Background

The Alberta Health Services (AHS) Provincial Psychology Professional Practice Council (PPPPC) identified an opportunity to support local efforts to advance clarity of the psychologists' role and evidence based practice in health care. Each of these resources is developed independently by AHS psychologists, and reviewed by the AHS PPPPC. We are pleased to share this information to support both psychologists' practice and leaders' awareness of the quality and cost-effective impacts psychologists can bring to programs, to further quality, patient and family centred care.

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The Role of Psychologists on Chronic Pain Health Care Teams

Psychologists provide

- Based on the evidence for numerous psychosocial factors in chronic pain, psychologists provide:
  - Screening, formal assessment, diagnosis of psychological disorders, and treatment recommendations for psychological disorders that result from, co-occur with, and perpetuate chronic pain.
  - Psychological-based pain management treatments with outcomes of reduced pain, improved quality of life, and improved mood; evidence-based treatments include Cognitive Behavioural Therapy (CBT), Acceptance and Commitment Therapy (ACT) and other Mindfulness-Based Therapies, and Pain Neuroscience Education.
  - Evidence-based psychological first line interventions that are highly effective in treating co-morbid mental health disorders that are common in a chronic pain population, including depression, anxiety, PTSD, and personality disorder features.
  - Psychological interventions aimed at addressing pain-specific psychological factors

including fear avoidance, pain catastrophizing, perceived injustice, problematic spousal/family responses, lack of acceptance, and opiate misuse that interfere with achieving gains in multidisciplinary rehabilitation programs.
- Additional psychological interventions aimed at addressing significant co-occurring symptoms secondary to chronic pain, such as fatigue, attention and memory complaints, sleep disturbance (insomnia), and sexual dysfunction.
- Methods of health behavior change (e.g., Motivational Interviewing) to enhance patient adoption and maintenance of self-management skills to improve chronic pain and decrease medical utilization.
- Consultations to multidisciplinary team providers in the management of patients regarding psychological disorders, patient-provider communication, and adherence/readiness for behavior change.
- Program development and evaluation services such as determination of program outcomes, enhancement of provider effectiveness, and development of treatment groups.
- Research support and initiatives such as determining factors that impede or facilitate patient adherence and treatment outcomes.
- Ethical consultation concerning patient and family functioning within a multidisciplinary team environment, including the family physician.

Chronic Pain: Definition, Prevalence and Classification

- Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in such terms [1]. Chronic pain is viewed as pain that persists beyond normal healing time, typically 3 to 6 months, and thus no longer serves an acute warning function.
- In Canada, prevalence for adults is 18.9% with higher prevalence for older adults (46 years and more), older female more so than males, duration of 10 years or more (one-half of respondents) and severe intensity (one-third of respondents) [2].
- Classification systems for chronic pain vary according to location, etiology, and involved pathophysiological mechanisms [1, 3]. Tertiary pain management services typically provide multimodal interdisciplinary (as defined by International Association of the Study of Pain Task Force on Multimodal Pain Treatment Defines Terms for Chronic Pain Care, Dec 14, 2017) programs for chronic non-cancer pain that can include but is not limited to musculoskeletal, neuropathic pain, visceral (e.g., pelvic), headache and orofacial pain.

Psychosocial Impact

- In addition to the pain itself, chronic pain has far-reaching negative consequences in most if not all domains of life [4,5], including a decline in mental health, interference in daily activities and work life, strain in close relationships, social isolation, frequent contact with the health care system, and experiencing the suffering associated with pain stigma and disbelief [6].

Mental Health Disorders

- **Depression** and **anxiety** are the most frequently represented mental health correlates of chronic pain with **stress** represented in fewer studies [4]. Lifetime prevalence of major depression in chronic pain patients ranges from 32% to 57% [7] and amongst medical conditions, the prevalence of depression in chronic pain appears to be highest [8]. Anxiety disorders, particularly **Post Traumatic Stress Disorder (PTSD)**, Panic Disorder, Generalized Anxiety Disorder and Social Anxiety Disorder frequently co-occur at rates of 25%-29% in treatment seeking samples [9]. Some pain groups such as fibromyalgia shower higher rates of anxiety disorders compared to low back pain or rheumatoid arthritis [4]. Physical pain is a consistent risk factor for **suicidality** including wish for death, suicide thoughts, suicide plan, suicide attempt, and suicide death]10]. One in four patients who present to a chronic pain service report suicide ideation [11, 12].
- Other psychological complaints that accompany chronic pain include **anxiety about pain**, **somatization** (i.e., the reporting of multiple physical symptoms), **anger/hostility**, **low self-efficacy**, **lowered self-esteem**, and **high emo-**

tional distress [13]. Intrapersonal psychological themes include an **undermining influence of pain** and **disempowerment** [14].

Significant Disability and Reduced Quality of Life

- Pain intensity and duration of pain are significantly linked to disability (i.e., broadly defined as an impairment in one's physical and/or mental well-being) which substantially affects a person's life activities in domains including but not limited to self-care, activity level, mobility, relationships and roles [4, 16].
- Significant additional physical and cognitive symptoms that accompany chronic pain include **fatigue** [16], **sleep disturbance** [17], and **memory and attention complaints** [18].
- Quality of life indicators are low, including perceived health status [15]. Individuals with non-specific chronic pain may have a lower quality of life than palliative cancer patients [4].

Problems with Work, Family and Social Relationships

- Work-related consequences include absenteeism, medical leaves, loss of employment, change of occupational duties [5], and health-induced performance limitations [19].
- Chronic pain has significant ramifications for family and social relationships. Chronic pain patients report restricting social/leisure activities and family events, having negative and strained communication with others, and experiencing high stress in the family. Couples' relationships are particularly impacted with a 'self-perceived burden' that leads to guilt, distress, feelings of responsibility, and a diminished sense of self [5]. Moreover, chronic pain significantly impacts women's and men's quality of life in the domain of sexual function [20, 21].

Pain Stigma, Problems with the Health Care System, and Opioid Misuse

- Pain stigma is significant in western culture yet seldom recognized for its consequences, which can include interference with care-seeking, rehabilitation participation, and treatment outcomes [22]. Problems encountered by pain patients in the health care system include unsatisfying relationships with healthcare professionals [14], and problems with communication, diagnosis and treatment [23]. While opioid use in the treatment of chronic pain has been intended for benefit to patients, recent increases in prescription rates and the consequent harms for morbidity and mortality has raised questions concerning misuse, abuse, and addiction [24].

Psychological Factors in the Onset and Maintenance of Chronic Pain

Depression

- In primary care settings, up to half of chronic pain patients with major depression are not properly diagnosed with depression. When these two conditions co-occur, outcomes for both conditions are worse, with more pain complaints, greater disability, lower quality of life, decreased work function, and increased health care utilization [7].
- In tertiary care populations, pain-specific risk factors for suicide include pain location, longer duration of pain, poor sleep quality, poorly perceived mental health, being unemployed or on disability leave, illicit drug use as a form of pain relief, and helplessness [12].

Post-Traumatic Stress Disorder

- Although a direct association between abuse (childhood and adulthood) and chronic pain is not clear [25, 26], there is a strong clinical literature base that attests to the frequent coexistence of chronic pain and **PTSD** [27, 28], and that individuals with PTSD and chronic pain may have altered sensory processes [29].
- Individuals exposed to trauma are almost three times more likely to have functional somatic syndromes, including fibromyalgia and chronic widespread pain [30].
- Chronic pain and posttraumatic stress disorder may be mutually maintaining conditions, with both involved in the escalation of symptoms and distress following exposure to trauma; emotional trauma may be a risk factor for the development and maintenance of chronic pain, and chronic pain likewise may be a risk factor for the development and maintenance of post-traumatic stress disorder [31].

Fear Avoidance and Pain Catastrophizing

- **Fear avoidance** concerns the anxiety, fear, and threats associated with pain as well as subsequent pain disability, affective distress, physical disuse and deconditioning, and behavioral avoidance [32]. Evidence for this model of chronic pain is substantive, based on cross-sectional studies, prospective studies, and structural equation modeling indicating that pain-related fear plays a role in the development of disability [33].
- **Pain catastrophizing,** a cognitive-based component of fear avoidance with subcomponents of magnification, helplessness, and rumination, has been found to be an independent predictor of functional disability beyond pain level [34].

Sleep Disturbance

- Sleep disturbance in chronic low back pain impacts numerous dimensions of sleep including duration, daytime function, sleep satisfaction and distress, sleep efficiency, and ability to fall asleep [35]. Beyond this association, some pain conditions (e.g., fibromyalgia) may have a direct physiological effect on the sleep-wake system [36]. Among chronic pain patients, higher opioid doses appear to be a risk factor for sleep apnea [37].

Other Psychosocial Factors

- **Spousal responses to pain behaviors** are consistently related to a variety of pain dimensions including pain severity, pain behaviors, pain disability, and pain cognitions, while marital functioning variables (marital satisfaction, spousal support) are related to psychological distress; specifically, depressive symptoms [38]. For example, over-solicitous and negative spousal responses are positively associated with pain severity.
- **Perceived injustice** or the appraisal of pain-related damages (including severity, losses, and unfairness) following injury is associated with increased pain intensity, functional disability, and psychological distress [39]. Moreover, perceived injustice is known to negatively impact the therapeutic alliance with providers [40].
- Patients who experience **acceptance** of chronic pain show greater confidence in coping, higher daily function, less depression, and less pain [41]. Factors that facilitate acceptance include diagnosis, social support, education of self and others, and self-care. Factors that hinder acceptance include struggling to restore pre-pain identity, negative impacts on relationships, others not accepting pain, and the unspoken message that pain is "all in their head" [42].

Assessment Services

- Psychological assessment of pain is considered a core component of the curriculum for treating pain [43], with practice guidelines advocating for the inclusion of comprehensive psychological assessment in the treatment of chronic pain patients. One such example comes from the Society for Obstetricians and Gynecologists of Canada [44] concerning chronic pelvic pain.
- In addition to gathering a basic social history, a **clinical interview** should review the patient's understanding and experience of pain, including pain description and history (i.e., onset; quality, intensity, and frequency of pain; course of pain over time; pain triggers; past treatments), beliefs about the cause of pain, functional impact, pain modulators, adaptive and maladaptive coping strategies (including possible substance misuse), couple and family functioning, psychosocial context, mental health/psychiatric status, and treatment expectations [45].
- Pain-specific **brief screening measures** and more **comprehensive assessment tools** may be employed, and include, but are not limited to: McGill Pain Questionnaire (MPQ), Multidimensional Pain Inventory (MPI), Short-Form MPI (SF-MPI), Pain Disability Index (PDI), Tampa Scale of Kinesiophobia (TSK), Pain Catastrophizing Scale (PCS), Chronic Pain Coping Inventory (CPCI), Coping Strategies Questionnaire (CSQ), Pain Stages of Change Questionnaire (PSOCQ), Pain Self-Efficacy Scale (PSES), Oswestry Index (OI), and Neck Disability Index (NDI), [45, 46, 47].
- **Other helpful measures**, though not pain-specific, include: Adult Symptom Report (ASR), Beck Depression Inventory (BDI-II), Patient Health Questionnaire-9 (PHQ-9), Beck Hopelessness Scale (BHS), General Anxiety Disorder-7 (GAD-7), State-Trait Anxiety Inventory (STAI), Beck Anxiety Scale (BAI), Clinician-Administered PTSD Scale for DSM-5 (CAPS-5),

PTSD Checklist – Civilian (PCL-C), Insomnia Severity Index (ISI), Minnesota Multiphasic Personality Inventory (MMPI), Personality Assessment Inventory (PAI), Millon Clinical Multiaxial Inventory (MCMI-IV), Personal Capacities Questionnaire (PCQ), Sickness Impact Profile (SIP), and World Health Organization Disability Assessment Schedule 2.0 (WHODAS) [45, 46, 47].

Psychology Services and Interventions

Interdisciplinary Treatment including the Psychologist

- Almost three decades of research overwhelmingly demonstrates that interdisciplinary chronic pain programs based on a psychosocial model of chronic pain is superior to stand-alone conventional medical treatment from both a cost-perspective [48,49] and positive treatment outcomes [50, 51, 52, 53].
- Despite ample evidence that psychological factors [54] and subsequent treatments are effective for various types of chronic pain [55, 56], psychological treatment within a comprehensive pain program is employed infrequently and often too late, for example, when pharmacological therapy has failed [57]. Interdisciplinary treatment approaches that include a psychological component have been found to have positive short-term effects on pain interference and positive long-term effects on return to work among those with chronic low back pain [58].
- Although interdisciplinary chronic pain treatment centres are difficult to evaluate [59], stakeholders argue for delivery of interdisciplinary treatment that truly encompasses all aspects of the biopsychosocial model [57, 60, 61]. Finally, national and international advocacy continues to call for a broad pain strategy including psychology [62, 63].

Psychologist as Consultant

- With the challenge and frustration experienced by interdisciplinary teams and other health care providers when treating chronic pain, psychologists consult regarding recognition and management of pain stigma, maladaptive beliefs and attitudes about pain and treatment, mental health disorders and personality disorder features [64,65], and common interaction problems between patients and providers [66].

Pain Neuroscience Education

- Following early models of understanding chronic pain [67] current models elaborate on central nervous system processes [68] and support the use of pain neuroscience education for chronic musculoskeletal disorders for reducing pain, improving patients' knowledge, improving function, lowering disability, reducing psychosocial factors, enhancing movement, and minimizing health care utilization [69,70] although such education is likely not a stand-alone intervention but rather best delivered in conjunction with other pain management approaches [71].

Cognitive-Behavioral Treatment

- Cognitive-behavioral treatment (CBT) has emerged as a first-line psychological treatment for chronic pain based on three decades of research showing moderate effects on mood and catastrophizing and small effects on pain and disability [72]. This body of research has included several common pain locations such as chronic back pain, headache, orofacial pain, and various populations, including older adults, rural population, spinal cord injury, and multiple sclerosis.
- Beyond having established broad applicability and effectiveness, and with regard for the wide heterogeneity of chronic pain patients, the question becomes what works for whom? [73]. Individuals with an interpersonally distressed profile on the Multidimensional Pain Inventory (MPI) and those with relatively lower expectations for the value of self-management of chronic pain benefitted the least from CBT treatment [74].

Acceptance and Commitment Therapy (ACT) and Other Mindfulness-Based Interventions

- Acceptance and Commitment Therapy (ACT), within the family of CBT, shows medium effects in a range of outcomes including improved physical and social functioning, and decreased medical visits [75]. Two recent meta-

analytic reviews of acceptance- and mindfulness-based interventions for chronic pain concluded that ACT and mindfulness-based interventions were good but not superior alternatives to CBT [76, 77].
- Two reviews of mindfulness-based stress reduction (MBSR) concluded that while MBSR is unlikely to reduce pain severity or disability, it may improve pain acceptance and one's ability to live with chronic pain [78, 79]. A most recent review of RCTs concluded that mindfulness is associated with a small decrease in pain, decreased depression scores, improved physical health-related quality of life, and improved mental-health related quality of life, with mixed results for analgesic use [80].

Psychologist-Facilitated Group Treatment

- Group treatment utilizing CBT is a major form of psychological treatment for chronic pain [81] with outcomes of reduced pain intensity, improved physical function, increased self-efficacy, and improved global health [82]. Professionally-led behavior change groups appear to be superior [83] to patient education, social support groups, and peer-led self-management groups [84].
- ACT-based groups for tension-type headache and chronic migraine, showed reduction in disability and affective distress [85]. With broad chronic pain samples in an interdisciplinary setting, ACT groups showed improvements in depression, pain-related anxiety, physical and psychological disability, medical visits and pain intensity, further hypothesizing that the underlying change process may be enhanced psychological flexibility [86, 87].

Other Psychological Treatments

- Evidence for **hypnosis** has typically focused on acute pain associated with medical procedures; more recently, its efficacy for chronic pain has emerged [88]. Two general findings from this literature show that response to hypnosis treatment is highly variable and benefits extend beyond pain reduction to positive affect, relaxation, and increased energy [89].
- **Biofeedback and relaxation training** have been emphasized for headache and migraine management [90]. Biofeedback shows medium to large mean effect sizes in migraine and tension-type headaches for frequency, self-efficacy, mood symptoms, muscle tension, and medication consumption [91].
- Pain-related fear is associated with escape-avoidance behaviors which in turn contribute to disuse, deconditioning, and disability [92]. **Graded exposure** is more effective than graded activity at improving catastrophizing in the short term, while graded activity can significantly reduce disability in the short-and long-term compared to control conditions [93].
- Hypnosis and other pain treatments such as meditation, **sensory discrimination training**, **imagery, mirrors, virtual reality treatments**, **neurofeedback** and biofeedback have demonstrated evidence of neurophysiological mechanisms that involve frontal, parietal and limbic brain regions [94].

Health Behavior Change

- Health behavior change approaches such as **motivational interviewing** are intended to promote engagement in evidence-based psychological treatments and self-management of pain [95]. People with chronic pain benefit from making changes towards more complex adaptive pain coping behaviors but find it difficult to do so [96]. Motivational interviewing has been applied to opioid prescription adherence [97] and couple's dealing with chronic pain [98]. Other approaches to adherence emphasize the **patient-provider communication** process [99, 100].

Couple's Treatment

- The concerns of patients for their intimate relationships may not be fully addressed by traditional pain management programs [101, 102]. Spouse-assisted coping skills training [103] and/or couples therapy for those couples who report marital problems in addition to pain problems [104] has shown additive benefit.

Pain Impact on Sexual Function

- Treatment aimed at improving the sexual function of persons living with chronic pain is minimal or absent within interdisciplinary pain programs. CBT and sex therapy strategies in a group format led by a psychologist and a pelvic physical therapist showed improvement in enjoyment, lubrication, and satisfaction despite

no change in fatigue or pain level during penetration [105]. RCTs comparing CBT and medical interventions such as surgery or a topical steroid for women with dyspareunia showed that group CBT results in more positive outcomes on more dimensions and supports its consideration as a first-line treatment for provoked vestibulodynia [106, 107].

Supporting Opioid Taper

- Opioid use in the treatment of chronic pain is controversial. Evidence is insufficient to determine the effectiveness of long-term opioid therapy for improving chronic pain and evidence exists for dose-dependent risk for serious harm [108]. In chronic pain, harm includes reduced function and quality of life, diminishing analgesia, fractures, myocardial infarction, physiological dependence and subsequent withdrawal, misuse, abuse and addiction, and overdose (108, 109,110). At present, based on limited RCTS, no overall conclusions about the effectiveness of psychological or other interventions for opioid withdrawal and chronic pain per se can be drawn [111]. However, the authors conclude that both interdisciplinary programs and cognitive-behavioral therapy are noteworthy as key components of treatment.

Chronic Post-Surgical Pain and Transitional Pain Services

- Chronic post-surgical pain (CPSP) is a significant clinical problem impacting 10-50% of individuals after various surgeries such as groin hernia repair, breast and thoracic surgery, and coronary artery bypass, with severe chronic pain occurring in 2-10% of these individuals [112]. Pre-operative psychosocial predictors and correlates for CPSP include anxiety, depression, psychological vulnerability, stress, and late return to work [113]and especially pain catastrophizing beyond general anxiety or other pain-related anxiety [114, 115]. Implications for practice include preoperative screening with interventions to reduce the most sensitive psychological predictors [115]. Multidisciplinary hospital-based Transitional Pain Services, delivering an ACT group, showed greater reductions in opioid use, pain interference, and improved mood for an at-risk patient group, compared to a no-ACT group [116].

Chronic Pain and the Older Adult

- Pain remains under-diagnosed and undertreated in older persons due to a myriad of factors including personal barriers (e.g., cognitive, hearing, communication impairments) and cohort barriers (e.g., fears, attitudes, expectations) [117]. In contrast, psychological treatments for chronic pain among older adults are experienced as relevant, acceptable in content, and beneficial in reducing distress and disability [118, 119].

Web-Based Psychological Intervention for Chronic Pain

- Web-based psychological interventions, most often cognitive behavioral therapy (CBT), ranging from no to minimal to regular therapist assistance, show promise with outcomes of reduced pain and disability for headache conditions, and for non-headache conditions, reduced pain, reduced disability including at follow-up, and improvement in depression and anxiety [120, 121]. For low back pain, web-based interventions showed reduced catastrophizing and improved patient attitudes [122]. Programs that involve interactive components (vs. non-interactive components) are better at increasing patients' feelings of empowerment and preventing medication misuse [123].

Resources and Guidelines

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