137336-B
MAR 14 2019
RKD #18

# INVOICE

**AJ Clark MD Consultants Inc**
**C/O Dr. A.J. Clark**
**Pain Management Unit**
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| | |
|---|---|
| INVOICE DATE | 2019/03/08 |
| DUE DATE | 2019/04/08 |

**BILL TO**

Robert K. Dickson
BoyneClarke LLP
P.O. Box 876
Dartmouth NS, B3A 4S5
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| DESCRIPTION | TAXED | AMOUNT |
|---|---|---|
| Medical Legal Letter | | 450.00 |

| | |
|---|---|
| Subtotal | 450.00 |
| Taxable | - |
| Tax rate | |
| Tax due | - |
| Other | - |
| **TOTAL** | **$ 450.00** |

**OTHER COMMENTS**

Re: Judy Foran
File No. 137336.B

Make cheque payable to
**AJ Clark MD Consultants Inc**

If you have any questions about this invoice, please contact
Jessica Howe (902) 473-6428
***Thank you***

137336.B
MAR 14 2019

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March 8, 2019

**Robert K. Dickson, Q.C.**
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**Re: Judith Theresa Foran**
**DOB January 21, 1958 | HCN: 0008 816 662**
**File No. 137336.B**
**Pedestrian/Motor Vehicle Collision – November 27, 2016**

Dear Mr. Dickson:

Thank you for your letter of Feb. 28, 2019 concerning Ms. Foran. Please find attached a signed civil procedure rule 55.04 expert report certification. Please be aware that I am retiring from the practice of medicine at the end of March 2019 and I most likely will not have a medical license shortly thereafter; it is my understanding that I would not be able to appear in court to provide any medical opinions once I no longer hold a license to practice medicine. I also attach a copy of my curriculum vitae.

You ask for an update of Ms. Foran's condition since August 2018, she was seen by me on September 19, 2018, December 12, 2018 and February 27, 2019. These are the only visits I have had with Ms. Foran since August 2018. I enclose copies of these reports for your information.

In my letter of September 19, 2018 I detailed her ongoing symptoms including both her chronic pain as well as a number of other symptoms that are related to her ongoing chronic pain; specifically issues with sleep, anxiety, palpitations, etc. I also detailed the modalities that she was utilizing to try and get better control of her chronic pain. In addition, I did refer her to Dr. Mary Lynch, a colleague in the Pain Management Unit, to provide a second opinion and to see if there is anything further that could be suggested for her care. I also referred her to Dr. Cane, psychologist, to explore psychological treatment modalities. I enclose a copy of his assessment and plan dated December 17, 2018 which I received on March 7, 2019.

When I reviewed her on December 12, 2018, I noted that Dr. Lynch's report agreed with the treatment modalities that we had tried to date and Dr. Lynch did not have anything else to add to suggestions of future care. I discussed Dr. Lynch's report with Dr. Lynch and we both agreed that Ms. Foran had pain that was severe in nature and that it was prolonged; given the motor vehicle

accident was in November, 2016. We also both agreed that Ms. Foran was not able to return to work in any capacity. I noted in my letter of this date that she continued to see Dr. King who was arranging some investigations. I noted that her pain was severe in her right arm and hand and that cool weather would exacerbate her pain. She indicated she dropped objects frequently. She did note that her mood has improved through the use of item B12 and Omega 3. I also indicated to Ms. Foran that I would be prepared to support her application for CPP given that her pain is severe and prolonged and was unlikely to change in the future. I also indicated that I did not feel there was anything else I had to add to her care. I did arrange to see her again in late February prior to my retirement.

On the visit of February 27, 2019 I reviewed a number of questions Ms. Foran brought to the clinic visit. I documented that there had not been any significant changes in regards to her right arm pain/CRPS, she did indicate that her pain had been worse through the winter with the weather and the coldness and that she continued to describe pain through her shoulder as well as down her arm and to her hand. She was concerned that she was also experiencing pain in the right leg whereas in the past she has had some left leg pain. She was concerned that CRPS would move into other areas of her body. I did indicate that people with CRPS can develop pain in other body parts at times but this does not always happen. I also indicated that it was very difficult to predict whether this could happen or would happen.

She was also very concerned about her future care and the support that would be needed to achieve this care in the future. We discussed any future treatment modalities that may be available to her. I had made arrangements in January 2019 for her to see another colleague in the Pain Management Unit, Dr. Mukhida for a trial of ketamine infusion. This will not happen until July 2019, there is a low probability that this will be of benefit to Ms. Foran however it is a modality that has been used and is probably worth trying on one occasion. I will leave this up to Dr. Mukhida to decide and to provide if he feels that it is indicated. She also questioned as to whether a trial of bisphosphonates would be worthwhile, there is limited evidence that this can be helpful in some situations in CRPS. She is aware of a clinical trial in Toronto; I indicated to her that if she wishes to approach leaders of the clinical trial, this would be at her discretion.

She continued to note that she was unable to work, that her sleep was poor, that her mood was depressed. I have suggested that her family physician should monitor her mood and if she becomes more depressed then the family physician may wish to consider treating her for this. She wished to know whether she should continue with physiotherapy and massage therapy and I suggested this would be reasonable on a regular basis, either weekly or twice weekly into the future, if it is helpful to her. I could not provide a longitudinal time frame for this. Finally Dr. Mukhida will see her this summer and if he feels that there is any further care that can be provided to her, I'll leave it in his hands to arrange at that time.

You ask as to whether Ms. Foran will require any further ongoing treatments for her condition. At the present time she is receiving physiotherapy and massage therapy and I would anticipate that this will continue into the future on a weekly or biweekly basis. I cannot give you a specific time frame but given that her motor vehicle accident was more than 2 years ago, she does not have control of her pain, her pain is described as severe and she has very significant functional limitations due to ongoing pain I think it very likely that she will continue to require these modalities into the future over a number of years. Actual duration will depend upon whether she continues to receive transient benefit from these modalities. I cannot provide an opinion as to whether intravenous ketamine might be required in the future, this typically would be provided through the Pain Management Unit at the

QEIIHSC so it would be of no cost to Ms. Foran other than coming to the unit and the expenses in regards to this such as parking.

I would anticipate she will continue to require both prescription medications such as nortriptyline on an ongoing basis and as she does get some benefit from the use of cannabis for medical purposes (i.e. cannabis oil) which will be required into the future on an ongoing basis. She is going to explore the use of Qigong which we provide through a group program; if this should be beneficial to her, again this is something that she would continue to utilize into the future and would probably require seeing a Qigong practitioner privately on a periodic basis into the future. She may also require further psychological support privately in the community, I will leave this up to Dr. Cane to recommend and detail in the future.

She currently uses a number of over the counter substances such as multivitamins, probiotics, B12, Omega 3, vitamin D and Vitamin C products which she feels are necessary in helping her maintain her health. Again, it is most likely that she will continue to require these into the future.

I have provided Ms. Foran with all treatment modalities that I am aware of for her chronic pain or have arranged for her to have further treatment modalities through my colleague Dr. Mukhida.

You ask whether Ms. Foran will be able to return to work at her own occupation.
I have previously indicated that Ms. Foran will not be able to return to work in her own occupation or in any occupation. Ms. Foran has attempted to return to work and has been unable to do so without flair of her pain along with a number of other symptoms that have been documented in my reports. Given that it is now more than 2 years since her accident and she continues to have pain that is prolonged and severe with very significant limitations in her ability to utilize her right upper extremity, it is very unlikely that she will get control of her pain or have improvement in function that would allow her to return to work in either her own occupation or in any capacity. As pointed out previously, both Dr. Lynch and I concur that she is not capable in returning to work in any capacity.

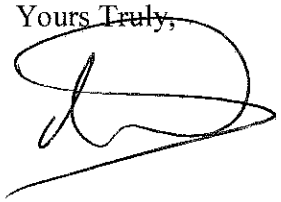
Ms. Foran has been compliant with treatment recommendations over the time that I have seen her. She has often had multiple questions in regards to specific treatments which is not unusual but when provided with an explanation as to why something should be considered, she has generally been compliant with that. She has also continued with treatment modalities and not given up on them after a short duration. Unfortunately it is not unusual in chronic pain, not to respond to treatment modalities provided, as a general rule we consider that we are able to help about 60% of the patients that we see. So that means that a substantial portion of patients who do try appropriate treatment modalities do not get benefit and continue to experience pain and disability because of their pain and injury. Pain, in particular CRPS is complex and impairment in mood, sleep, increased anxiety and significant impact on function are all frequent outcomes when an individual develops pain after an injury. Ms. Foran fits this picture.

Lastly, Ms. Foran did have symptoms and signs compatible with Complex Regional Pain Syndrome in the early stages of her presentation. She continues to demonstrate some of the signs and symptoms compatible with this diagnosis at this time although a number of the clinical signs have resolved which is not unusual and she does not meet the full criteria for CRPS at this time. CRPS is a condition one has to diagnose when one initially sees a patient after an accident. Sometimes, as the signs and symptoms change as time progresses, it is not always possible to document all of the signs and symptoms that are necessary to make a diagnosis according to the Budapest Criteria at a later

date. I attach a recent review in regards to the Budapest Criteria for Complex Regional Pain Syndrome and the challenges around making this diagnosis for your information.

Notwithstanding the above, Ms. Foran does have chronic pain, onset it clearly related to the accident of November 27, 2016. She developed symptoms and physical findings that were compatible with Complex Regional Pain Syndrome and she has continued to experience severe and prolonged pain with significant limitations in her functional abilities since then such that she is unable to return to work in any capacity because of ongoing pain and physical limitations.

Yours Truly,



A.J. Clark MD, FRCPC

Enc.

## *CIVIL PROCEDURE RULE 55.04 EXPERT REPORT CERTIFICATION*

I, Dr. Alexander J. M. Clark, hereby certify the following in respect to the attached expert report(s) I have prepared in respect to Judith Theresa Foran:

1. I am providing an objective opinion for the assistance of the court, notwithstanding that I have been retained by the Plaintiff in this action.

2. I am prepared to testify at the trial or hearing, to comply with directions of the court, and to apply my independent judgment when assisting the court in this matter.

3. My report includes everything that I regard as relevant to the opinion expressed therein and my report draws attention to anything that could reasonably lead to a different conclusion.

4. I will answer any and all written questions put by the parties in this proceeding as soon as possible after the questions are delivered to me.

5. I will notify each party in writing of any change in my opinion, or of a material fact that was not considered when the report was prepared and could reasonably affect the opinion, as soon as possible after arriving at the changed opinion or becoming aware of the material fact.

6. Unless otherwise stated, the opinions expressed in my reports are held by me to a reasonable degree of certainty, and it is more probable than not that they are correct and accurate.

7. I have referenced all the literature and other authoritative material consulted by me to arrive at and prepare the opinion which may be provided in an attached list.

8. I have stated all documents, electronic information and other things provided to, or acquired by, the expert to prepare the opinion.

9. Attached to my report is a true copy of my Curriculum Vitae which sets out my relevant qualifications, including a listing of all my publications on the subject of the opinion.

Dr. Alexander J. M. Clark

**NS Civil procedure Rule 55.04: Content of expert's report**

(1) An expert's report must be signed by the expert and state all of the following as representations by the expert to the court:

(a) the expert is providing an objective opinion for the assistance of the court, even if the expert is retained by a party;

(b) the witness is prepared to testify at the trial or hearing, comply with directions of the court, and apply independent judgment when assisting the court;

(c) the report includes everything the expert regards as relevant to the expressed opinion and it draws attention to anything that could reasonably lead to a different conclusion;

(d) the expert will answer written questions put by parties as soon as possible after the questions are delivered to the expert;

(e) the expert will notify each party in writing of a change in the opinion, or of a material fact that was not considered when the report was prepared and could reasonably affect the opinion, as soon as possible after arriving at the changed opinion or becoming aware of the material fact.

(2) The report must give a concise statement of each of the expert's opinions and contain all of the following information in support of each opinion:

(a) details of the steps taken by the expert in formulating or confirming the opinion;

(b) a full explanation of the reasons for the opinion including the material facts assumed to be true, material facts found by the expert, theoretical bases for the opinion, theoretical explanations excluded, relevant theory the expert rejects, and issues outside the expertise of the expert and the name of the person the expert relies on for determination of those issues;

(c) the degree of certainty with which the expert holds the opinion;

(d) a qualification the expert puts on the opinion because of the need for further investigation, the expert's deference to the expertise of others, or any other reason.

(3) The report must contain information needed for assessing the weight to be given to each opinion, including all of the following information:

(a) the expert's relevant qualifications, which may be provided in an attached résumé;

(b) reference to all the literature and other authoritative material consulted by the expert to arrive at and prepare the opinion, which may be provided in an attached list;

(c) reference to all publications of the expert on the subject of the opinion;

(d) information on a test or experiment performed to formulate or confirm the opinion, which information may be provided by attaching a statement of test results that includes sufficient information on the identity and qualification of another person if the test or experiment is not performed by the expert;

(e) a statement of the documents, electronic information, and other things provided to, or acquired by, the expert to prepare the opinion.

*Review Article* *http://www.alliedacademies.org/anesthesiology-clinical-science-research/*

# The Budapest criteria for complex regional pain syndrome: The diagnostic challenge.

**Joseph V Pergolizzi[1], Jo Ann LeQuang[1], Sri Nalamachu[2], Robert Taylor[1], Ryan W Bigelsen[3]**

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## Abstract

**Chronic regional pain syndrome (CRPS) is a neuropathic pain syndrome that involves both peripheral and central sensitization. Described in the literature as early as 1872, CRPS has been described using different names and different symptoms over the years. Since many neuropathic pain syndromes are rare, complex, and exhibit overlapping signs and symptoms, diagnosing CRPS has been challenging. Recently the Orlando Criteria in 1993, the subsequent Budapest Criteria in 2003 have attempted to provide a more helpful and robust diagnostic framework. However, the multiplicity of signs and symptoms and allowable variations have resulted in a diagnostic template that accommodates what may actually be a wide variety of conditions and obscures a better understanding of CRPS. The Budapest Criteria make CRPS ultimately a diagnosis of exclusion, leaving clinicians with patients who may be CRPS Type I, CRPS Type II or the new CRPS-NOS. CRPS can be challenging to treat and many treatments are ineffective, possibly owing to the fact that the syndrome is currently defined in such a diffuse way. The current diagnostic criteria of CRPS have even called the entire syndrome into question. There is an urgent need to better define and describe CRPS so that it can be appropriately diagnosed and its mechanisms elucidated. That step will lead to better treatment.**

**Keywords**: Budapest criteria, Orlando criteria, Neuropathic pain syndromes, Complex Regional Pain Syndrome (CRPS).

*Accepted on March 28, 2018*

## Introduction

Pain specialists, neurologists, and many other clinicians must frequently confront the challenging and maladaptive condition of chronic neuropathic pain. Chronic pain of any type involves central sensitization and can be challenging to treat. Neuropathic pain involves aberrant neural signal processing which can amplify pain signals and result in pain that appears unrelated to the original nerve injury. Among the most difficult neuropathic pain syndromes to treat is complex regional pain syndrome (CRPS), a condition so diffuse and poorly defined that its very existence has recently been called into question [1]. CRPS, although not under that name, was described as early as the 19th century when it was termed "causalgia" [2]. By World War II, what clinicians today might recognize as CRPS was called "reflex sympathetic dystrophy" [3]. With the emergence of pain medicine as a specialty and a growing undertanding of pain mechanisms, this amorphous condition was the subject of greater scrutiny and several notable attempts were made to better define it and establish diagnostic criteria.

The great problem with CRPS is that although patients suffer from it or at least something that fits under the umbrella of what is being defined as CRPS, its pathophysiology and mechanisms are poorly understood. Without a clear understanding of what is involved, CRPS has become a catchall label for a variety of signs and symptoms and has emerged as a diagnosis of exclusion. Furthmore, the diagnostic criteria for CRPS may have emerged from clinical frustration about defining an extremely

The purpose of our article is to review in short narrative form the nature of CRPS, current diagnostic criteria and how they are used, and implications for pain specialists with regard to diagnosis and treatment of CRPS.

## Literature Review

### *Diagnosing CRPS*

Historically, the condition today known as CRPS was diagnosed by a variety of diagnostic criteria set forth by individuals and based largely or entirely on their own experiences. These diagnostic criteria never achieved any form of standardization, were not generally accepted by the medical community, and might most charitably be described as "idiosyncratic" [5-7]. It was not until 1994 that a consensus meeting of experts adopted the term "complex regional pain syndrome" to encompass both "causalgia" and "reflex sympathetic dystrophy," which were difficult conditions to differentiate anyway [8,9]. The great issue was that patients were presenting with chronic neuropathic pain that appeared to involve both peripheral and central sensitization; the painful symptoms were also sometimes accompanied by edema, asymmetrical skin temperature and coloration differences, and trophic or motor symptoms.

These patients were often in moderate to severe or very severe pain, may have suffered from allodynia or hyperalgesia, and defied standard treatment. In many cases, it was difficult to ascertain how or why the condition began. The epidemiology of CRPS is unclear. In a retrospective cohort study conducted

per 100,000 person-years (95% confidence interval [CI], 23.0 to 29.7) [10]. Females were vastly more affected than males (ratio 3.4) with the highest incidence occurring in postmenopausal women between the ages of 61 and 70. The mean age at diagnosis in this study was 52.7 years. In 44% of cases, a fracture was identified as the precipitating event and the upper extremities were more likely to be involved than lower extremities [10]. As this is a highly distressing condition associated with reduced function and moderate to severe pain, there was a sense of urgency to create a solid diagnostic foundation and advance toward effective .

In a meeting in Orlando in 1994, the International Association for the Study of Pain (IASP) entered the condition into its taxonomy as a diagnostic entity [7,9,11]. The IASP definition of CRPS was descriptive and led to a generally accepted set of standardized criteria by which to make a diagnosis [8]. The IASP was the first organization to enter CRPS into its taxonomy as a diagnostic entity and arrived at four conditions on which to base a diagnosis: (1) an initiating event or cause of immobilization; (2) continuing pain, allodynia, or hyperalgesia disproportionate to the inciting event; (3) evidence at some time(s) of edema, changes in skin blood flow, or abnormal sudomotor activity in the painful region; and (4) the diagnosis is excluded by the existence of other conditions that might account for the pain and dysfunction. The IASP then subdivided CRPS into Type I (without major nerve damage) and Type II (with major nerve damage) [11]. These initial criteria introduced a fair amount of confusion.

While an inciting event (typically a distal radius fracture or fracture of the ankle) was required by the so-called Orlando Criteria, the IASP itself noted that 5% to 10% of all patients will not have an inciting event or cause of immobilization and stated this criterion was not absolutely essential to make a diagnosis [11]. It has also been postulated that perhaps some patients experienced a triggering event but simply did not remember it or did not consider it meaningful. Since the type and nature of the inciting event can vary—indeed it may not even have occurred—it has opened up the question as to how such trauma might precipitate CRPS and, more importantly perhaps to understanding its mechanisms, why only a fraction of patients with such injuries progress to CRPS while most do not.

The IASP diagnostic criteria also specified that the patient experience continuous pain disproportionate to the inciting event. This relied on the patient's own self-reports both of pain and a subjective assessment that this pain is out of proportion to the inciting event. Furthermore, other signs and symptoms relied on self-reports and subjective assessments. The diagnosis could be made based on historical experiences as recollected by the patient. Such subjective patient-centric criteria might be unreliable and could lead to over-reporting. Moreover, another difficulty with these diagnostic criteria emerged in that they were based on expert consensus rather than clinical findings or rigorous analysis of the literature [12].

The Orlando criteria for CRPS were sensitive (that is, they accurately identified most cases of CRPS) but lacked specificity (meaning they inappropriately labeled other neuropathic painful false-positive diagnosis and possibly inappropriate treatment. In a study of 160 patients (113 CRPS and 47 neuropathic pain patients who did not have CRPS), IASP criteria were diagnostically sensitive (1.00) but not very specific (0.41) while the new Budapest criteria in this same group retained the high sensitivity (0.99) but offered improved specificity (0.68) [15-17]. Early studies of the IASP criteria found them to be highly sensitive but a lack of specificity resulted in false positives [13,15,18]. For example, the IASP mentioned in its criteria that the patient should have signs and symptoms relating to vasomotor changes, sudomotor changes, or edema, but allows that fulfilling any one of these conditions fulfills the criterion [14,19]. Thus, it is possible that the Orlando criteria led to overestimating the prevalence of the condition. The IASP criteria omitted references to motor/trophic signs and symptoms, which can play an important role in differential diagnoses [14,18,20].

CRPS is a relatively rare condition treated by a handful of experts who had generalized their observations to try to meet an urgent need—to better identify a potentially devastating condition—but one that proved over time to be suboptimal in real-world clinical practice. In 2003, a group of clinicians met in Budapest to review what had been learned about CRPS since the IASP diagnostic criteria were in use and to make recommendations in a think-tank type of forum that would lead to specific research efforts [13,14]. This resulted in the publication of a definitive book about CRPS21 and recommendations to IASP as to the incorporation of the so-called "Budapest criteria."

In a study of 117 CRPS patients and 43 neuropathic pain patients without CRPS, a validation study found that the IASP criteria had high sensitivity in diagnosing CRPS (0.98, meaning it almost always diagnosed CRPS when it was present) but low specificity (0.36, meaning there were a lot of false-positives). Taken together, this translates into a very poor score in that CRPS diagnoses are only likely to be correct in less than half of all cases (about 40%) [13]. A factor analysis was conducted (n=123 CRPS patients) determining four distinct subgroups among CRPS signs and symptoms: pain processing (allodynia, hyperalgesia), vasomotor dysfunction (skin color and/or temperature changes), edema/sudomotor dysfunction, and motor/trophic signs and symptoms. The reorganization of these signs and symptoms into four subgroups differentiated the Budapest criteria from the IASP, which previously had treated vasomotor/sudomotor dysfunction and edema as one subgroup [4]. The addition of the fourth criterion (motor/trophic effects) allows clinicians to consider such conditions as dystonia or tremor in the diagnosis (omitted in the IASP criteria). These modified criteria allowed for better discrimination between CRPS and neuropathic painful conditions (Table 1).

### *The face of CRPS in clinical practice*

CRPS as currently understood may be described as a type of persistent neuropathic pain syndrome. As such, it shares many features of neuropathic painful conditions: peripheral pain, hyperalgesia, allodynia, edema, and paresthesia. The pain of CRPS often described as deep or burning, is often moderate to severe. This pain is typically linked to an inciting event such as, but not limited to a fracture of the wrist or ankle, but the pain

*Table 1. The Budapest Criteria: In order to make a clinical diagnosis of CRPS, the following four criteria must be met.*

| S. No | Criteria | Categories | | | |
|---|---|---|---|---|---|
| | | Sensory | Vasomotor | Sudomotor/Edema | Motor/Trophic |
| 1 | Continuing pain, disproportionate to any inciting event | -- | -- | -- | -- |
| 2 | **Symptoms:** Must report at least one symptom in three of the four categories shown to the right | Hyperesthesia; Allodynia | Temperature asymmetry; Changes in skin color; Skin color asymmetry | Edema; Sweating changes; Sweating asymmetry | Decreased range of motion; Motor dysfunction; Trophic changes (hair, nails, skin) |
| 3 | **Signs:** At the time of evaluation, must have at least one sign in two or more of the categories shown to the right | Hyperalgesia (pinprick); Allodynia (light touch or temperature); Deep somatic pressure; Joint movement | Skin temperature asymmetry (>1°C); Changes in skin color; Skin color esymmetry | Edema; Sweating changes; Sweating asymmetry | Decreased range of motion; Motor dysfunction (weakness, tremor, dystonia); Trophic changes (Hair, nails, sin) |
| 4 | No other diagnosis can better explain the patient's signs and symptoms | -- | -- | -- | -- |

Furthermore, the pain of CRPS may not be associated with the root or nerve territory that was originally affected that is a wrist injury may lead to pain sites in other parts of the body. The presence or absence of peripheral nerve damage has been used to differentiate so-called Type I from Type II CRPS, although the clinical utility of these two types of CRPS4 and indeed veracity of this categorization is disputed [21].

Swelling, asymmetrical temperature changes, atrophy, dystrophy, and movement disorders may (or may not) be present and may occur at varying degrees [22]. The painful condition may persist, and over time may progress and spread to new regions of the body in a subset of patients this chronic pain may become generalized [23].

The clinical presentation among CRPS patients can be extremely diverse. Skin temperature can be a telling symptom, but in a "typical" CRPS patient, skin temperature increases in the first six months of the disease and then decreases even to the point that the patient's extremities grow cold over time—except that many patients suffer low skin temperature from the outset [24]. Thus, paradoxically, both increased and decreased skin temperature of the extremities might be considered indicative of CRPS. Yet some CRPS patients may have no skin temperature anomalies at all.

Edema, a prominent sign of early CRPS in some patients may decrease over time, but it is not clear if this is owing to the natural course of the inflammatory response or the nature of CRPS [25]. Trophic changes can be considered as signs of CRPS, but they occur in only about half of patients and may be mild or pronounced [25]. It is not clear why this occurs and why it occurs only in some patients.

CRPS is a syndrome not a disease and as such there is no definitive test, laboratory evaluation, or imaging that can objectively diagnose the condition. That in itself is not remarkable, many conditions rely on clinical diagnoses and patient self-reports (for example, headaches). But in the case of CRPS, attempts to define this syndrome have created considerable confusion.

## *Who is the CRPS patient?*

The introduction of the Budapest criteria, which were more stringent than the preceding Orlando criteria, resulted in about

diagnosis [19]. This resulted in the creation of a new category called CRPS-NOS (Not Otherwise Specified) which included those patients who did not fulfill the Budapest criteria but whose signs and symptoms could not be better explained by any other diagnosis. Rather than limit the scope of CRPS to two types, a third and non-specific new type was added.

The Budapest and Orlando criteria make CRPS a diagnosis of exclusion, but it may be that CRPS patients are those patients with pronounced neuropathic pain syndromes of a variety of etiologies. A systematic literature review evaluated cases of CRPS Type I occurring only in the knees [26]. A total of 31 articles encompassing 368 patients were found and it was determined the most common inciting event of knee CRPS Type I was knee surgery. This type of knee-only CRPS Type I condition is relatively rare although the 368 patients in this study technically fulfilled the Budapest criteria.

However, patients who undergo knee surgery might experience chronic postsurgical pain, a well described condition associated with many types of surgeries, including orthopedic surgery [27]. CRPS Type I of the hand (typically involving one to three fingers) is a rare clinical condition but a retrospective study retrieved reports in the literature involving a total of 16 such patients (11 men, five women) [28]. In this group, 88% of patients fulfilled the Budapest criteria for a diagnosis of CRPS Type I while the remainder were diagnosed using a three-phase bone scintigraphy test.

CRPS patients may have mild to severe or very severe symptoms. In some patients, so-called "warm CRPS" (with elevated asymmetrical skin temperatures) may progress to "cold CRPS" by Bruehl. This transition remains to be further elucidated but may represent the transition from acute to chronic phases. Older notions described three sequential stages of CRPS which have since been refuted but may represent a subtype of CRPS. These sequential stages include: a relatively limited form of CRPS in which vasomotor signs and symptoms predominate, a somewhat limited syndrome in which neuropathic pain and sensory symptoms predominate, and a more florid form of CRPS which aligns best with the "classic" descriptions of the syndrome and was most associated with motor/trophic signs [29].

CRPS is perhaps most robustly characterized as a chronic painful

596 patients with a single fracture of wrist, scaphoid, ankle, or metatarsal V in the Netherlands, none of the patients diagnosed with CRPS Type 1 were free of symptoms at 12 months and all patients with CRPS Type 1 had significantly more pain at baseline than those without CRPS Type 1 ($p<0.001$) [30]. CRPS typically—but not exclusively—occurs after an inciting event. In most cases (55% to 60%) the inciting event is traumatic, most commonly distal radius fracture [31-33]. CRPS Type 1, formerly called reflex sympathetic dystrophy syndrome, is cause by a noxious event or immobilization leading to persistent pain, allodynia, and hyperalgesia out of proportion to the noxious stimuli. Type 1 CRPS typically involves edema, changes in skin blood flood, and abnormal sudomotor activity. Type 2 CRPS, formerly called causalgia, describes persistent pain, allodynia, or hyperalgesia specifically after a nerve injury, although not necessarily in the distribution of that nerve and may include the features of Type 1 [34]. The pathophysiology does seem to differ between types [35]. In a 10-year population-based study, it was found women were four times more likely than men to develop CRPS and the average age at onset of CRPS was 46 years, the vast majority of cases (96.9%) appear to be CRPS Type 1 [36,37]

CRPS has been particularly associated with a fracture of an upper extremity although it may occur following the fracture of the foot or ankle as well as without a preceding fracture [10,36]. In a study of 390 foot/ankle surgery patients from 2009, in which the incidence of CRPS based on IASP criteria was 4.36%, nearly half of those who developed CRPS (47.06%) had a medical history of anxiety or depression and 29.41% were smokers [35]. In a study of 477 patients who underwent surgery to treat a distal radius fracture, 8.8% fulfilled the Budapest criteria for CRPS Type 1 at six months [38]. Females and older patients were more likely to develop CRPS Type I. In fact, female patients and those with high-energy trauma or severe fracture were significantly more likely to develop CRPS Type I (p-values are 0.02, 0.01, and 0.01, respectively) [38]. A prospective study of 90 consecutive patients treated at a single center for a distal radius fracture diagnosed CRPS Type 1 in 32.2% of patients using earlier Veldman criteria and found it occurred most frequently in the third and fourth week after cast removal and was more likely to occur in females who reported severe pain and reduced physical quality of life [39]. Moreover, patients with musculoskeletal comorbidities and rheumatoid arthritis appeared more likely to develop CRPS Type 1 than those without these conditions [30]. Furthermore, there may be a genetic predisposition to CRPS Type 1 but further work is needed in this area [40-42].

### *Diagnostic challenges*

Clinical diagnoses are inherently challenging, but the challenges with the Budapest and Orlando criteria are perhaps more pointed than most. The diagnostic scheme for the Budapest criteria relies primarily on dichotomous responses to conditions and fails to take into account subtle variations among patients. In the case of skin temperature asymmetry, it is possible to take an objective measure and to compare various degrees of temperature asymmetry. However, many of the other criteria are subjective. Clearly, the most important of these criteria is continuing pain. In a retrospective study of 190 patients diagnosed with CRPS according to the Budapest criteria and 26 patients with neuropathic pain not identified as CRPS, patients were mainly female, mean age 44 years, and median disease duration was 18 months. Among the CRPS patients, about a third had experienced pain in the affected limb prior to the inciting event. In this cohort of CRPS patients, clinically important and widespread pain affected more than 10% of patients [43].

The diagnostic sensitivity and specificity of the Budapest criteria may be affected in part by how the algorithm is employed [44]. High sensitivity/low specificity occurs when diagnosis requires at least one each of at least two of the sign categories, and at least one each of two of the symptom categories (0.94 and 0.36, respectively) [4]. High specificity/low sensitivity occurs when diagnosis depends on one each in at least two of the sign categories, and one each in all four of the symptom categories (0.70 and 0.94, respectively). The highest combination scores for sensitivity and specificity are 0.86 and 0.75, respectively, which can be achieved when diagnosis depends on at least one each of three of the sign categories, and one each of all four of the symptom categories [4].

The challenges of the various diagnostic criteria set forth for CRPS are evident in their results. In a study published in 2016 of 306 consecutive patients with foot or ankle fractures, the incidence of CRPS diagnosed according to the Budapest criteria was less than 1% [44]. Yet in a retrospective study of 390 foot/ ankle surgery patients in 2009, 4.36% could be classified as having CRPS based on the IASP criteria [35]. In a study of 596 patients with a single fracture of wrist, scaphoid, ankle, or metatarsal V, the incidence of CRPS Type 1 varied depending on which diagnostic criteria were used: the incidences were 7.05%, 48.5%, and 21.3% based on the Harden and Bruehl criteria, the IASP criteria, and the Veldman criteria, respectively [30]. In that latter study, the data were collected around the time that the Budapest criteria were first published and so the Budapest criteria were not evaluated.

In 2010, a severity scale was proposed for CRPS diagnostics which allowed for clinicians to better capture the nuances in various metrics, such as the degree of skin coloration asymmetry or severity of dystonia [17]. In a study of 114 CRPS patients and 41 non-CRPS patients with neuropathic painful condition, 17 clinically assessed signs and symptoms were evaluated leading to a CRPS Severity Score (CSS). This CSS was able to differentiate between CRPS and non-CRPS patients ($p<0.001$) and exhibited strong associations with the dichotomous CRPS diagnoses in terms of both the earlier IASP diagnostic criteria and the newer Budapest criteria. Patients with higher CSS scores had significantly greater pain intensity, distress, and dysfunction compared to those with lower CSS scores.17 Attempts to correlate certain diagnostic criteria, such as overall CRPS severity score (CSS) and temperature asymmetry have not been successful [45].

While diagnosis of CRPS is primarily based on clinical signs, laboratory, neurophysiological, and radiologic testing may be helpful to support or refute a potential determination [46]. Indeed, the role of laboratory testing and radiology may be

criteria were specifically intended to be readily accessible and deployable by any clinician in the clinical setting, in that they did not require special training, elaborate equipment, or complicated testing. Such "bedside-ready" criteria serve a practical need. However, such criteria rely on the subjective impressions of both the patient (in terms of pain) and clinician (signs). This extensive (and in this case sole) use of subjective criteria for diagnosis is, of course, somewhat problematic [15]. For example, the pain required to fulfill Budapest criteria must be "disproportionate" with respect to the inciting event. This is problematic for two reasons. First, not all patients have or can remember the inciting event. Second, pain disproportionate to the injury is a highly subjective term. What is "disproportionate" to one patient may be reasonable to another.

### *Possible mechanisms of CRPS*

CRPS remains a diffuse and vaguely described syndrome and it has been difficult to elucidate the mechanisms behind it. One particular characteristic of CRPS is that the pain is not confined to the innervation zone of an individual nerve [47]. Focal small-fiber axonal degeneration and alteration of the cutaneous innervation by small-diameter fibers (afferent and efferent) have been implicated in CRPS [48]. Patients with CRPS may have changes in the neural microenvironment at the peripheral site of injury that result in peripheral afferent sensitization along with neurogenic inflammation and sympathetic afferent coupling [49]. This functionally reorganizes somatosensory, motor, and autonomic circuits in the central nervous system (CNS) [22,50].

Because CRPS is a neuropathic pain disorder with autonomic features whose pathophysiology has not been well understood or elucidated, effective treatments have been elusive. The pathophysiology of CRPS is complex and multifactorial, involving both peripheral and central nervous systems.

CRPS is further characterized by inflammation, altered sympathetic and catecholaminergic function, and changes in the somatosensory representation in the brain. There are likely genetic factors at play, which remain to be elucidated, and psychophysiologic interactions contribute as well. It may be that CRPS manifests in different ways depending on which factors are involved and to what degree they interact with each other [51].

Three-phase bone scintigraphy (TPBS) has given evidence that CRPS patients experience enhanced periarticular bone metabolism. Thus, hyperalgesia around the joints in response to blunt pressure may be a finding more specific to CRPS than hyperalgesia associated with muscle. Pressure-pain thresholds on the joints have been described in the literature as a type of noninvasive diagnostic test for CRPS [52].

### *Treatment of CRPS*

CRPS treatment can be very challenging and a subset of all CRPS patients may be described as refractory to all standardized treatments. Indeed, treatment of CRPS may be described overall as generally ineffective. There is growing support for multidisciplinary approaches to CRPS treatment and certain promising new approaches [53].

occupational therapy may be helpful. In particular, occupational therapy may help improve functionality and the ability of the patient to carry on everyday activities [54]. Pharmacological treatment is individualized and may include steroids, free-radical scavengers, neuropathic pain treatments, and drugs that interfere with bone metabolism such as calcitonin and bisphosphonates [46].

Ketamine, an N-methyl-D-aspartate (NMDA) antagonist, has been evaluated in various acute and chronic pain syndromes. It is believed that systemic ketamine can modulate central sensitization over the long term [55]. Ketamine inhibits pro-inflammatory cytokines which may play a role in peripheral and central sensitization [56]. In the early stages of localized CRPS, low-dose ketamine can be effective, but this agent does not appear as effective in the treatment of more advanced CRPS. In a study of 20 CRPS patients (mean age 30.4±10.4 years, range 14 to 48 years) with severe and/or spreading CRPS, they were treated with anesthetic doses of ketamine over five days and followed for six months [57]. Significant pain relief was observed at one, three and six months after treatment (93.5 ± 11.1%, 89.4 ± 17.0%, and 79.3 ± 25.3%, $p<0.001$) and complete remission was observed in all patients at one month, in 17/20 at three months, and in 16/20 in six months. Even when relapse occurred, significant pain relief was still noted at three and six months (59.0 ± 14.7%, $p<0.004$ and 50.2 ± 10.6% $p<0.002$). In addition, most patients reported improvements in quality of life.

A case report in the literature describes complete recovery from intractable CRPS Type 1 following anesthetic ketamine and midazolam [58]. The patient had severe and rapidly progressing CRPS refractory to standard treatment and with unmanageable and severe pain levels. The patient entered the intensive care unit (ICU) and was administered anesthetic doses of ketamine (3-5 mg/kg/h) along with midazolam over five days. Improvement was visible at two days and all symptoms resolved completely by the sixth day. The patient was tapered off the drugs and emerged from anesthesia completely free of pain and related CRPS symptoms. The recovery was durable in that the patient has enjoyed this remission for eight years.

Steroids are conventionally used to help treat CRPS. In an open-label, uncontrolled study of CRPS outpatients evaluated in the period from 2009 to 2012, 31 patients (diagnosed with Budapest criteria) who had CRPS for at least three months refractory to standard treatment were treated in two centers. At Center 1 (C1), patients were administered 100 mg of oral prednisone tapered by 25 mg every four days to zero) while patients at Center 2 (C2) were treated with oral prednisone 60 mg for two weeks, lowered by 20 mg every 4 days to zero. Patients were assessed for pain intensity levels at the outset of the study and six weeks after treatment commenced. No significant pain reduction was observed against baseline ($p=0.059$) but two patients had a consistently reduced pain intensity with return to baseline levels nine weeks after study onset; one patient reported ongoing stable pain relief >50% [59].

A single-center study (n=56 with painful peripheral neuropathy including but not exclusively CRPS) found 75% of patients

a 5% lidocaine plaster as an add-on analgesic [60]. Pain in this study was measured using a numeric rating scale and all patients exhibited an average reduction of 61% at six months from baseline (4.7 points), that is, from a baseline average of 7.8 to an endpoint score of 3.1. CRPS patients had a 51% reduction in pain from baseline (7.9 at baseline and 3.9 at endpoint).

The lack of a single generally effective treatment and reports of effective treatments for small subsets of patients seems to suggest that what we are considering as CRPS may actually be any number of neuropathic pain syndromes.

### *A diagnosis of exclusion*

The new Budapest criteria, like the Orlando criteria that preceded them, make CRPS of any type a diagnosis of exclusion, that is, that the clinician cannot find any better diagnosis that explains the patient's signs and symptoms. While diagnoses of exclusion are hardly rare in medicine, in the case of CRPS with its wide constellation of varying signs and symptoms, it allows any number of other inexplicable neuropathic pain syndromes to be relegated to CRPS. This means that CRPS has become a catch-all diagnosis, and if there is any genuine CRPS sharing common pathophysiologic mechanisms, it will be difficult to define and elucidate as it is lumped together with a wide range of other neuropathic conditions.

The field of neuropathy includes a wide range of relatively rare and poorly understood conditions. These range from the fairly obscure, such as (but not limited to) Morvan's syndrome [61,62], neuromyotonia [63], Charcot-Marie-Tooth neuropathy [64], demyelinating neuropathy [65], Parsonage-Turner syndrome [66], deQuervain's stenosing tenosynovitis [67], and meralgia paresthetica [68]. Neuropathic pain may also occur with an injury to the central nervous system, such as stroke [69]. It is beyond the scopeof this article to discuss the many possible neuropathic conditions that might factor into a diagnosis of exclusion. The diagnosis of neuropathic syndromes can be extremely challenging.

Chronic postsurgical pain (CPSP), on the other hand, is known to affect about 10% to 30% of surgical patients and thus neuropathic pain following surgery should be considered [70]. CPSP often has a significant and pronounced neuropathic component [71]. For example, when an inciting injury was treated surgically, it may be that the resulting constellation of symptoms owes to CPSP rather than CRPS.

Neuropathic pain is a typical feature not just in CPSP, but also in many forms of chronic noncancerous pain (such as chronic low back pain), and cancer pain, such as lymphoma or iatrogenic neuropathic pain associated with chemotherapy [72,73]. New conditions are emerging which at least overlap to some degree with CRPS: for example POEMS syndrome which involves demyelinating neuropathy manifesting initially as polyneuropathy with chronic pain [74].

In short, neuropathic pain can occur due to injuries to peripheral nerves, entrapment of these nerves, spinal cord injuries, cerebral infarcts, infections (such as postherpetic neuralgia), multiple sclerosis, and others [75]. Neuropathic pain syndromes may evolve into evoked painful conditions such as hyperalgesia and conditions based on mechanisms rather than symptomology. For that, a better understanding of the mechanisms of CRPS is needed.

## Discussion

Pain specialists generally recognize that a subset of patients present with persistent and sometimes severe neuropathic pain. When this pain becomes centralized but retains a peripheral component, is associated with a variety of other signs and symptoms including but not limited to edema, motor symptoms, skin temperature and coloration changes, and can create moderate to severe and even debilitating pain, it has been tempting to assign it to the category of CRPS. The problem with CRPS—historically as well as contemporaneously—is that it is a very flexible syndrome that can "stretch" to accommodate a wide number of conditions. The pain must be persistent but can be moderate to severe, may be localized or diffuse, may migrate or not, and might remit. Related signs may be changes to hair and nails, changes in sweating, dystonia, and cutaneous abnormalities— which may be mild to severe, may remit or relapse, and may not occur at all. Related symptoms such as hyperalgesia and allodynia, which can be exceedingly troublesome to the patient, occur in any number of neuropathic painful conditions.

If CRPS were a clear-cut condition, it would offer a more precise definition. If it were more precisely defined, its mechanisms and physiopathology might be better elucidated. And if its mechanisms were better understood, targets for drug development might emerge or other effective treatment strategies might become clear. The vagueness of the CRPS diagnostic criteria and our tendency to keep expanding it (by the addition of CRPS-NOS) rather than condensing and refining it has created a condition in which many conditions might—or might not—be CRPS.

In truth, neuropathic pain represents the "frontier" of pain science in that it is not clearly understood and cannot be universally effectively treated. Our understanding of aberrant neural signal processing is mainly descriptive—it is not entirely evident how these neural transmissions might be modified to reduce pain and lower the pain threshold. There is an urgent unmet need in medicine to better come to grips with neuropathic pain, its mechanisms, and treatment. With that, a clearer understanding of CRPS may emerge.

There is no doubt in the mind of pain specialists that patients with complex neuropathic pain (which we currently diagnose as some form of CRPS) present with genuine symptoms and very urgent medical needs for pain control and symptom management. However, it is unclear whether CRPS exists quite the way we think it exists and if our current line of thinking is even helpful. Our attempts to diagnose CRPS have led to a growing awareness—and clinical frustration—that what we currently call CRPS may represent one or several conditions. Since it is a diagnosis of exclusion, a rush to diagnose CRPS may preclude a more time-consuming, difficult, but accurate diagnosis of a different condition.

Finally, it may be that our broad and rather vague definition of

deeper study. For instance, the role of the inciting injury in CRPS requires more investigation, in that a subset of patients develops CRPS with no such trauma or at least no recollection of it. Trophic symptoms, including very pronounced symptoms, might hold a clue to deeper understanding of CRPS but only a subset of patients develops them. Skin temperature changes are often observed in CRPS but they occur in many other conditions as well and may owe to the inflammatory response rather than a specific aspect of CRPS.

Without neglecting the patients in our care, some of whom are in genuine need of pain control as well as reassurance and emotional support in the wake of serious neuropathic pain, attention should be focused on better defining and describing CRPS. Its etiology, pathophysiology, mechanisms, and genetic background should be elucidated. Then better diagnostic categories may emerge. Until such time, the Budapest criteria represent our best—but inadequate—approach to diagnosing these difficult conditions.

Finally, this is not to minimize or trivialize the severe, debilitating, and fundamentally life-altering pain that many patients experience. Such patients may suffer from unrelenting severe pain. It is not unusual for patients with persistent pain to suffer losses on many fronts: loss of function, loss of employment, loss of relationships, and diminished quality of life. These individuals often seek out medical help in a fashion that might only be described as heroic: going from one failed diagnosis to the next and occasionally being accused of malingering or drug-seeking by the healthcare professionals they trusted.

The issue of malingering deserves a special mention here. It is easy to dichotomize pain into those conditions in which there is a structural or physiological pathology toward pain ("real" pain) versus patients who complain about pain but have no such "proof." The latter has been called a pseudo neurological presentation [77]. Neuropathic pain can be difficult to dichotomize in that a neural lesion or dysfunction can be difficult to prove objectively in some patients. Malingering or intentionally producing or exaggerating physical or psychological symptoms for a goal is not rare.

These goals might include everything from avoiding work, evading military service, obtaining a financial settlement, avoiding criminal prosecution, gaining sympathy, or obtaining drugs. The prevalence of malingers who claim "chronic pain" is high (20% to 31%) [78,79] and most healthcare professionals treating chronic pain patients have encountered such individuals. In a study of 237 CRPS patients, surveillance found that 16 of them (about 7%) were malingering [80].

While we may challenge the utility of the Orlando and Budapest criteria and even raise questions about the authenticity of CRPS Types I and II as clinical categories, it is because there is a real need to help patients who seem to "fall into" this diagnosis and it appears that our efforts are falling short.

## Conclusion

The Budapest criteria intended to help clinicians better diagnose CRPS but actually made the syndrome even more diffuse by that preceded them, the Budapest criteria, based on consensus and expert opinion, offer a virtual menu of signs and symptoms and result in a syndrome that defies clear understanding of the syndrome. A better knowledge of CRPS, its etiology, and its mechanisms are urgently needed. As a diagnosis of exclusion in a field where many rare and complex conditions predominate, it is likely that many patients diagnosed with CRPS may have other conditions. Treatment of CRPS is challenging and often ineffective. A more thorough understanding of the neuropathy and its origins are urgently needed to better define it, diagnose it, and ultimately treat it effectively.

## Conflicts of Interest

To comply with International Committee of Medical Journal Editors (ICMJE) requirements, I disclose the following relationships: Consultant/Speaker and Researcher for: Inspirion, Mallinckrodt, Baxter, Purdue Pharma LLP, Grunenthal GmhB, BDSI, ENDO Pharmaceuticals Iroko, DepoMed and Mundi Pharma. There was no specific funding related to this project. Ms. LeQuang has nothing to disclose. Dr. Nalamachu has nothing to disclose. Mr. Bigelsen has nothing to disclose. Dr. Taylor has nothing to disclose.

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***Correspondence to:**

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Naples, Florida-34108
USA
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E-mail: robert.taylor.phd@gmail.com

# NOVA SCOTIA HEALTH AUTHORITY
# CENTRAL ZONE

5820 University Avenue, Halifax, Nova Scotia, B3H 6A3
Health Information Services Room 5031, (902) 473-6318

| | | | |
|---|---|---|---|
| MRN #: | 0000476698 | Acct #: | 30765545 |
| HCN #: | 0008816662 | | |
| FORAN, JUDY THERESA | | | |
| 36 TRAILWOOD PLACE, HALIFAX, NS B3M-3Y1 | | | |
| DOB: | 1958-Jan-21 | Phone: | (902)499-4513 |
| PMI: | DEPT OF HEALTH | | |
| WCB: | | | |

**AMBULATORY CARE CLINIC LETTER**
Pain Management Unit
QEII Health Sciences Centre

VISIT DATE: 2018-Sep-19

Dear Dr. Doyon:

I saw Ms. Foran in the pain management unit for followup at her request.

Since last being seen, she had an IME by Dr. Koshi. As might be expected given his conclusion, she was not very happy with this examination and report. She did provide me with a copy of the IME by Dr. Koshi. I understand since this was completed that she has been cut off by her insurance company and no longer has support from them. She also indicates that she tried returning to work over a period of several days, but had significant difficulty at that time. Specifically, she mentioned difficulties in being able to get to sleep at nighttime, she had difficulty turning off her brain to get to sleep, she described symptoms of anxiety, palpitations and she was unable to do many functions of everyday living, i.e., cooking or doing things around the house.

In addition, she also described that she had a couple episodes where her body began to shake and that she had a migrainous-type headache on one occasion, which has not happened in a long time. She indicated she was very concerned that she may be having a heart attack or a stroke associated with these symptoms.

She also indicated that she recently was diagnosed with a UTI and this is the second or third one since the accident and that she has never had these before and is worried that these may relate to the fact that brain changes occur when one has chronic pain.

She continues to be concerned about the Dupuytren nodules in her right hand and indicates she needs to know how to fix this. She does tell me that she has been seen in Montreal for this and they would not provide any injections because of her previous diagnosis of CRPS. She also had been in contact with a physician in the US and was also told that no surgery would be done because of the previous history of CRPS.

**Copies:**
ATTENDING: A CLARK REFERRING: PRIMARY CARE: Julie Doyon

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| Transc ID: | / saretskykr |
| Job ID / Document ID: | 1610197 / 6619127 |
| Date Dictated: | 2018-Sep-19 12:02:39 |
| Date Transcribed: | 2018-Sep-28 08:55:59 |
| Date Revised: | 2018-Sep-28 11:42:43 |
| Date Printed: | 2018-Sep-28 |

She continues to note that exercising, participating in yoga and other activities such as this will exacerbate her right arm pain.

She indicates that she needs help in keeping functional and healthy. She indicates she does not know what to do.

Currently, her medications include nortriptyline 30 mg at bedtime. If she increases the dose to 40 mg, then she finds that she will be quite sedated the next day. She continues to use marijuana oil and at nighttime this is THC and in the daytime it is CBD. She does vary the dose depending how she feels. She is currently exploring qigong and is going to go to this very shortly. She continues to use modalities such as meditation and mindfulness. She continues to see a physiotherapist in the pain management unit. She is having hypnosis. She continues to spend a lot of time on the Internet looking at her symptoms and all the different treatment modalities that are available.

I did discuss today whether she can access a psychologist, but she indicates from a financial standpoint, this would not be possible privately. She continues to be reluctant to consider other medications. I did suggest that you might wish to consider switching nortriptyline to duloxetine. The initial dose of duloxetine would be 30 mg at bedtime and the dose can be increased every 2 weeks by 30 mg up to a maximum dose of 120 mg, depending on benefit versus side effects. The goal would be to try and reduce some of her anxiety and also to help facilitate sleep.

I do think it would be useful to have Dr. Mary Lynch review this lady, given how bothersome her symptoms are at this time, particularly in regards to anxiety, poor sleep, etc. I do note that on one of the evaluation tools used that she scored fairly high in the pain catastrophizing scale in the past and there are certain elements of this, in that she is very aware of any symptoms that she has and then it is very concerned about what is happening with her symptoms and what are resolutions. I would be interested as to whether Dr. Lynch has any suggestions as to further care involving the use of medications and/or any psychiatric involvement in the future.

Lastly, we did discuss return to work again and I have told her that the experience she had with her return to work would be unusual for most people chronic pain; i.e., the issues around palpitations, heightened anxiety, etc. I also told her that typically we would advocate a graduated return to work, but she feels is not possible given her occupation as a real estate agent. I have told her that it is up to her whether she tries returning to work in a full-time capacity not. I also reassured her that the chances of having a heart attack or a stroke would be very low in this type of situation, which she does seem to be quite concerned about.

I will review her after she has been seen by Dr. Lynch to see if there is anything further I have to offer her. I have also spoken to one of psychologists, Dr. Cane, and Ms. Foran can be seen by a psychology intern under his supervision in the Pain Management Unit for a limited time this fall.

Yours truly,

Electronically authenticated by Alexander J Clark MD FRCPC on 28 Sep 2018 11:42:44 AM

Alexander J M Clark, MD, FRCPC
Attending Staff

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| Transc ID: | / saretskykr |
| Job ID / Document ID: | 1610197 / 6619127 |
| Date Dictated: | 2018-Sep-19 12:02:39 |
| Date Transcribed: | 2018-Sep-28 08:55:59 |
| Date Revised: | 2018-Sep-28 11:42:43 |
| Date Printed: | 2018-Sep-28 |

Ambulatory Care Clinic Letter

Dept. of Anaesthesia

Office Tel: 902-473-4130 Office Fax: 902-473-4126

cc: Julie Doyon <PCP>

| | |
|---|---|
| Transc ID: | / saretskykr |
| Job ID / Document ID: | 1610197 / 6619127 |
| Date Dictated: | 2018-Sep-19 12:02:39 |
| Date Transcribed: | 2018-Sep-28 08:55:59 |
| Date Revised: | 2018-Sep-28 11:42:43 |
| Date Printed: | 2018-Sep-28 |

Ambulatory Care Clinic Letter

# NOVA SCOTIA HEALTH AUTHORITY
# CENTRAL ZONE

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|---|---|---|---|
| MRN #: | 0000476698 | Acct #: | 31104861 |
| HCN #: | 0008816662 | | |
| FORAN, JUDY THERESA | | | |
| 36 TRAILWOOD PLACE, HALIFAX, NS B3M-3Y1 | | | |
| DOB: | 1958-Jan-21 | Phone: | (902)499-4513 |
| PMI: | DEPT OF HEALTH | | |
| WCB: | | | |

**AMBULATORY CARE CLINIC LETTER**
Pain Management Unit
QEII Health Sciences Centre

VISIT DATE: 2018-Dec-12

Dear Dr. Sheppard:

I saw this lady for reassessment in the pain management unit on December 12, 2018. I had the opportunity to review with her, Dr. Lynch's report from November 27, 2018, who agreed with the treatment modalities we have tried to date and did not have anything else to add. I also had the opportunity to discuss her with Dr. Lynch today and she agrees with me that this lady continues to have pain that is severe in nature and it has been prolonged, given that it is almost 2 years since the original accident and it is both our expectations she will continue to have pain that is severe and prolonged in the future and that she is unable to return to work in any capacity.

I understand she has seen Dr. King recently, who indicated the Dupuytren's is related to her complex regional pain syndrome. I understand she is to have imaging of her shoulder to look for arthritis on the right-hand side. I will leave this in Dr. King's hands.

She continues to experience pain that is severe into her right arm and hand and finds with the cooler weather it has been occurring recently that this has exacerbated her pain. She currently describes having annoying pain throughout her arm and she frequently drops objects as well.

She feels her mood has been helped through the use of vitamin B12 and omega-3.

She is anticipating applying for CPP in the near future and I have told her that I would support this, given that her pain is severe and prolonged and is unlikely to change in the future.

I do not have anything further to add to her care at this time. She continues to see Dr. Cane, psychologist, through our program. I will leave it up to Dr. Cane as to when he discharges her from his care. From my standpoint, I will see her again in late February to see if there is anything else to add and to arrange for any further followup that might be needed once I retire at the end of March.

**Copies:**
ATTENDING: A CLARK REFERRING: PRIMARY CARE: Kayla Sheppard

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| Transc ID: | / saretskykr |
| Job ID / Document ID: | 1698154 / 6707787 |
| Date Dictated: | 2018-Dec-12 11:57:39 |
| Date Transcribed: | 2018-Dec-19 08:14:05 |
| Date Revised: | 2018-Dec-19 11:19:31 |
| Date Printed: | 2018-Dec-19 |

Yours truly,

Electronically authenticated by Alexander J Clark MD FRCPC on 19 Dec 2018 11:19:32 AM

Alexander J M Clark, MD, FRCPC
Attending Staff
Dept. of Anaesthesia

Office Tel: 902-473-4130 Office Fax: 902-473-4126

cc: Kayla Sheppard <PCP>

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| Transc ID: | / saretskykr |
| Job ID / Document ID: | 1698154 / 6707787 |
| Date Dictated: | 2018-Dec-12 11:57:39 |
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| Date Revised: | 2018-Dec-19 11:19:31 |
| Date Printed: | 2018-Dec-19 |

Ambulatory Care Clinic Letter

# NOVA SCOTIA HEALTH AUTHORITY
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|---|---|---|---|
| MRN #: | 0000476698 | Acct #: | 31386894 |
| HCN #: | 0008816662 | | |
| FORAN, JUDY THERESA | | | |
| 36 TRAILWOOD PLACE, HALIFAX, NS B3M-3Y1 | | | |
| DOB: | 1958-Jan-21 | Phone: | (902)499-4513 |
| PMI: | DEPT OF HEALTH | | |
| WCB: | | | |

**AMBULATORY CARE CLINIC LETTER**
Pain Management Unit
QEII Health Sciences Centre

VISIT DATE: 2019-Feb-27

Dear Dr. Sheppard:

I saw Ms. Foran for followup in the pain management unit on February 27, 2019. I spent about one and a quarter hours with her today, as she had multiple questions she wished to discuss.

Overall, there has not been very significant change in regards to her right arm CRPS. She does feel that the pain has been quite a bit worse this winter with the change in the weather and the coldness, and she continues to describe pain through her shoulder as well as down into her hands at times. She continues to be very limited by her ongoing pain and continues to be unable to work, which I do not think will change into the future.

Today, she had many questions and I will itemize a number of them. She was wondering as to whether she should get some blood tests to determine which medications would be best to use based on her genetics. I have told her that this is not something that we do on a routine basis and that as far as I know it is not available through Nova Scotia Health Authority at this time. I also indicated to her that the role these tests may take would be to help us understand which medication she might be able to take and which she would not be able to take because of side effects. They would not predict whether she would respond to a particular medicine or not. She was also wondering as to whether some genetic testing in regards to looking at apo-lipoproteins and whether there are certain substances, i.e., foods that might cause inflammation that she should avoid. Again, I told her from my standpoint, I am not aware of anything on these lines. She indicated she had some information that she obtained online to suggest both this type of blood test, as well as blood tests in regards to which medications she uses are available. I have told her that if she wishes to go ahead and do this privately she can do so, but it is not something that we actively utilize at the present time.

She expressed considerable concern that over time she may get worse. She had been speaking to an individual with CRPS who is now in a home and to my understanding, needs a wheelchair and is on opioids, who was suggesting that she may get worse over time. I have told her that it is impossible to

**Copies:** Karim Mukhida MD
ATTENDING: A CLARK REFERRING: PRIMARY CARE: Kayla Sheppard

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| Transc ID: | / carruthersgm |
| Job ID / Document ID: | 1771886 / 6782190 |
| Date Dictated: | 2019-Feb-27 17:17:04 |
| Date Transcribed: | 2019-Mar-02 12:35:46 |
| Date Revised: | 2019-Mar-06 09:29:16 |
| Date Printed: | 2019-Mar-06 |

predict whether she will get worse over time, but from my standpoint, it is not something that I see typically. In the same regard, she had questions in regards to whether there is the chance that this would move to other extremities. She is concerned that she is having more right leg pain at the present time; in the past she has had more left leg pain. Again, I told her that we do see some people who seem to develop pain into multiple areas of the body when they have CRPS, but we also see some that do not. Again, this is difficult to predict. She is very concerned about her future care and what she may need to support herself in the future from a standpoint of achieving medical care. She indicated that she is on multiple supplements including PhytoMulti, Align, B12, omega 3, vitamin D and vitamin C. She is also on nortriptyline 40 mg at bedtime and is using both CBD and THC oils at different times of day. She indicates these are all quite expensive, and she is wondering whether she is going to need to take these on an ongoing basis in the future. This would obviously be dependent on how she does. If she does not have any change in pain, then I could see that she will continue to use them into the future over many years.

She is also having questions as to what other treatment modalities might be available to her. As you are aware, I have arranged for her to see Dr. Mukhida for a trial of ketamine; unfortunately, this will not happen until July because of his availability, but I will leave it up to Dr. Mukhida to decide whether this is something that should be continued in the future and if so how often and how much. She was also questioning a trial of bisphosphonates; this is a treatment that has been suggested in a couple of papers. There is some evidence that it can be helpful. There is currently a trial in Toronto that is ongoing that she has information about. Again, this is something that in a small number of people can be helpful, but I cannot predict in the future whether it is something she will end up utilizing.

She expresses significant concerns about her inability to travel because she is on marijuana for medical purposes and because of pain and the unpredictability about it. She again expressed her concern that she is not able to work because of pain. She has poor sleep associated with her pain and is worried that this is going to get worse in the future. She also feels that her mood is down at times because of pain. Again, I think that you as a family physician would need to monitor this and if her mood becomes substantially poorer, then you may wish to consider looking at an antidepressant for her. She is concerned as to how long she needs to have physiotherapy and massage therapy into the future. Again, this would depend upon whether she has benefit or not. If she does have benefit, then it would be quite reasonable to continue these on a regular basis weekly or 2 times a week into the future.

She also brought up other symptoms today, she feels cold at times and other times she feels sweaty and does not feel she has good control of these things. Again, these are not necessarily related to her pain, although they could be. There are a number of other reasons that these could occur and I will leave this in your hands to look after.

She indicated that I will receive a letter from her lawyer with the hope that I would clarify some of the issues above. I have told her that as I retire at the end of March, hopefully he will provide this to me in the near future, as once I retire and do not have a license anymore, I would not be able to provide opinions for her.

As mentioned, she will see Dr. Karim Mukhida later on this summer. I will let him determine as to whether there is anything further we have to offer her through pain management when he sees her. I did tell her that if in the future she is discharged from the pain management unit, that if something changes, then we would always consider a new referral letter from yourself and if appropriate she would be seen again.

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| Transc ID: | / carruthersgm |
| Job ID / Document ID: | 1771886 / 6782190 |
| Date Dictated: | 2019-Feb-27 17:17:04 |
| Date Transcribed: | 2019-Mar-02 12:35:46 |
| Date Revised: | 2019-Mar-06 09:29:16 |
| Date Printed: | 2019-Mar-06 |

Ambulatory Care Clinic Letter

Yours truly,

Electronically authenticated by Alexander J Clark MD FRCPC on 06 Mar 2019 09:29:18 AM

Alexander J M Clark, MD, FRCPC
Attending Staff
Dept. of Anaesthesia

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cc: Karim Mukhida MD
Kayla Sheppard <PCP>

| | |
|---|---|
| Transc ID: | / carruthersgm |
| Job ID / Document ID: | 1771886 / 6782190 |
| Date Dictated: | 2019-Feb-27 17:17:04 |
| Date Transcribed: | 2019-Mar-02 12:35:46 |
| Date Revised: | 2019-Mar-06 09:29:16 |
| Date Printed: | 2019-Mar-06 |

Ambulatory Care Clinic Letter

FORAN,JUDY THERESA

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**Psychology: QEII**

**Nova Scotia Health Authority**

3rd Floor, Bethune Building

330 – 1276 South Park Street

Halifax, NS, B3H 2Y9

P: (902) 473-5526; F: (902) 473-2148

## PSYCHOLOGY CONSULTATION REPORT

| | |
|---|---|
| **Name:** | **Foran, Judy** |
| **Date of Birth:** | **1958/01/21** |
| **Referral Source:** | **Dr. John Clark, Pain Management Unit** |
| **HUN:** | **0000476698** |
| **Initial Consultation Date:** | **2018/10/16** |
| **Date of Report:** | **2018/12/17** |

**Reason for Referral:**

Ms. Foran is a 62 year old woman with Complex Regional Pain Syndrome (CRPS), which developed following a motor vehicle accident in 2016. Ms. Foran underwent an Independent Medical Evaluation in 2018, the results of which led to discontinuation of support from her insurance company. She reported a significant increase in pain, pain catastrophizing, and anxiety when she attempted to return to work and felt that she would benefit from seeing a psychologist. Ms. Foran was referred in order to explore these psychological difficulties.

**Relevant Background Information:**

*Pain History:* Ms. Foran presented with right arm and should pain, which began in 2016 when she was struck by a motor vehicle while at a crosswalk. She was debilitated for several months following the accident and although she slowly regained some function, pain persisted. She has also developed Dupuytren nodules on her right hand.

In 2017, Ms. Foran attended 9 of 12 sessions of the Pain Self-management Program in the Pain Management Unit. She also worked individually with physiotherapy. Ms. Foran currently engages in several pain self-management strategies, including meditation, pacing her activities, and applying heat. She had previously found these strategies to be helpful, but has noticed an increase in her average pain level with the onset of cold weather. Ms. Foran takes nortriptyline for pain. She also takes CBD oil at nighttime to help with sleep.

*Psychosocial Functioning*: Ms. Foran reported depressed mood for a period of time following the accident, which worsened after support from her insurance company was terminated. At the present time, Ms. Foran also reports that she worries about the consequences of ongoing pain, including her ability to work, and loss of function in her arm. Ms. Foran also reported difficulty with falling asleep, which is somewhat improved with cannabis oil. She previously worked with a psychologist for several sessions but was unable to continue due to financial constraints.

Ms. Foran has experienced a decrease in functioning of her right arm. This has had a negative impact on her ability to work as a real estate agent, as well as on her activities of daily living. She is unable to entertain as frequently as she would like and, at times, has difficulty completing household tasks.

Ms. Foran lives with her husband. Her son lives in Toronto. Her daughter, with whom she has a strained relationship, and grandson live nearby. She was previously involved in taking care of her grandson, but has been unable to continue in that role due to pain. Ms. Foran's husband recently completed treatment for cancer, which has impacted his ability to work. Consequently, they are under considerable financial strain. Ms. Foran also reported worrying that her husband's cancer will recur.

**Summary and Recommendations:**

Ms. Foran was referred to learn non-pharmaceutical strategies to manage pain and manage pain catastrophizing. At intake, Ms. Foran indicated that she would also like to learn strategies to manage and improve communication difficulties with her daughter. She consented to attending individual sessions with Molly Atwood, a predoctoral psychology

resident working under the supervision of Dr. Douglas Cane, in order to learn these strategies. Following completion of Ms. Atwood's rotation in the Pain Management Unit, Ms. Foran will continue to be followed by Dr. Cane.

02/28/19
Date

Molly Atwood, M.A.
Psychology Resident

03/6/19
Date

Douglas Cane, Ph.D.
Psychologist

**Cc: Dr. John Clark, MD, Pain Management Unit**

**Dr. Alexander Clark, MD FRCPC**

Pain Management Unit - Central Zone, Nova Scotia Health Authority
4th Floor Dickson
5820 University Ave
Halifax, NS B3H 1V7

Email: ajohn.clark@nshealth.ca
Phone: 902 473 6428

## Degrees

| | |
|---|---|
| 1974 | MD - Dalhousie University, Halifax, Nova Scotia |
| 1970 | BSc - Dalhousie University, Halifax, Nova Scotia |

## Postgraduate Training

| | |
|---|---|
| 1981 | Clinical Fellow - Children's Hospital of Eastern Ontario, Ottawa, ON - Pediatric Anesthesia |
| 1980 - 1981 | Chief Resident, Anesthesia - University of Ottawa, Ottawa, ON - Anesthesia |
| 1978 - 1981 | Resident - University of Ottawa, Ottawa, ON - Anesthesia |
| 1976 - 1977 | Resident - University of Manitoba, Winnipeg, MB - Anesthesia |
| 1975 - 1976 | Resident - Dalhousie University, Halifax, NS - Family Medicine |

## Faculty Appointments

| | |
|---|---|
| 2010 - present | Full Professor - Dalhousie University - Department of Anesthesia, Pain Management and Perioperative Medicine |
| 2004 - 2010 | Full Professor - University of Calgary - Anesthesia |
| 1998 - 2004 | Full Professor - Dalhousie University - Anesthesia |
| 1993 - 1998 | Associate Professor - Dalhousie University - Anesthesia |
| 1992 - 1996 | Assistant Professor (Cross Appointment) - Dalhousie University - School of Occupational Therapy |
| 1988 - 1993 | Assistant Professor - Dalhousie University - Anesthesia |
| 1982 - 1988 | Lecturer - Dalhousie University - Anesthesia |

## Credentials

| | |
|---|---|
| 2010 | Nova Scotia - License |

| | |
|---|---|
| 2004 | Alberta - License |
| 1983 | DABA - Diplomat, American Board of Anesthesiology |
| 1981 | FRCPC - Anesthesia, Royal College of Physicians and Surgeons of Canada |
| 1978 | Ontario - License |
| 1976 | CCFP - College of Family Physicians of Canada |
| 1976 | Manitoba - License |
| 1975 | Nova Scotia - License |
| 1975 | LMCC - Medical Council of Canada |

## Work Experience

| | |
|---|---|
| 2015 | Medical Director, Pain Services - Central Region, Nova Scotia Health Authority |
| 2012 | Consultant - Department of Health and Community Services - Newfoundland and Labrador |
| 2010 - 2015 | Medical Director, Pain Services - Capital Health, Halifax, Nova Scotia |
| 2004 - 2009 | Medical Director, Calgary Pain Program - Alberta Health Services - Chronic Pain Centre - (formerly Calgary Health Region), Calgary, Alberta |
| 1998 - 2001 | Consultant - College of Physicians and Surgeons of Ontario |
| 1996 - 2004 | Consultant - College of Physicians and Surgeons of Nova Scotia |
| 1996 - 1997 | Medical Director, Same Day Admission/Ambulatory Surgery Program - Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia |
| 1994 - 1996 | Medical Advisor, Same Day Admission Unit - Victoria General Hospital, Halifax, Nova Scotia |
| 1992 - 2004 | Director, Pain Management Unit - Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia |
| 1991 - 2004 | Consultant - Canadian Medical Protective Association |
| 1990 - 1996 | Consultant, Pain Management - IWK Children's Hospital, Halifax, Nova Scotia |
| 1988 - 1994 | Co-ordinator, ASPENS - - Anaesthetic Services Program Encompassing Nova Scotia |
| 1988 - 1992 | Acting Director, Pain Management Unit - Victoria General Hospital, Halifax, Nova Scotia |
| 1982 - 2004 | Active Staff, Anesthesiology and Pain Management - Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia |
| 1982 - 1995 | Consultant - Nova Scotia Rehabilitation Centre, Halifax, Nova Scotia - Pain Management |
| 1982 - 1995 | Consultant - Camp Hill Medical Centre, Halifax, Nova Scotia - Pain Management |

| | |
|---|---|
| 1982 - 1990 | Consultant - Halifax Civic Hospital, Halifax, Nova Scotia - Pain Management |
| 1977 | Locum, General Practice Anesthetist - University of Manitoba at Norway House - Northern Medical Unit |
| 1976 | Locum - Winnipeg, Manitoba - General Practice |
| 1976 | Locum - Amherst, Nova Scotia - General Practice |
| 1974 - 1975 | Rotating Internship - Dalhousie University, Halifax, Nova Scotia |

## Recognition

| | |
|---|---|
| 2016 | 2016 Distinguished Career Award - Canadian Pain Society |
| 2014 | Award of Excellence, Internal Team - Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University |
| 2010 | Chronic Pain Association of Canada Helen Hayes Award for Excellence in Pain Management |

## Grants and Contracts

1. Higgins K, Chambers C, **Clark A**, Rosen , Sherry S, Campbell-Yeo M, Lynch M (2015 - present). Risk and resilience in children of parents with chronic pain [Grant] - CDHA - $4936.

2. Stinson J, Campbell F, Chorney J, **Clark A**, Dick B, Forgeron P et al (2014 - 2017). ICanCope with pain: A integrated smartphone and web self-managment program for adolescents and young adults with chronic pain [Grant] - CIHR - $383884.

3. George RB, Chambers C, MacDougall J, **Clark A**, Harman K (2014). 2014 Pain Research Day-Bringing People Together Grant [Grant] - IWK - $1000.

4. **Clark A**, Mumford K, George RB, Davis D, Milne D, Langille L, Hammond P, Yazbeck S, Sernyk S (2014 - 2015). The highly opioid tolerant patient - will a new paradym of care improve outcomes? [Grant] - Translating Research into Care (TRIC) - $3000.

5. d'Entremont M-A, Lynch ME, **Clark A** (2013). Urine Drug Screening in the Management of Chronic Pain [Grant] - Pain Management Unit CDHA - $2500.

6. Hart C, Fraser J, **Clark A** (2013). The Mobile Methadone Program Is it Helping? [Grant] - Dalhousie University - $2500.

7. **Clark A**, Chambers C, Harman K, George RB, McDougall J. (2013). Dalhousie Pain Group [Grant] - Faculty of Medicine, Dalhousie University - $23000.

8. **Clark A**, Lynch ME (2012 - 2014). National Neuropathic Pain Database - Extension [Grant] - CPS NeP SIG - $6000.

9. **Clark A**, Lynch ME, Jovey RD, Cooper L, VanDenKerkhof E, Logan G (2011 - 2012). Stakeholder Meeting, Canadian Pain Summit [Grant] - CIHR - $17500.

10. Lynch ME, **Clark A**, Flowerdew G, Moulin D, Toth C (2010 - 2012). A Double Blind Randomized Controlled Trial Examining the Efficacy of Methadone in the Treatment of Chronic Neuropathic Pain [Grant] - CIHR/NSHRF/RPP/Dalhousie University - $502633.

11. Lynch ME, Clark, AJ, et al (2010 - 2014). Infrastructure Operating Fund (CFI): Canadian Pain Trials Network [Grant] - CFI - IOF - $105580.

12. Ware M, **Clark A** (2009 - 2010). A Prospective, Non-Interventional Observational, Multicenter Study Examining Patients Treated for up to 12 Months with Prescription Cannabinoid Medications: An Assessment of Problematic Use [Grant] - McGill University Health Centre - $10000.

13. Lynch ME, **Clark A**, Flowerdew G, Moulin D, Toth C (2009 - 2010). A double blind randomized controlled trial examining the efficacy of methadone in treatment of chronic neuropathic pain [Grant] - CIHR - Bridge Funding - $100000.

14. **Clark A** (2009 - 2010). IVIG for treatment of resistant neuropathic pain: A preliminary study [Grant] - The Bayer Foundation - $240000.

15. Lynch ME, MacDougall P, **Clark A** (2009 - 2010). National Neuropathic Pain Database [Industry Contract] - CIHR/Pfizer Canada - $5000.

16. Henry J, Watt-Watson J, Hunter J, McGillion M, Dubrowski A, Lax L, Sessle B, Pennefather P, Salter M, Choiniere M, **Clark A**, Johnston C, Jovey R, Lavigne G, LeFort SM, Lynch M, Rashiq S, Sinclair L, Cooper L (2008 - 2013). Community Alliances for Health Research and Knowledge Exchange in Pain [Grant] - CIHR - $2500000.

17. Lynch ME, MacDougall P, **Clark A** (2008 - 2009). Randomized cross-over trial of Quigong for the treatment of Fibromyalgia [Grant] - Pfizer neuropathic pain Research Award Competition - $130000.

18. **Clark A** (2008 - 2009). A randomized, placebo-controlled, crossover study of a combination of controlled-release oxycodone and naloxone (OXN) and controlled-release oxycodone HCL tablets in patients with chronic non-cancer pain [Industry Contract] - Purdue Pharma - $12000.

19. **Clark A** (2008 - 2009). Community Alliances for Health Research and Knowledge Exchange in Pain [Grant] - CIHR/AstraZeneca - $350000.

20. **Clark A** (2007 - 2008). Pain Education Survey [Grant] - Canadian Pain Society - $20000.

21. **Clark A**, Mariotti C (2006 - 2007). A two-center, open label inhaled AeorLEF Liposome-encapsulated Fentanyl for the treatment of acute, post-operative pain for anterior cruciate ligament reconstruction [Industry Contract - Pending] .

22. **Clark A** (2005 - 2006). Physician to physician telephone consultation for chronic pain patients - a pragmatic randomized trial [Grant] - AHFMR - $167000.

23. **Clark A** (2005 - 2006). A randomized, placebo-controlled trial of the efficacy and safety of pregabalin in the treatment of subjects with peripheral neuropathic pain [Industry Contract] - Pfizer - $7500.

24. **Clark A** (2004 - 2005). A multicenter, randomised, double-blind, dose-response, placebo and Gabapentin controlled study of PD-217,014 in the treatment of postherpetic neuralgia [Industry Contract] - Pfizer - $45000.

25. **Clark A** (2004 - 2005). A real-life, prospective, multicenter study of health outcomes in the treatment of painful diabetic polyneuropathy and posttraumatic neuralgia in the context of clinical care [Industry Contract] - AstraZeneca - $50000.

26. **Clark A** (2004 - 2005). STOP-PAIN Project. Evaluation of the human and economic burden of chronic pain: A multi-center study [Grant] - CIHR - $415092.

27. **Clark A** (2004 - 2005). Canadian Pain Trials Network [Grant] - Canada Foundation for Innovation - $1991059.

28. **Clark A** (2003 - 2004). A randomised, double-blind, placebo-controlled, multicenter Phase IIb study to evaluate the safety and efficacy of multiple alvimopan dosage regimens for the treatment of opioid-induced bowel dysfunction in subjects with chronic pain of non-malignant orig [Industry Contract] - GlaxoSmithKline - $10000.

29. **Clark A** (2003 - 2004). A multicenter, randomised, double-blind, placebo-controlled, parallel group study to assess the safety and efficacy of GW406381 35 mg and 70 mg, administered once daily for 21 days to subjects with postherpetic neuralgia [Industry Contract] - GlaxoSmithKline - $10000.

30. **Clark A** (2002 - 2003). Cannabis use by patients with multiple sclerosis: a prospective survey [Grant] - Pain Management Unit, Department of Anesthesia, Dalhousie University - $5000.

31. **Clark A** (2002 - 2003). An open-label study of the efficacy and safety of EpiCept-NP® topical cream (ketamine/amitriptyline combination) applied 3 times daily in the treatment of neuropathic pain [Industry Contract] - EpiCept Corporation - $158427.

32. **Clark A** (2002 - 2003). Bruprenorphine transdermal system or acetaminophen plus codeine for opioid therapy in patients with chronic low back pain [Industry Contract] - Purdue Pharma - $25000.

33. **Clark A** (2002 - 2003). A phase II, multi-centre, randomised, double-blind, placebo-controlled, crossover study of CJC-1008, a long-acting, parenteral, opioid analgesic, in the treatment of postherpetic neuralgia [Industry Contract] - ConjuChem Inc. - $18000.

34. **Clark A** (2002 - 2003). The objective measurement of attention and concentration complaints in chronic pain patients [Grant] - Canadian Pain Society/Pfizer Canada Research Award - $5000.

35. **Clark A** (2001 - 2002). A study of Duragesic® (ITS-Fentanyl) compared to sustained-release Morphine (MS-Contin®) in subjects with chronic non-cancer pain [Industry Contract] - Janssen-Ortho Inc. - $15000.

36. **Clark A** (2001 - 2002). The safety and efficacy of Electrotransport (E-TRANS®) Fentanyl compared to IV PCA Morphine for the treatment of post-operative pain [Industry Contract] - ALZA Corporation - $50000.

37. **Clark A** (2001 - 2002). A randomized, double-blind crossover comparison of the safety and efficacy of controlled-release Oxycodone (plus rescue immediate release Oxycodone) and placebo (plus rescue Acetaminophen plus Codeine) in patients with chronic low back pain [Industry Contract] - Purdue Pharma - $12000.

38. **Clark A** (2001 - 2002). A multi-center, randomized, double-blind, double-dummy, active-comparator (Naproxen), placebo-controlled, parallel group trial assessing the analgesic effect of COX189 400 mg o.d. in the treatment of post-surgical pain following total knee or hip arthropl [Industry Contract] - Novartis Pharmaceuticals Canada Inc. - $50000.

39. **Clark A** (2001 - 2002). Cannabis use by patients with chronic noncancer pain: a prospective survey [In-Kind] - Dalhousie.

40. **Clark A** (2001 - 2002). A double-blind, placebo-controlled trial to examine the efficacy of topical amitriptyline, topical ketamine and a combination in the treatment of neuropathic pain [Industry Contract] - EpiCept Corporation - $134189.

41. **Clark A** (2000 - 2001). The Canadian Consortium for the Investigation of Cannabinoids in Human Therapeutics [Grant] - CIHR - $40000.

42. **Clark A** (2000 - 2001). A double-blind, placebo-controlled, cross-over designed, pilot study to examine the efficacy of topical Amitriptyline/Ketamine vs. topical Ketamine vs. topical Amitriptyline vs. placebo for the treatment of neuropathic pain [Industry Contract] - Epicept Corp. - $100000.

43. **Clark A** (2000 - 2001). A multicentre, double-blind study of oral naloxone for the treatment of opioid induced constipation [Industry Contract] - Roxane Labs - $15000.

44. **Clark A** (2000 - 2001). A multicentre, multinational, open-label, extension study of oral naloxone for the treatment of opioid-induced constipation in patients with chronic, non-malignant or malignant pain [Industry Contract] - Roxane Labs - $15000.

45. **Clark A** (1999 - 2000). A double-blind, placebo-controlled trial to evaluate the efficacy and safety of prucalopride in subjects with chronic non-cancer pain suffering from opioid induced constipation [Industry Contract] - Janssen Pharmaceutica Inc. - $37600.

46. **Clark A** (1999 - 2000). A trial to evaluate the long-term tolerability and safety and the pattern of use of prucalopride in subjects with chronic pain (cancer and non-cancer pain) suffering from opioid-induced constipation [Industry Contract] - Janssen Pharmaceutica Inc. - $13000.

47. **Clark A** (1998 - 1999). Adenosine Systems as a target for treatment of neuropathic pain [Grant] - MRC/University/Industry Operating Grant - $430000.

48. **Clark A** (1997 - 1998). A randomized, double-blind, crossover comparison of the efficacy and safety of controlled release Tramadol and immediate release Tramadol in patients with chronic nonmalignant pain [Industry Contract] - Purdue Frederick - $20000.

49. **Clark A** (1996 - 1997). A double-blind, randomized, parallel group, multi-national, multi-centre study, comparing a single oral dose of Ondansetron 24mg with placebo and Metoclopramide 10mg tds po in the treatment of opioid-induced nausea and emesis (OIE) in cancer patients [Industry Contract] - Glaxo Wellcome Inc. - $7200.

50. **Clark A** (1996 - 1997). Evaluation of guidelines for initiation of dosing with controlled release codeine (Codeine Contin) in patients with chronic non-malignant pain receiving analgesic combinations of acetominophen plus codeine [Industry Contract] - Purdue Frederick - $45000.

51. **Clark A** (1996 - 1997). Evaluation of subject preference for Duragesic® (TTS Fentanyl) or sustained release Morphine (MS-Contin®), and comparison of their efficacy and safety in the treatment of chronic pain caused by non-malignant disease [Industry Contract] - Janssen Pharmaceutica Inc. - $5500.

52. **Clark A** (1996 - 1997). Evaluation of long-term efficacy and safety of Duragesic® (TTS Fentanyl) in the treatment of subjects with chronic pain caused by non-malignant disease [Industry Contract] - Janssen Pharmaceutica Inc. - $10000.

53. **Clark A** (1992 - 1993). Outcome analysis of a Group Pain Management Program [Grant] - Department of Anesthesia, Dalhousie University - $15000.

## Peer Reviewed Journal Publications

1. VanDenKerkhof EG, Stitt L, **Clark A**, Gordon A, Lynch M, Morley-Forster PK, Nathan H, Smyth C, Toth C, Ware M, Moulin DE. Sensitivity of the DN4 in screening for neuropathic pain syndromes. *The Clinical Journal of Pain.* [Accepted].

2. Mai LM, **Clark A**, Gordon A, Lynch ME, Morley-Forster PK, Nathan H, Smyth C, Stitt LW, Toth C, Ware MA, Moulin DE (2017). Long-term outcomes in the management of painful diabetic neuropathy. *Canadian Journal of Neurological Sciences*. [Published] PubMed ID: 28065184.

3. Bostick GP, Kamper SJ, Haanstra TM, Dick BD, Stitt LW, Morley-Forster P, **Clark A**, Lynch ME, Gordon A, Nathan H, Smyth C, Ware MA, Toth C, Moulin DE (2016). Pain expectations in neuropathic pain: Is it best to be optimistic? *European journal of pain (London, England)*. [Published] PubMed ID: 27739623.

4. Racine M, Moulin DE, Nielson WR, Morley-Forster PK, Lynch M, **Clark A**, Stitt L, Gordon A, Nathan H, Smyth C, Ware MA, Jensen MP. (2016). The reciprocal associations between catastrophizing and pain outcomes in patients being treated for neuropathic pain: a cross-lagged panel analysis study. *Pain*, 157(9), 1946-53. [Published] DOI: 10.1097/j.pain.0000000000000594.

5. Beaulieu P, Boulanger A, Desroches J, **Clark A** (2016). Medical cannabis: Considerations for the anesthesiologist and pain physician. *Can J Anesth*. [Published] PubMed ID: 26850063.

**6.** **Clark A**, Taenzer P, Drummond N, Spanswick CC, Montgomery LS, Findlay T, Pereira JX, Williamson T, Palacios-Derflingher L, Braun T (2015). Physician-to-physician telephone consultations for chronic pain patients: a pragmatic randomized trial. *Pain Res Manag*. [Published] PubMed ID: 26474380.

7. Higgins KS, Birnie KA, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M, Stinson J, Campbell-Yeo M. (2015). Offspring of Parents with Chronic Pain: A Systematic Review and Meta-Analysis of Pain, Health, Psychological, and Family Outcomes. *Pain*, 156(11), 2256-66. [Published] PubMed ID: 26172553.

8. Tarride J-E, Moulin DE, Lynch M, **Clark A**, Stitt L, Gordon A, Morley-Forster PK, Nathan H, Smyth C, Toth C, Ware MA. (2015). Impact on health-related quality of life and costs of managing chronic neuropathic pain in academic pain centres: Results from a one year prospective observational Canadian study. *Pain Res Manag*. PubMed ID: 26474381.

9. Moulin DE, **Clark A**, Gordon A, Lynch M, Morley-Forster PK, Nathan H, Smyth C, Toth C, VanDenKerkhof E, Gilani A, Ware M. (2015). Long term outcome of the management of chronic neuropathic pain - a prospective observational study. *J Pain*, 16(9), 852-61. PubMed ID: 26080044.

10. Bostick GP, Toth C, Carr EC, Stitt LW, Morley-Forster P, **Clark A**, Lynch M, Gordon A, Nathan H, Smyth C, Ware MA, Moulin DE (2015). Physical functioning and opioid use in patients with neuropathic pain. *Pain Med*. PubMed ID: 25645728.

11. Moulin DE, Boulanger A, **Clark A**, Clarke H, Dao T, Finley GA, et al (2014). Pharmacological management of chronic neuropathic pain: Revised consensus statement from the Canadian Pain Society. *Pain Res Manag*, 19(6), 328-35. PubMed ID: 25479151.

12. Tamburin S, Borg K, Caro XJ, Jann S, **Clark A**, Magrinelli F, Sobue G, Werhagen L, Zanette G, Koike H, Spath PJ, Vincent A, Goebel A. (2014). Immunoglobulin G for the treatment of chronic pain. Report of an expert workshop. *Pain Medicine*, 15(7), 1072-82. PubMed ID: 24422915.

**13.** **Clark A**, Spanswick CC (2014). Why anesthesiologists need to care about the way chronic pain is managed. *Can J Anesth*, 61, 95-100 (Editorial). PubMed ID: 24198162.

14. Racine M, Dion D, Dupuis G, Guerriere D, Zagorski B, Choiniere M, Banner R, Barton PM, Boulanger A, **Clark A**, Gordon A, Guertin MC, Intrater HM, Lefort SM, Lynch ME, et al (2013). The Canadian STOP-PAIN Project: The burden of chronic pain - does sex really matter? *Clin J Pain*. PubMed ID: 23887346.

15. Watt-Watson J, Peter E, **Clark A**, Dewar A, et al (2013). The Ethics of Canadian Entry to Practice Pain Competencies: How are we Doing? *Pain Res Manage*, 18, 26-32. PubMed ID: 23457683.

16. Gagliese L, Katz L, Gibson M, **Clark A**, Lussier D, Gordon A, Salter M (2012). A brief eductional intervention about pain and aging for older members of the community and health care workers. *The Journal of Pain*, 13, 849-56. PubMed ID: 22841472.

**17. Clark A** (2012). Book Review - Atlas of Common Pain Syndromes. *CJA*, 238-9. DOI: 10.1007/s12630-011-9626-z. [Editorial].

18. Mankovsky T, Lynch ME, **Clark A**, Sawynok J, Sullivan MJL (2012). Pain catastrophising predicts poor response to topical analgesics in patients with neuropathic pain. *Pain Res Manage*, 17, 10-4. PubMed ID: 22518362.

19. Mystakidou K, **Clark A**, Fischer J, Lam A, Bornhoevd K, Richarz U (2011). The impact of pain on sleep and the role of opioids analgesics. *Pain Pract*, 11, 282-9. PubMed ID: 20854307.

20. Guerriere D, Choiniere M, Dion D, Peng P, Banner R, Barton P, Boulanger A, **Clark A**, Gordon A, Geurtin MC, Intrater HM, LeFort S, Lynch ME, Moulin D et al (2010). The Canadian STOP-PAIN Project - Part 2: What is the cost of pain for patients on the waitlists of multidisciplinary pain treatment facilities? *Can J Anesth*, 57, 549-558. PubMed ID: 20414821.

21. Choiniere M, Dion D, Peng P, Banner R, Barton P, Boulanger A, **Clark A**, Gordon A, Guerriere D, Geurtin MC, Intrater HM, LeFort S, Lynch ME, Moulin D et al (2010). The Canadian STOP-PAIN Project - Part 1: Who are the patients on the waitlists of multidisciplinary pain treatment facilities? *Can J Anesth*, 57, 539-548. PubMed ID: 20393821.

22. Gordon A, Rashiq S, Moulin DE, **Clark A**, Beaulieu AD, Eisenhoffer J, Piraino PS, Quigley P, Harsanyi Z, Darke AC (2010). Buprenorphine transdermal system for opioid therapy in patients with chronic low back pain. *Pain Res Manage*, 15, 169-78. PubMed ID: 20577660.

23. Watt-Watson J, McGillion M, Hunter J, Choiniere M, **Clark A**, Dewar A, Johnston C, Lynch ME, Morley-Forster P, Moulin D et al (2009). A survey of pre-licensure pain curricula in health science faculties in Canadian universities. *Pain Res Manage*, 14, 439-444. PubMed ID: 20011714.

24. Peng P, Stinson J, Choiniere M, Dion D, Intrater H, LeFort S, Lynch ME, Ong M, Rashiq S, Tkactuk G, Veillatte Y, **Clark A** (2008). Role of healthcare professionals in multidisciplinary treatment facilities in Canada. *Pain Res Manage*, 13(6), 484-88. PubMed ID: 19225605.

25. Lynch ME, Campbell F, **Clark A**, Goldstein D, Dunbar M, Peng P, Stinson J, Tupper H (2008). A systematic review of the effect of waiting for treatment for chronic pain. *Pain*, 136, 97-116. [Review] PubMed ID: 17707589.

26. Sullivan MJL, Lynch ME, **Clark A**, Mankovsky T, Sawynok J (2008). Catastrophizing and treatment outcome: Differential impact on response to placebo and active treatment. *Contemporary Hypnosis*, 29, 129-40. DOI: 10.1002/ch.365.

27. Lynch ME, Campbell F, **Clark A**, Goldstein D, Dunbar M, Peng P, Stinson J, Tupper H (2007). Waiting for treatment for chronic pain; a survey of existing benchmarks: Towards establishing evidence based benchmarks for medically acceptable waiting times. *Pain Res Manage*, 2007 Winter;12(4), 245-8. PubMed ID: 18080042.

28. Moulin DE, **Clark A**, Gilron I, Ware M, Watson CPN, Sessle B, Coderre T, Finley GA, Lynch ME (2007). Pharmacologic management of chronic neuropathic pain - Consensus statement and guidelines from the Canadian Pain Society. *Pain Res Manage*, 12(1), 13-21. PubMed ID: 17372630.

29. Boulanger A, **Clark A**, Squire P, Cui E, Horbay GLA (2007). Chronic pain in Canada: Have we improved our management of chronic noncancer pain? *Pain Res Manage*, 12(1), 39-47. PubMed ID: 17372633.

30. Beaulieu AD, Peloso P, Bensen W, O'Hanlon D, **Clark A**, Watson CP, Gardner-Nix J, Piraino PS, Eisenhoffer J, Harsanyi Z, Darke AC (2007). A randomized, double-blind, 8-week crossover study of once-daily controlled-release release tramadol vs. immediate-release tramadol taken as needed for chronic non-cancer pain. *Clin Ther*, 29, 49-60. PubMed ID: 17379046.

31. Dick BD, Connolly JF, Houlihan ME, McGrath PJ, Finley GA, Stroink G, **Clark A** (2006). Effects of experimental pain on mismatch negativity. *J Psychophysiol*, 20(1), 21-31.

32. Lynch ME, Young J, **Clark A** (2006). A case series of patients using medicinal marijuana for chronic pain under the Canadian Marijuana Medical Access Regulations. *J Pain Symptom Manage*, 32, 497-501. [Case Series] PubMed ID: 1705276.

33. Hung O, Lynch ME, **Clark A** (2006). Cannabinoids and pain management. *Can J Anesth*, 53, 743-6 (Editorial). PubMed ID: 16873338.

34. Wallace MS, Moulin D, **Clark A**, Wasserman R, Neale A, Morley-Forster P, Castaigne JP, Teichman S (2006). A Phase II multi-center randomized double-blind placebo-controlled crossover study of CJC-1008, a long-acting parenteral opioid analgesic, in the treatment of postherpetic neuralgia. *J Opioid Manag*, 2, 167-73. PubMed ID: 17319450.

**35.** **Clark A**, Lynch ME, Beauprie I (2005). A triage approach to managing a two year wait-list in a chronic pain program. *Pain Res Manag*, 10(3), 155-7. PubMed ID: 16175251.

36. Lynch ME, **Clark A**, Sawynok J, Sullivan MJ (2005). Topical amitriptyline and ketamine in neuropathic pain syndromes: an open-label study. *J Pain*, 6, 644-9. PubMed ID: 16202956.

**37.** **Clark A**, Lynch ME, Ware M, Beaulieu P, McGilveray IJ, Gourlay D (2005). Guidelines for the use of cannabinoid compounds in chronic pain. *Pain Res Manage*, 10, 44A-6A. PubMed ID: 16237482.

38. Lynch ME, **Clark A**, Sawynok J, Sullivan MJL (2005). Topical 2% amitriptyline and 1% ketamine in neuropathic pain syndromes: a randomized, double- blind, placebo-controlled trial. *Anesthesiology*, 103, 140-6. PubMed ID: 15927385.

**39.** **Clark A**, Lynch ME (2005). Cannabinoids for pain management: what is their role? *Pain Res Manage*, 10, 5A-6A. PubMed ID: 23905214.

40. Chan VWS, **Clark A**, Davis J, Wolf SW, Kellstein D, Jayawardene S (2005). The postoperative analgesic efficacy and tolerability of Lumiracoxib compared with placebo and Naproxen after total knee or hip arthroplasty. *Acta Anaesthesiolo Scand*, 49, 1491-1500. PubMed ID: 16223396.

41. Sullivan MJL, Lynch ME, **Clark A** (2005). Dimensions of catastrophic thinking associated with pain experience and disability in patients with neuropathic pain conditions. *Pain*, 113, 310-5. PubMed ID: 15661438.

**42.** **Clark A**, Yazer E, Murray TJ, Lynch ME (2004). Patterns of cannabis use among patients with multiple sclerosis. *Neurology*, 62, 2098-2100. PubMed ID: 15184623.

**43.** **Clark A** (2004). Progress in Pain Reserach and Management, Volume 25. Opioids and Pain Relief: A Historical Perspective. *Can J Anesth*, 51, 195. [Editorial].

**44.** **Clark A**, Ahmedzai SH, Allan LG, Camacho F, Horbay GL et al (2004). Efficacy and safety of transdermal fentanyl and sustained-release oral morphine in patients with cancer and chronic non-cancer pain. *Curr Med Res Opin*, 20, 1419-28. PubMed ID: 15383190.

45. Dick BD, Connolly JF, McGrath PJ, Finley GA, Stroink G, Houlihan ME, **Clark A** (2003). The disruptive effect of chronic pain on mismatch negativity. *Clin Neurophysiol*, 114, 1497-1506. PubMed ID: 12888033.

46. Lynch ME, **Clark A** (2003). Cannabis reduces opioid dose in the treatment of chronic non-cancer pain. *J Pain Sympt Manag*, 25(6), 496-8. PubMed ID: 12782429.

47. Lynch ME, **Clark A**, Sawynok J (2003). A pilot study examining topical amitriptyline, ketamine, and a combination of both in the treatment of neuropathic pain. *Clin J Pain*, 19(5), 323-8. PubMed ID: 12966259.

48. Lynch ME, **Clark A**, Sawynok J (2003). Intravenous Adenosine alleviates neuropathic pain, a double blind placebo controlled trial using an enriched enrollment design. *Pain*, 103, 109-15. PubMed ID: 12749965.

49. Ware MA, Lynch ME, **Clark A** (2003). Cannabis use for chronic noncancer pain: Results of a prospective survey. *Pain*, 102, 211-6. PubMed ID: 12620613.

50. Russell **A**, Watson PN, **Clark A**, Arkinstall W, Moulin D, Hays H, Eisenhoffer J, Quigley P, Harsanyi Z, Darke A (2003). Evaluation of dosing guidelines for use of controlled-release codeine in chronic noncancer pain. *Pain Res Manag*, 8, 143-8. PubMed ID: 146579412.

51. Morley-Forster PK, **Clark A**, Speechley M, Moulin DE (2003). **A**ttitudes towards opioid use for chronic pain: A Canadian physician survey. *Pain Res Manag*, 8, 189-94. PubMed ID: 14679412.

52. Moulin DE, **Clark A**, Speechley M, Morley-Forster PK (2002). **C**hronic pain in Canada - prevalence, treatment, impact and the role of opioid analgesia. *Pain Res Manag*, 7, 179-84. PubMed ID: 12518174.

53. Chan PSL, **Clark A** (2000). Postherpetic Neuralgia: A review of treatment modalities. *Pain Res Manag*, 5, 69-74. [Review].

**54. Clark A** (2000). Opioid sensitivity of chronic noncancer pain. *Can J Anesth*, 47, 196. [Editorial].

55. Watt-Watson JH, **Clark A**, Finley GA, Watson CPN (1999). **C**anadian Pain Society Position Paper on Pain Relief. *Pain Res Manage*, 4(2), 75-8.

56. Vienneau TL, **Clark A**, Lynch ME, Sullivan MJL (1999). **C**atastrophizing, functional disability and pain reports in adults with chronic low back pain. *Pain Res Manag*, 4, 93-6.

**57. Clark A**, Hays H, Horton E (1999). Chronic noncancer pain and opioid analgesics. *Janssen-Ortho Inc.*.

58. Watt-Watson JH, **Clark A**, Finley GA, Watson CPN (1999). Canadian Pain Society position statement on pain relief. *Pain Res Manag*, 4, 75-8. [Editorial].

**59. Clark A** (1998). "Mirror Pain" as an unusual presentation of renal colic. *Urology*, 51, 116-8.

**60. Clark A** (1997). **A** report on the Task Force on Pain in the Elderly of the International **A**ssociation for the Study of Pain. *CMAJ*, 156, 1463. [Editorial].

**61. Clark A** (1996). **C**areful examination of pain treatment centres. *Pain Res Manag*, 1(4), 242. [Editorial].

**62. Clark A** (1996). An introduction to anesthesiology. *Can J Anaesth*, 43, 1083. [Editorial].

**63. Clark A** (1995). **C**hronic pain - is anything new? *Can J Anaesth*, 42(5), R55-61.

**64.** **Clark A** (1994). The Anaesthetic Services Programme Encompassing Nova Scotia (ASPENS). *Can J Anaesth*, 41(8), 716-24.

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**68.** **Clark A** (1993). The maintenance of competence programme (MOCOMP). *Can J Anaesth*, 40(6), 477-9.

**69.** **Clark A** (1992). Continuing Medical Education is as important as patient care. *Can J Anaesth*, 39, 637-40.

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**72.** **Clark A** (1990). Selective trans-sacral nerve root blockade. *Reg Anesth*, 15, 125-9.

**73.** **Clark A**, Purkis IE, Shukla R (1988). Lumbar sympathetic blockade: Is a single needle technique adequate? *Clin Journal of Pain*, 4, 213-6.

74. Shukla R, **Clark A** (1987). Myofascial pain syndromes. *NS Med Bulletin*, 66, 141-3.

**75.** **Clark A**, Houlton PG, Purkis IE, Shukla R (1987). The correlation of thermography and diagnosis at initial assessment of the chronic pain patient. *Pain*, S382.

76. Pounder DR, **Clark A** (1987). A review of sympathetically mediated pain: Reflex sympathetic dystrophy and causalgia. *NS Med Bull*, 66, 77-9. [Review].

77. Johnstone GK, **Clark A** (1987). Post herpetic analgesia: Current concepts and management. *NS Med Bull*, 66, 139-40.

78. Awad SA, Acker KL, **Clark A** (1987). Selective sacral cryoneurolysis in the treatment of patients with detrusor instability/hyperreflexia and hypersensitive bladder. *Neurourol Urodyn*, 6, 307-15.

79. Benoit BG, Cole CW, **Clark A**, McIntyre RW (1983). Menigitis secondary to retropharyngeal abcess. Report of a case occurring in association with cervical spine fracture. *Spine*, 8, 125-9.

**80.** **Clark A** (1981). Premedication with meperidine and atropine does not prolong recovery to street fitness after outpatient surgery. *Can Anaesth Soc J*, 28, 390-393.

## Books and Chapters

I. Smith BH, **Clark A**, Collett B (2011). Managing chronic pain in primary care [Book Chapter]. In: Smith BH, Clark **AJ**, Collett B (Eds), *Clinical Pain Management: A Practical Guide*. Wiley-Blackwell, Oxford, UK.

**2.** **Clark A** (2008). Non-drug treatments for chronic pain [Book Chapter]. In: Rashiq S, Schopflocher D, Taenzer P, Josnnon E, Wiley VCH (Eds), *Chronic Pain, a Health Policy Perspective* (pp. 121-130). Weinheim, Germany.

3. **Clark A**, Spanswick CS (2008). Interventional treatment for chronic pain [Book Chapter]. In: Rashiq S, Schopflocher D, Taenzer P, Jonsson E, wiley VCH (Eds), *Chronic Pain, a Health Policy Perspective* (pp. 131-140). Weinheim, Germany.

4. **Clark A**, Spanswick CS (2008). Interventional treatments for chronic pain [Book Chapter]. In: Jovey RD (Ed), *Managing Pain. The Canadian Healthcare Professional's Reference* (pp. 55-64). Baker Edwards Consulting Inc., Stittsville, ON.

## Other Publications

1. Lynch ME, **Clark A**, Moulin DE, Watson CPN (2011) *Modifications are suggested for the Special Interest Group (SIG) on Neuropathic Pain proposed definition and guidelines for neuropathic pain* - Pain [Opinion Editorial (Op-Ed) Piece]

2. Lynch ME, Campbell F, **Clark A**, Goldstein D, Dunbar M, Peng P, Stinson J, Tupper H (2006) *Towards establishing evidence based benchmarks for acceptable waiting times for treatment of pain* - IASP Newsletter [Opinion Editorial (Op-Ed) Piece]

3. Sullivan MJL, Lynch ME, **Clark A** (2005) *Dimensions of catastrophic thinking associated with pain experience and disability in patients with neuropathic pain conditions* - Pain [Opinion Editorial (Op-Ed) Piece]

4. Lynch ME, **Clark A** (2005) *Beyond epistemology and ontology, the value of empathy and a relational approach in pain management* - Pain [Opinion Editorial (Op-Ed) Piece]

5. Lynch ME, **Clark A** (2005) *Beware somatization* - Pain [Opinion Editorial (Op-Ed) Piece]

6. **Clark A**, Lynch ME (2005) *Cannabinoids for pain management: What is their role?* - Pain Res Manage [Opinion Editorial (Op-Ed) Piece]

7. Lynch ME, **Clark A** (2004) *Is intranasal ketamine an appropriate treatment for chronic non-cancer breakthrough pain?* - Pain [Opinion Editorial (Op-Ed) Piece]

8. **Clark A**, Lynch ME (2004) *Prescribing pain relief* - National Post [Opinion Editorial (Op-Ed) Piece]

9. **Clark A**, Lynch ME (2003) *Chronic pain: opioid medication appropriate treatment* - Halifax Chronicle Herald and Mail Star [Opinion Editorial (Op-Ed) Piece]

10. **Clark A**, Lynch ME (2003) *Opioid therapy and chronic non-cancer pain* - Can J Anesth [Opinion Editorial (Op-Ed) Piece]

11. **Clark A**, Lynch ME (2003) *Therapy of chronic non-malignant pain with opioids* - Can J Anesth [Opinion Editorial (Op-Ed) Piece]

12. **Clark A**, Lynch ME, Chisholm K, Beauprie I (1996) *Regulated analgesics and pain control* - Canadian Medical Association Journal [Opinion Editorial (Op-Ed) Piece]

13. **Clark A**, Lynch ME, Chisholm K, Beauprie I (1996) *To prescribe opioids for chronic pain is not bad medicine* - Canadian Medical Association Journal [Opinion Editorial (Op-Ed) Piece]

14. **Clark A** (1996) *Back pain without apparent cause* - CMAJ [Opinion Editorial (Op-Ed) Piece]

15. **Clark A** (1993) *AIDS* - Annals RCPSC [Opinion Editorial (Op-Ed) Piece]

## Scientific Abstracts

1. Higgins KS, Chambers CT, Rosen NO, Sherry S, Mohammadi S, Lynch M, **Clark A**, Campbell-Yeo M. Child Catastrophizing about Parental Pain: Potential Risk Factor for Children of Parents with Chronic Pain. [Poster - Submitted], May 2017.

2. VanDenKerkhof EG, Moulin D, Stitt L, **Clark A**, Gordon A, Lynch M, Morley-Forster PK, Nathan H, Smyth C, Toth C, Gilani A, Ware M. Sensitivity of the DN4 in screening for neuropathic pain syndromes. [Poster] International Association for the Study of Pain 16th World Congress on Pain (Yokohama, Japan), September 2016.

3. **Clark A**, George RB, Davis D, Langille L, Hammond P, Milne D, Yazbeck S, Mumford K. The highly opioid tolerant patient - impact on health care resources after surgery. [Poster] Canadian Pain Society Annual Meeting (Vancouver, British Columbia), May 2016.

4. Higgins KS, Birnie KA, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M, Stinson J, Campbell-Yeo. Offspring or parents with chronic pain: Meta-ethnography of qualitative studies. [Poster] Crossroads Interdisciplinary Health Research Conference (Halifax, NS), March 2016.

5. Tarride J-E, Moulin DE, Lynch M, **Clark A**, Stitt L, Gordon A, Morley-Forster PK, Nathan H, Smyth C, Toth C, Ware MA.. Impact on health-related quality of life and costs of managing chronic neuropathic pain in academic pain centres: Results from a one year prospective observational Canadian Study. [Poster] Canadian Association of Population Therapeutics Conference (Toronto, ON), November 2015.

6. Higgins KS, Birnie KA, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M, Stinson J, Campbell-Yeo. Offspring of parents with chronic pain: Meta-ethnography of qualitative studies. [Poster] International Forum on Pediatric Pain (White Point, NS), October 2015.

7. Racine M, Moulin DE, Nielson W, Lynch M, **Clark A**, Stitt L, Gordon A, Morley-Forster PK, Nathan H, Smyth C, Ware M, Jensen MP. Changes in pain catastophizing predict both earlier and later changes in pain intensity and interference: A cross-lagged panel analysis study. [Poster] EFIC (Vienns, Austria), September 2015.

8. Ouellette C, Stinson J, Lalloo C, Harris L, Gordon A, Chorney J, **Clark A**, Rashiq S, Simmonds M, Jibb L, Cafazzo J, Campbell F.. iCanCope with Pain: Usability testing of a self-management app for adolescents and young adults with chronic pain. [Poster] 2015 SickKids Summer Research Program Symposium Day. The Hospital for Sick Children (Toronto, ON), August 2015.

9. Lauren MM, **Clark A**, Gordon A, Lynch M, Morley-Forster PK, Nathan H, Smyth C, Toth C, Ware A, Moulin DE. Long term outcomes in the management of painful diabetic neuropathy. [Poster] Canadian Neurological Sciences Federation (Toronto, ON), June 2015.

10. Mai LM, **Clark A**, Gordon A, Lynch ME, Morley-Forester PK, Nathan H, Smyth C, Stitt LW, Toth C, Ware MA, MoulinDE. Long term outcomes in the management of painful diabetic neuropathy. [Poster] Canadian Neurological Sciences Federation (Toronto, ON), June 2015.

11. Pike M, Sawynok J, Lynch M, **Clark A**, Marcon D. Chaoyi Fanhuan Qigong (CFQ) has produced benefit in fibromyalgia. An observational trial of Qigong as a complimentary practice in a chronic pain program. [Poster] Canadian Pain Society Annual Meeting (Charlottetown, PEI), May 2015.

12. Higgins KS, Birnie KA, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M, Stinson J. Meta-analysis of pain, health and psychological outcomes in children of parents with chronic pain. [Poster] Canadian Pain Society Annual Scientific Meeting (Charlottetown, PEI), May 2015.

13. Tarride J-E, Moulin DE, Lynch M, **Clark A**, Gordon A, Morley-Forster PK, Nathan H, Toth C, Ware MA.. Impact on health-related quality of life and costs of managing chronic neuropathic pain in academic pain centres: Results from a one year prospective observational Canadian study. [Poster] Canadian Agency for Drugs and Technologies in Health Annual Conference (Saskatoon, SK), April 2015.

14. Birnie KA, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M, Stinson, J.. A systematic review of pain, health, and psychological outcomes in children of parents with chronic pain. [Poster] Department of Psychiatry 24th Annual Research Day (Halifax, NS), October 2014.

15. Bostick GP, Toth C, Eloise Carr ECJ, Morley-Forster P, **Clark A**, Lynch M, Gordon A, Nathan H, Smyth C, Ware M, Moulin DE. Physical functioning and opioid use in patients with neuropathic pain. [Poster] International Association for the Study of Pain Biennial Meeting (Buenes Aires, Argentina), October 2014.

16. Higgins KS, Birnie KA, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M, Stinson J. A systematic review of pain, health, and psychological outcomes in children of parents with chronic pain. [Poster] International Association for the Study of Pain Biennial Meeting (Buenes Aires, Argentina), October 2014.

17. d'Entremont MA, Lynch M, **Clark A**. Urinary drug screening in the management of pain: Is it helpful in management? [Poster] Canadian Pain Society Annual Scientific Conference (Quebec, QC), May 2014.

18. d'Entremont MA, Lynch ME, **Clark A**. Urinary drug screening in the management of pain: Is it helpful in management? [Poster] Dalhousie Pain Research Day (Halifax, NS), May 2014.

19. Higgins KS, Chambers CT, Wilson AC, Caes L, **Clark A**, Lynch M. A systematic review of pain, health, and psychological outcomes in children of parents with chronic pain. [Poster] Dalhousie Pain Research Day (Halifax, NS), May 2014.

20. Moulin DE, Boulanger A, **Clark A**, Clarke H et al. Pharmacological management of chronic neuropathic pain - revised consensus statement from the Canadian Pain Society. [Poster] Canadian Pain Society Annual Meeting (Quebec, QC), May 2014.

21. Breitiling M, Rideout R, Glazebrook M, Abdo I, Lynch M, **Clark A**. Incidence of persistent postoperative pain in ankle arthroplasty and arthrodesis patients. [Podium] Research Day (Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, Halifax, NS), April 2014.

**22.** **Clark A**, Cane D, Lynch ME, Davis D. Outcomes of a Group Pain Self-Management Program 2007-2011. [Poster] Canadian Anesthesiologists' Society Annual Meeting, Calgary, AB (poster accepted - meeting cancelled by CAS), June 2013.

23. Schultz G, Cane D, Federoff I, **Clark A**. A comparison of three Canadian pain management programs: Toward the development of open and shared structures, processes and outcomes. [Poster] Canadian Pain Society Annual Scientific Meeting (Winnipeg, MB.), May 2013.

**24.** **Clark A**, Cane D, Davis D. Patterns of Activity as Predictors of Treatment Outcomes and Treatment Effects Following a Group Pain Self-Management Program. [Poster] Canadian Pain Society Annual Scientific Meeting (Winnipeg, MB.), May 2013.

25. Moulin DE, **Clark A**, Giliani A, Gordon A, Lynch ME, et al. Canadian Multi-Centre Cohort Study to Determine the Longterm Outcomes of the Management of Chronic Neuropathic Pain. [Poster] Canadian Pain Society Annual Scientific Meeting (Winnipeg, MB), May 2013.

**26.** **Clark A**, Cane D, Davis D.. Patterns of Activity as Predictors of Treatment Outcomes and Treatment Effects Following a Group Pain Self-Managment Program. [Poster] Dalhousie Pain Day (Halifax, NS), May 2013.

**27.** **Clark A**, Cane D, Lynch ME, Davis D.. Outcomes of an Interdiscipinary Led Group Pain Self-Management Program 2007-2011. [Poster] Dalhousie Pain Day (Halifax, NS), May 2013.

28. Galiese L, Katz L, Gibson M, **Clark A**, Lussier D, Gordon A, Salter M. A Brief Educational Intervention about Pain and Aging for Older Members of the Community and Healthcare Workers (PH 166). [Poster] 14th World Congress on Pain (Milan, Italy. www.abstracts2view.com/iasp), August 2012.

**29.** **Clark A**, Pereira JX, Taenzer P, Martinez J, Hernandez-Gonzalez A, Toth C.. Determination of Serological Cytokine Levels in Patients with Chronic Neuropathic Pain and the Impact of Intravenous Immunoglobulin or Placebo Treatment (PT 419). [Poster] 14th World Congress on Pain (Milan, Italy. www.abstracts2view.com/iasp), August 2012.

**30.** **Clark A**, Dubin R, Montgomery L. Community Care of Chronic Pain - Primary care clinics, communications and support from the specialist. [Poster] Canadian Pain Society Annual Scientific Meeting. Whistler (BC), May 2012.

31. Pereira JX, Toth C, Taenzer P, **Clark A**. IVIG for Treatment Resistant Neuropathic Pain. [Poster] Canadian Pain Society Annual Scientific Meeting. Whistler (BC), May 2012.

32. Lynch ME, Sawynok J, Hiew C, Marcon D, MacDougall P, **Clark A**, Nauss P. A randomized controlled trial of Qigong for treatment of fibromyalgia. [Poster] Capital Health Quality Day (Halifax, NS), May 2011.

33. Moulin DE, **Clark A**, Genge A, Gilani A, Gordon A, Lynch ME, Morley-Forster PK et al. Canadian Multicentre Neuropathic Pain Database (NePDaT) to Determine Longterm Outcomes and Benefits of Management of Chronic Neuropathic Pain. [Poster] 13th World Congress on Pain (Montreal, Quebec), August 2010.

34. Taenzer P, Williamson T, Palacios L, Pereira JX, Spanswick C, Montgomery L, **Clark A**, Findlay CE, Drummond N, Braun T. Physician to Physician Telephone Consultation for Chronic Pain Patients. [Poster] 13th World Congress on Pain (Montreal, Quebec), August 2010.

**35.** **Clark A**, Taenzer P, Boyd J, Spanswick C, et al. The Calgary Chronic Pain In-Patient Consultation Service: the First Three Years. [Poster] 2010 Canadian Pain Society Annual Scientific Meeting, May 2010.

36. Hanis R, Boyd JL, Rasmussen K, **Clark A**. Toward a model of pain management in long-term care: Revision of pain screening, assessment and monitoring tools. [Poster] 2009 Canadian Pain Society Annual Conference (Quebec, Quebec), May 2009.

37. Watt-Watson J, McGillion M, Hunter J, Choiniere M, **Clark A**, Dewar A, Johnston C, Lynch ME, Morley-Forster P, Moulin D, Thie N, von Bayer CL, Webber K. Pre-licensure pain curricula in health science faculties: A survey of Canadian universities. [Poster] 12th World Congress (IASP, Glasgow, Scotland), July 2008.

38. Choiniere M, Dion D, Peng P, Boulanger A, **Clark A**, Lynch ME, Ong-Lam MC, Shir Y, Taenzer PA, Ware MA. The Canadian STOP-PAIN Project: The biopsychosocial profiles of patients on waitlists of large university-affiliated multidisciplinary pain treatment facilities. [Poster] 12th World Congress (IASP, Glasgow, Scotland), July 2008.

39. Dion D, Choiniere M, Peng P, **Clark A**, Intater HM, Lefort SM, Moulin DE, Ong-Lam MC, Shir Y, Taenzer PA. The Canadian STOP-PAIN Project: Factors associated with severe pain in patients waiting for treatment in large university-affiliated multidisciplinary treatment facilities. [Poster] 12th World Congress (IASP, Glasgow, Scotland), July 2008.

**40.** **Clark A**, Butler SH, Gordon A. Six months of treatment for neuropathic pain has little effect. [Poster] 12th World Congress (IASP, Glasgow, Scotland), July 2008.

41. Watt-Watson J, McGillion M, Hunter J, Choiniere M, **Clark A**, Dewar A, Johnston C, Lynch ME. A survey of pre-licensure pain curricula in health science faculties in Canadian universities. [Poster] Canadian Pain Society Annual Meeting (Victoria, BC), April 2008.

**42.** **Clark A**, Rossiter-Rooney M, Valle-Leutri F. Aerosolized liposome-encapsulated Fentanyl (AeroLEF™) via pulmonary administration allows patients with moderate to severe post-surgical acute pain to self-titrate to effective analgesia. [Poster], January 2008.

**43.** **Clark A**, Lynch ME, Ware M, Beaulieu P, McGilveray IJ, Gourlay D. Updated guidelines for the use of cannabinoid compounds available in Canada for the treatment of chronic pain. [Poster] ICRS Annual Meeting (17th Annual Symposium on the Cannabinoids, St. Sauveur, Quebec Abstract 126), June 2007.

44. Boyd J, **Clark A**, Taenzer PA, Spanswick CC, Chary S, Wiebe V. Development and evaluation of a Hospital Chronic Pain Consultation Service. [Poster], January 2007.

45. Watson CP, Moulin D, Watt-Watson J, Gordon A, **Clark A**, Kelly A, Rashiq S, Sibley J, Thompson EN, Zidel B, Eisenhoffer J, Salem P, Harsanyi Z, Darke AC. Long-term benefit of controlled-release Oxycodone (Oxycontin®) in patients with painful diabetic neuropathy or chronic low back pain. [Poster], January 2007.

46. Moulin DE, Morley-Forster PK, Connolly B, Guerin J, **Clark A**. Prospective study of the management of chronic neuropathic non-cancer pain. [Poster], January 2007.

**47.** **Clark A**, Spanswick CC. Is there still a role for the anesthesiologist in chronic pain management? Transcontinental paradigms. [Poster] CAS Annual Meeting, June 2006.

**48.** **Clark A**, Miller C, Schultz G, Taenzer P, Spanswick C. Development of a modular patient triage questionnaire for the Chronic Pain Centre, Calgary Health Region. [Poster], January 2006.

49. Lynch ME, Young J, **Clark A**. Report on a case series of patients using medicinal marijuana for management of chronic pain under the Canadian Medical Marihuana Access Regulations. [Poster] International Cannabinoid Research Society Meeting (Florida), June 2005.

**50.** **Clark A**, Boulanger A, Squire P, Horbay GLA, Cui E. Canadian Pain Study II: Opiophobia in Canada, 2004. [Poster], January 2005.

51. Boulanger A, **Clark A**, Squire P, Horbay GLA, Cui E. Canadian Pain Study II: Use of strong opioids in Canada, 2004. [Poster], January 2005.

**52.** **Clark A**, Beauprie I, Clark LB, Lynch ME. An innovative approach to wait-list management in a Pain Management Program. [Poster], January 2005.

53. Rashiq S, Moulin D, Sibley J, **Clark A**, Beaulieu A, Gordon A, Eisenhoffer J, Darke AC. Randomized placebo controlled trial of buprenorphine transdermal system in patients with chronic low back pain. [Poster], January 2005.

54. Lynch ME, **Clark A**, Sullivan MJL, Sawynok J. Topical amitriptyline and ketamine in neuropathic pain syndromes: an open label study. [Poster] 3rd World Congress (World Institute of Pain), June 2004.

55. Cane D, McCarthy M, Lynch ME, **Clark A**. Prevalence of pacing in patients attending a multidisciplinary pain program. [Poster], June 2004.

56. Allan L, **Clark A**, Horbay G, Camacho F, Vermeulen R. Transdermal fentanyl is associated with fewer adverse events than sustained release morphine in patients with chronic pain. [Poster], January 2004.

**57.** **Clark A**, Allan L, Horbay G, Camacho F, Richarz U. Transdermal fentanyl (TDF) is significantly better than sustained release morphine (SRM) in managing chronic pain: A meta-analysis in cancer and chronic non-cancer pain. [Poster], January 2004.

58. Chung F, Badner N, Parlow J, **Clark A**. A randomized multicenter trial comparing the safety and efficacy of a patient-controlled transdermal fentanyl HCL delivery system versus an intravenous patient-controlled morphine pump for the treatment of acute post-operative pain. [Poster], January 2004.

59. Lynch ME, **Clark A**, Sullivan M, Chisholm K. The presence of allodynia and hyperalgesia in different categories of neuropathic pain, a descriptive clinical study. [Poster] Canadian Pain Society Meeting, June 2003.

**60.** **Clark A**, Ware MA, Yazer E, Lynch ME, Murray J. Patterns of cannabis use for multiple sclerosis. [Poster] 13th Symposium on the Cannabinoids (International Cannabinoid Research Society, Burlington, Vermont), January 2003.

61. Cane D, MacKinnon E, Titus D, McCarthy M, Young A, Card P, Lynch ME, **Clark A**. Prediction of improvement in physical functioning following completion of a pain self-management program. [Poster] IASP World Congress (San Diego), June 2002.

62. Ware M, Doyle C, Lynch ME, **Clark A**. Use of Cannabis in a population of patients presenting to a Pain Clinic. [Poster] ICRS Annual Meeting (California), June 2002.

63. Lynch ME, **Clark A**, Sawynok J. Intravenous Adenosine in the treatment of neuropathic pain, a double blind placebo controlled trial using an enriched enrollment design. [Poster] CPS Annual Meeting (Winnipeg - May and IASP World Congress, San Diego - August), April 2002.

64. Morley-Forster PK, **Clark A**, Speechley M, Moulin DE. Attitudes towards opioid use for chronic pain - a Canadian Physician Study. [Poster], January 2002.

65. Ware M, Doyle C, Woods R, Lynch ME, **Clark A**. Cannabis use by patients with chronic noncancer pain: a prospective survey. [Poster] 12th Symposium on the Cannabinoids (International Cannabinoid Research Society, Burlington, Vermont), January 2002.

66. Moulin DE, **Clark A**, Speechley M, Morley-Forster PK. Chronic pain in Canada - a patient survey. [Poster] 10th World Congress on Pain, International Association for the Study of Pain (IASP), Seattle, WA), January 2002.

67. Chan V, **Clark** A, Ganapathy S, Rhodes R, Davis J, Wolf RS, Forsythe A, Jayawardene S, Manning D. A comparison of COX189, Naproxen and placebo for relief of post-surgical pain. [Poster] 10th World Congress on Pain (IASP, Seattle, WA), January 2002.

68. Sibley J, Kelly A, Rashiq S, Zidel B, **Clark A**, Thompson EN, Eisenhoffer J, Quigley P, Harsanyi Z, Darke AC. Controlled release Oxycodone and Acetominophen plus Codeine in chronic low back pain. [Poster] 10th World Congress on Pain (IASP, Seattle, WA), January 2002.

**69.** **Clark A**, Lynch ME, Sawynok J. The analgesic action of intravenous Adenosine in alleviating spontaneous pain, allodynia and hyperalgesia in four diagnostic categories of neuropathic pain. [Poster], June 2001.

70. Lynch ME, Gammell L, Sawynok J, **Clark A**. Topical treatment of neuropathic pain, a double blind placebo controlled pilot study examining the efficacy of topical Amitriptyline, Ketamine and a combination in the treatment of neuropathic pain. [Poster], June 2001.

71. Lynch ME, **Clark A**. Proceedings of the inaugural meeting of the Canadian Consortium for the Investigation of Cannabinoids. [Poster], January 2001.

72. Lynch ME, **Clark A**, Sawynok J. Novel approaches to the treatment of neuropathic pain, the analgesic action of intravenous Adenosine in alleviating spontaneous pain, allodynia and hyperalgesia in four diagnostic categories of neuropathic pain. [Poster] Canadian Pain Society, June 1999.

73. Lynch ME, Boylen K, Unruh A, **Clark A**, Sullivan MJ. Menstrual variation in chronic musculoskeletal pain. [Poster], June 1997.

**74.** **Clark A**, Vienneau-Harquail TL, Lynch ME, Sullivan MJ. A correlation study examining the relationship between catastrophizing, functional disability and subjective pain reports in patients with chronic low back pain. [Poster], June 1997.

**75.** **Clark A**, Vakharia N, Francis H. Unscheduled post-operative discharge in Same Day Admission surgery patients - incidence and causes. [Poster] CAS annual meeting (Vancouver, BC), June 1997.

**76.** **Clark A**, Hawboldt GS, Smith JB, Norman RW. Analgesia/sedation requirements during ESWL of renal calculi with the Siemens Lithostar Multiline. [Poster] CAS annual meeting (Vancouver, BC), June 1997.

**77.** **Clark A**, Vienneau-Harquail TL, Lynch ME, Sullivan MJ. A correlational study examining the relationship between catastrophizing, functional disability and subjective pain reports in patients with chronic pain. [Poster] CPS annual meeting (Niagara-on-the-Lake, ON), May 1997.

**78.** **Clark A**, Cane DB. Narcotic utilisation after participation in a Group Pain Management Program. [Poster] 11th World Congress of Anaesthesiologists (Sydney, Australia), April 1996.

**79.** **Clark A**, Cane DB. Use of narcotics following participation in a Pain Management Program: A preliminary investigation. [Poster] CPS annual meeting (Ottawa, ON), May 1995.

**80.** **Clark A**, Livingston PL, Houlton PG. Ketanserin IV bier block in treatment of reflex sympathetic dystrophy. [Poster] Canadian Pain Society (CPS) annual meeting, London, ON), October 1990.

**81.** **Clark A**, Houlton PG, Cane DB. A retrospective assessment of TENS usage in a chronic pain population. [Poster] Intractable Pain Society of Great Britain and Ireland (IASP Chapter) annual meeting, Exeter, England), September 1990.

**82.** **Clark A**, Houlton PG, Cane DB. A retrospective assessment of TENS usage in a chronic pain population. [Poster] VIth World Congress on Pain, International Association for the Study of Pain (IASP), Adelaide, Australia), April 1990.

**83.** **Clark A**, Awad SA. Selective sacral nerve root blockade. [Poster] American Society of Regional Anesthesia (Boston, MA), March 1989.

**84.** **Clark A**, Houlton PG, Shukla R, Purkis IE. Lumbar sympathetic blockade - a comparison of a one and two needle technique. [Poster] Canadian and American Pain Societies Joint Meeting (Toronto, ON), November 1988.

**85.** **Clark A**, Awad SA, Acker KL, Flood HD. Selective sacral neurolysis in the treatment of patients with detrusor instability/hyperreflexia and hypersensitive bladder. [Poster] International Continence Society (Bristol, England), September 1987.

**86.** **Clark A**, Houlton PG, Purkis IE, Shukla R. The correlation of thermography and diagnosis at initial assessment of the chronic pain patient. [Poster] International Association for the Study of Pain (IASP), Vth World Congress, Hamburg, W. Germany), August 1987.

87. Johnstone GK, **Clark A**, Houlton PC, Purkis IE, Shukla R. Lumbar sympathetic block - volume requirements. [Poster], January 1987.

**88.** **Clark A**, Awad SA, Mays LJ. Sacral nerve blocks in the management of detrusor hyperreflexia. [Poster] Canadian Urological Association annual meeting (Montreal, QC), June 1985.

89. **Clark A**, Awad SA, Mays LJ. Selective sacral nerve blockade in the management of detrusor hyperreflexia. [Poster] 20th Congress of the International Society of Urology (Vienna, Austria), June 1985.

90. **Clark A**, Awad SA, Mays LJ. Sacral nerve blocks in the management of detrusor hyperreflexia. [Poster] American Urological Association annual meeting (Atlanta Georgia), May 1985.

## Invited Presentations - National and International

1. Central triage and improving the consultation process for patients with chronic pain (2015) - Canadian Pain Society Annual Scientific Meeting - Charlotetown, PEI [Symposium]

2. Cannabinoids and Pain (2014) - Canabinoids in Clinical practice, navigating a new landscape - Toronto, ON [Plenary]

3. Update, from the Canadian Pain Summit to the Present (2013) - Canadian Pain Society Annual Meeting - Winnipeg, MB.

4. Determination of Serological Cytokine Levels in Patients with Chronic Neuropathic Pain and the Impact of Intravenous Immunoglobulin or Placebo Treatment (2012) - International Association for the Study of Pain World Congress on Pain - Milan, Italy

5. A Brief Educational Intervention about Pain and Aging for Older Members of the Community and Healthcare Workers (2012) - International Association for the Study of Pain World Congress on Pain - Milan, Italy

6. Community Care of Chronic Pain - Primary Care Clinics, Communications and Support from the Specialist (2012) - Canadian Pain Society Annual Meeting - Whistler, BC [Conference Workshop]

7. IVIG for Treatment Resistant Neuropathic Pain (2012) - Canadian Pain Society Annual Meeting - Whistler BC

8. Introduction of the Strategy - The National Pain Strategy (2012) - Canadian Pain Summit 2012 - Ottawa, ON

9. Update on Neuropathic Pain (2012) - King Faisal Specialist Hospital - Riyadh, Saudi Arabia

10. Update on the Management of Neuropathic Pain (2012) - Dubai - UAE [Workshop]

11. Update on Neuropathic Pain (2012) - Dammam - Saudi Arabia

12. Update on Neuropathic Pain (2012) - Jeddah - Saudi Arabia

13. Update on the Management of Neuropathic Pain (2012) - Riyadh - Saudi Arabia

14. Pain (2012) - Globe and Mail Editorial Board - Halifax, NS

15. Visions and Goals for a National Pain Strategy for Canada (2011) - Canadian Pain Summit Stakeholder Meeting - Toronto, ON

16. Canadian Strategies to Enhance Community Care of Chronic Pain (2011) - Joint British and Canadian Pain Society Meeting - Edinburgh, Scotland [Workshop]

17. Do Nerve Blocks have a Role in Chronic Pain Management? (2011) - Canadian Pain Society Annual Meeting - Niagara Falls ON [Workshop]

18. Cannabiniods in Clinical Practice: Prescribing, Synergies, and Medical Cannabis (2011) - Canadian Pain Society Annual Meeting - Niagara Falls, ON [Workshop]

19. Hot topics session (2011) - Canadian Pain Society Annual Conference - Niagra Falls, Ontario, Canada [Symposium]

20. A missing piece in the pain puzzle: Exploring pain-related sleep difficulties (2011) - Canadian Pain Society Annual Conference - Niagra Falls, Ontario, Canada [Symposium]

21. Synergies - Cannabinoids and Opioids (2010) - Canadian Consortium for the Investigation of Cannabinoids - Calgary, AB [Workshop]

22. Canadian Multicentre Neuropathic Pain Database (NePDaT) to Determine Longterm Outcomes and Benefits of Management of Chronic Neuropathic Pain (2010) - International Association for the Study of Pain World Congress on Pain - Montreal, QC

23. Physician to Physician Telephone Consultation for Chronic Pain Patients (2010) - International Association for the Study of Pain World Congress on Pain - Montreal, QC

24. Do Blocks have a Role in Chronic Pain Management (2010) - Canadian Pain Society Annual Meeting - Calgary, AB [Workshop]

25. The Calgary Chronic Pain In-Patient Consultation Service: the First Three Years (2010) - Canadian Pain Society Annual Meeting - Calgary, AB

26. Cannabinoids in Clinical Practice (2010) - Canadian Consortium for the Investigation of Cannabinoids - Calgary, AB [Workshop]

27. Assessment of Clinical Skills - Western Provinces Prescribing Program (2009) - Calgary - AB [Workshop]

28. Ongoing Assessment - Western Provinces Prescribing Program (2009) - Calgary - AB [Workshop]

29. First Nations - Western Provinces Prescribing Program (2009) - Calgary - AB [Workshop]

30. Cannabis and cannabinoids in medical practice: Challenges and opportunities (2009) - Canadian Consortium for the Investigation of Cannabinoids - National Lecture Series 2009, Edmonton, AB

31. Cannabis and cannabinoids in medical practice: Challenges and opportunities (2009) - Canadian Consortium for the Investigation of Cannabinoids - National Lecture Series 2009, Calgary, AB

32. Cannabis and cannabinoids in medical practice: Challenges and opportunities (2009) - Canadian Consortium for the Investigation of Cannabinoids - National Lecture Series 2009, Lethbridge, AB

33. Neuropathic pain: Diagnosis and current treatment guidelines (2009) - International Symposium on Neuropathic Pain and Fibromyalgia - Lima, Peru

34. Neuropathic pain: Diagnosis and current treatment guidelines (2009) - International Symposium on Neuropathic Pain and Fibromyalgia - Buenos Aires, Argentina

35. New horizons in fibromyalgia: Bringing hope through better patient care (2009) - Primary Care Updates - Calgary, AB

36. Strategies for managing the chronic pain patient in the ambulatory surgical centre (2009) - CAS Annual Meeting - Vancouver, BC

37. Toward a model of pain management in long-term care: Revision of pain screening, assessment and monitoring tools (2009) - American Pain Society Annual Meeting - San Diego, CA

38. Toward a model of pain management in long-term care; Revision of pain screening, assessment and monitoring tools (2009) - Canadian Pain Society Annual Meeting - Quebec, QC

39. Use of a synthetic cannabinoid in the in-patient with chronic non-cancer pain (2009) - CPS Annual Meeting - Quebec, QC

40. The Regional Pain Program: What's new? Trends and Treatments (2008) - Calgary Pain Conference - Calgary, AB

41. Chronic pain in the elderly (2008) - Pain Awareness Week Symposium - Chronic Pain Association of Canada, Calgary, AB

42. Pain (2008) - Faculty of Medicine - University of Calgary, Calgary, AB

43. The dilemma of chronic pain in the patient with acute pain (2008) - Trauma Rounds - Foothills Medical Centre, Calgary, AB [Grand Rounds]

44. Six months of treatment for neuropathic pain has little effect (2008) - IASP meeting - Glasgow, UK

45. Pre-licensure Pain Curricula in Health Sciences Faculties: A survey of Canadian universities (2008) - IASP meeting - Glasgow, UK

46. The Canadian STOP-PAIN Project: The biopsychosocial profiles of patients on waitlists of large university-affiliated multidisciplinary pain treatment facilities (2008) - IASP meeting - Glasgow, UK

47. The Canadian STOP-PAIN Project: Factors associated with severe pain in patients waiting for treatment in large university-affiliated multidisciplinary treatment facilities (2008) - IASP meeting - Glasgow, UK

48. Aerosolized liposome-encapsulated fentanyl (AeroLEF™) via pulmonary administration allows patients with moderate to severe post-surgical acute pain to self-titrate to effective analgesia (2008) - American Pain Society Annual Meeting - Tampa, FL

49. Survey of Pre-Licensure Pain Curricula in Health Science Faculties in Canadian Universities (2008) - CPS Annual Meeting - Victoria, BC

50. Survey of Pre-Licensure Pain Curricula in Health Science Faculties in Canadian Universities (2008) - CPS Annual Meeting - Victoria, BC

51. Recognizing and treatment neuropathic pain (2008) - Sports Medicine Clinic - Kinesiology Department, University of Calgary, Calgary, AB

52. Improving outcomes in pain management (2008) - Multi - dimensional Approach to Pain Management Course, Lake Louise, AB

53. Research and what is new with cannabinoids (2008) - Palliative Care Group - Calgary Health Region, Calgary, AB [Research Club]

54. A Case of Chronic Post-Operative Pain - Multi-dimensional Approach to Pain Management Course (2008) - Lake Louise - AB

55. Recognizing and Treating Neuropathic Pain - Multi-dimensional Approach to Pain Management Course (2008) - Lake Louise - AB

56. Managing acute pain perioperatively in the patient with chronic pain and transitioning back to "Usual Care" (2008) - 14th Annual Winterlude Symposium - Ottawa, ON

57. Update on chronic pain management (2008) - Workers Compensation Board of Alberta - Calgary, AB

58. Pain management and the older person (2007) - Chronic Pain Association of Canada Annual Meeting - Edmonton, AB

59. Tertiary care level chronic pain management: in the community and the hospital. What to do about pain? Are broad-based community solutions possible? (2007) - Global Perspectives on Chronic Disease: Prevention and Management Conference - Calgary, AB

60. Non-pharmaceutical treatments (2007) - Institute of Health Economics Invited Symposium - Banff, AB

61. Prospective study of the pharmacological management of chronic neuropathic non-cancer pain (2007) - 2nd International Congress on Neuropathic Pain - Berlin, Germany

62. Updated guidelines for the use of cannabinoid compounds available in Canada for the treatment of chronic pain (2007) - 17th Annual Symposium on the Cannabinoids, Saint - Sauveur, QC

63. Novel agents in the management of neuropathic pain: cannabinoids and beyond (2007) - 42nd Annual Congress of the Canadian Neurological Sciences Federation - Edmonton, AB

64. Become active in research (2007) - Consumer Advisory Council - Canadian Arthritis Network, Calgary, AB [Research Club]

65. Pain management and the older person (2007) - Public Forum - Calgary, AB

66. Development and evaluation of a hospital chronic pain consultation service (2007) - Canadian Pain Society Annual Meeting - Ottawa, ON

67. Long-term benefit of controlled-release Oxycodone (Oxycontin) in patients with painful diabetic neuropathy or chronic low back pain (2007) - CPS Annual Meeting - Ottawa, ON

68. The triad: pain, sleep and mood (2007) - CPS Annual Meeting - Ottawa, ON

69. A Question of Balance: The impact of scheduling on pain management in Canada (2007) - CPS - Toronto, Ontario, Canada

70. Neuropathic pain: New trends and treatment (2007) - Division of Physical Medicine Rounds - Clinical Neurosciences, Calgary Health Region, Calgary, AB [Grand Rounds]

71. Therapeutic advances in chronic pain (2007) - Canadian Rheumatology Association 62nd Annual Meeting - Lake Louise, AB

72. Chronic pain cases - what to do next (2007) - Canadian Rheumatology Association 62nd Annual Meeting - Lake Louise, AB

73. An algorithm for the treatment of chronic pain. Trends and Treatments (2006) - The Calgary Pain Conference - Calgary, AB

74. Acute, chronic and palliative pain management: what are the similarities and differences in pharmacological and management strategies? Trends and Treatments (2006) - The Calgary Pain Conference - Calgary, AB

75. Calgary Health Region Chronic Pain Program - an integrated service delivery model for pain management (2006) - Pain Awareness Week - Towards the Conquest of Pain. Michael DeGroote School of Medicine, McMaster University, Burlington, ON

76. The Ying and Yan of follow-up: the balance between the pain clinic and the GP (2006) - Pain Awareness Week - Towards the Conquest of Pain. Michael DeGroote School of Medicine, McMaster University, Burlington, ON

77. Update on mechanisms, diagnosis and treatment of arthritis pain (2006) - CPS - Edmonton, Alberta, Canada

78. Getting through the process. How to get ready for accreditation (2006) - Canadian Pain Society Annual Conference - Edmonton, AB

79. An algorithm for the treatment of chronic pain with cannabinoids (2006) - CPS Annual Conference - Edmonton, AB

80. Neuropathic pain - an interactive approach to treatment and management (2006) - CPS Annual Conference - Edmonton, AB

81. Treating neuropathic pain - case discussion (2006) - CAS 62nd Annual Meeting - Toronto, ON

82. Is there still a role for the anesthesiologist in chronic pain management? Transcontinental Paradigms (2006) - CAS 62nd Annual Meeting - Toronto, ON

83. Chronic pain - is there a role for cannabinoid medications? (2006) - Department of Medicine Grand Rounds - Rockyview General Hospital, Calgary, AB [Grand Rounds]

84. Chronic pain, the opioid tolerant patient (2006) - Department of Anesthesia Grand Rounds - Rockyview General Hospital, Calgary, AB [Grand Rounds]

85. Great opioid debate. Managing Chronic Non-Malignant Pain (2006) - The 40th Annual Mackid Symposium - Calgary, AB

86. Guidelines for the management of neuropathic pain (2006) - Health on 12th - Calgary Health Region, Calgary, AB

87. Chronic pain (2006) - Dystonia Research Society - Calgary, AB

88. Cannabinoid Compounds in the Treatment of Chronic Pain: Update and clinical guidelines (2006) - CPS Annual Meeting - Edmonton, Alberta, Canada

89. The Calgary experience - developing a Chronic Pain Program (2006) - Vancouver Island Health Authority - Nanaimo, BC

90. Innovations in pharmacological management of chronic pain - are there concerns for anesthesiologists? (2006) - CAS - Alberta Division meeting, Lake Louise, AB

91. A burning talk about zoster, postherpetic neuralgia and the future (2006) - CPS Annual Meeting - Edmonton, Alberta, Canada

92. Overview and perspectives of arthritis pain (2006) - Pain and Arthritis Research Workshop - Canadian Arthritis Network, Calgary, AB [Research Club]

93. Going through the process - how to get ready for accreditation (2006)

94. An algorithm for the treatment of chronic pain with cannabinoids (2006)

95. Innovations in the pharmacological management of pain (2005) - The Calgary Pain Conference - Calgary, AB

96. Neuropathic pain in multiple sclerosis, advances in management (2005) - Neurology Grand Rounds - Foothills Medical Centre, Calgary, AB [Grand Rounds]

97. Approaches to chronic noncancer pain (2005) - Drumheller Regional Health Center - Drumheller, AB

98. Pain impact on quality of life (2005) - 2nd Annual Pain Symposium - Chronic Pain Association of Canada, Edmonton, AB

99. Canadian Pain Study II: Standards of care for chronic noncancer pain in Canada 2004 (2005) - International Association for the Study of Pain - IASP) 11th World Congress, Sydney, Australia

100. Pain medications, how to optimize sleep (2005) - Pain Education Day, Canadian Pain Society - CPS), Halifax, NS

101. Randomized placebo controlled trial of buprenorphine transdermal system in patients with chronic low back pain (2005) - CPS meeting - Halifax, NS

102. Canadian Pain Study II: Use of opioids in Canada 2004 (2005) - CPS meeting - Halifax, NS

103. An innovative approach to wait-list management in a pain management program (2005) - CPS meeting - Halifax, NS

104. Canadian Pain Study II: Opiophobia in Canada 2004 (2005) - American Pain Society - Boston, MA

105. Litigation and patient distress (2005) - CPS Annual Meeting - Halifax, Nova Scotia, Canada

106. Canadian Pain Study II: Profile of chronic non-cancer pain in Canada 2004 (2005) - American Academy of Pain Medicine - Palm Springs, CA

107. Chronic pain in Canada II - Prevalence, treatment, impact on quality of life and frequency of physician visits 2004 (2004) - Family Medicine Forum 2004 - Toronto, ON

108. Etiology of neuropathic pain (2004) - Lyrica Advisory Board meeting - Montreal, QC

109. Self-titrated aerosolized liposome-encapsulated Fentanyl results in rapid onset and sustained analgesia following ACL knee surgery (2004) - American Society of Anesthesiologists - ASA) meeting

110. The clinical foundation for durogesic D-TRANS: a decade of transdermal Fentanyl for chronic pain (2004) - 3rd World Congress World Institute of Pain - Barcelona, Spain

111. Topical Amitriptyline and Ketamine in neuropathic pain syndromes: An open-label study (2004) - 3rd World Congress World Institute of Pain - Barcelona, Spain

112. Tolerabiilty of transdermal Fentanyl versus sustained-release Morphine in elderly subjects with cancer and non-cancer pain (2004) - 3rd World Congress World Institute of Pain - Barcelona, Spain

113. Chronic Pain: Chronic pain after surgery (2004) - 13th World Congress of Anaesthesiologists - Paris, France

114. Chronic pain - impact, attitudes, evidence-based medicine and the future (2004) - Calgary Chronic Pain Centre - Calgary, AB

115. Pain Advocacy - the Canadian experience (2004) - 2nd Joint Scientific Meeting of the American Pain Society and the Canadian Pain Society - Vancouver, BC

116. Maintenance of Competence: a major tool of quality insurance to avoid recertification (2004) - 13th World Congress of Anaesthesiologists - Paris, France

117. Approaches to treatment of chronic pain (2004) - GI and Pain Advisory Board, Janssen - Ortho Inc., Nuevo Vallarta, Mexico

118. Managing chronic pain patients: Focusing on working within Provincial College Guidelines (2004) - GI and Pain Advisory Board, Janssen - Ortho Inc., Nuevo Vallarta, Mexico

119. Maintenance of Competence: A major tool of quality insurance to avoid recertification (2004)

120. Pain Advocacy - Contrasting approaches, Canadian and American experiences (2004) - 2nd Joint Scientific Meeting of the American Pain Society and the Canadian Pain Society - Vancouver, British Columbia, Canada

121. Risk of abuse: Treating patients with non-cancer pain (2003) - North American Chronic Pain Association of Canada Annual General Meeting - Halifax, NS

122. Experts in Pain Management (2003) - Toronto, Ontario, Canada [Workshop]

123. Dealing with chronic pain (2003) - Televised Public Education Session - the Arthritis Society, Halifax, NS

124. Enhancing chronic pain management with opioids (2003) - Workshop - Toronto, Ontario, Canada [Conference Workshop]

125. Patterns of cannabis use for multiple sclerosis (2003) - 13th Symposium on the Cannabinoids - International Cannabinoid Research Society, Cornwall, ON

126. The presence of allodynia and hyperalgesia in different categories of neuropathic pain - a descriptive clinical study (2003) - CPS annual meeting - Toronto, ON

127. Clinical implications of the Canadian Pain Study (2003) - Perspective and Strategies in Pain Management - Mont Tremblant, QC

128. Adjunct therapies for chronic non-cancer pain (2003) - Perspective and Strategies in Pain Management - Mont Tremblant, QC

129. Management of chronic pain (2003) - Family Medicine Residents' Annual Retreat - Moncton, NB

130. New therapies for neuropathic pain - are they better? (2003) - Department of Anesthesia - University of Ottawa, Ottawa, ON [Grand Rounds]

131. Opioids for intra-operative and chronic pain, old and new knowledge (2003) - Department of Anesthesia - University of Ottawa, Ottawa, ON

132. Clinical implications of the Canadian Pain Study (2003) - Enhancing Chronic Pain Management with Opioids - Toronto, ON

133. Attitudes towards opioid use for chronic pain - a Canadian Physician Survey (2002) - The Rehabilitation and Geriatric Care Research Day Program - University of Western Ontario, London, ON

134. Chronic pain in Canada - a patient survey (2002) - The Rehabilitation and Geriatric Care Research Day Program - University of Western Ontario, London, ON

135. Attitudes towards opioid use for chronic pain - a Canadian physician survey (2002) - Rehabilitation and Geriatric Care Research Day - St. Joseph's Health Care, London, ON

136. Pain: Impact on quality of life (2002) - 5th Annual Conference for People with Pain - North American Chronic Pain Association of Canada, Halifax, NS

137. Chronic pain in Canada - a patient survey (2002) - 10th World Congress on Pain, International Association for the Study of Pain - IASP), San Diego, CA

138. Intravenous Adenosine alleviates neuropathic pain - a double blind placebo controlled trial using an enriched enrollment design (2002) - 10th World Congress on Pain - San Diego, CA

139. A comparison of COX189, Naproxen and placebo for relief of post-surgical pain (2002) - 10th World Congress on Pain - San Diego, CA

140. Prediction of improvement in physical functioning following completion of a pain self-management program (2002) - 10th World Congress on Pain - San Diego, CA

141. Controlled release Oxycodone and Acetominophen plus Codeine in chronic low back pain (2002) - 10th World Congress on Pain - San Diego, CA

142. Cannabis use by patients with chronic noncancer pain: a prospective survey (2002) - 12th Symposium on the Cannabinoids - International Cannabinoid Research Society, Pacific Grove, CA

143. Controlled substances in pain management - Methadone (2002) - CPS annual meeting - Winnipeg, Manitoba

144. Attitudes towards opioid use for chronic pain - a Canadian Physician Survey (2002) - CPS annual meeting - Winnipeg, Manitoba

145. Evidence for medical marijuana (2002) - 48th annual Scientific Assembly - New Brunswick College of Family Physicians, Moncton, NB

146. A report card on current pain management in Canada - the Canadian Pain Study (2002) - Enhancing Chronic Pain Management with Opioids - Whistler, BC

147. Controlled substances in pain management: Methadone (2002)

148. Pain management (2001) - The 1st annual conference of the Arthritis Society - NS Division, Halifax, NS

149. The analgesic action of intravenous Adenosine in alleviating spontaneous pain, allodynia and hyperalgesia in 4 diagnostic categories of neuropathic pain (2001) - CPS annual meeting - Montreal, QC

150. Topical treatment of neuropathic pain - a double blind placebo controlled pilot study examining the efficacy of topical Amitriptyline, Ketamine and a combination in the treatment of neuropathic pain (2001) - CPS annual meeting - Montreal, QC

151. Experts Forum - Chronic Pain (2000) - Montreal, Quebec, Canada [Panel]

152. How to visit and communicate with your physician (2000) - Pain! Help Me I Hurt Conference - North American Chronic Pain Association of Canada, Halifax, NS

153. Collaborative clinical trials & future of the consortium workshop (2000) - Canadian Consortium for the Study of Cannabinoids in Human Therapeutics - Halifax, Nova Scotia, Canada [Workshop]

154. Non-cancer pain: Which opioid to use - from receptors to side effects (2000) - Pain Rounds - McGill University, Montreal, QC [Grand Rounds]

155. Neuropathic pain management in Canada (2000) - The Canadian Consultant's Forum - Cancun, Mexico [Conference Workshop]

156. Managing pain (1999) - Pain Management Workshop - The Arthritis Society, Charlottetown, PEI

157. Spinal cord stimulation: Indications and efficacy (1999) - CPS Annual Meeting - St John's, Newfoundland, Canada [Symposium]

158. Chronic non-malignant pain - opioid analgesics and new receptors, emerging concepts re: M6G receptor (1999) - Canadian Pain Society annual meeting - St. John's, NF

159. Overview and medical assessment of the patient for spinal cord stimulation (1999) - Canadian Pain Society - CPS) annual meeting, St. John's, NF

160. Novel approaches to the treatment of neuropathic pain: The analgesic action of intravenous Adenosine in alleviating spontaneous pain, allodynia and hyperalgesia in 4 diagnostic categories of neuropathic pain (1999) - CPS annual meeting - St. John's, NF

161. The painful extremity: Diagnosis and treatment (1998) - Regional Anaesthesia & Analgesia '98 - University of Toronto, Toronto, ON

162. Starting a Pain Clinic in the community setting (1998) - Regional Anaesthesia & Analgesia '98 - University of Toronto, Toronto, ON

163. Chronic pain outcome: Clinician expectations versus patient experience (1998) - Regional Anaesthesia & Analgesia '98 - University of Toronto, Toronto, ON

164. Andrews-Anelevitz Mt. Sinai Hospital Lecture (1998) - University of Toronto - Toronto, ON

165. Chronic pain - case discussion (1998) - CAS annual meeting - Toronto, ON

166. Epidural steroid debate - Con side (1998) - CPS annual meeting - Regina, SK

167. Which patients must be seen? (1997) - Pre Admission Clinic Directors Working Group - Vancouver, BC

168. Preassessment Clinic - which patients should be seen? (1997) - CAS annual meeting - Vancouver, BC

169. The use of steroids in the management of chronic pain (1997) - CAS annual meeting - Vancouver, BC

170. MOCOMP PCDiary (1997) - Society of Obstetricians and Gynecologists of Canada 53rd Annual Clinical Meeting - Halifax, NS

171. PC diary trainer workshop (1997) - 4th Annual MOCOMP Conference - RCPSC, Ottawa, ON

172. Your opportunity to question experirenced PC diary users workshop (1997) - 4th Annual MOCOMP Conference - RCPSC, Ottawa, ON

173. The challenge of research in a busy clinical setting (1997) - CPS annual meeting, Niagara - on

174. Setting up a Pre-Assessment Clinic (1996) - CAS annual meeting - Montreal, QC

175. The problem of communications to the periphery - How the present system works and the changes that are necessary (1996) - CAS annual meeting - Montreal, QC

176. How to run workshops to teach PC diary (1996) - 3rd Annual MOCOMP Conference - RCPSC, Ottawa, ON

177. Chronic pain management (1996) - NS Insurance Women's Association annual meeting - Halifax, NS

178. PC diary user (1995) - The Royal College of Physicians and Surgeons of Canada - Ottawa, ON [Workshop]

179. Sexual Misconduct (1995) - CAS Annual Meeting - Ottawa, Ontario, Canada [Symposium]

180. Pain control in burns (1995) - Canadian Association of Burn Nurses - Halifax, NS

181. Chronic pain - is anything new? (1995) - CAS annual meeting - Ottawa, ON

182. Management of chronic pain (1994) - 2nd Annual Conference on Office Orthopedics for the Primary Care Physician - Halifax, NS

183. Pain: The challenge and the response (1994) - CPS Annual Meeting - Halifax, Nova Scotia, Canada [Symposium]

184. The Maintenance of Competence (MOCOMP) Pilot Project - Anesthetists Continuing Medical Education Practices (1994) - CAS annual meeting - Edmonton, AB

185. Effects of inadvertent dural puncture during epidural injection in patients with chronic pain (1994) - CPS annual meeting - Halifax, NS

186. MOCOMP criteria for quality programs (1994) - Planning Quality CME Activities for Specialists - 2nd Annual MOCOMP Conference, RCPSC, Ottawa, ON

187. Musculoskeletal pain - Current opinions in pain management (1994) - Faculty on Chronic Pain - Quebec City, QC

188. Pre-emptive analgesia (1994) - CPS Annual Meeting - Halifax, Nova Scotia, Canada

189. Subspecialties - How much is enough? (1993) - CAS Annual Meeting - Halifax, Nova Scotia, Canada [Symposium]

190. Inadvertent dural puncture during epidural injection in a lithotripter unit and a chronic pain unit (1993) - Association of Anaesthetists' of Great Britain and Ireland and CAS Joint Annual Scientific Meeti - Glasgow, Scotland

191. Maintenance of Competence (1993) - CAS annual meeting - Halifax, NS

192. Chronic pain management (1992) - NS Pharmacists' Society - Halifax, NS

193. Anaesthesia and the Patient with Cardiac Disease (1992) - CAS Annual Meeting - St John's, Newfoundland, Canada [Symposium]

194. Education for the anaesthetist - Fellowship Anaesthetists (1992) - Anesthesia Update 1992 - CAS Alberta Division, Kananaskis, AB

195. New agents - analgesics (1992) - Anaesthesia Update 1992 - CAS Alberta Division, Kananaskis, AB

196. Addiction in Anesthetists (1992) - CAS Annual Meeting - Toronto, Ontario, Canada [Symposium]

197. How to optimize your OR experience (1991) - Residents seminar - CAS annual meeting, Quebec, QC

198. The recovery room (1991) - CAS - Halifax, Nova Scotia, Canada [Conference Workshop]

199. Cervical sprains (1990) - CPS annual meeting - London, ON

200. The patient in pain - Current concepts of chronic pain management (1990) - Phi Rho Sigma Medical Society Educational Day - Halifax, NS

201. Orthopedic anesthesia session (1986) - CAS Atlantic Regional Meeting - Halifax, Nova Scotia, Canada [Symposium]

202. Effect of premedication on recovery to street fitness after out-patient surgery (1980) - CAS annual meeting Residents' Competition - Toronto, ON

## Invited Presentations - Regional and Local

1. Cannabis: What you need to know (2014) - National Pain Awareness Week, Chronic Pain Association of Canada - Halifax, NS [Symposium]

2. To weed or not to weed? The tangled garden of medical marijuana (2014) - Dalhousie University - Halifax, NS

3. Nova Scotia Update - Chronic Pain (2013) - Atlantic Pain Policy Meeting - Fredericton, NB

4. What's Interesting about Chronic Pain (2013) - Department of Anesthesia, Dalhousie University - Halifax, NS [Grand Rounds]

5. Medical Cannabis (2012) - Capital Health - Halifax, NS

6. Common Challenges Managing Inpatients with Chronic Pain (2012) - Dalhousie University - Halifax, NS

7. Update on Neuropathic Pain Guidelines (2012) - Atlantic Provinces Inter-Professional Pain Conference - Halifax, NS

8. Role for Epidural Steroid Injections (2011) - Atlantic Spine Meeting - Fox H'br, NS [Symposium]

9. Update on the National Pain Strategy and Ottawa Pain Summit (2011) - Atlantic Pain Policy Meeting - Halifax, NS

10. Pain and Pain Care (2010) - Nova Scotia Association of Health Volunteers - Dartmouth NS

11. Cannabinoids in clinical practice (2010) - Capital Health - Halifax, NS

12. Cannabinoids: Is there a role for their use in chronic pain? (2010) - Valley Pain Day - Wolfville, NS

13. Chronic pain: Prevalence, attitudes and perceptions (2004) - Halifax Support Group - Chronic Pain Association of Canada, Halifax, NS

14. Chronic pain: Prevalence, attitudes and perceptions (2004) - Atlantic Canadian Pain Conference - Halifax, NS
15. Chronic pain: Impact and attitudes (2004) - Nova Scotia Barristers Society - Halifax, NS
16. Switching from short-acting to long-acting opioids (2004) - Woodlawn Medical Clinic - Dartmouth, NS
17. Chronic pain, use and abuse of opioids (2003) - Sydney - NS
18. Perspectives and strategies in pain management (2003) - Morell, Prince Edward Island, Canada [Seminar]
19. Clinical implications of the Canadian Pain Study - Where do we go from here? (2003) - Perspectives and Strategies in Pain Management - Morell, PEI
20. What else? Adjunct therapies for CNCP (2003) - Perspectives and Strategies in Pain Management - Morell, PEI
21. QEII HSC Pain Management Unit: All your questions answered (2003) - Chronic Pain in Your Practice: a Pain Management Symposium - Halifax, NS
22. Visiting Professor (2003) - University of Ottawa - Ottawa, ON
23. Barriers to the use of opioids (2002) - Atlantic Canada Advisory Board - Lunenburg, NS
24. The medical use of marijuana (2002) - 37th Conjoint Scientific Assembly - Maritime Chapters of the College of Family Physicians of Canada, Charlottetown, PEI
25. Chronic pain (2002) - Workshop for Physicians and Nurses - Tobique First Nation, NB [Workshop]
26. Chronic pain in the community, approaches to management (2002) - Workshop for Health Care Professionals and Community Members - Tobique First Nation, NB [Workshop]
27. Chronic Regional Pain Syndromes (2002) - Hand Interest Group - Halifax, NS
28. Integrity in scholarly activity (2001) - Dalhousie University - Halifax, NS [Workshop]
29. The efficacy of topical Amitriptyline/Ketamine vs topical Ketamine vs topical Amitriptyline vs placebo for the treatment of neuropathic pain (2001) - Dalhousie University - Halifax, NS
30. Indications for and demonstrations of injections for occipital neuralgia, trigger points and nerve entrapments (2001) - CME Videoconference - Dalhousie University, Halifax, NS
31. Epidemiology of chronic pain (2001) - Pain Management Unit Symposium - Halifax, NS
32. Prescribing opioids to the patient with chronic noncancer pain (2000) - Pain Education Day - Halifax, NS
33. Chronic pain (1999) - Atlantic Health Corporation - Saint John, NB [Grand Rounds]
34. Novel approaches to the treatment of neuropathic pain (1999) - Dalhousie University - Halifax, NS
35. Opioid analgesics and chronic noncancer pain (1999) - Quinpool Family Medicine Group - Halifax, NS
36. Chronic pain outcome (1999) - Dalhousie University - Halifax, NS [Grand Rounds]

37. Nonpharmacologic approach to pain management (1999) - 25th Annual February Refresher - Therapeutics) for Family Physicians, Dalhousie University, Halifax, NS

38. Day surgery: Time for a fresh look? Patient assessment and outcome (1998) - CAS Atlantic Regional Meeting - Charlottetown, PEI

39. Day surgery - Time for a fresh look? Prevention and treatment of morbidity (1998) - CAS Atlantic Regional Meeting - Charlottetown, PEI

40. The Preanaesthetic Clinic: Round Table discussion (1998) - CAS Atlantic Regional Meeting - Charlottetown, PEI

41. Treatment of chronic pain and symptom control (1997) - 23rd Annual Refresher for Family Physicians - Dalhousie University, Halifax, NS

42. Acupuncture (1996) - 32nd Annual Pharmacy Refresher Course - College of Pharmacy, Dalhousie University, Moncton, NB

43. MOCOMP workshop for members of council (1996) - RCPSC - Halifax, Nova Scotia, Canada [Workshop]

44. MOCOMP: Barriers to utilisation (1996) - Regional Advisory Committee 5 - RCPSC, Halifax, NS

45. Setting up a Same Day Admission Clinic (1995) - ASPENS Update 1995 - Liverpool, NS

46. The basics of pain and suffering (1995) - 21st Annual February Refresher for Family Physicians - Dalhousie University, Halifax, NS

47. Never-ending pain (1995) - 21st Annual February Refresher for Family Physicians - Dalhousie University, Halifax, NS

48. ASPENS - 6 years' experience (1994) - ASPENS Update 1994 - Halifax, NS

49. The RCPSC Bulletin Board Service - enhancing personal learning skills with the home computer (1994) - Regional Advisory Committee 5 - RCPSC, Halifax, NS [Workshop]

50. Pain management (1994) - Community Hospitals Program - Glace Bay, NS

51. Visiting Professor (1994) - Wake Forest University, The Bowman Gray School of Medicine, Department of Anesthesiology - Winston-Salem, North Carolina

52. Chronic pain (1993) - 67th Annual Refresher Course - Dalhousie University, Halifax, NS

53. Difficult patients - pharmacological and non-medication treatment options. Effective Management of the Prescription-Prone Patient (1993) - Dalhousie University - Halifax, NS

54. ASPENS - Helping NS hospitals avoid anaesthesia risks (1993) - Managing Health - Care Risks

55. 20 years experience with clinical practice guidelines (1993) - Regional Advisory Committee 5 - RCPSC, Halifax, NS

56. Chronic pain (1992) - 66th Annual Refresher Course - Dalhousie University, Halifax, NS

57. Difficult patients - pharmacological and non-medication treatment options. Effective Managment of the Prescription-Prone Patient (1992) - Dalhousie University - Halifax, NS

58. Management of the patient with cancer pain (1992) - Yarmouth Regional Hospital - Yarmouth, NS

59. The management of cancer pain (1992) - NS Oncology Nurses Association - Halifax, NS
60. Maintenance of Competence (MOCOMP) (1991) - Regional Advisory Committee 5, The Royal College of Physicians and Surgeons of Canada - RCPSC), Charlottetown, PEI
61. Chronic pain/Cancer pain (1991) - Community Hospitals Program - Antigonish, NS
62. Fiberoptic intubation (1991) - ASPENS Update 1991 - Sydney, Halifax & Kentville, NS [Workshop]
63. Managing the patient with chronic pain (1991) - Dalhousie University - Halifax, NS
64. Future trends in anaesthesia (1990) - CAS Atlantic Regional Meeting - Halifax, NS
65. Pain and the elderly (1990) - Community Hospitals Program - Everett Chalmers Hospital, Fredericton, NB
66. Medications: Choices, uses and abuses (1990) - Community Hospitals Program - Everett Chalmers Hospital, Fredericton, NB
67. Recent developments in post operative analgesia and chronic pain control (1989) - CAS Atlantic Regional Meeting - Saint John, NB
68. Pain management of terminal cancer (1988) - 62nd Annual Refresher Course - Dalhousie University, Halifax, NS
69. A correlational study examining the relationship between catastrophizing, functional disability and subjective pain reports in patients with chronic low back pain (1988) - Department of Anesthesia Research Day - Dalhousie University, Halifax, NS
70. Internal forms of pain control (1987) - Dalhousie University - Halifax, NS
71. The Pain Clinic management of facial pain and headache (1987) - Dalhousie University - Halifax, NS
72. Chronic Pain session (1987) - Dalhousie University - Halifax, Nova Scotia, Canada [Workshop]
73. Chronic pain (1987) - Community Hospitals Program - Digby, NS
74. Picturing pain - Liquid crystal thermography (1986) - CAS Atlantic Regional Meeting - Halifax, NS
75. Chronic pain (1986) - Community Hospitals Program - Berwick, NS
76. Liver transplantation (1985) - CAS Nova Scotia Division meeting
77. Epidural steroids for relief of pain (1984) - CAS Atlantic Regional Meeting - Charlottetown, PEI
78. Non-pharmacologic management of pain (1984) - Dalhousie University - Halifax, NS
79. Pain Clinic approaches to headache (1984) - Dalhousie University - Halifax, NS
80. Role of nerve blocks (1982) - Dalhousie University - Halifax, NS

## Reviewer Activities

2015 Reviewer - Dalhousie University Pain Research Day [Conference Presentations]

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| 2015 | Reviewer - Dalhousie University Research in Medicine Day [Conference Presentations] |
| 2013 | PhD External Examiner - University of Toronto [Thesis or Dissertation] |
| 2010 - 2011 | Reviewer - European Journal of Pain [Journal] |
| 2004 | Reviewer - Chronic Pain Services, The Ottawa Hospital, Ottawa, ON |
| 2004 | Reviewer - Current Medical Research and Opinion [Journal] |
| 2003 - 2004 | Reviewer - The Physicians' Services Incorporated Foundation [Journal] |
| 2002 | Reviewer - Chronic Pain Services, Calgary Health Region, Calgary, AB |
| 1999 | Reviewer - The Physicians' Services Incorporated Foundation [Journal] |
| 1997 - 2000 | Reviewer - Canadian Medical Association Publications [Journal] |
| 1997 - 2006 | Reviewer - Canadian Medical Association Journal [Journal] |
| 1996 | Reviewer - Canadian Pharmceutical Association [Journal] |
| 1994 | Reviewer - Department of Anesthesia, Anesthesia Work Stations, Health Sciences Centre, St. John's, NL |
| 1994 - 2004 | Reviewer - Pain [Journal] |
| 1992 - present | Reviewer - Canadian Journal of Anesthesia [Journal] |
| 1991 - 2005 | Reviewer - Medical Research Council of Canada/CIHR [Funding Application] |

## Editorial Member Activities

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|---|---|
| 1994 - 1998 | Canadian Anesthesiologists' Society [Newsletter] - Journal |
| 1994 - 2015 | Pain Research and Management, Journal of the Canadian Pain Society - Journal |

## Committee Membership

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| 2016 | Investigation Committee D [Member] - College of physicians and Surgeons of Nova Scotia |
| 2016 - present | Board of Directors [Past President] - Canadian Consortium for the Investigations of Cannabinoids |
| 2014 - 2016 | Board of Directors [President] - Canadian Consortium for the Investigation of Cannabinoids |
| 2013 - 2014 | Tier 2 Canada Research Chair In Pain Search And Selection Committee [Member] - Dalhousie University |
| 2013 | National Pain Strategy Steering Committee [Co-Chair] - National Pain Strategy |
| 2013 - 2016 | Clinical Advisory Group [Member] - Drug Information System Program, Nova Scotia Department of Health and Wellness |

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| 2012 | Data Safety Monitoring Committee TEC 006 [Chair] - Wex Pharmaceuticals |
| 2012 - 2015 | Dalhousie University Pain Chair Planning Group [Co-Chair] |
| 2011 - 2015 | Cannabinoid Research Network Atlantic [Member] |
| 2011 - 2014 | Faculty Council [Member] - Faculty of Medicine, Dalhousie University |
| 2011 - 2016 | Investigations Committee A [Member] - College Of Physicians And Surgeons Of Nova Scotia |
| 2011 - 2015 | Research Operational Committee [Member] - Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University |
| 2011 | Pain Review [Chair] - Canadian Pain Society |
| 2011 | National Centres For Excellence Canadian Pain Network Application Steering Committee [Member] |
| 2011 - 2015 | Dalhousie Pain Group Working Group [Co-Chair] |
| 2010 | Chronic Pain Services [Co-Chair] - Capital Health |
| 2010 - 2011 | Engaging Health System Decision Makers In Supporting Chronic Pain Management In Provincial And Territorial Healthcare Systems In Canada Steering Committee [Member] - McMaster Health Forum |
| 2010 - 2012 | ACE III Steering Committee [Member] - Canadian Consortium for the Investigation of Cannabinoids |
| 2010 - 2013 | Canadian Pain Coalition [Member] |
| 2010 - 2013 | Canadian Pain Summit 2012 [Co-Chair] |
| 2010 - 2014 | Provincial Advisory Council For Chronic Pain Services [Member] - Nova Scotia Department of Health and Wellness |
| 2010 | Executive Council [Member] - Department of Anesthesia |
| 2010 | Policy And Operations Committee [Member] - Department of Anesthesia |
| 2010 | Managing And Medical Directors Committee [Member] - Department of Anesthesia |
| 2010 - 2012 | Scientific Program Committee [Member] - Canadian Pain Society |
| 2010 - 2015 | Organizing Committee [Member] - Annual Atlantic Provinces Interdisciplinary Pain Conference. |
| 2010 - 2011 | Pain Services Program Advisory Committee [Co-Chair] - Capital Health |
| 2010 - 2013 | Information Management Steering Committee [Member] - Department of Anesthesia |
| 2010 | North America Emerging Analgesia Network [Member] |
| 2010 - 2015 | Student Travel Award/Student Reserach Grant [Member] - Canadian Consortium for the Investigation of Cannabinoids |

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| 2009 | Centre Development And Evaluation Committee [Co-Chair] - Alberta Health Services |
| 2009 - 2010 | Board Of Directors [Member] - Explainpain.ca |
| 2009 - 2010 | National Opioid Use Guideline Group [Member] |
| 2009 - 2010 | Stakeholder Dialogue Re Supporting Chronic Pain Management In Provincial Health Systems Across Canada Steering Committee [Member] - McMaster Health Forum |
| 2009 - 2012 | Curriculum Elaboration Committee [Member] - Canadian Consortium for the Investigation of Cannabinoids |
| 2009 - 2013 | SIG On Education Interprofessional Curriculum Resources Committee/Task Force [Co-Chair] - Canadian Pain Society |
| 2009 | SIG On Function And Rehabilitation [Chair] - Canadian Pain Society |
| 2008 - 2010 | National Opioid Use Guideline Group (NOUGG) Advisory Panel [Member] - College of Physicians and Surgeons of Alberta (CPSA) |
| 2008 - 2013 | Pfizer Neuropathic Pain Research Awards Committee [Chair] |
| 2008 - 2010 | Western Provinces Prescribing Program Development Committee [Member] - Western Provinces Prescribing Program |
| 2008 - 2015 | National Task Force On Service Delivery [Co-Chair] - Canadian Pain Society |
| 2007 | Chronic Pain, It Takes Nerve [Chair] - Neuropathic Pain and Chronic Pain Conference |
| 2007 - 2009 | Regional Bone And Joint Health Program [Member] - Alberta Health Services |
| 2007 | Tramadol Scheduling Working Group [Chair] - Canadian Pain Society |
| 2007 - 2010 | Canadian Consortium For The Investigation Of Cannabinoids [Member] |
| 2007 - 2010 | Prescribing Program Working Group [Member] - College of Physicians and Surgeons of Alberta (CPSA) |
| 2007 | Selection Committee Director CPC [Member] - Calgary Health Region |
| 2006 - 2007 | Wait Times Task Force [Member] - Canadian Pain Society |
| 2006 | CPC Retreat [Member] - Calgary Health Region |
| 2005 - 2006 | Accreditation Committee [Member] - Regional Pain Program |
| 2005 - 2015 | SIG On Neuropathic Pain [Member] - Canadian Pain Society |
| 2005 | Annual Meeting Local Arrangements Committee [Member] - Canadian Pain Society |
| 2004 - 2009 | Executive Committee [Member] - Chronic Pain Centre |
| 2004 - 2009 | CPC Leadership Committee [Chair] - Alberta Health Services |

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| 2004 - 2009 | Regional Pain Program Steering Committee [Member] - Alberta Health Services |
| 2004 - 2009 | Neuromodulation Program Steering Committee [Member] - Alberta Health Services |
| 2004 - 2008 | Network Investigator [Member] - Canadian Arthritis Network |
| 2004 | Scientific Advisory Panel Neuropathic Pain [Member] - Health Canada |
| 2004 | CPC Retreat [Member] - Calgary Health Region |
| 2003 - 2004 | Review [Co-Chair] - Chronic Pain Services |
| 2002 - 2003 | Department Of Radiology Survey And Search Committee [Chair] - Dalhousie University |
| 2002 - 2003 | National Centres Of Excellence (NCE) Application Steering Committee [Member] - The Canadian Pain Mechanisms |
| 2002 - 2004 | AIF And CFI Application Steering Committee [Member] - Canadian Consortium for the Investigation of Cannabinoids in Human Therapeutics |
| 2002 - present | Canadian Pain Trials Network [Member] |
| 2002 - 2003 | CFI Application Committee [Member] - Canadian Pain Trials Network |
| 2002 - 2004 | Canadian Pain Coalition [Member] |
| 2002 - 2003 | Canadian Pain Coalition [Co-Chair] |
| 2002 - 2003 | Search Committee [Member] - CIHR Junior Chair in Pain, Dalhousie University |
| 2002 | Pain Summit (Ottawa) Organizing Committee [Member] - Canadian Pain Society |
| 2002 - 2006 | Consumer Consultation Workshop (Canadian Pain Coalition) [Co-Chair] - Canadian Pain Society |
| 2001 | Anesthesia Care Integration Team [Member] - Queen Elizabeth II HSC |
| 2001 | Local Arrangements Committee [Member] - CAS annual meeting |
| 2001 - 2004 | Board Of Directors [Member] - North American Chronic Pain Association of Canada |
| 2000 - 2004 | Cabinet [Member] - Department of Anesthesia |
| 2000 - 2002 | Committee On Continuing Professional Development [Member] - CAS |
| 2000 - 2003 | By Law And Constitution Committee [Member] - CAS |
| 2000 - 2004 | Research Advisory Committee [Chair] - Canadian Pain Society |
| 2000 | Anesthesia Fee Review Task Force [Member] - Doctors Nova Scotia |
| 2000 - 2008 | Committee For Pain Relief [Member] - World Federation of Societies of Anaesthesiologists |
| 2000 - 2002 | CFI Application Steering Committee [Member] - The Canadian Pain Mechanisms |

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| 2000 - 2007 | Executive Director [Member] - Canadian Consortium for the Investigation of Cannabinoids in Human Therapeutics |
| 1999 - 2003 | Promotions Committee [Chair] - Department of Anesthesia |
| 1999 - 2000 | Search Committee [Member] - Palliative Care Physician |
| 1999 - 2002 | Continuing Professional Development Assessor [Member] - RCPSC |
| 1998 | Search Committee [Member] - Dean of Medicine |
| 1998 - 2003 | The Canadian Pain Mechanisms [Member] - Diagnosis and Management Consortium |
| 1998 - 2006 | Task Force IV Knowledge Transfer To Pain Management [Co-Chair] - The Canadian Pain Mechanisms |
| 1998 - present | Canadian Consortium For The Investigation Of Cannabinoids In Human Therapeutics [Member] |
| 1997 - 1998 | Working Group On Organizational Affairs [Member] - CAS |
| 1997 - 1998 | Task Force National Standards Of Accreditation For Organizations Providing CME Programs [Member] - RCPSC |
| 1997 - 2000 | Committee Of Presidents [Member] - Internnational Association for the Study of Pain |
| 1996 | Same Day Surgery Rationalisation Committee [Co-Chair] - QEII HSC |
| 1996 - 1997 | Same Day Admission/Ambulatory Surgery Program [Member] - QEII HSC - Medical Director |
| 1996 - 2001 | Working Group On Bylaws [Chair] - CAS |
| 1996 | Task Force On Physicians Who Over Prescribe [Member] - Doctors Nova Scotia |
| 1996 - 1997 | Working Group The Role Of Learning Portfolios In Continued Learning In The Health Professions [Member] - RCPSC |
| 1996 - 1997 | Working Group Critical Thinking And MOCOMP [Member] - RCPSC |
| 1996 | Nominating Committee [Member] - World Federation of Societies of Anaesthesiologists (WFSA) |
| 1996 - 2000 | 12th World Congress Of Anaesthesiologists Board Of Directors [Member] - WFSA |
| 1996 - 2000 | Advisor [Member] - Assistance for Physicians Prescribing Narcotics and Controlled Drugs |
| 1996 - 2000 | Promotions And Marketing Subcommittee [Chair] - 12th World Congress Of Anaesthesiologists Organizing Committee |
| 1996 | Appointed Delegate For Canada [Member] - General Assembly, World Federation of Socities of Anesthesia |
| 1995 | Phi Rho Sigma Medical Society Education Day [Chair] - Department of Anesthesia |
| 1995 - 1996 | Faculty Of Medicine Promotion And Tenure Committee (Clinical) [Chair] - Dalhousie University |

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| 1995 | Department Of Medicine Search Committee [Member] - Dalhousie University |
| 1995 - 2001 | Vision 2000 Against Pain [Member] - Dalhousie University |
| 1995 | Clinical Task Force Clinical Programs Group Chronic Pain [Chair] - QEII HSC |
| 1995 | Clinical Task Force Clinical Programs Group Ambulatory Care [Co-Chair] - QEII HSC |
| 1995 - 1996 | Scheduling Project Group Anesthesia [Member] - Queen Elizabeth II HSC |
| 1995 | Selection Committee [Member] - Same Day Surgery Programme |
| 1995 - 1996 | Strategic Implementation Work Group (Governance Of Society) [Chair] - CAS |
| 1995 - 1998 | Committee Of Section Representatives [Chair] - CAS |
| 1995 | ASPENS Survey Team [Member] - South Shore Health Association |
| 1995 - 2000 | 12th World Congress Of Anaesthesiologists Organizing Committee [Member] - WFSA |
| 1994 - 1995 | Surgical Benchmarking Project (with Conference Of Canada) Team Leader [Member] |
| 1994 - 1996 | Chronic Pain Management Implementation Committee [Chair] - QEII HSC |
| 1994 - 1996 | Pre Admission Clinic/Same Day Surgery Program [Member] - QEII HSC - Medical Advisor |
| 1994 - 1998 | MOCOMP Advisory Committee [Member] - The Royal College of Physicians and Surgeons of Canada (RCPSC) |
| 1994 - 2003 | Regional Advisory Committee 5 [Member] - RCPSC |
| 1994 - 1998 | Planning Committee [Member] - Annual MOCOMP Conferences (2nd |
| 1994 | Resident Poster Presentations [Chair] - CAS Annual Meeting |
| 1993 - 1997 | Faculty Of Medicine Promotion And Tenure Committee (Clinical) [Member] - Dalhousie University |
| 1993 - 1996 | Ambulatory Care Committee [Chair] - Queen Elizabeth II HSC |
| 1993 - 1995 | Same Day Surgery Implementation Committee [Chair] - Queen Elizabeth II HSC |
| 1993 - 1996 | Medical Advisory Committee [Member] - Queen Elizabeth II HSC |
| 1993 - 1998 | Committee On Organizational Affairs [Member] - CAS |
| 1993 | Local Arrangements Committee [Member] - CAS annual meeting |
| 1993 - 1998 | Executive Committee [Member] - Canadian Anesthesiologists' Society (CAS) |
| 1993 - 1998 | Finance Committee [Member] - Canadian Anesthesiologists' Society |
| 1993 - 1997 | Committee Of Public Information And Education [Member] - International Association for the Study of Pain (IASP) |

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| 1993 - 1998 | MOCOMP Expert Group Educational/Publications [Member] - RCPSC |
| 1993 - 1994 | Task Force On Same Day Surgery [Member] - Metropolitan Hospital Advisory Committee |
| 1992 - 1997 | Executive Council [Member] - Department of Anesthesia |
| 1992 - 1993 | Ambulatory Care Committee [Co-Chair] - Queen Elizabeth II HSC |
| 1992 - 1993 | Review Of Pain Management Services (Acute + Chronic) [Chair] - QEII HSC |
| 1992 - 1995 | ICU Committee [Member] - Queen Elizabeth II HSC |
| 1991 - 1996 | Ambulatory Care Committee [Member] - Queen Elizabeth II HSC |
| 1991 | Selection Committee [Member] - PACU Head Nurse |
| 1991 - 1994 | Liaison PACU/Anesthesia [Member] - Queen Elizabeth II HSC |
| 1991 - 1993 | Committee On Medical Economics [Member] - CAS |
| 1991 - 1993 | Council [Member] - Nova Scotia Representative |
| 1991 - 1994 | Task Force To Develop An Educational Program For Physicians Who Over Prescribe Narcotics And Mood Altering Drugs [Member] - Health Canada |
| 1991 - 1992 | Task Force On Palliative Care [Member] - Metropolitan Hospital Advisory Committee |
| 1990 | Atlantic Regional Meeting [Chair] - CAS |
| 1990 - 2002 | Maintenance Of Competence Program (MOCOMP) CAS And The Royal College Of Physicians And Surgeons Of Canada (RCPSC) [Member] |
| 1990 - 1999 | MOCOMP Co Ordinator [Member] - Anesthesia |
| 1989 - 2002 | Research Committee [Member] - Department of Anesthesia |
| 1989 - 1993 | Committee On Continuing Education [Chair] - CAS |
| 1989 - 1993 | Committee On Research Awards Advisory [Member] - CAS |
| 1989 - 1995 | Annual Meeting Scientific Programme Committee [Member] - CPS |
| 1989 - 1995 | Annual Meeting Local Arrangements Committee [Member] - CPS |
| 1988 | Department Of Radiation Oncology Survey And Search Committee [Member] - Dalhousie University |
| 1988 - 1995 | Specialty Training Committee [Member] - Department of Anesthesia |
| 1988 - 2004 | Acting Director/Director [Member] - Pain Management Unit |
| 1988 | Local Arrangements Committee [Chair] - CAS annual meeting |
| 1988 - 1991 | Committee On Organizational Affairs [Member] - CAS |

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| 1987 | Anesthesia Services Programme Encompassing Nova Scotia (ASPENS) [Chair] - Doctors Nova Scotia |
| 1987 - 1989 | Joint Committee To Review New Fees [Member] - NS Health Services and Insurance Commission and the Medical Society of NS |
| 1986 - 1991 | Blood Transfusion Committee [Member] - Queen Elizabeth II HSC |
| 1986 | Scientific Programme Committee [Member] - Atlantic Regional Meeting |
| 1986 | Annual Meeting Scientific Programme Committee [Member] - CPS |
| 1986 - 1989 | Membership Committee [Member] - Canadian Pain Society |
| 1986 - 2004 | Executive Committee [Member] - Canadian Pain Society |
| 1986 - 1989 | New Procedures Fee Subcommittee [Chair] - Doctors Nova Scotia |
| 1985 - 1987 | Nominating Committee [Member] - The Canadian Pain Society (CPS) |
| 1985 | Joint International Meeting Of The CPS And The Intractable Pain Society Of Great Britain And Ireland Scientific Programme Committee [Chair] |
| 1985 | Local Organizing Committee [Member] - CPS |
| 1984 - 1986 | Clinical Appraisal Committee [Member] - Queen Elizabeth II HSC |
| 1982 - 1984 | Ambulatory Care Committee [Member] - Queen Elizabeth II HSC |
| 1975 - 1976 | Subcommittee On Family Medicine [Chair] - Canadian Association of Interns and Residents |

## Professional Associations

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|---|---|
| 2016 - present | Board of Directors, Canadian Consortium for the Investigation of Cannabinoids [Past President] |
| 2014 - 2016 | Board of Directors, Canadian Consortium for the Investigation of Cannabinoids [President] |
| 2012 - 2014 | Board of Directors, Canadian Consortium for the Investigation of Cannabinoids [President Elect] |
| 2004 - 2010 | Member, Alberta Medical Association |
| 2000 - 2003 | Past President, Canadian Pain Society |
| 2000 - present | Founding Member, Canadian Consortium for the Investigation of Cannabinoids |
| 1997 - 2000 | President, Canadian Pain Society |
| 1994 - 1997 | President Elect, Canadian Pain Society |
| 1993 - 1998 | Secretary, Canadian Anesthesiologists' Society |
| 1991 - 1994 | Member, Nova Scotia Medical Legal Society |

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|---|---|
| 1990 - 1992 | Member, Society for Education in Anesthesia |
| 1989 - 1994 | Vice-President, Canadian Pain Society |
| 1988 - 1990 | Chair, NS Division, Canadian Anesthesiologists' Society |
| 1988 - 1990 | Chair, Anesthesia Section, Doctors Nova Scotia |
| 1986 - 1988 | Secretary/Treasurer, NS Division, Canadian Anesthesiologists' Society |
| 1986 - 1988 | Secretary/Treasurer, Anesthesia Section, Doctors Nova Scotia |
| 1986 - 1989 | Treasurer, Canadian Pain Society |
| 1985 - 1986 | President, Alumni Association of Alpha Eta Chapter, Phi Rho Sigma Medical Society |
| 1984 - 1989 | Member, American Society of Anesthesiology |
| 1984 - 2000 | Member, American Society of Regional Anesthesia |
| 1983 - 1987 | Executive member, Alumni Association of Alpha Eta Chapter, Phi Rho Sigma Medical Society |
| 1982 - present | Member, Doctors Nova Scotia |
| 1982 - present | Member, Canadian Medical Association (CMA) |
| 1982 - present | Member, International Association for the Study of Pain (IASP) |
| 1982 - present | Member, The Royal College of Physicians and Surgeons of Canada (RCPSC) |
| 1982 - present | Member, Canadian Pain Society |
| 1980 | Resident Representative to Council, Canadian Anesthesiologists' Society (CAS) |
| 1978 - 2015 | Member, Canadian Anesthesiologists' Society |
| 1975 - 1976 | Vice-President, Intern-Resident Association of Nova Scotia |
| 1975 - 1976 | NS Representative to Board, Canadian Association of Interns and Residents |
| 1974 - 1975 | Treasurer, Intern-Resident Association of Nova Scotia |

## Supervision of Clinical Learners

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|---|---|
| 2014 - 2015 | Vladko Pelivanov [Fellow] |
| 2013 - 2014 | Kirsten Derdall [Fellow] |
| 2011 - 2012 | Magnus Breitling [Fellow] |
| 2010 - 2011 | Darlene Davis [Other] - CDHA/Faculty of Health Professions Dalhousie University |
| 2008 - 2009 | Jenny Bestard [Fellow] |

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|---|---|
| 2007 - 2008 | Darcy Bishop [Undergraduate Medical Student] |
| 2005 - 2006 | Lori Montgomery [Fellow] - Department of Family Medicine |
| 2002 | Erika Yazer [Summer Studentship] |
| 2001 | Crystal Doyle [Summer Studentship] |
| 2000 | Lisa Gammell [Summer Studentship] |
| 1996 | Theresa Harquail [Summer Studentship] |
| 1996 | Khrista Boylan [Summer Studentship] |

## Media Interviews

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|---|---|
| November 2014 | Information Morning [Radio] - CBC Radio |
| November 2014 | Hurting All Over [Online] - CanadianLiving.com |

## Event Organization

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|---|---|
| 2014 | Atlantic Pain Conference - Morning Session [Chair] - Department of Anesthesia, Pain Management and Perioperative Medicine |
| 2014 | Provincial Chronic Pain Services Meeting [Co-Chair] - Department of Anesthesia, Pain Management and Perioperative Medicine |
| 2014 | Atlantic Pain Policy Meeting [Co-Chair] - Department of Anesthesia, Pain Management and Perioperative Medicine |
| 2013 | Session Chair - Atlantic Pain Conference [Chair] - Department of Anesthesia, Pain Management and Perioperative Medicine |
| 2012 | Canadian Pain Summit [Co-Chair] - Canadian Pain Summit |
| 2010 - 2015 | Annual Atlantic Pain Conference - Dalhousie University/Nova Scotia Health Authority |
| 1985 | Joint International Meeting of Canadian Pain Society and Intractable Pain Society of Great Britain and Ireland [Co-Chair] - Canadian Pain Society |
| 1982 - 2011 | Events organised prior to 2012 included under Committees - Department of Anesthesia, Pain Management and Perioperative Medicine |

## Service and Advocacy

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|---|---|
| 2010 - 2013 | Medical Advisor, Canadian Pain Coalition [Volunteer] |
| 2002 - 2003 | Co-Chair, Canadian Pain Coalition [Leader] |

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|---|---|
| 2001 - 2004 | Member, Board of Directors, North American Chronic Pain Association of Canada [Volunteer] |
| 1997 - 1999 | Chair, Board of Governors, Halifax Grammar School [Leader] |
| 1995 - 2000 | Medical Advisor, North American Chronic Pain Association of Canada, NS Division [Volunteer] |
| 1993 - 1999 | Member, Board of Governors, Halifax Grammar School [Volunteer] |
| 1984 - 1985 | Centre for Child Studies, Dalhousie University [Treasurer] [Volunteer] |
| 1983 - 1985 | Centre for Child Studies, Dalhousie University [Board member] [Volunteer] |