Abstracts - Poster Session #1

Friday, October 13, 2017

16:00-17:00

1. **Pain assessment practices in Swedish and Norwegian neonatal care units**

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Objective: Structured pain measurement scales are considered a prerequisite for pain management but these scales are currently reported to be underutilized in clinical practice. The aim of this study was to describe and compare pain assessment practices and the current use of structured pain measurement scales in Norwegian and Swedish neonatal care units.

Design: A survey investigating practices regarding pain assessment and the use of pain measurement scales was sent to all neonatal units in Sweden and Norway (n = 55) in 2013-14. All Norwegian and 92% of Swedish units responded. The study was a replication of an earlier study1.

Results: A significantly higher number of Swedish than Norwegian units reported that they assessed pain (97% vs. 68%, p=0.007), used structured pain measurement scales (88% vs. 53%, p=0.008) and regularly documented pain assessment (85% vs. 53%, p=0.008). Facial expression, body movements, crying, respiration, muscle tone, and alertness were the most frequently used pain indicators in both countries. Different versions of ALPS were the most frequently used scales in Sweden while EDIN, ALPS-1 and PIPP the most frequently used scales in Norway. Norwegian units expressed more confidence in their pain assessment method and found the use of pain measurement scales more important than Swedish units.

Conclusions: The increased use of structured pain measurement scales in Swedish and Norwegian neonatal care units may be seen as a contribution towards better recognition and management of pain and potentially less suffering for vulnerable neonates. However; the finding that Swedish units use structured pain measurement scales more frequently and at the same time expressed less confidence in their chosen pain assessment method than Norwegian units warrants further investigation.

References:

1Gradin M, Eriksson M. Neonatal pain assessment in Sweden - a fifteen-year follow up. Acta Paediatr 2011; 100:204-8.

2. **Defining Treatments Necessary for Successful Management of Pediatric Chronic Pain in a Multidisciplinary Treatment Center**

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Objective: It has been shown that taking a multidisciplinary approach to pain management is more likely to result in improved functioning. To date, it is unclear which specialties must be involved. The goal of the study was to see if there was a correlation between a diagnosis and types of treatment necessary for success. If so, this information could be used to shape treatment plans for future patients.

Design: A retrospective chart review of new patients to the pain program between August 2014 and October 2016 was completed. Information such as age at evaluation, gender, race, diagnosis, and treatments used were collected. During this time span, the use of physical therapy, occupational therapy, psychology, and physician visits was examined. Success was determined subjectively by the physician and therapists involved in treatment with consideration for decreased healthcare utilization and improved functioning.

Participants: A total of 499 patients were reviewed, with 388 females and 111 males between the ages of 3 and 20, average age of 14.4 years old. Common diagnoses included headache, migraine, amplified musculoskeletal pain syndrome, complex regional pain syndrome, and abdominal pain.

Results: Of the 348 patients treated, 195 were considered successful (56%). All successful patients saw psychology during treatment. 110 (56%) had physical therapy and 29 (15%) had occupational therapy. Average number of visits for psychology, physical therapy, and occupational therapy were 5.7, 10.4, and 8.8, respectively.

Conclusion: Further analysis is necessary to determine statistical significance of this data. This data will also serve as the framework for future studies. Future plans include looking at the reduction in health care costs before compared to after completion of the multidisciplinary pain program. In addition, future directions should explore objective ways to determine success such as amount of school missed, return to regular activities, and missed work days by parents.

3. **Significant Reduction in Pain and Length of Stay with Adolescent Hip Preservation Surgery: The Impact of Pre-Operative Psychological Intervention**

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Objective: This is the first study to assess the impact of pre-operative psychological intervention on adolescent candidates for hip preservation surgery (HPS) in an integrated team approach.

Design: 37 HPS candidates (24 females; average age 16.3 years, range 12-18) diagnosed with a chronic hip condition were evaluated pre-operatively by psychology as part of an integrated team. Evaluation at the pre-operative psychology visits (average 2.5 visits, range 1-12) included: patient readiness and adherence, re-education of treatment plan, pain management, baseline psycho-social functioning, and coping. Patients completed measures pre- and 3 months postoperatively: Numerical Pain Rating Scale (NPRS); Child Health Questionnaire (CHQ-87) and the modified Harris Hip Score (mHHS). This cohort was matched to a cohort who was not evaluated by psychology to analyze the influence of psychology on length of stay (LOS).

Results: 74% of HPS candidates reported 1-3 years of symptoms prior to intervention. Patient-reported pain scores significantly improved at 3 month post-operative follow-up (current pain level: 3.82 to 0.5; -3.32; p=0.000; usual pain level: 4.08 to 0.95; -3.13; p=0.000; best pain level: 2.45 to 0.42; -2.03 p=0.0001; worst pain level: 6.37 to 2.08;-4.29; p=0.0000). Health-related quality of life scores (CHQ-87) also yielded statistically significant improvements: global health (72.24 to 81.84; 9.61; p=0.0246); physical functioning (65.5 to 76.89; 11.39; p=.0333); and bodily pain (41.05 to 76.84; 35.79; p=0.000). This cohort had significantly reduced LOS compared to matched cohort that did not have psychological intervention (3.7 days to 2.7 days; approximately 25%; p=0.000).

Conclusions: Adolescent HPS candidates in this cohort presented with chronic hip pain prior to intervention. Psychological involvement, as part of an integrated team, contributed to significantly improved pain scores, function and health-related quality of life. Post-operative hospitalization was also reduced by approximately 25%.

4. A Case for Interdisciplinary Pediatric Complex Pain Services in Saskatchewan

Authors: Krista Baerg[1], Rupal Bonli[2], JoAnn Nilson[3], Kathy Nelson[4], Nikki Cooke[5]

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Objective: The aim of this study is to describe patients referred to a specialized interdisciplinary general pediatric clinic and clinical service needs.

Design: Retrospective chart review.

Setting: 6% of children and youth live with debilitating chronic pain. Debilitating chronic pain impacts approximately 6,931 children and youth in Saskatchewan (2015 population data for 10-19 year olds). Pain related disability impacts participation in school, leisure activities, and family functions; limits social development, education, and employment. Direct healthcare costs for this group alone in Saskatchewan are estimated to be $76.7 million dollars1. Costs include family doctor visits, outpatient appointments, inpatient care, medication, and out-of-pocket expenses for patients and their families for medications, special equipment, and travel to and from appointments.

Participants: Patients referred to the Interdisciplinary Pediatric Pain Clinic from 2009 to 2013 will be described. In 2009, the Interdisciplinary Pediatric Complex Pain Clinic was developed. Clinic intake criteria include children age 6 to 17 years, referred by pediatric specialists and subspecialists, pain more than 3 months duration, not due to recent acute injury, missing school due to pain, not a candidate for palliative care. The clinic team includes a general pediatrician, a pediatric physical therapist, a clinical health psychologist and a nurse coordinator.

Procedures: Ethics approval was obtained.

Measures: PROMIS Pain Interference, Functional Disability Inventory, Pain Score (Numeric Rating)

Results: 52 patients 6-17 years attended intake assessment. Wait-time was 0-15 months, mean 4 months. Twenty-two (42%) patients were referred from outside the health region. Limb, back, abdominal pain and headache were most common presenting concerns. Complete data was available for 42 patients. Psychological comorbidities reported include bullying (18, 43%), anxiety/depression (23, 55%), attention deficit/hyperactivity symptoms (8, 19%), post-traumatic stress symptoms (2, 5%), obsessive compulsive symptoms (1, 2%), and dysmenorrhea (6, 14%). Seven met Budapest criteria for complex regional pain syndrome (15%). Thirty-four patients (81%) had never seen a general pediatrician.

Conclusions: Every Canadian children's hospital provides comprehensive multidisciplinary pediatric chronic pain services. Key features of evidence based treatment include a

comprehensive assessment and treatment plan based on the underlying pain mechanisms, empathy and validation of patient experience, communication of a coherent explanation for pain and normalization of multimodal therapy. Accurate diagnosis and understanding of pain mechanisms informs treatment strategies however, the majority of primary care physicians and pediatricians report that they lack the knowledge, skills, and comfort to assess and manage complex pain[2]. Due to complex biological, psychological, and social factors, optimal treatment includes a multidisciplinary approach that builds capacity for self-management skills. Dedicated resources are required to address waiting lists and enable early intervention for patients with debilitating pain in Saskatchewan. Adults waiting for multidisciplinary pain treatment experience deterioration in quality of life and psychological well-being. Waiting as few as 10 weeks yields mixed results, with deterioration over as few as 5 weeks[3]. Creative solutions for pain education and follow-up of Saskatchewan children are suggested, such as development of 1-day workshops for pain education, development of on-line modules, and integration of telehealth for clinic follow-ups.

References:

[1]Groenewald & Palermo, 2014

[2]O'Rorke, Chen, Genao, Panda & Cykert, 2007

[3]Lynch, Campbell, Clark, Dunbar, Goldstein, Peng, Stinson, Tupper, 2008

5. **The evidence supporting recommendations of pediatric observational pain scales: A systematic review of reviews**

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Objectives: Describe how systematic reviews have evaluated and recommended observational pain measurement scales for use in non-verbal children 0–18 years and appraise the evidence supporting these recommendations.

Design: Systematic review of reviews

Data Sources: Cochrane Library, PubMed/MEDLINE, CINAHL, Web of Science, and PsychINFO were searched from inception to September 2016. Reference lists and gray literature were searched for additional studies.

Procedures: Study selection and data extraction were performed by two reviewers independently with a disagreement procedure in place. We included studies that a) Were considered to be a systematic review; b) Concerned observational pain measurement scales for use in children from birth to 18 years of age; and c) Evaluated and reported on one or more measurement properties of these scales. Methodological quality (study validity) and risk of bias (internal validity) were measured. PROSPERO registration number CRD42016035264.

Measures: Assessment of Multiple Systematic Reviews (AMSTAR) checklist[1] and Risk of Bias in Systematic Reviews (ROBIS) tool[2].

Results: Twelve reviews were included. They evaluated 65 different observational pain scales for use in children, of which 28 were recommended at least once. FLACC/rFLACC, COMFORT/COMFORT behavioral scale and CHEOPS were evaluated and recommended most frequently. Few of the reviews assessed methodological quality of the included studies. The narrative analysis consisted mostly of a reiteration of primary study results. More recent reviews demonstrated a lower risk of bias than older reviews.

Conclusions: Included reviews exhibited low quality of evidence; thus, their recommendations regarding pain measurement scales for use in clinical practice or research with non-verbal children should be interpreted with caution.

References:

[1] Shea BJ, Grimshaw JM, Wells GA, et al. BMC Med Res Methodol 2007; 7:10-10.

[2] Whiting P, Savovic J, Higgins JP, et al. J Clin Epidemiol 2016; 69:225-34.

6. Outpatient Rehabilitation for Youth with Pediatric Chronic Pain: Case Illustrations

Authors: Katherine S. Salamon, PhD, Robin Greenspan, PT, DPT, Jessica Saienga, BS, MBA/HCM, IMC, PTA, and Erin Mackereth, PT, DPT

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Objective: It is widely documented that a multidisciplinary approach to the treatment and management of pediatric chronic pain leads to improvements in functional disability. Physical, occupational, and psychological therapies are the standard as part of these multidisciplinary teams. However, less is known about the dose, or amount, of treatment needed from each modality in order to a patient to be successful.

Design: Several case illustrations are presented to highlight the types of treatments received in a multidisciplinary pediatric chronic pain.

Participants: Participants are 6 females, mostly (83%) White/Caucasian, ranging in age from 9 to 17 years old at the time of the initial evaluation. All participants received multidisciplinary treatment including access to psychology, physical and occupational therapy, and integrative treatments (e.g., healing touch, massage). Youth presented with a range of diagnoses including amplified pain, chronic fatigue, and fibromyalgia as well as a wide range of length of pain (3 months to more than 6 years).

Results: A summary of the cases will be provided. All youth attended physical therapy (PT) and pain psychology sessions with an average of 11 PT sessions and 10 pain psychology sessions. Two youth also received occupational therapy in addition to other treatment modalities and one youth received both healing touch and massage. All youth were discharged successfully with return to functioning in daily activities.

Conclusion: The data confirm the literature that multidisciplinary treatment programs for pediatric chronic pain are successful. These cases highlight that treatment may need to be individualized for youth presenting with certain pain conditions and those presenting with a longer history of chronic pain. Future research should continue to investigate the dose required to lead to successful discharge to better inform treatment planning.

7. **Preliminary Examination at Three Month Follow-up of Youth Treated in Multidisciplinary Pediatric Pain Management Program**

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Objective: Cognitive behavioral therapy (CBT) is shown to be an efficacious treatment for pediatric chronic pain (Eccelston et al., 2014; Ehde et al., 2014). The examination for long term effectiveness is needed especially outside the context of randomized controlled trials (RCT). The current study aimed to examine changes in pain, pain disability, and other variables three months following intake within a multidisciplinary pediatric pain management program.

Design: Youth and families presenting to an initial evaluation in a multidisciplinary pediatric pain management program completed questionnaires on pain location and intensity, pain acceptance, pain interference, and anxiety. Families are asked to complete the same questionnaires at 3, 6, and 12 months post treatment.

Participants: Currently, 352 predominately Caucasian (81%), female (77%) teens (Mage = 14.6 years old) and their guardians completed the initial questionnaires. Forty seven families have completed three month follow-up questionnaires.

Results: Youth attended an average of 5 sessions (M = 5.73, SD = 3.38, Range = 0-17). At the initial appointment, almost half of the youth reported headache pain (46.3%) and generalized pain (12.2%) with an average intensity of 5.57/10 (SD = 1.89). The average intensity at three month follow-up was 4.43/10 (SD = 2.27), $t(22) = 2.73$, $p = .012$). Paired sample t-tests indicated that teen and guardian reported pain interference decreased ($t_{teen}(27) = 3.90$, $p = .001$; $t_{guardian}(33) = 2.47$, $p = .019$). No significant changes in pain acceptance and anxiety were observed.

Conclusions: Initial findings mirror results from RCTs affirming that CBT is an effective treatment for pediatric chronic pain. Results highlight the importance of focusing on functioning over pain intensity; however, average pain intensity reported by the youth did decrease across time. Data collection is ongoing. Future directions include examining changes one year post treatment to explore long term outcomes of CBT for pain management.

8. **A New Sickle Cell Wellness Clinic – How Healthy Living and Pain Management Can Work Together**

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Objective: Information will highlight the new collaboration of 9 disciplines and 20 providers who have developed and implemented a Wellness Clinic to improve the wellness of youth with Sickle Cell Disease (SCD). Within this Children's hospital, there is no predictable process for referring youth with SCD to the pain program or to teach pain management strategies outside of crisis inpatient consultation. Rooted in recent SCD treatment advances, the Clinic provides programming to monitor, track, and treat youth to help them normalize daily life by providing knowledge and skills to cope with SCD pain, minimize chronic pain development, and improve quality of life through proactive symptom management.

Design: We utilized feedback from an intensive family focus group to shape a monthly ½ day Wellness Clinic housed within the Pain, Palliative Care, and Integrative Medicine (PPCIM) department. Services are offered to youth and parents in both individual and group settings from multiple disciplines. Long-term targets include decreased inpatient hospitalization and increased use in Hydroxyurea (62% had orders in 2016).

Setting: A PPCIM clinic located within a major Children's hospital that includes exam rooms, psychosocial offices, biofeedback equipment, and a physical therapy gym.

Participants: Families with a 12-21-year-old child who has been diagnosed with SCD for this first Clinic Phase (2nd Phase plan can also be presented including 5-11 year old).

Results: 12-months of planning resulted in a pilot clinic date set for September and significant institutional progress, patient-input, and provider participation. Following two mock clinics, the group has gained insight into ways in which family input can be used to form the foundation for a strong interdisciplinary SCD Wellness clinic.

Conclusions: New initiatives for youth with SCD are most successful when interdisciplinary, based on family-expressed values and needs, and consistent with institution-wide values. Additional conclusions based on first phase will be presented.

9. Addressing parent distress during paediatric medical procedures

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Objective: Paediatric burn dressing changes are repetitive, painful and distressing to the child. Young children are particularly at risk for burn injuries, and for increased distress during dressing changes. Some parents are distressed themselves following the injury, and this impairs their ability to support the child during the procedures, leading to greater child pain, anxiety and distress. Previous work by the authors have found this mediation relationship. Therefore, a parenting resource addressing parent distress and behaviour may be of value. A video resource was created to shape the parent's influence during their child's procedures. Content was developed from previous research, in consultation with medical, nursing, allied health, and research staff, and past and present families attending treatment.

Design/Setting: The video resource was tested via pilot study at the Pegg Leditschke Childrens Burns Centre at Lady Cilento Childrens Hospital, Brisbane, Australia.

Participants: Ten parents of children aged 1-6 years old presenting for their child's first dressing change.

Procedures/Measures: Parents completed a mental health questionnaire, watched the video resource, and completed behavioural intent and confidence scales. Parent and child behavior was observed during the dressing change using a modified version of the Child-Adult Medical Procedure Interaction Scale-Revised. Child's highest pain and state anxiety were recorded via 10-point scales, as were the parent's state anxiety. Qualitative interviewing were conducted afterwards.

Results: Findings will demonstrate the perceived acceptability and feasibility of a parenting video resource for use in an outpatients' clinic. Additionally, data will be compared with outcomes from the authors' previous observational study to give pilot data of it's usefulness.

Conclusions: There has been much work investigating changing parent behaviour during other medical procedures and child ages to reduce child pain experiences. This work adds to the literature by attempting to address the unique distress associated with young child burn injuries.

10. Reporting of pain assessment and management in a Canadian Neonatal Intensive Care Unit (NICU): Where are we at?

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Background: Despite strong evidence that repeated pain exposure in neonates is associated with adverse outcomes, inadequate pain assessment and management has been reported with less than half receiving pain relief (Cruz, Fernandes, & Oliveira, 2016). This highlights the need to evaluate the current status of pain assessment and use of pain relieving interventions in this population.

Objective: To evaluate the level of pain assessment and management in a cohort of hospitalized Canadian preterm neonates.

Methods: A secondary analysis of study data collected from premature neonates enrolled in a clinical trial (Campbell-Yeo et al., 2013) and supplemental chart review.

Results: The 242 neonates included in the study underwent a total of 10468 painful procedures (4801 tissue breaking and 5667 non-tissue breaking with only 56.6% and 12.2% having a documented pain score using the Premature Infant Pain Profile (PIPP) respectively). Of those with a documented pain score the most likely procedures to receive a pain score were heel sticks (60.8 %), venipunctures (58.4 %) and peripherally inserted central catheters (56.8%). The average PIPP score was 4.71 (range (0-21). Procedures least likely to receive a pain score were suctioning (0.2%), tape removals (6.8%), and endotracheal tube insertions (7.4%). A pain relieving intervention was only used in 58.5% of procedures.

Conclusion: There was considerable variation in reporting and treatment of pain. Increased efforts are needed to promote consistent pain assessment and management.

References:

Campbell-Yeo, M., Johnston, C., Benoit, B., Latimer, M., Vincer, M., Walker, C.-D., … Caddell, K. (2013). Trial of repeated analgesia with Kangaroo Mother Care (TRAKC Trial). BMC Pediatrics, 13(1), 182. http://doi.org/10.1186/1471-2431-13-182

Cruz, M. D., Fernandes, A. M., & Oliveira, C. R. (2016). Epidemiology of painful procedures performed in neonates: A systematic review of observational studies. European Journal of Pain (United Kingdom), 20(4), 489–498. http://doi.org/10.1002/ejp.757

11. Examining Protective Factors in Children of Parents with Chronic Pain: Pain Acceptance, Pain Self-Efficacy, and Optimism

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Background and Aims: Children of parents with chronic pain are at risk for more problems with pain and mental health than children whose parents do not have chronic pain. Examining protective factors in this population may reveal pathways for optimizing health, beyond reducing risk factors. Based on research in adults and children with chronic pain, three factors were identified as possible protective factors in children of parents with chronic pain: pain acceptance (including components of activity engagement and pain willingness), pain self-efficacy, and dispositional optimism. This project examined relationships between these hypothesized protective factors and child pain and mental health outcomes.

Design: As part of a larger project, children (ages 8-15) of parents with chronic pain (at least 6 months duration) completed questionnaires assessing the hypothesized protective factors described above. They also reported on their pain over the past 3 months, internalizing symptoms (e.g., anxiety symptoms), and positive adjustment (e.g., interpersonal relationships).

Results: Thirty children (Nfemale=17, mean age=11.94, SD=2.50) and parents (Nfemale=23, mean pain intensity=7.17, SD=1.81) completed study procedures. Lower child pain intensity was associated with higher pain self-efficacy (i.e. lower scores on this measure; r=0.55, p=0.003) and pain acceptance (r=-0.56, p=0.002), but not optimism (r=0.11, p=0.567). Total pain acceptance scores were marginally correlated with self-confidence (r=0.38, p=0.057) but not internalizing symptoms (r=-0.32, p=0.117). Greater activity engagement was associated with higher self-confidence (r=0.48, p=0.013), while greater pain willingness was associated with higher interpersonal relationship satisfaction (r=0.39, p=0.045) and lower levels of internalizing symptoms (r=-0.48, p=0.011).

Conclusions: Preliminary evidence suggests that pain self-efficacy and pain acceptance could be protective factors for outcomes in children of parents with chronic pain. The same evidence was not identified for dispositional optimism. These factors should be further investigated, including their relative role in predicting outcomes compared to hypothesized risk factors, to identify targets for intervention.

12. Engaging patients in the development of clinical resources related to the treatment of chronic pain

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Background: Patient engagement is a critical aspect of health-related research and clinical care (e.g., Coulter, 2012; Mawn, Welsh, Stain, & Winderback, 2015; Shen et al., 2016). In clinical care, one important component of patient engagement focuses on eliciting client feedback regarding the utility of resources provided by healthcare professionals.

Objective: The current project aims to incorporate patient perspectives in the design of clinical resources. Specifically, our goal is to improve the utility of the written materials provided as part of a Complex Pain Clinic for youth.

Methods: This project is ongoing and will involve several phases. The first step entails updating a brochure outlining information about pain, treatment approaches, and online resources. Currently, we are recruiting existing patients of a Complex Pain Clinic. We are partnering with a youth-led group (Youth Advisory Council) that aims to improve healthcare services within the broader health centre. For the purposes of this project, the Youth Advisory Council will provide an existing structure for facilitating the provision of feedback, while youth from the Complex Pain Clinic (3-5 patients) will bring their unique perspectives regarding the information that is most helpful in the treatment of pain. This collaboration will entail a two-hour session taking place in April 2017, during which youth will review the existing brochure and provide feedback. Following this session, a member of the team will implement the feedback with the help of youth from the Complex Pain Clinic. The new brochure will be sent to the youth who participated in the project to ensure that feedback was implemented as intended.

Conclusions: We will discuss the processes of recruitment, of eliciting patient feedback, and of involving patients in the implementation of feedback. By highlighting the challenges and successes at each of these steps, this project will provide important insights into how to meaningfully and collaboratively engage youth in promoting change to clinical care.

References:

Coulter, A. (2012). Patient engagement – What works? Journal of Ambulatory Care Management, 32 (2), 80–89, doi: 10.1097/JAC.0b013e318249e0fd

Mawn, L., Welsh, P., Stain, H.J., & Windebank, P. (2015). Youth Speak: Increasing engagement of young people in mental health research. Journal of Mental Health, 24 (5), 271–275, doi: 10.3109/09638237.2014.998810

Shen, S., Doyle-Thomas, K.A.R., Beesley, L., Karmali, A., Williams, L., Tanel., N, & McPherson, A.C. (2016). How and why should we engage parents as co-researchers in health research? A scoping review of current practices. Health Expectations, 1–12, doi:10.1111/hex.12490.

13. Psychosocial needs of children and families preparing for major surgery: A qualitative analysis

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Objective: Surgery can be a painful and frightening procedure for children. Psychosocial factors have an influential role on children's pain outcomes after major surgery(1). By developing a better understanding of the psychosocial needs of children who undergo major surgery, a perioperative behavioural intervention to improve outcomes after surgery can be more appropriately designed.

Participants/Setting: Children who had undergone posterior spinal fusion and instrumentation for Adolescent Idiopathic Scoliosis (AIS) at a pediatric tertiary care centre within the last 5 years and who were 10-18 years old at the time of surgery participated in this study. The participants were all part of a larger prospective cohort study. Parents of children who underwent this procedure were also recruited.

Design/Methods: Perspectives from eight children and twelve parents were collected individually through semi-structured interviews. The interview guide explored the preparation they received for surgery, their thoughts and feelings around the surgical experience, and what type of intervention would be beneficial. Data was analyzed using Thematic Analysis methodology to identify themes which are clinically relevant and can be used to guide intervention development.

Results: Analysis of the children's interview transcripts led to three main themes which focused on feeling prepared for surgery, physical and emotional challenges, and coping during recovery. Themes in the parent transcripts focused on understanding information and preparing for surgery, parental responsibility during their child's recovery, and the recovery journey at home.

Conclusions: Major surgery can be emotionally challenging for both children and their parents. Perioperative behavioural interventions aimed to reduce post-operative pain and anxiety should include pre-operative provision of information from the surgeon and from a peer who has experienced a similar procedure, support for parents, and provision of short-term and long-term coping strategies during recovery.

References:

1. Rabbitts, J.A., Groenewald, C.B., Tai, G.G., Palermo, T.M. 2015. Presurgical psychosocial predictors of acute postsurgical pain and quality of life in children undergoing major surgery. J Pain 16(3):226-234.

14. Passport to Medical Care: The Impact of Contextual and Cultural Differences on Psychological Intervention

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Objective: The purpose of this study is to identify the various factors that contribute to adjustment to hospitalization, surgery preparation, and pain management in children referred for orthopedic surgery from another country.

Design: This case study will review the treatment outcomes of a 5 year-old female, "Ariel," who was referred for psychological services prior to and following orthopedic surgery. The intervention will consist of a combination of pre-surgical preparation (psychoeducation), family based problem-solving, care coordination (interdisciplinary and global) and pain management. Objective (i.e., hospital records) and subjective (i.e., parent and provider reports, observations) outcomes will be examined to incorporate contextual and cultural differences that may impact health outcomes and the perception and treatment of pain.

This case study will demonstrate how daunting it is to integrate research findings to care for a child brought to the United States for treatment of an orthopedic condition. Numerous factors complicate such treatment due to the uncontrolled variables that are not seen in most research or clinical settings. These include collaboration with international providers, working with translators, having the child separated from caregivers and support system, immersion into a different culture, and the need for the psychologist to understand how other systems (e.g., school, health care, government policies) affect pediatric health service delivery.

Results: Treatment will consist of psychoeducation, problem-solving training, cognitive restructuring, progressive muscle relaxation, and collaboration with other disciplines to appropriately manage her pain.

Conclusions: Current psychological interventions do not take into account the unique issues faced by children referred to another country for intensive medical care. This case highlights the importance of understanding the child's issues, the caregiver's issues, and the political issues in the country of origin as it relates to intervention and post-discharge planning.

15. Comparison of treatment outcomes between morphine and concomitant morphine and clonidine regimens for neonatal abstinence syndrome

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Objective: In 2010, the tertiary-care centre involved in this study adjusted the treatment guidelines for neonatal abstinence syndrome (NAS) to include concomitant clonidine and morphine administration as first-line therapy. This study is the first evaluation of this practice change and aimed to compare treatment outcomes between the morphine alone and morphine + clonidine regimen for NAS from 2006-2015.

Design: Retrospective population-based cohort design

Setting: Neonatal intensive care unit in a tertiary-care centre

Participants: Infants treated pharmacologically for NAS resulting from opioid exposure in utero delivered between 2006-2015.

Measures: Maternal and infant clinical characteristics were gathered from the Nova Scotia Atlee Perinatal Database. Treatment information was collected using chart review.

Results: The incidence of NAS in the population increased from 0.79 per 1000 live births in 2007 to 4.00 per 1000 live births in 2015. Of the 188 infants identified, 22 were treated with morphine alone and 100 were treated with morphine + clonidine. The expected change over time due to adjusted guidelines was observed with 60% of infants from 2006-2010 being treated with morphine alone and 91% of infants from 2010-2015 being treated with morphine + clonidine. Significantly longer length of treatment ($p=0.004$) and higher peak morphine dose ($p=0.045$) was observed in the morphine + clonidine group. Higher cumulative morphine exposure was also observed with combination therapy ($p=0.228$). The clinical factors of gestational age, weight, sex, and maternal smoking did not control for the differences seen between groups.

Conclusions: The increase in incidence of NAS is consistent with recent national and international reports. The increase in length of treatment and morphine dose seen in the morphine + clonidine group was unexpected, as our findings contrasted with previous work on this treatment combination. Further exploration examining the impact of additional clinical characteristics is warranted such as maternal methadone and antidepressant exposure.

16. Nonverbal Characteristics of Parental Reassurance and Distraction: Pilot Study of the Scheme for Understanding Parent Responses during Child Painful Procedures

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Objective: Needle pokes are a prevalent painful procedure in pediatric healthcare associated with child pain and distress. Parent behaviours impact a child's pain experience; distraction (e.g., "look over there") is recommended as a pain reducing strategy whereas reassurance (e.g., "it's okay") has been associated with negative child outcome. Child perceptions of parental emotion appear to vary with vocal tone and facial expression but naturalistic parental emotion during these utterances has not been investigated. This pilot study investigates parent reassurance and distraction holistically by using a new observational coding scheme, the Scheme for Understanding Parent Responses during Child Painful Procedures (SUPR-CPP). The SUPR-CPP uses vocal cues, facial expressions, and body posture to detect levels of parent fear, warmth, disengagement, and humor communicated during pain tasks. The SUPR-CPP is applied at micro (e.g., tied to a particular verbal behavior) and global (overall interaction) levels.

Design: Children (7-12 years) completed the Cold Pressor Task while interacting with their parent. Parental reassurance and distraction were identified using the Child-Adult Medical Procedure Interaction Scale; the SUPR-CPP was used to code responses for each instance of reassurance and distraction (micro level) and for the overall interaction. Children self-reported their pain using the Faces Pain Scale-Revised. Correlations will be calculated to relate child pain and parent responses using SUPR-CPP codes at both micro and global levels.

Results: Twenty-five dyads have participated (data collection ongoing).

Conclusion: This aims to provide a detailed description of reassurance and distraction beyond verbal content to clarify what emotions are being communicated during these behaviours. Consistent with social referencing, parent expressed emotions may contribute to child outcome during acute pain (e.g., fear may be communicated during reassurance which could explain the relation to negative child outcomes). Results may have important implications for the study of parental behaviour during child pain.

17. Psychological Factors Related to Pediatric Limb-Lengthening and Orthopedic Procedures

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Objective: To identify common psychosocial stressors among pediatric patients and caregivers undergoing limb-lengthening and other orthopedic procedures. It is hypothesized that demographical factors and individual traits will moderate the relationship between orthopedic procedures and the subsequent experience of pain. The results of the study may be applied to the development of maximally efficacious pain management.

Design: Descriptive statistics will be analyzed and between-factor ANOVAs will be utilized in order to understand the relationship between family characteristics and outcome measures.

Setting: Inpatient pediatric orthopedic hospital in the Southeastern region of the United States.

Participants: Participants included pediatric orthopedic patients ages 8-17 years of age, currently undergoing treatment and their available caregiver(s).

Procedures: Participants were recruited from on-site support groups for patients and families. Interested English-speaking families and patients meeting the age criteria were provided with online consent forms, assent forms, a demographic questionnaire, and survey. Participants were provided with a $15 gift card immediately following completion.

Measures: Family Assessment Device (FAD), Pediatric Patient-Reported Outcome Measurement Information System-37 (PROMIS-37), and Parent-Proxy Patient-Reported Outcome Measurement Information System (Parent-proxy PROMIS)

Results: Data is currently being collected. The N number at the time of the conference is anticipated to range between 20-30 individuals. Descriptive statistics will be analyzed in order to highlight particular familial and personal traits that may related to the overall experience and well-being of pediatric patients' and caregivers during extensive orthopedic procedures.

Conclusions: Previous literature has demonstrated that demographical information may influence both the experience and expression of pain (Batista, et al., 2012). The results are intended to be utilized in order to understand common stressors within this unique population, as well as potential barriers for effective pain management. It is further anticipated that results will be applicable during the development of pain and stress management techniques for this specific individuals within this population.

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18. Moving on from pain. Long term outcomes following intensive interdisciplinary pediatric pain rehabilitation

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Objective: To examine outcomes of intensive interdisciplinary pain treatment (IIPT) for pediatric pain at 5+ years post-discharge. Primary outcomes included pain, functional disability, quality of life, progress toward developmentally-appropriate goals. Health service and medication use were also examined.

Design: Observational cohort study, long-term follow up.

Setting: IIPT day hospital program at Boston Children's Hospital incorporating physical, occupational, and cognitive-behavioral therapy components.

Participants: Of 217 patients treated from 2008-2011, 131 were reached; 95 returned surveys. 79% had diagnosis of complex regional pain syndrome. Mean age at follow-up was 20.0 years (SD=2.5). 86% were female.

Procedures: This follow-up study was a component of an IRB-approved protocol developed at program inception to measure treatment outcomes. Participants completed the survey online via electronic data-capture tool.

Measures:
Functional disability: FDI (Walker & Greene 1991).
Quality of life: Peds-QL core scales (Varni, Seid, & Kurtin, 2001).
Pain: 11-point Numeric rating scale assessing worst pain since program discharge; number of episodes of recurrence of initial pain problem, onset of new pain complaints since discharge.
Other: Additional items evaluated psychosocial and developmental factors, medical and mental healthcare utilization, substance use, treatment satisfaction.

Results: 32.6% were completely pain free, 49.5% report reduced pain. Significant reductions in pain since program admission ($t=7.32$, $P<.001$) were reported. 86% had one or more pain flares since discharge, 35.8% reported a new pain problem. 42% have used pain medication post-discharge. FDI scores decreased since admission ($t=14.7$, $P<.001$), and 78% report no functional deficits. Good to excellent quality of life was reported in all domains ($M=65.9$ for physical functioning, $M=87.0$ for school functioning). Older age at admission predicted poorer outcomes for both pain and function at 5-year follow-up.

Conclusions: The majority of IIPT participants who completed surveys are doing well with pain and function and are developmentally on track five years after program discharge.

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19. Feasibility of two self-guided web-based interventions for adolescents and young adults with migraine: a pilot randomized controlled trial

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Background: Migraines are common. Cognitive Behavioral Therapy (CBT) is advocated as the first-line treatment although rarely available. Internet-based interventions can help gain access. There is limited evidence that Internet-based CBT, with no human support, are well used, accepted and effective.

Objective: Our purpose was to assess acceptability and adherence to two self-guided CBT: SPHERE, a comprehensive program aimed to teach a variety of skills, and PRISM, a targeted program aimed to identify headache triggers and provide recommendations to cope with them.

Design: A pilot randomized controlled trial was performed. Participants and Procedure: Sixty participants were stratified into two age groups (14-21, 22-35) and randomly allocated to SPHERE, PRISM or usual care. Measures: The Client Satisfaction Questionnaire (CSQ-8) and interviews were conducted 4-month post-randomization.

Results: Satisfaction was favorable: CSQ-8: SPHERE Mdn=25, range =16-31; PRISM Mdn=24, range =15-30. Adherence was low: 7 of 19 SPHERE participants went beyond the 6th topic out of 30, and PRISM identified a potential headache trigger and provided recommendations to 6 out of 20 participants.

Conclusions: Low adherence to internet interventions is common. The nascent field of research on internet interventions could benefit from taking into account participant views. Based on participants' feedback we are introducing changes (e.g., add instructions, simplify programs) and we will test adherence to new the versions.

20. Efficacy of breastfeeding and expressed breast milk to reduce procedural pain in newborns: A systematic evidence update

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Background: Untreated pain is associated with adverse consequences in full term and preterm infants. International guidelines recommend breastfeeding as a pain relieving intervention during acute procedures, however, an updated synthesis of the state of evidence is needed to make recommendations for research and clinical practice.

Objective: To review the current state of evidence for the effectiveness of breastfeeding and expressed breast milk in reducing procedural pain in full term and preterm infants.

Methods: A systematic search of key electronic databases (PubMed, CINAHL, EMBASE) was completed from the date of the most recent Cochrane review search on this topic (January 1, 2011) to December 22, 2016. The search strategy included key terms for infant, breastfeeding, breast milk, and pain. Inclusion criteria required that studies be 1) an empirical investigation examining the use of breastfeeding as a pain relieving intervention, 2) include a sample of full term or preterm born infants, and 3) be published in English in a peer-reviewed journal. Risk of bias was scored using using Cochrane tools.

Results: Of the 1032 abstracts screened, 21 were found eligible for inclusion. Fifteen studies reported on the use of breastfeeding or expressed breast milk in full term infants (n = 1908) and six reported on preterm infants (n = 428). Direct breastfeeding was more effective than maternal holding, maternal skin-to-skin contact, topical anesthetics, and music therapy; and was as or more effective than sweet tasting solutions in full term infants. Expressed breast milk was not consistently found to reduce pain responding in full term or preterm infants. Studies generally had moderate to high risk of bias.

Conclusion: While there is sufficient evidence to recommend direct breastfeeding as the preferred first line analgesic intervention for procedural pain management in full term infants, expressed breast milk alone should not be considered an adequate intervention.

21. Electroencephalogram event-related potentials hold promise as a neurophysiological indicator of procedural pain in newborns undergoing medical procedures

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Background: While infant pain assessment has historically relied on behavioural pain scores, use of neurophysiological imaging methods is an emerging trend. However, to date, there is a lack of synthesis and evaluation of the neuroimaging technologies, data collection and analysis procedures, and study findings to allow recommendations for future work in the field.

Aim: To describe the neurophysiological methods that have been used to construct the scientific knowledge base in the field of infant acute pain assessment.

Methods: A systematic search of key electronic databases (CINAHL, PubMed, PsycINFO, EMBASE) was conducted from database inception to October 2015. The search strategy included key terms for infant, acute pain, pain response, and neurophysiological imaging methods. Of the 2411 abstracts screened, 19 articles were retained and data on study methodology were extracted.

Results: Of the included studies, nine utilized near infrared spectroscopy (NIRS), two utilized functional magnetic resonance imaging (fMRI), and eight utilized electroencephalography (EEG) as the primary outcome. There was variability in research designs and procedures in those studies utilizing NIRS, whereas studies utilizing EEG and fMRI reported consistent methods across studies. Of the eight EEG studies, six reported event-related potentials (ERPs) as the primary outcome. All of the ERP studies identified a distinct nociceptive-specific potential, which was found to be stimulus intensity dependent, independent of sleep state, and present in preterm and full term infants.

Conclusion: Of the neurophysiological methods used to date, ERPs appear to be the most consistently described indicator of infant nociception. While additional research is needed, ERPs may be a valuable neurophysiological indicator to supplement behavioural pain tools for use in clinical research to advance our understanding of infant pain responding.

22. Adverse effects of early life pain exposure in full term infants–More than just a preterm concern: Results of a systematic review and meta-analysis

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Background: Studies reporting on outcomes of pain exposure have focused on preterm infants undergoing repeated procedures. No synthesis of outcomes of early pain exposure in full term infants has been conducted.

Objective: Conduct a systematic review and meta-analysis examining both immediate and long term consequences of early pain exposure in full term infants.

Methods: Systematic search of key electronic databases conducted to October 2015. Data were extracted and summarized narratively and quantitatively using random-effects meta-analyses. Risk of bias was scored using Cochrane risk of bias assessment tools.

Results: Of the 2049 abstracts screened, 17 were retained. All reported on the impact of previous pain on later pain response with follow-up periods ranging from 24 hours to 16 years. Six reported on infant later pain response following surgery, (n = 309), nine following acute procedures (n = 570), and two following burns (n = 70). All but three studies reported that early pain was associated with altered later pain response, with thirteen reporting heightened and one reporting reduced later pain. Two studies reported on the effectiveness of analgesic interventions in preventing pain hypersensitivity and found no effect. Heterogeneity limited meta-analysis of studies. Data from two studies reporting on pain response during venepuncture following repeated heel lancing were combined and showed no difference in visual analogue scale (VAS) score in centimeters (n = 255, MD = 3.73, 95% CI = -2.35 to 9.80) or cry duration in seconds (n = 254; MD = 20.88, 95% CI = -9.92 to 51.68). Studies generally had low to moderate risk of bias.

Conclusions: Full term infants exposed to early pain may be vulnerable to pain hypersensitivity. Consistent reporting is needed to allow for inclusive meta-analyses. Research examining optimal analgesic interventions to prevent adverse outcomes and the impact of pain on other neurodevelopmental outcomes is warranted.

23. Growing Pains: Transition Experience of Young Adults with Chronic Pain.

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Purpose: To explore the transition experience of young adults with chronic pain in Canada from the pediatric healthcare setting to the adult healthcare setting.

Materials & Methods: A qualitative descriptive approach using semi-structured interviews to capture the transition experiences of young people with chronic pain who have recently transitioned from the pediatric setting to the adult healthcare setting was conducted. Participants were recruited from west, central, and east coast of Canada to situate the findings within the context of Canada. Interviews were transcribed and analyzed using qualitative inductive content analysis.

Results: Nine participants were interviewed; 3 from each part of Canada (west, central, and east) Five common categories, unique to the transition experience of young adults with chronic pain were determined. They included; *I can do it, maybe?: Independence; Stress and pain along for the ride: Pain trajectory*; *Need a shoulder to lean on: social support networks; Obviously they are there: Parental support;* and *The Bridge: Collaborative systems.*

Conclusion: Young adults with chronic pain experience unique challenges when faced with transitioning to adult healthcare settings. Supporting the young adult and their family in preparation and readiness, and collaboration between the pediatric and adult healthcare settings are essential to ensure a smooth transition and avoid negative transition outcomes. Further research is needed to determine the best ways to prepare young people for transition and the care activities required in both pediatric and adult healthcare settings to improve pain related outcomes post transition.

24. Pain management practices surrounding lumbar punctures in children: a national Canadian survey of emergency physicians

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Objective: Less than a third of emergency department (ED) physicians adhere to societal recommendations outlining analgesia for paediatric lumbar punctures (LPs). We sought to explore the barriers behind this knowledge to practice gap.

Methods: A novel survey was disseminated to all physicians listed on either the Paediatric Emergency Research Canada (PERC) or the Canadian Association of Emergency Physicians (CAEP) databases. Participants were asked to answer questions pertaining to three scenarios of children requiring an LP. The primary outcome was the willingness to provide analgesia.

Results: The response rate by database was 150/222 (67.6%) for PERC and 272/1362 (20%) for CAEP. The practice setting of respondents was 144/422 (34.1%), 262/422 (62.1%), and 16/422 (3.8%) in the paediatric ED (PED), general ED (GED) or both, respectively. For a three-week-old male, 123/144 (85.4%) PED and 231/262 (88.2%) GED physicians reported a willingness to provide analgesia, most frequently sucrose in PED physicians (114/144, 79%) and subcutaneous lidocaine in GED physicians (155/262, 59%). The most common reason among PED physicians for withholding analgesia was the perception that analgesia produced additional discomfort (13/21, 61.9%). The same reason was cited by GED physicians (12/31, 38.7%), along with unfamiliarity surrounding analgesic options (13/31, 41.9%). The mean $\pm$ SD perceived competence performing LPs was lower in GED (50.4 $\pm$ 30.2) versus PED physicians (92.5 $\pm$ 9.8). For the 16-year-old female, willingness to provide analgesia was endorsed by all but one GED physician. For the 3-year-old male, provision of analgesia was almost universal among PED (142/144, 98.6%) and GED physicians (256/262, 97.7%).

Conclusions: In contrast to preschool children and adolescents, willingness to provide analgesia to young infants is suboptimal among both GED and PED physicians. Barriers include perceptions that analgesia produces additional discomfort and a lack of knowledge of appropriate analgesics.

25. The Implementation of a Freely Available Smartphone App to Assess Pain and Its Impact in Children with Cancer

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Background: Pain is one of the most distressing symptoms for children with cancer. Before pain can be treated, proper assessment must take place. Various smartphone applications (apps) have been developed to assess pain in real-time, however, few are freely available. The aim of the current study was to pilot and evaluate a real-world implementation of Pain Squad, a freely available and empirically validated iOS app, to assess pain and its impact in a small sample of children with cancer.

Methods: Eligible children (ages 8-18 years) taking part in a larger study were invited to participate. Children self-reported their pain intensity, cause and impact of pain, and use of pain management strategies on their iPhone or iPad twice daily for 1 week. Participants emailed their reports to the research team and were invited to complete an online survey on their experience using Pain Squad.

Results: Sixteen children agreed to participate and 6 returned their pain reports. Participants (5 female) had a history of a variety of cancer diagnoses including acute lymphoblastic leukemia (n=3), osteosarcoma (n=1), germ cell tumour (n=1) and brain tumour (n=1), and the majority were in remission (5/6). Children completed an average of 8.7 (SD=4.2, min=4, max=15) reports over the one week period and reported clinically significant levels of pain (mean=5.6/10, SD=2.0). The most commonly reported causes of pain were everyday pains and treatment-related pain. Pain had the greatest impact on enjoying life and walking. Overall, participants were highly satisfied with using Pain Squad (mean=4.7/5, SD=0.52). Child-reported benefits included the app's ease-of-use and its ability to help describe pain. The most common child-reported challenge was remembering to fill out the reports.

Conclusions: The implementation of a free smartphone app is a novel method to track symptoms and functioning in children with cancer. Further work is needed to optimize engagement.

26. Physiotherapy management of paediatric conversion disorder: The art and the science

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Objective: Clinical practice suggests a subset of paediatric patients with chronic pain also develop conversion disorder, the exact prevalence is unknown. Further, children with chronic pain may be at risk of developing conversion disorder secondary to the stressors related to their pain condition. Therefore, physiotherapists (PTs) who work in paediatric chronic pain clinics are faced to work with children who have co-morbid conversion disorder. Traditionally, PTs who are trained in a Canadian physiotherapy program have little to no training to guide practice with patients who have co-morbid mental health conditions, and even less training specific to conversion disorder. To inform physiotherapy practice in paediatric conversion disorder, this review aims to (1) summarize current evidence and (2) describe current practice in our tertiary pediatric centre.

Design: A literature review was conducted for physiotherapy and paediatric conversion disorder. An internal scan of our institution was also conducted to outline and describe current practice of PTs working with children with the diagnosis of conversion disorder.

Conclusions: A gap exists in the literature related to physiotherapy treatment interventions for paediatric conversion disorder. The literature to date is limited in volume and is primarily compromised of case studies and case series. Existing evidence suggests potential benefits of physiotherapy in this patient population. PTs must combine the science of healing with the art of caring practice while working with children who have the diagnosis of conversion disorder.

27. A brief, comprehensive measure of pain and pain outcomes in hospitalized children: Development and initial results in a general sample of hospitalized children in the US

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Background: Pain is prevalent in hospitalized children, and efforts to improve pediatric pain management are needed. Better methods for assessing pain will allow for more effective interventions. Standard pain assessment in the hospital setting involves a rating of pain intensity; however, experts have recommended a more comprehensive evaluation of pain and pain outcomes. The objective of this study is to develop and validate a comprehensive measure of pediatric pain and pain outcomes in the hospital setting.

Methods: Patients and a parent were recruited during the first 24 hours of admission or after surgery in a pediatric hospital. The Pediatric APS-POQ is a 17-item patient- and parent-report measure that includes the following subscales: pain intensity, interference in functioning, emotional response, medication use and side effects, non-pharmacological interventions, and satisfaction.

Results: Results of pilot testing were satisfactory. 100 children and a parent were included in the validation sample (51% girls; 81% mothers). Children were 10.7 years old on average (range: 3-18).

Parent and child reports were highly correlated (range .36-.60, ps<.05). Children reported that their worst pain was 7/10 and that they experienced severe pain 42% of the time. 91% of children reported using medication and 66% reported using non-pharmacological strategies to manage their pain (e.g., distraction, relaxation). 94% experienced some reduction in pain from pain management interventions; although a minority of patients (19%) indicated that they would have liked more help using non-pharmacological strategies. Overall, patients reported a moderate-high level of satisfaction (6.7/10) with their pain management.

Conclusion: Despite improved knowledge, pain continues to be a challenge for hospitalized children in the US. Better, more comprehensive assessment techniques are needed. We adapted a comprehensive measure of pain and pain outcomes for use in pediatrics. Results show that parent and child reports are highly correlated, and that the measure provides valuable information that may inform care.

28. Pilot Testing of an Interactive Video-Based Pain Management Intervention for Adolescents with Sickle Cell Disease

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Objective: Adolescents with sickle cell disease (SCD) experience frequent and intense pain episodes, requiring lengthy hospital admissions that are associated with feelings of loneliness and poor psychosocial outcomes.1,2 Despite evidence that adolescents with SCD benefit from cognitive behavioral therapy (CBT) interventions targeting pain,3-6 they remain an underserved population who do not often gain access to this treatment.7 In an effort to improve access to psychological interventions, we designed an interactive video-based intervention to introduce CBT and biobehavioral pain management strategies to adolescents with SCD and their families. This study evaluates the feasibility of implementing this program in both inpatient and outpatient settings.

Description: Program content was generated from an existing pain management curriculum (The Comfort Ability) and tested on a focus group of adolescents (8-17 years) with SCD (n=7) and their parents. Content was modified based on patient experience and consultation with interdisciplinary providers. Pilot testing was completed with inpatient (n=4) and outpatient (n=5) families in the BCH sickle cell program. All patients and their parents completed questionnaires to assess program satisfaction and skill acquisition at baseline, immediately post-intervention, and 1-month post-intervention.

Outcomes: From an educational perspective, 100% of adolescents and 87.5% of parents agreed or strongly agreed that they learned about how pain interferes with mood and daily function and all adolescents and parents agreed or strongly agreed that they learned new pain management strategies. Functionally, all adolescents reported positive changes to sleep routine, 75% reported identification of positive thoughts that helped improve mood and use of an active pain coping skill (i.e., relaxation) three or more times at 1-month post-intervention. Importantly, all parents and adolescents reported program satisfaction and use of program strategies to manage pain at 1-month post-intervention. Qualitative and narrative data on skill acquisition and self-report changes in mood and function across groups will be reported.

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29. Functional Outcomes following Inpatient Rehabilitation for Young Adults with Chronic Pain

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Objective: To assess outcomes following inpatient pediatric pain rehabilitation program in young adult patient population. Little research has been done to determine factors associated with chronic pain and tailor treatments to this age group.

Design: Patients were assessed at admission and follow up after discharge. Mean length of inpatient stay for this group was 26.2 days. As part of inpatient rehabilitation, patients received intensive physical therapy, occupational therapy, psychology and medical services.

Participants: 31 patients between the ages of 18-21 with diagnoses of Amplified Musculoskeletal Pain or Complex Regional Pain Syndrome admitted for inpatient pain rehabilitation. Demographics (78% female; 58% Caucasian; Mean age 18.4 years old).

Measures: Measures included self reported change in pain level (0-10 Scale), Lower Extremity Functional Scale (LEFS), Upper Extremity Functional Index (UEFI), Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), and the Functional Disability Inventory (FDI).

Results: Improvements in functioning and pain level were observed. Pain level was significantly lower at discharge as compared to admission (2.2± 2.04, vs. 7.1 ± 1.66). Both LEFS and UEFS were significantly higher at discharge as compared to admission (68.54 ± 14.5 vs. 34.5 ± 11.8 and 72.2 ± 8.8 vs. 50.1 ± 14.8, respectively). Improvements were also observed in patient report (29.8± 7.5 vs. 6.7 ± 7.1, $p<.001$) and parent report FDI scores (27.7 ± 7.4 vs. 5.5 ± 6.9, $p<.001$).

Conclusions: Functional outcomes were observed in young adults following inpatient pediatric pain rehabilitation, however future research is needed in order to adapt interventions appropriately and develop improved validated measures for this vulnerable age group.

30. A User-Centred Design Approach to the Development of the Web-Based Implementation of Pain Practice Change (ImPaC) Resource

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Objective: To utilize a user-centred design (UCD) approach [1] to evaluate the utility of the Implementation of Pain Practice Change (ImPaC) Resource for improving pain management in hospitalized infants.

Design/ Methods: The functional and design requirements for the ImPaC Resource were based on the Evidence-based Practice for Improving Quality (EPIQ) intervention that integrated evidence and quality improvement.[2,3] The EPIQ intervention was modified to an online resource to be more practical, cost-effective, and sustainable. The ImPaC Resource content and utility was previously validated with 22 and 55 HCPs respectively. Usability will be evaluated through iterative testing involving: (a) facilitated individual walkthroughs (Part 1), and (b) a field study using HCP teams in clinical settings (Part 2) in mid 2017.

Participants: In Part 1, 10 - 12 HCPs from the Hospital for Sick Children (HSC) who care for hospitalized infants will be recruited (3-4 participants in each of 3 waves). The Pain Practice Committees from the NICU and Cardiology Units at HSC will be recruited for Part 2.

Procedures and Measures: In Part 1, a facilitator will guide participants through the Resource using a semi-structured interview to think aloud about (i) the workflow (navigation), (ii) relevance and (ii) feasibility. The walkthroughs will be audio recorded, and a trained observer will take fieldnotes to identify functional and interface design difficulties. Participants will complete the Acceptability E-Scale.4 In Part 2, the Resource will be implemented for 6 months by 2 HCP teams in their clinical settings. Data will include observation, automated usage data transfer, and interviews.

Results: Results on the UCD approach and Part 1 usability testing will be reported. Resource refinements will be outlined for Part 2.

Conclusions: Rigorous assessment of the UCD design approach will provide important direction for evaluating the implementation and intervention effectiveness of the ImPaC Resource.

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31.

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Objective: Adverse post-anesthetic outcomes include severe pain, agitation, and postoperative behavior changes. Perioperative identification of children at greater risk for these outcomes would enable providers to plan appropriate prevention measures and interventions. This study sought to examine the relationship between child temperament and post-surgical outcomes to help identify factors which may impact pediatric post-operative response.

Design: This was an observational study which examined pre-, peri-, intra-, and post-operative data gathered from parental report and medical records of children undergoing surgical procedures.

Setting: Participants were recruited from Boston Children's Hospital at Waltham.

Participants: Children undergoing TNA surgery (N=260, ages 2-7 years) were selected for this study.

Procedures: Patients were consented and enrolled prior to their surgery. Parents completed temperament and post-operative behavior measures. Information on demographics, anesthetic agents, and postoperative outcomes were gathered from the electronic medical and intraoperative records.

Measures: The Child Behavioral Questionnaire (CBQ) was used to assess temperament. Induction behaviors were documented with the Induction Compliance Checklist (ICC). The Pediatric Anesthesia Emergence Delirium Scale (PAED) evaluated emergence agitation, while post-operative behavior changes were assessed using the Post Hospitalization Behavior Questionnaire (PHBQ). Developmentally appropriate VAS scales (Numeric Rating Scale, Wong Baker Faces Scale, or FLACC scale) were used to codify pain.

Results: The SPSS TwoStep Cluster method was utilized to create 4 participant groupings based on the z-scores of reactive temperament measures. One-way ANCOVAs were used to test whether outcome variables differed across each cluster, controlling for age. Results indicated that pain levels differed significantly across groups (Main Effect: $F(3,234)=4.336$, $p=.005$).

Conclusions: Findings suggest that temperament is predictive of pain post-TNA surgery. In particular, children with higher levels of emotionality exhibited more pain that those with lower negative affect scores. Further research may enable providers to accurately assess who is at risk of adverse response based on temperamental profile.

32. "Project S.M.I.L.E.": Improving use of tools to minimize pediatric procedural pain by pediatric residents in the inpatient setting

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Objective: To implement a program to minimize pain during procedures performed on pediatric patients during hospitalization.

Design: Pediatric residents documented details of painful procedures performed on the pediatric inpatient unit; the type of procedure, methods used to minimize pain, and level of distress of the patient were documented. We then educated the pediatric residents regarding procedural pain and methods to decrease pain during a 1 hour lecture. We incorporated several methods to reduce procedural pain into an acronym, "Project S.M.I.L.E" (S= Sucrose drops/breastfeeding for infants; M= maximize distractions; I= Incorporate comfort positioning; L= lidocaine numbing cream; E= Encourage patient/family participation). A "toolbox" (filled with bubbles, pinwheels, Viewmasters, reminders to use numbing cream and sucrose drops/breastfeeding) was made available to the residents during all shifts. Residents completed a follow-up survey 3 months after initiation of "Project S.M.I.L.E."

Results: Baseline evaluation included 20 procedures: Intravenous line placements, venipunctures/heel sticks, and arterial punctures. Distraction was utilized in 61% of encounters and perceived to be successful 64% of the time. Numbing cream was not utilized for any of these procedures. 90% of patients were described as being at least mildly distressed and 30% at least moderately distressed. 3 months after Project SMILE was initiated, 73% of pediatric residents reported increased use of comfort positioning, 93% reported increased use of distraction, 81% reported increased use of numbing cream, 53% reported increased use of sucrose drops, and 27% reported increased use of breastfeeding during painful procedures.

Conclusions: Methods to decrease procedural pain in pediatrics are well-described. However, due to various barriers, these methods are not always incorporated. Through education and a program utilizing a novel acronym, as well as by providing tools for procedural pain reduction, we improved pediatric resident use of tools to decrease pain during routine procedures in the hospital.

33. Comfort with Pediatric Pain Assessment and Pharmacologic Treatment Among Pediatric and Emergency Medicine Residents

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Objectives: We aimed to assess pediatric and emergency medicine (EM) resident physicians' comfort with pain assessment and treatment in various pediatric age groups.

Design: 20 EM and 24 Pediatric residents at a single institution were offered an anonymous survey to assess comfort with both the assessment of pain as well as the treatment of pain with medications in various age categories.

Results: The majority of pediatric residents were comfortable assessing pain in patients from toddler (90%) to teenage years (100%). The percentage of EM residents comfortable with pain assessment increased with each subsequent age category (36% comfortable with toddlers, 93% with teenagers). Fewer residents were comfortable with infant pain assessment (15.4% of EM and 45% of pediatric residents).

EM residents' comfort with treating pain increased with each subsequent age group as well (15% and 93% comfortable treating infants and teenagers, respectively). Over 80% of pediatric residents were comfortable treating pain in elementary age, adolescents, and teenagers. 38% and 62% were comfortable treating pain in infants and toddlers, respectively.

100% of all residents were comfortable using acetaminophen and ibuprofen in all age categories. Among the narcotics, residents in both groups were most comfortable using IV morphine. Both groups of residents were more comfortable using hydromorphone and oxycodone in older children.

Conclusions: Pain assessment and management are common and necessary in pediatric inpatient and emergency room settings. Both EM and pediatric residents were least comfortable with pain assessment and treatment in patients <1 year of age. EM residents are more comfortable both assessing and treating pain in older children. Lack of comfort with assessment and treatment of pain in younger children may lead to under-treatment of pain. Further education for residents in both specialties may improve comfort with pain assessment and management in young children.

34. Neonatal Pain and Neurobehaviour of Preterm Newborns

Authors: Liana Albuquerque da Silva, MSc; Maria de Fátima Junqueira-Marinho, PhD; Saint Clair dos Santos Gomes Junior, PhD; Érica Célia Sousa Rocha.

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Objective: The main objective of this study was to describe the relationship between neonatal pain and the early neurobehaviour of hospitalized preterm newborns.

Methods: This is a prospective cohort study. The participants were all preterm newborns (≤ 35 weeks of gestational age) born and hospitalized at neonatal units at Rio de Janeiro, Brazil, during data collection, that did not have any congenital neurological impairments. To assess neonatal pain, the pain was measured by NIPS (Neonatal Infant Pain Scale)1 and the painful procedures were counted in the first fourteen days of life of each newborn. The Neurobehavioral Assessment of Preterm Infants (NAPI)2 was applied when newborns completed 37 weeks of corrected gestational age and/or when they were clinically stable for the neurobehavioral evaluation.

Results: A total of 663 acute painful procedures were recorded, with an average of 3 procedures per day per newborn, and a total of 162 measures of pain relief. The greater severity of infants is associated with greater pain management, as well as more invasive procedures seem to be associated with greater analgesia. In this study, we did not identify statistically significant relationships between the pain exposure and the newborns` neurobehavior. The reduced sample size (n = 17) and the clinical characteristics of this population may be related to the absence of statistical significance. However, the changes in irritability, crying quality and scarf signal, which may characterize a certain vulnerability of these infants to pain and / or to other factors related to prematurity, stand out.

Conclusions: Studies with larger populations and with different levels of complexity should be performed on this subject, especially in preterm infants, in order to investigate possible early neurobehavioral changes and, thus, to promote greater attention to pain management and neonatal care, prioritizing not only their survival but also their quality of life.

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35. Multidisciplinary Approach to Chronic Migraine in Adolescents with incorporation of Botulinum Toxin A - A Case Series

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Objective: To assess effectiveness of a multidisciplinary approach with incorporation of Botulinum Toxin A for the prophylactic treatment of headaches in adolescents.

Design: Retrospective case series.

Methods: Retrospective review of data of 10 patients, aged 14-18 years, who suffered from migraine and tension type headaches and were treated at the multidisciplinary pain clinic at our institution from 2014-2017. These patients have previously failed two or more preventative and suffered severe disability most days of the month. A multidisciplinary approach incorporating medical management, physical therapy, psychological therapy and injection of Botulinum Toxin per PREEMPT protocol was employed. The frequency and severity of headaches following treatment was extracted from the patient charts.

Results: 8/10 patients reported significant improvement in headache quality and frequency . In these patients Botox injections needed to be repeated every 3-12 months. In two patients, short lived (<1 week) improvement was reported with return of severe headaches.

Conclusions: This retrospective case series demonstrates promising effects of combination of a multidisciplinary pain management approach with Botulinum Toxin A injections in adolescents suffering from chronic migraines. "

36. Evaluation and impact of an online pediatric pain curriculum (OPPC) for healthcare professionals

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Background: Ineffective pain assessment and management can have detrimental consequences for children and families including slower recoveries, increased complications and greater use of healthcare resources (Grunau 2006; Finley 2005). Evidence attests that inadequate pain practices occur due to gaps in knowledge, misconceptions about pain, and lack of training. No online pain curriculum has been developed and evaluated for healthcare professionals working in paediatrics.

Methods: To address this need, the Pain Centre and Learning Institute at The Hospital for Sick Children (SickKids) have partnered to develop an Online Paediatric Pain Curriculum (OPPC). The OPPC includes ten educational modules, based on IASP curricula, and developed by international experts to bridge the knowledge to action gap. To evaluate the OPPC, a survey at the end of each module was developed. The survey was designed to answer questions with respect to perceived acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost and sustainability.

Results: Early findings from respondents who completed the modules and survey indicate that (a) 81-88% reported improved knowledge of paediatric pain and collaboration with other healthcare providers and (b) 86-89% felt the modules were acceptable and appropriate and would recommend them to others. Future results will include more detailed data on the number and location of people accessing the modules and highlight differences between early and later survey submissions.

Conclusion: Feedback on the OPPC suggests early benefits in terms of knowledge acquisition, accessibility and impact. Survey feedback will inform further development of the modules, which will educate healthcare trainees and professionals on paediatric pain assessment and management.

37. User-Centered Design of a Smartphone App for Adolescents with Post-Operative Pain

Authors
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Objective: To explore the pain self-management needs of adolescents with acute post-operative pain to inform development of a smartphone application for this group called iCanCope with Post-Operative Pain (iCanCope PostOp).

Design: An iterative user-centred approach is being used to develop and evaluate iCanCope PostOp.

Procedures: In Phase 1, a qualitative needs assessment was completed with a convenience sample of adolescents (n=14), parents (n=13), and healthcare providers; HCPs (n=15). Two iterative cycles of semi-structured individual interviews were conducted with adolescents and parents. Two separate focus groups were conducted with HCPs (n=15). Descriptive statistics and simple content analyses were used to organize data into themes. In Phase 2, we partnered with community colleges and universities in Toronto during the 12-week Taking SickKids Mobile Competition. In Phase 3, a two-day consensus conference was held with multi-disciplinary experts in pediatric post-operative pain (n=13) to inform development of a clinical decision support system (CDSS) for the app. This consensus meeting was informed by a systematic review of psychological strategies for post-operative pain management.

Results: In Phase 1, study participants were presented with questions regarding the app functions: (1) pain tracking, (2) goal setting, and (3) pain self-management toolbox. Participants reported all three functions as important, with additional comments regarding the importance of realistic goals and a customizable interface. In Phase 2, low-fidelity app wireframes were developed. In Phase 3, consensus participants refined the pain tracking questions and generated algorithms for the CDSS. Two patient partners participated as equal members in the consensus meeting.

Conclusions: Adolescents, parents, and HCPs indicate that iCanCope PostOp is a promising avenue to improve accessibility and availability of self-management strategies for acute post-operative pain. Future phases will include usability and feasibility testing, followed by a definitive randomized controlled trial to evaluate program effectiveness.

38. Treating Pediatric Pain with Medical Family Therapy

Author: Swanger-Gagne, M.

Background: Amplified Musculoskeletal Pain Syndrome (AMPS) is a pain condition that involves both localized and/or diffuse musculoskeletal pain and leads to even greater pain severity and decreased functioning than other chronic pain conditions (Logan et al., 2013). It is estimated that 2% to 6% of children and adolescents are affected by amplified musculoskeletal pain (Sherry, 2011). Experiencing chronic pediatric pain as a family can be life-changing. Adolescents often experience reduced activity, isolation, independence while families alike experience financial strain, changed relationships, and emotional distress (Jorden at al, 2008; Palermo % Eccleston, 2009). Family patterns premorbid to illness are often disrupted, roles, responsibilities, structure, and function of family members change. Families grieve the loss of their child's illness free future and adjust to a diagnosis that is confusing and unpredictable. Parents accommodate parenting behaviors in attempt to lessen the impact of the illness for their child. These family level changes reciprocally impact the child's pain management and response to treatment.

Methods: Medical Family Therapy (MedFT) is a framework for professional practice that applies a biopsychosocial-systems approach to the integration of behavioral and medical health care (McDaniel, Doherty, & Hepworth, 2014). The practice of MedFT is collaborative with a primary aim to promote a family's agency (autonomy, efficacy, and power; Bakan, 1966) and communion (connectedness, relationships and sense of belonging) within a healthcare experience. In practice, MedFT's work with patients and their families to support coping with chronic illness, disability, and caretaking, reduce conflict related to medical needs, and support a lifestyle change and illness acceptance, while improving partnerships and communication between patient, family, and medical team.

Results: This presentation aims to overview MedFT and its application with families, patients, and medical teams of children with AMPS and comorbid diagnoses. A case example of MedFT involving interdisciplinary collaboration and partnerships across medical, mental health, education, and physical rehabilitation providers will be presented.

39. **Pain reactivity in inpatients and stressful events in the Pediatric Intensive Care setting**

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Objective: To characterize the pain reactivity of children hospitalized in the Pediatric Intensive Care Unit (PICU) and to examine the associations between acute pain and the level of stress exposure of children during hospitalization.

Method: The sample consisted of 11 inpatients (1-6 years) admitted to the PICU of a public university hospital in Southeastern of Brazil. The pain intensity was assessed during a puncture procedure by the Faces, Legs, Activity, Cry, and Consolability scale (FLACC). The history of stressful events of the PICU environment was obtained by the Neonatal Infant Stressor Scale (NISS), analyzing the medical records. The descriptive statistical and correlation analysis (Pearson test) were performed. The level of significance was p â‰¤ 0.05.

Results: The inpatients presented predominantly chronic diseases (prevalence of 82%), and were submitted to surgical treatments (prevalence of 64%). The rate of stress in the PICU experimented by the children was, in median, 19 stressors events per day. The stress was classified, predominantly, as moderately and slightly stressful. There was a statistical significant positive correlation between pain score in the baseline and the number of previous hospitalizations; the higher the number of previous hospitalizations, the greater the pain intensity in the baseline prior to procedure. Also, there was a statistically significant positive correlation between pain scores during the procedure and recovery phases; the higher the pain intensity during puncture, the higher the pain after the procedure. Finally, there was a significant positive correlation between length time stay in the hospital and the number of stressful events; the longer time the stay of children in the hospital, the more the children were exposed to low- to extremely- stressful events.

Conclusion: Although the PICU presented pharmacological management for pain relief, the findings highlighted the presence of stressful experiences for children that have to be managed by non-pharmacological strategies, aiming to protect them.

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40. Title: Face Validity of the Sickle Cell Disease Health-Related Stigma Scale in Youth with Sickle Cell Disease

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Objective: Disbelief of pain symptoms by others has been documented in adult chronic pain populations due to the 'invisibility' of pain (Kool, Van Middendorp, Boeije, & Geenen, 2009). This form of health-related stigma has also been supported among adults with SCD (Haywood et al., 2014; Jenerette & Brewer, 2010). Part of the challenge of stigma research in youth with SCD is the limited availability of assessment tools to evaluate this construct, which has implications to health outcomes, specifically poorer quality of life (Wakefield et al., 2017). The purpose of the current study is to evaluate face validity among youth with SCD of the Sickle Cell Disease Health Related Stigma Scale (SCD-HRSS; Jenerette et al., 2012), which has been validated among young adults with SCD. Feedback from adolescents and young adults with SCD will inform modifications to the SCD-HRSS for youth and provide descriptions of stigma. **Methods**: The SCD-HRSS is a 30-item questionnaire evaluating perception of stigma among the three existing domains: general public, physicians and family members. An additional 10 items were included to develop a nurse domain. 12 youth with SCD (M = 18.77, SD = 2.27) were recruited from both inpatient and outpatient settings. The participants were asked to rate each of the 40 SCD-HRSS items on a 5-point Likert scale regarding level of importance to their illness experience and describe reasons for their rating. **Results**: Our findings suggest that 90.05% of items demonstrate consistent face validity, with four items identified as having inconsistent importance across two subscales: family (N =3) and nurses (N = 1). Of note, there were no problematic items identified within the general public and physician subscales. **Conclusions**: Overall, SCD-HRSS demonstrates face validity for a majority of items. The ability to understand the role of stigma for youth with SCD is dependent on the ability to reliably and accurately measure stigma. Face validity is the first step in the validation process. Future research implications include the further establishment of psychometric properties for the SCD-HRSS.

Abstracts – Poster Session #1

Saturday October 14, 2017

16:00-17:00

1. **A Pilot Study of the Effectiveness of A Multidisciplinary Pediatric Chronic Pain Program: Does Diagnosis Matter**

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Objective: Literature has documented the success of a multidisciplinary approach to manage pediatric chronic pain. The objective of this study was to examine data from the first two years of a multidisciplinary pediatric chronic pain program at an east coast children's hospital to determine if diagnosis is related to patient success.

Design: A retrospective chart review was completed on patients enrolled between August 2014 and October 2016. Demographic information including age, sex, and race was collected, along with primary pain diagnosis. The treatment team subjectively determined success, which included decreased healthcare utilization and increased functioning (e.g., return to school, sports, etc.).

Participants: 499 total patients were reviewed, with 388 females and 111 males with ages ranging from 3 to 20. Average age was 14.4 years old. On average, patients attended 4.3 PT sessions, 1.2 OT sessions, and 3.8 psychology appointments.

Results: The most common primary pain diagnoses were amplified musculoskeletal pain syndrome (111 patients) and migraines (69 patients). The diagnoses with the highest success rates were abdominal pain/GI complaints (50%) and migraine (45%). Conversely, the lowest success rates were found with chronic fatigue syndrome (24%) and complex regional pain syndrome (25%). Males overall had a 51% success rate and females had a 57% success rate.

Conclusion: The data indicate that certain diagnoses may be more responsive to A multidisciplinary approach including behavioral health and PT/OT in conjunction with medical treatment. Further statistical analysis is required to better understand this pattern of response to a comprehensive pain program. Future research should continue to investigate the factors associated with program success in order to improve care for all families referred.

2. A Case-Study of a 17-Year-Old Female Soccer Player Displaying Potential Phenotypic Symptoms of Future Chronic Traumatic Encephalopathy (CTE): A Cautionary Tale

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Background: We present as a cautionary example, the case of a 17-year-old, high-level, elite female soccer player with a long-term history of multiple presumed and confirmed concussive brain injuries with severe treatment refractory postconcussive headache that appears to be demonstrating potential phenotypic characteristics of future chronic traumatic encephalopathy (CTE) as identified in the literature. While this condition is rare in adults, it is even more so in the pediatric population with only seven youth American football players (ages 16-18) documented in the literature. Our patient's history is significant for symptoms such as debilitating headaches, depression, anxiety, severe suicidality, changes in cognitive function, and risk-taking behaviors. CTE can only be diagnosed through autopsy, but many adult athletes who play collision sports including soccer, boxing, American football, ice hockey, or rugby as well as military veterans who sustained blast injuries have comparable presentations. While it is currently not feasible to diagnose our patient with a potential phenotypic CTE at this time, her case highlights the importance of proper concussion identification and treatment in youth athletes, as well as stricter regulations about return to play. Further research of sports-related, mild-traumatic, brain injuries is warranted for the developing brain.

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3. **Investigating the role of parents with chronic pain and their partners in the pain experience of their children**

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Background and objective: Pain literature indicates that children of parents with chronic pain are at higher risk of reporting pain. For example, pain-related cognitions of parents with chronic pain are related to the anxiety that their children experience during a painful procedure. It is possible that partners of parents with chronic pain (i.e., the child's other parent) could also play a role in children's attitudes toward a painful procedure. We hypothesized that greater pain-related cognitions (pain catastrophizing) of both parents would be related to higher levels of anxiety in their children during a painful procedure.

Design: As part of a larger ongoing project, 14 parents (mean age=42.43; 9 females) with chronic pain (having pain for more than 6 months; recruited from a local pain clinic), their partners (living with the parent with pain and the child; mean age=42.51; 5 females), and their children (8-15 years old; mean age=11.52; 8 females) participated. Parents with chronic pain and their partners completed measures of pain catastrophizing about their own pain and their children's pain in general. Children participated in a Cold Pressor Task (CPT) and reported their anxiety and pain during the CPT using two Visual Analogue Scales (0-10).

Results: After controlling for the pain intensity during the CPT (mean=4.86), the regression results showed that only partners' pain catastrophizing about their own pain (b=.98, p=.006) was associated with higher anxiety in children during the CPT. Parents' and partners' pain catastrophizing about their child's pain and pain catastrophizing of parents with pain about their own pain were not associated with children's anxiety.

Conclusions: These preliminary findings suggest that pain-related cognitions of the partners are related to their children's anxiety during a painful procedure. While further investigation is essential, this work highlights the importance of the role of partners of patients with chronic pain.

4. Parental perceptions of pain and treatment adherence in juvenile idiopathic arthritis (JIA)

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Background: Juvenile Idiopathic Arthritis (JIA) affects approximately 24,000 children throughout Canada, many of whom report pain as the predominant symptom. While treatments aim to manage the pain, adherence is often a challenge.

Objective: This study will explore whether treatment adherence is affected by parent-level factors such as coping, attitudes, and fears related to pain. We hypothesize that there will be more non-adherence in families where parents demonstrate avoidance coping, have negative perceptions of pain and medication, and score higher on fear of pain and pain catastrophizing scales.

Methods: Parents will be recruited via social media with the support of Cassie & Friends (www.cassieandfriends.ca). All Canadian families are eligible provided their child has been diagnosed with JIA and is under the age of 18. After informed consent, parents will complete online questionnaires about their child's diagnosis, treatment, and adherence, and their own coping, attitudes, and fears regarding pain.

Analysis: A correlation analysis will examine the relationship between the various parent-level factors. Adherence scores will be divided into adherent/non-adherent groups as per recommendations in the literature. Controlling for age and gender, logistic regressions will examine the impact of parent-levels factors predicting pharmacological and non-pharmacological treatment adherence.

Implication: This study will identify how parental attitudes around pain relate to treatment adherence, which can have long-term effects on their child's health and well-being. We expect results to inform the need for the dissemination of evidence-based pain-management techniques to improve treatment adherence in JIA.

5. **Evaluation of the quality and proportion of pain related content of available online health resources for parents of preterm infants receiving intensive care.**

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Objective: Parents of preterm infants are increasingly turning to the Internet for information on their baby's health needs. However, little is known about the reliability and evidence based, up-to-date quality of online information related to prevalent parental concerns, such as infant pain or general care.

Design: Systematic review of available online health evidence through Google.com using a search strategy combining premature baby plus 12 key terms (i.e., pain; breastfeeding). Inclusion criteria were websites published in English within the top 100 hits per search on May 28/16. Exclusion criteria included newspaper articles, scientific sources, hospital websites, or non-relevant results. Websites were evaluated using DISCERN, a 16-item questionnaire to evaluate reliability and overall quality, as well as Health On Net (HON) to evaluate credibility and transparency.

Results: The initial search yielded 1,200 websites with 337 eligible being screened with total of 197 websites included. Using DISCERN, only 41.1% of websites received a high score (above 80%) on reliability, 30.5% scored high on treatment information, and only 9.6% scored high on overall quality. Findings indicate few websites focused on infant pain (n=10), with 50.0% receiving a high score on reliability, 70% scored high on treatment information, yet only with 30% scored high on overall quality. Of pain websites, 20% held HONcode certification (12.2% total) and 40% were dated on or after 2015 (24.4% total).

Conclusions: Despite being a common concern of parents, this evaluation suggests that infant pain is not a prevalent topic addressed online. Of those websites that did, most were of low quality and lacked up-to-date information, consistent with study findings across all websites regarding general care.

6. Parental Heart Rate Variability in the Context of Child Acute Pain: A Pilot Study

Objectives: Parent behaviours and responses are linked to child pain outcomes during painful medical procedures. Research has focused on self-report and behavioural observations but parent physiology has been overlooked. Heart rate variability (variation in time between consecutive heartbeats; HRV) is an index of emotional experience and regulation that can inform how an individual is internally managing their emotions during stressful situations. This pilot study investigated how parent HRV changes in the context of a laboratory pain task, and its associations with child pain outcomes.

Design and participants: Children between 7 and 12 years of age (n = 26) completed the cold pressor task (CPT; 10Â°C water; 4 mins uninformed ceiling) in the presence of one of their primary caregivers who were instructed to interact with them as usual.

Procedure: Parental HRV (assessed as HF-HRV and RMSSD to isolate the variability centrally related to emotion regulation) was monitored during three phases of the study: 1) baseline neutral video (2 mins resting), 2) immediately prior to children's completion of the CPT (2 mins pre-CPT), and 3) recovery post-CPT (2 mins recovery).

Measures: Parent- and child-rated child pain intensity and fear. Pain tolerance was measured by the length of time the child kept their hand in the cold water. Phasic indices (Î”1 = pre-CPT minus resting; Î”2 = recovery minus resting) of parent HRV were calculated.

Results: Repeated measures ANOVA indicated HF-HRV significantly decreased from baseline to recovery, while RMSSD did not. Bivariate correlations indicated phasic HF-HRV and RMSSD were not significantly related to child pain outcomes, although moderate positive associations were observed with child pain (child report) and fear (parent report).

Conclusions: Exploring parent's HRV sheds light on their internal experience in the context of their child's acute pain, contributing to our understanding of parent-child dynamics in the pediatric pain context.

7. **Virtual Reality for Procedural Pain and Anxiety in Young Children with Burn Injuries: A Pilot Study**

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Objective: Hydrotherapy is a painful procedure associated with treatment of burn injuries. Very few studies have used virtual reality (VR) for procedural pain and anxiety in young children with burn injuries. The aim of this study was to assess the feasibility and acceptability of a VR prototype for procedural pain and anxiety in children with burn injuries.

Design, setting and participants: This prospective pilot study recruited children from 3 months to 10 y.o. with burn injuries requiring hydrotherapy sessions for wound burn care. Data was collected at the CHU Sainte-Justine, a large pediatric tertiary university health centre located in Montreal (Quebec, Canada).

Procedures: Each child received the virtual reality distraction in addition to the standard pharmacological treatment as per the unit's protocol.

Measures: Pain was assessed using the FLACC (0 to 10) and anxiety using the PBCL (Pain Behavioral Check List) (8 to 40). Satisfaction of healthcare professionals was also documented using a pretested questionnaire (8 to 32).

Results: Fifteen participants were included in the analyses. The mean age was 2.2 Â± 2.1 y.o., and the mean TBSA 5 % (Â±4%). Pain did not significantly vary before, during and after the procedure with mean FLACC scores respectively at: 2.1 (Â±2.7), 2.9 (Â±3), 2.6 (Â±3). The mean PBCL score was 11.4 (Â±5.2) during the procedure. The mean satisfaction of healthcare professionals was 26.3 (Â±4.2). The VR prototype did not interfere with the procedure and was considered very useful by most healthcare professionals for reducing children’s pain and anxiety.

Conclusions: The VR prototype is a feasible and acceptable method of distraction for procedural pain and anxiety in young children with burn injuries. A larger trial with a control group would be required to assess its efficacy.

8. Parent-targeted resources for pain management during infant vaccinations: A cross-Canada environmental scan

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Objective: Early childhood vaccination is one of the most important public health interventions. However, vaccinations are painful and result in distress for infants and parents. Clinical practice guidelines recommend parent-targeted pain reduction strategies during vaccination (i.e. breastfeeding, secure upright holding, sucrose). This study aims to identify and analyze publicly accessible information regarding existing parent-targeted resources for pain management during vaccinations of infants across Canada.

Methods: An environmental scan is being conducted to identify online publicly available resources through two main internet sources: Google searches iii) Social Media networks i.e Facebook, YouTube, Twitter. Inclusion criteria are those resources in Canada which i) have content on pain management during vaccination; ii) aim to disseminate information about pain management during vaccinations for infants; and iii) include pain management strategies for use with infants during vaccinations. Characteristics of the resources will be collected and summarized in a data extraction sheet and will be validated by a second reviewer. Descriptive analysis will be used to synthesize data.

Conclusion: By identifying existing parent-targeted interventions, this environmental scan will provide baseline data to inform future studies aimed at promoting evidence-based recommendations for pain management of infants during vaccination.

9. Pain reactivity in inpatients and stressful events in the Pediatric Intensive Care setting

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Objective: To characterize the pain reactivity of children hospitalized in the Pediatric Intensive Care Unit (PICU) and to examine the associations between acute pain and the level of stress exposure of children during hospitalization.

Method: The sample consisted of 11 inpatients (1-6 years) admitted to the PICU of a public university hospital in Southeastern of Brazil. The pain intensity was assessed during a puncture procedure by the Faces, Legs, Activity, Cry, and Consolability scale (FLACC). The history of stressful events of the PICU environment was obtained by the Neonatal Infant Stressor Scale (NISS), analyzing the medical records. The descriptive statistical and correlation analysis (Pearson test) were performed. The level of significance was p â‰¤ 0.05.

Results: The inpatients presented predominantly chronic diseases (prevalence of 82%), and were submitted to surgical treatments (prevalence of 64%). The rate of stress in the PICU experimented by the children was, in median, 19 stressors events per day. The stress was classified, predominantly, as moderately and slightly stressful. There was a statistical significant positive correlation between pain score in the baseline and the number of previous hospitalizations; the higher the number of previous hospitalizations, the greater the pain intensity in the baseline prior to procedure. Also, there was a statistically significant positive correlation between pain scores during the procedure and recovery phases; the higher the pain intensity during puncture, the higher the pain after the procedure. Finally, there was a significant positive correlation between length time stay in the hospital and the number of stressful events; the longer time the stay of children in the hospital, the more the children were exposed to low- to extremely- stressful events.

Conclusion: Although the PICU presented pharmacological management for pain relief, the findings highlighted the presence of stressful experiences for children that have to be managed by non-pharmacological strategies, aiming to protect them.

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10. Does Spinal Fusion Surgery Increase Kinesiophobia? Preliminary Results

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Objective: Adolescents undergoing spinal fusion surgery with instrumentation are at great risk to develop kinesiophobia (fear of movement) and consequent morbidities like disability. However, kinesiophobia is only measured with a questionnaire, and no objective physical tests are used. To improve recovery, identifying who develops kinesiophobia after surgery is of paramount importance.

Design: Twenty-three 10-19 year-old patients with Adolescent Idiopathic Scoliosis (AIS) scheduled to undergo spinal fusion surgery at the Shriners Hospital for Children-Canada were enrolled. Before surgery, pain catastrophizing, anxiety and pain intensity were assessed with self-reported questionnaires. After surgery, kinesiophobia was measured with the Tampa scale on postop day 1, 2 and 5 and 6 weeks after. Functional disability was also assessed. Correlation and paired t-tests analyses were performed.

Results: Pain catastrophizing and helplessness positively correlated with kinesiophobia during the acute postop day 1 (r=0.43,p=0.06 & r=0.42,p=0.07), day 2 (r=0.41,p=0.17 & r=0.45,p=0.06) and day 5 (r=0.35,p=0.12 & r=0.44,p=0.06). Furthermore, pain catastrophizing, helplessness and magnification during in-hospital stay day 2 (r=0.39,p=0.09, r=0.44,p=0.05 & r=0.33,p=0.16) and day 5 (r=0.51,p=0.02, r=0.52,p=0.02 & r=0.50,p=0.02) predicted kinesiophobia six weeks after surgery. Six weeks after surgery, 19 of 23 patients developed kinesiophobia, and a positive correlation was observed between kinesiophobia and functional disability (r=0.39,p=0.06) and helplessness (r=0.44,p=0.06).

Conclusion: Kinesiophobia is associated with pain catastrophizing during the acute postoperative period. Presence of kinesiophobia weeks after surgery was observed in the majority of patients and is associated with functional disability. There is a clinical need to better characterize the observed fear of movement that could interfere with proper recovery.

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11. Building Sustainable Partnerships with Patients and Families to Guide Pediatric Chronic Pain Research and Practice in Canada

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Objective: While pediatric pain researchers have identified important knowledge gaps and priorities for future research, the patient and family voice is largely lacking. The primary aim of this project is to co-build a sustainable patient engagement strategy to guide pediatric chronic pain research and practice in Canada. "Patient engagement occurs when patients meaningfully and actively collaborate in the governance, priority setting, and conduct of research, as well as in summarizing, distributing, sharing, and applying its resulting knowledge" (Canadian Institutes of Health Research, 2014).

Design: This poster will outline the activities for this patient engagement project, including plans to: 1) create a Canadian patient engagement registry of pediatric patients and families who are interested and able to act as partners and collaborators in research and clinical practice in pediatric chronic pain; 2) facilitate capacity building for pediatric patient engagement by developing and implementing pediatric specific training for patients, families, clinicians, and researchers delivered locally and online; and 3) co-build a national research agenda for pediatric chronic pain with patients, families, clinicians, and researchers from across Canada. Evaluation and knowledge dissemination is embedded throughout. Our national team is comprised of current and former pediatric chronic pain patients, parents, clinicians, researchers, policy-makers and advocacy groups that form a partnership of relevant engaged stakeholders.

Conclusions: Patient engagement, including that involving children and their families, enhances the quality, appropriateness, and relevance across all stages of the research process. By enhancing pediatric patient and family engagement in pediatric chronic pain research, we believe that research will be more effective, efficient, and meaningful to pediatric patients and their parents. This will increase the likelihood that research will be taken up in clinical care, lead to better patient outcomes, avoid wasting research funds or effort in areas that are not of importance to patients.

12. Agreement and Predictors of Discrepancy Between Parent Proxy and Child Self-Report of PROMIS Measures in Pediatric Chronic Pain

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Background and Objective: The goal of this project is to examine the agreement and predictors of discrepancy between parent proxy and child self-report of Patient-Reported Outcomes Measurement Information System (PROMIS) measures in youth with chronic pain. Given generally low to moderate agreement between parents and children across patient-reported outcomes and assessment of childrenâ€™s pain, reports from multiple sources may be more valid than single source alone and differentially inform treatment.

Participants and Setting: 341 dyads including one youth with chronic pain (8-18 years old, M=14.11 years old; SD=2.37; 73.9% female) and a parent (91.5% mothers) seen in an outpatient pediatric pain clinic in an interdisciplinary tertiary care setting (Pain Management Service at Stanford Childrenâ€™s Health).

Procedures and Measures: Youth self-report and parent proxy ratings of PROMIS computer adaptive testing (CAT) measures were completed electronically prior to initial clinic intake (baseline) and at set follow-up times. PROMIS domains included mobility, pain interference, fatigue, peer relations, anxiety, and depression. Measures were completed through the Pediatric-Collaborative Health Outcomes Information Registry (Peds-CHOIR; Bhandari et al., 2016 PAIN).

Results: Pearson correlations between parent and child report were significant for all PROMIS domains and ranged from .537 (pain interference) to .794 (mobility). As compared with child report, parents rated significantly worse pain interference, peer relations, fatigue, anxiety, and depression for the child. Ongoing data analyses examine: (1) longitudinal relations between parent and child report; and (2) child (sex, age, race, chronic pain duration) and/or parent factors (relation to child, mental and physical health, pain catastrophizing) related to discrepancy in child and parent report. Results will be included in this poster presentation.

Conclusions: Only moderate agreement was reported between parent proxy and child self-report.

Funding: This work is supported by the International Collaboration Award from the Society of Pediatric Psychology.

13. Comparisons of the Psychometric Properties of the VAS, FPS-R and CAS in the Pediatric Emergency Department

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Objective: Appropriate pain management relies on the use of valid, reliable and age-appropriate tools that are validated in the setting in which they are intended to be used. The aim of the study was to determine and compare the psychometric properties of three self-reported pain scales commonly used in the pediatric EDs.

Methods: We performed a secondary analysis of the psychometric properties of the pain scales used in the OUCH Trial. The inclusion criteria were children aged between 6-17 y.o. presenting to the ED with a musculoskeletal injury and a self-reported pain scores â‰¥ 30 mm on the VAS scale. The pain intensity was assessed through self-report using first the VAS, secondly the FPS-R and thirdly the CAS. Convergent validity was assessed by the Pearson's correlations and the Bland-Altman method between the three scales. Responsiveness to change was determined by performing the Wilcoxon signed-rank test between the pre-post analgesia mean scores. Reliability of the scales was estimated using relative (Pearson's correlation, ICC) and absolute indices (CR).

Results: A total of 495 participants was included in the analyses with a mean age of 11.9 Â± 2.7 y.o. and a majority of boys (55.3%). Correlation between each pair of scales was 0.78 (VAS/FPS-R), 0.92 (VAS/CAS) and 0.79 (CAS/FPS-R). Limits of agreement (95%CI) were -3.77 to 2.33 (VAS/FPS-R), -1.74 to 1.75 (VAS/CAS) and -2.21 to 3.62 (CAS/FPS-R). Responsiveness to change was demonstrated by significant differences in mean pain scores among the three scales ($p<0.0001$). ICC and CR estimates suggested acceptable reliability for the three scales at respectively 0.79 and Â±2.29 for the VAS, 0.82 and Â± 2.07 for the CAS, and 0.76 and Â± 2.82 for the FPS-R.

Conclusion: The scales demonstrated good psychometric properties with a sample of

children with acute pain in the ED. The VAS and CAS showed a strong convergent validity, while FPS-R was not in agreement with the other scales.

14. Vaporized Medical Marijuana in an Inpatient Pediatric Rehab Hospital

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Background: Medical use of marijuana (medical marijuana [MMJ]) was sanctioned by Health Canada in 2001 (legislation revised in 2013), alongside the common law recognition of an individual's right to reasonable access to a legal source of MMJ. In spite of a lack of evidence demonstrating the efficacy and safety of MMJ for pediatric pain, interest and clinical use of various preparations (e.g., oil) for chronic pain management has increased in clinical practice. Consequently, hospitals are increasingly being faced with admission of patients who use MMJ to manage pain and other conditions, thus challenging administrators to develop policies to ensure the safety of all clients and staff.

The Get Up and Go (GUAG) Persistent Pediatric Pain Service at Holland Bloorview Kids Rehab (HBKR) Hospital is uniquely positioned in Canada as the only inpatient/day-patient intensive interdisciplinary pediatric chronic pain program in the country. Recently, GUAG admitted a patient using vaporized MMJ on referral. While HBKR had an existing policy for ingested forms of MMJ, the organization had not previously supported a client using other forms of MMJ.

The proposed poster will discuss the extensive process of developing an organizational policy and procedure to ensure the safe use of vaporized MMJ at HBKR. Specifically, we will discuss unique challenges faced in a pediatric setting and the relevant staff and organizational responses, including development of a client contract, consultation with the family and other stakeholders. We will include a brief comment on client experience (Case Report), and lessons learned. Our intention is to share our experience and knowledge with other inpatient settings to build expertise and capacity in the system as well as to encourage dialogue on this important and timely issue.

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15. Psychodynamic Treatment of Persistent Pain in a Pediatric Intensive Interdisciplinary Rehab Setting: Engaging Partnerships to Support Change

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Objective: Our primary objective is to share a clinical example of psychodynamic treatment of a youth with persistent pain in an inpatient/day-patient interdisciplinary setting. A secondary objective is to highlight interdisciplinary partnerships that support patient care and treatment gains. Our treatment approach will be presented in the context of a psychodynamic case formulation, highlighting the need for consultation and consistency among team members for particular presentations (e.g., use of the defense of splitting). Treatment outcomes will be presented.

Design: Case report.

Setting: Intensive interdisciplinary rehabilitation service for persistent pain, consisting of 4 week inpatient/day-patient treatment.

Measures: Social/emotional functioning: Patient-Reported Outcomes Measurement Information System (PROMIS) Pediatric Anxiety and Depressive Symptoms, Short Forms (Irwin, et al., 2010).
Pain-related coping: Pain Self-Efficacy Questionnaire (PSEQ, Nicholas, 1989); Pain Catastrophizing Scale (PCS, Sullivan, Bishop, & Pivik, 1995); Chronic Pain Acceptance Questionnaire - Adolescent Version (CPAQ-A; McCracken, Gauntlett-Gilbert, & Eccleston, 2010); and PROMIS Pediatric Pain Interference, Short Form (Varni, Stucky, Thissen, et al., 2010).

Pain: Brief Pain Inventory, severity questions (Univ. of Texas MD Anderson Cancer Centre).

Conclusions: Treatment primarily involved a relational approach. The inpatient/day-patient setting necessarily involved exposure to anxiety-provoking stimuli (including school, social, family/separation, and physical domains), which were processed in therapy. A final aspect of treatment involved creation of (new) supportive/successful interpersonal experiences. Improvements in functioning were seen from in a variety of domains including, including significant reductions in anxious/depressive symptoms, improvements in pain-related coping, and dramatic physical gains in spite of minimal change in pain intensity.

16. Pain in the PICU. How and what are we doing?

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Objective/Design: The aim of this cross-sectional multi-center study was to report the prevalence of pain and painful procedures among critically ill children during a 24-hour period and to describe the pain assessment and intervention practices conducted.

Setting: Fifteen pediatric intensive care units (PICUs) within 12 children's hospitals across the United States. Participants: Data was collected on all patients in the units for the duration of the 24-hour period. Health records were reviewed for pain assessments, interventions, and painful procedures.

Procedures/Measures: Nurses were surveyed during the 24-hour period regarding patients' ability to effectively communicate pain using the revised Nurse Questionnaire: Ability to Communicate and Pain Management.

Results: Of the 220 patients included in this study, 86 (39%) had pain scale scores documented that suggested pain was present and 47 (21%) had maximum pain scores that were moderate to severe. Patients experienced an average of 10 painful procedures, the majority related to airway management. Pain was assessed on average 11.5 times, most frequently with behavioral pain scales. Twelve different pain scales were used across the sites. Parenterally administered opioids (fentanyl, hydromorphone, and morphine) were the most common analgesic provided. Acetaminophen was the most commonly administered non-opioid. Decreasing environmental stimuli and caregiver presence were the most frequently described non-pharmacological interventions recorded. Patients with increased pain severity had pain assessed significantly more often, received more doses of analgesics, more often received multi-modal analgesia, and were more often able to communicate their pain. Eighteen children with pain received no analgesia; half of these children experienced moderate to severe pain.

Conclusions: Critically ill children continue to experience moderate to severe pain and multiple painful procedures per day. The prevalence of pain experienced is likely underestimated in this study due to the use of health record data to identify pain events. Future prospective research is warranted.

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17. Oral morphine versus ibuprofen for post-operative orthopaedic pain in children at home: a randomized controlled trial

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Background: Most paediatric surgical procedures are currently performed on an outpatient basis and pain is the most common complaint of children. Oral morphine is being increasingly prescribed. However, evidence supporting its use for at home therapy post-operatively is non-existent. Given the growing fears surrounding opioids, an evaluation of oral morphine's effectiveness was urgently needed in this clinical context.

Objectives: We sought to evaluate whether oral morphine was superior to ibuprofen for children's pain at home, following ambulatory orthopaedic surgery.

Design/Methods: We conducted a parallel-group, randomized, blinded superiority trial comparing oral morphine (0.5 mg/kg, maximum 200 mg) to ibuprofen (10 mg/kg, maximum 600 mg) for at home therapy in children 5-17 years who underwent outpatient orthopaedic surgery. Participants were asked to take the intervention at home every 6 hours as needed for pain for 48 hours. The primary outcome was the pre-post difference in pain scores using the Faces Pain Scale – Revised (FPS-R) for the first medication dose. Secondary outcomes included the pre-post difference in pain scores using the FPS-R for the second to eighth doses, breakthrough acetaminophen doses for pain, unscheduled visits to a health care provider within 96 hours, and the type and frequency of adverse effects.

Results: We analyzed the results of 65 participants in the morphine group and 67 in the ibuprofen group. At each dose, both morphine and ibuprofen decreased pain scores with no difference in efficacy. Significantly more participants in the morphine group (45/65, 69% versus 26/67, 39%) experienced adverse effects, most commonly drowsiness. There were no differences in health care visits.

Conclusion: Both oral morphine and ibuprofen decreased pain at home with no difference in analgesic efficacy. Oral morphine was associated with significantly more adverse effects, suggesting ibuprofen is an effective and safer option for at home management of mild to moderate pain following ambulatory orthopaedic surgery.

18. Making Pain Visible: Pain Management in Children and Adolescents With Cancer from the Perspective of the Nursing Professionals

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Objectives: To identify implemented assessment actions to pain management based on nursing professionals' perspectives; to compare the pain assessment actions between nurses and nursing technicians; and to analyze the association between nursing professionals' responses and professional variables.

Method: A cross-sectional descriptive study was conducted in a pediatric oncology institution from June 2015 to October 2016. The sample criteria included nursing professionals who had been working in the institution for at least 1 year and providing direct patient care. A questionnaire based on the ChildKind International (CKI) principles was developed and used to data collection. It has 72 multiple-choice questions with score assigned to each of them (100 points for "yes", 50 for "sometimes" or "partially", 0 for "no" or "I don't know/I don't remember").

Results: A total of 83 nursing professionals were recruited (42 nurses and 41 nursing technicians). The nurses' median age was 32 years and 37 for nursing technicians (p= 0.005). All nurses were female and seven (17%) of the technicians were male (p= 0.005). The median years of professional experience was 11 with no difference between them. The questionnaire median score for each principle was: 71 to Policy, 72 to Education, 70 to Pain Assessment and 12 to Guidelines. Correlation was identified between years of professional experience in pediatric nursing and Policy (p=0.0039). A significant correlation was found between Policy and Education (p=0.049), Pain Assessment (p=0.008) and Guidelines (p=0.001). Also between Education and Pain Assessment (p=0.009) and Guidelines (p=0.004). Pain Assessment (p=0.009) and Guidelines (p<0.0001) also were significantly correlated.

Conclusion: While nursing professionals do perform pain assessment actions related to all pain domains, they are not applied uniformly or systematically. The identification of different factors that may contribute to hindered optimal pain management in this context must continue to be studied in the next research steps.

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19. "Achy Penguin": Usability Testing of a Smartphone-based Tool to Improve Pain Assessment and Management in Children Aged 4-7 Years.

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Objective:
Achy Penguin is a smartphone-based tool designed to improve pain assessment and management among children, using innovative tools such as animal-based body maps to report pain and interactive pain self-management tools. The objective of this study is to evaluate and refine the usability of the Achy Penguin smartphone application in children with post-surgery acute pain, specifically for (a) ease of use, (b) ease of understanding, (c) frequency of technical and practical issues, (d) time to complete, and (e) patient satisfaction.

Design:
Qualitative, audio-recorded usability testing involving user observation and followed by semi-structured interviews were conducted in 3 iterative cycles, with 5-7 participants per cycle, to refine the program.

Setting:
In-patient general surgery recovery units at a Canadian pediatric tertiary care centre.

Procedures:
A purposive sample of English-speaking children (4-7 years old) who underwent day surgeries were recruited. Informed consent was obtained and baseline questionnaires were completed. Participants were provided with a brief demonstration of the program and proceeded through the Achy Penguin smartphone application in a step-wise manner. A trained observer recorded difficulties and navigation errors. Participants also provide feedback through a semi-structured interview, regarding their experience using the application and recommendations for improvement. Data was analyzed using content analyses and used to refine the smartphone application for further testing cycles.

Results:
To date, two iterative cycles have been completed with 13 participants (Cycle 1: n=6, mean age=5.77 years, SD=1.05; Cycle 2: n=7, mean age=6.0 years, SD=1.15). All participants reported having a smartphone in the household and the majority of participants felt 'comfortable' or 'very comfortable' using a smartphone (n=9). Participants progressed through the app tasks, on average, in 9.96 minutes and responded positively to the game. Usability issues were identified after Cycle 1 testing. Specifically, (1) aesthetics (i.e., larger font/icons), (2) ease of use (i.e. appropriate reading level, minor word changes), (3) pain

reporting (i.e. defined body map), and (4) gameplay (i.e. customization, reducing time to keep children engaged). Changes were completed prior to Cycle 2 testing, where minor issues were identified regarding ease of use. Specifically, adding audio instructions and minor navigation tools (i.e. zoom button, visual instructions).

Conclusions:

Overall, participants found Achy Penguin enjoyable, easy to use, and quick to complete. Further refinements to the app will be made following the third cycle of usability testing. Next steps include applying for funding to conduct a pilot randomized controlled trial.

20.

Objective: To make researchers and practitioners aware of this inclusive tool. Design: Provided books to 15 families, child life at 4 mid-western children's hospitals, doctors, dentists, nurses, PTs, OTs and SLPs.

Setting: For use of this pain management material is in the home.

Procedure: For use of this material are outlined in the book with annotated bibliography provided. 40 years of speech therapy practice have been applie to pain management communication in 36 pages print or e-book.
Intended users of this book are limited communicators from age two. Directions can be found on the website for "Users Who Read Well."

Participants: are families or caregiver-severely handicapped individual dyads. Procedures are: practice learning and using the six levels of My Pain Alert Scale. Measures include three aspects: Care giver notes stored on cell phone, numeric pain scoring like W-B faces, and admitting and release questions to demonstrate institutional cost savings.

Results: Families report children name their level of pain to parents when coming for help. Trained children don't wait for the pain to build.

Conclusion: We believe this book is worth using in children’s pain research. References can be accessed on our website: www.mypainalert.com

21. Changes in GABA associated with less pain and functional disability in adolescents 3-months following intensive pain rehabilitation

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Objective: Pediatric chronic pain (pain >3 months) can lead to significant disability. The Intensive Pain Rehabilitation Program (IPRP) is a multidisciplinary 3-6-week day program at the Alberta Children's Hospital developed to reduce disability in children and adolescents with chronic pain that do not respond to traditional therapy. However, the influence of IPRP on brain changes is currently unknown. Central to determining the activity of two brain regions involved in chronic pain, the anterior cingulate cortex (ACC) and left posterior insula, is the neurotransmitter gamma-amino butyric acid (GABA). The present study examined whether GABA levels in these regions changed following IPRP, and whether any changes in GABA were associated with decreased functional disability and pain at 3 months following IPRP.

Design: Youths (n=9, aged 12-18 years) with chronic pain underwent 3T neuroimaging before and immediately after the IPRP and GABA-edited data were acquired. At the beginning and at the end of the IPRP, patients filled out questionnaires, including the Functional Disability Index and 11-point pain numerical rating scale.

Results: Although GABA in the anterior cingulate cortex did not change significantly, GABA in the posterior insula significantly decreased between the first and second scan (t-test: $t(8)=3.38$, $p=0.01$). GABA concentrations in the posterior insula from pre- to post-IPRP were associated with decreased functional disability (GEE test: Effect size=-44.06, $p=0.01$) and pain (GEE test: Effect size=-4.97, $p=0.04$) 3-months following IPRP.

Conclusions: Regional, specific changes in GABA are associated with IPRP. Decreases in GABA are required for plasticity, however, higher GABA concentrations in the posterior insula both before and after IPRP are associated with less pain and less functional disability at 3-months following IPRP. Higher concentrations of GABA in the posterior insula, prior to IPRP, may serve as a biomarker for those whom will benefit the most from this intervention.

22. Pain Assessments before and after administration of chloroprocaine

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Objective: Pain is a complex physical and emotional experience. Therefore, pain assessment in children requires both self-report when possible, and observations of emotional and behavioral responses. Regional analgesia with peripheral nerve catheters and epidural catheters are commonly used to provide postoperative analgesia. Little is known about the use of chloroprocaine to test functionality of catheters in this population. The objective of this paper is to describe both the use of comparative assessments of chloroprocaine and how changes to management of pain may be guided by the outcomes of these injections.

Design: A retrospective review of 132 surgical patients, (0-25 years old), who received chloroprocaine injections for testing peripheral nerve and epidural catheters between January 2014 and December 2015. Patient demographics included age, weight, and type of surgery. Patient outcomes included: blood pressure, respiratory rate, heart rate and pain intensity scores.

Results: Injection of chloroprocaine is a safe and effective method to manage pain and assess the function of peripheral nerve or epidural catheters in a pediatric population. After administration of chloroprocaine, 64.2% of patients had a decrease in pain. No significant adverse events were reported. Patients who did not experience adequate pain relief after injection were treated with alternative analgesic methods.

Conclusions: Use of chloroprocaine injections is a useful strategy to evaluate functionality of peripheral nerve and epidural catheters after surgery, and may be a useful technique to assess and manage postoperative pain in a pediatric population.

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23. Utilization of a web-based module (WBM) for caregiver pain management following fractures in children: a randomized controlled trial

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Objective

Fractures are common in childhood and the most severe pain occurs within 48 hours. A third of parents are dissatisfied with pain management at home following emergency department (ED) discharge and fail to provide analgesia. We explored if caregiver education on pain management using video instructions was superior to an interactive WBM and the standard of care (SOC): verbal and paper instructions.

Methods

This open-label, randomized, controlled, three-arm trial included caregivers of children with non-operative fractures presenting to the ED. The primary outcome was the gain score (pre-post intervention) on a novel 21-item questionnaire testing knowledge surrounding pain recognition and management for children with fractures.

Results

246 participants were recruited (WBM 74; Video 88; SOC 84) including 97 females (39.4%). The mean (SD) age was 9.7 (4.3) years. The SOC group had significantly lower mean (SD) gain scores: 0.3 (2.2) versus WBM: 2.3 (3.1) and Video: 2.6 (3.9) (95% CI: -3.2, -0.8, $p<0.001$ for WBM versus SOC; 95% CI: -3.4, -1.2, $p<0.001$ for Video versus SOC). There was no significant difference between WBM and Video (95% CI: -0.9, 1.5, $p=0.83$). The mean gain score adjusted for access time demonstrated no significant differences between WBM and Video (gain score: 0.3; 95% CI: -0.8, 1.4; $p=0.56$). The impact on functional outcomes at 96 hours was minimal across groups and there were no significant differences in caregiver confidence ($p=0.41$), number of absent school days ($p=0.43$), sleep-interrupted nights ($p=0.94$), or workdays missed ($p=0.95$).

Conclusion

Among caregivers of children with fractures, education on pain management at home using both an interactive WBM and a video was associated with superior knowledge acquisition to verbal and paper instructions. Interactive WBMs should be utilized for caregivers managing children's pain at home.

24. A prospective study of pain pre- and post-intrathecal baclofen pump implant in children with cerebral palsy

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Objective: Cerebral Palsy (CP) is the most common congenital cause of disability in children. Spasticity is reported in approximately 70% of individuals with CP and, depending on severity, results in chronic pain and interferes with function. Intrathecal baclofen (ITB) is regarded as relatively effective in the reduction of spasticity associated with CP. Although almost all studies to date report changes in tone, the evidence for other outcomes including pain reduction is typically anecdotal/retrospective.

Design: We conducted a prospective study assessing pain intensity, duration, frequency and interference pre/post ITB pump implant.

Participants: Participants were 32 individuals with CP (mean age= 12 years, 8 months). The majority of participants had a CP diagnosis of quadriplegia (72%) or diplegia (22%) and relied on wheeled mobility (91%; GMFCS level IV-V).

Procedures: For all participants, pain (Brief Pain Inventory [BPI]; Dalhousie Pain Interview [DPI]) and spasticity (Multiple Sclerosis Spasticity Scale [MSSS]) assessments were completed by parent report.

Results: There was a significant overall effect for pain duration $F(2,10)= 4.467$, $p= .041$ with a significant decrease in pain duration from pre (M= 60.04 hours, SD= 90.06 hours) to post surgery (M= 0.50 hours, SD= 1.20 hours; $F(1, 11)= 7.946$, $p= .017$). There was also a significant overall effect for spasticity $F(1, 7) = 10.697$, $p = .007$ with a significant decrease in spasticity from pre (M= 58.64, SD= 12.78) to post surgery (M= 44.87, SD= 12.12; $F(1, 8) = 23.035$, $p = .001$). The MSSS spasticity score correlated significantly with pain duration ($r=.35$, $p=.005$) and pain intensity ($r=.36$, $p=.003$). Although not statistically significant, pain intensity, frequency and pain interference all decreased following ITB pump implant.

Conclusion: Our initial analysis supports the anecdotal evidence that pain decreases along with decreases in spasticity related to ITB pump implant. The greatest impact appears to be on the duration of pain experience.

25. Parent perspectives on pain identification, competence, barriers and information needs related to pediatric pain: A thematic analysis

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Background:. Families play an important role in managing pain in children. Further research is needed to understand parents' perspectives on factors affecting their ability to identify and treat children's pain.
Objective: To identify parent-perceived 1) methods of pain identification, 2) areas of competence in management, 3) barriers to management, and 4) information needs in regards to children's pain.
Methods: Semi-structured phone interviews were conducted with 202 Canadian parents (98% mothers; 53% ages 30-39 years) with a child (47% ages 5-8 years). The following questions were asked: 1) How do you tell when your child/children has/have pain? 2) What parts of helping your child/children with pain do you feel you do well? 3) Are there any challenges or barriers you face when it comes to helping your child/children with pain? 4) What would you like to learn that would be helpful to you when it comes your child/children's pain?
Parent responses were analyzed using semantic thematic analysis. Established procedures for this method were followed and common themes were identified.
Results: Major themes identified for each respective question listed above were: 1) Crying; behaviour change; mood change; and attention being drawn to the affected area, 2) Comforting; identifying the pain, cause or severity; pharmacological interventions; non-

pharmacological interventions; and teaching coping strategies, 3) Child or parent fear; communication difficulties; difficulty identifying pain, cause or severity; lack of knowledge; time constraints; and advocating for child's pain 4) Most effective interventions; non-pharmacological interventions; pharmacological interventions; alternative medicine; identifying pain, cause or severity; preventative measures; coping skills; and pediatric pain resources. **Conclusion:** This study identifies themes in parent perspectives on pain identification, competence, barriers and information needs related to pediatric pain. A better understanding of parent perspectives will assist in setting future research priorities and better supporting parents.

26. Best of a bad bunch: A network meta-analysis of pain-relieving treatments for retinopathy of prematurity eye exams

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Background: Preterm neonates at risk of developing retinopathy of prematurity (RoP) undergo frequent and painful eye exams. Currently, no consensus regarding the optimal way to manage this pain has been reached. A lack of head-to-head randomized clinical trials (RCT) comparing possible pain relieving treatment options has contributed to this problem.

Objective: To estimate the relative efficacy and safety of all available interventions intended to reduce pain from RoP exams.

Design: We searched MEDLINE, Embase, Cochrane CENTRAL, and Web of Science for randomized controlled trials comparing at least two pain-relieving interventions. Two reviewers performed study selection, data extraction, and quality appraisal. We performed a network meta-analysis using a random-effect model.

Results: Fifteen trials (n = 915 infants), evaluating nine treatments reported results from a validated pain assessment tool. Sweet taste + topical anesthetic, and multisensory (engagement of multiple senses e.g. gustatory + non nutritive sucking (NNS)) interventions + topical anesthetic showed statistically significant improvement over topical anesthetic alone (MD: -1.78; -3.03), although absolute scores still indicated moderate pain. Neither acetaminophen, digital retina imaging, sweet taste alone, or NNS combined with anesthetic showed significant improvement over anesthetic alone. Four studies reported adverse events with no differences in rates of events between anesthetic drops alone or in combination with sweet taste, Tylenol, multi-sensory interventions, or NNS.

Conclusions: Combining topical anesthetic with sweet taste or multisensory interventions is likely to provide the most effective pain relief for RoP exams, although no treatment reduces overall scores to ranges considered to indicate low or no pain.

27. A year in the development of a new interdisciplinary pediatric chronic pain program: opportunities, initiatives, and challenges

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Background: The field of pediatric pain medicine has demonstrated the benefits of interdisciplinary collaboration more than any other endeavours (Law, Palermo, & Walco, 2013). Recently, the Ontario Ministry of Health and Long-term Care announced the funding of specialty pediatric chronic pain programs in several children's hospitals across the province, including McMaster Children's Hospital. The Pediatric Chronic Pain Program includes Physicians (Pediatricians, Psychiatrist, Anesthesiologist), Psychologists, Child Life Specialist, Registered Nurse, Nurse Practitioner, Occupational Therapist, Physiotherapist, Social Workers, Pharmacist, and Clinical Manager. The purpose of this poster is to highlight new opportunities and initiatives within our clinic, including the development and facilitation of standardized interdisciplinary assessment and treatment processes, research database and program evaluation integrated with clinical work, development of new group therapies (e.g., a 5-week Psychoeducation Rise Above Pain Group for both parents and youth; a 5-week Parenting Youth with Chronic Pain Group). Challenges in developing a new clinic/new programs and providing care to complex families (e.g., professional roles and competencies, diagnostic discrepancies) will be discussed. Implications for program development in new and established clinics will be highlighted.

28. DSM-5 Diagnostic Dilemmas in Pediatric Chronic Pain

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Background: The history of medicine is replete with examples of pain that cannot be explained by current physiological and anatomical knowledge. Typically such medically-unexplained pain is attributed to psychopathology or patients are told that they are a diagnostic mystery. "This approach is damaging to the patient and provider alike" (Katz , Rosenbloom, & Fashler, 2015, p. 160). Katz's comments represent one side of the current DSM-5 chronic pain diagnostic debate: the use of somatic symptom disorder (SSD) in youth with chronic pain over-pathologizes somatic symptoms, mislabels normal reactions to being sick, stigmatizes youth, and invalidates symptoms (Katz et al., 2015; Frances & Chapman, 2013). On the other side of the spectrum are clinicians who see value in the use of diagnoses such as SSD in youth with chronic pain. These individuals note that using somatization explanations for pain can reduce over-medicalization, reduce over-investigation, reduce iatrogenic illness, directs patients toward needed assessment and intervention, and encourage internal locus of control (i.e., child or adolescent believing that he or she can do things to increase pain management versus child or adolescent feeling that pain control is outside his or her influence). Furthermore, clinicians in favour of using somatization explanations note that isolating the pain symptoms in children and adolescents, who may also have other medical symptoms (e.g., dizziness, fatigue, nausea, etc.), may be unhelpful in treating the whole patient and can reinforce a medical conceptualization rather than promote more psychological explanations and approaches (e.g., patients being seen in the department of psychiatry versus pain medicine). This poster will highlight some of the diagnostic dilemmas that four Canadian pediatric chronic pain clinics are facing and how each clinic is approaching/considering the use of DSM-5 differential diagnoses (e.g., SSD, illness anxiety disorder, conversion disorder, etc.). Implications for case conceptualization and treatment compliance will be discussed. The need for more research in this area and partnerships across sites will also be highlighted.

29. A 5 Week Group for Parents of Youth with Chronic Pain: Rationale, Structure, Content, and Preliminary Outcome Data

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"You can't make it better. I think that's the hardest thing I found: that Mummy couldn't make it better."• (Palermo & Eccleston, 2009, p 15).

Background: Parenting a child or adolescent with chronic pain can be challenging, isolating, and demanding. Parents often struggle with how to best support their child. Furthermore, caring for a child with chronic pain can have a significant impact relationally, emotionally and financially on parents, caregivers, and families (Palermo, 2000; Lewandowski et al., 2010). There is a growing literature indicating that parent emotions (e.g., distress, anxiety, depression), cognitions (e.g., coping, pain catastrophizing), and behaviours (e.g., attending to pain symptoms) can moderate a child's adjustment to chronic pain (Logan & Scharff, 2005; Palermo et al., 2007; Palermo et al., 2014; Palermo & Eccleston, 2008; Ross et al., 1993). Therefore, intervening with parents of youth with chronic pain is believed to foster better outcomes regarding children's functioning (e.g., school attendance; Coakley & Wihak, 2017).This poster highlights a five week parenting group that was developed at McMaster Children's Hospital and ran on four occasions. The group is designed to augment the treatment of youth in the McMaster Pediatric Chronic Pain Program and includes the following topics: chronic pain 101 (psychoeducation, group overview), impact of pain on the family, self-care, tools for managing a child's pain, identifying and overcoming barriers, school partnerships, and celebrating successes. Each session involves homework review, a mindfulness activity, new material (inclusive of a didactic activity), goal-setting, and assigned chapters to read from Palermo and Law's (2016) â€˜Managing Your Child's Chronic Pain' book. Outcomes were measured using the Adults' Responses to Symptoms Questionnaire (Van Slyke & Walker, 2006) and feedback regarding the strengths and weaknesses of the group as well as parent satisfaction was obtained on a form developed for use in this group. This poster will include preliminary results pertaining to group outcomes. Implications for improving the effectiveness of treatments for youth with chronic pain by intervening with parents will be discussed.

30. Usability and safety of a virtual reality program to reduce procedural pain in children with cancer

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Objective: Subcutaneous port (SCP) needle insertions are very distressing for adolescents with cancer (AWC). Virtual reality (VR) may be an effective distraction for AWC undergoing painful SCP access. VR consists of hardware (i.e. head-mounted display) and custom software (i.e. immersive audiovisual environment). Our aim was to assess and refine usability (including acceptability, ease of use) and safety of a custom VR program in AWC undergoing SCP access. Design: Iterative cycles of 25-minute usability sessions Setting: Tertiary care pediatric hospital in Toronto, Ontario, Canada. Participants: AWC aged 8-18 years old undergoing SCP access. Procedures: AWC used the VR program during SCP access under supervision of a trained research coordinator. AWC were asked to "think aloud" while using the program, and then responded to semi-structured questions related to usability and safety of the program. Observations and feedback were recorded, and used to refine the VR software. Results: Over 3 cycles of testing, 17 AWC were recruited (M=11.7 years). Most AWC reported that the VR was easy to use, enjoyed the VR program, and understood its objective (i.e. shooting rainbow balls at underwater sea creatures). Recommendations for changes included: (1) improving ease of aiming, (2) increasing sea life interaction, (3) increasing fish distance from screen interface, (4) preventing hardware from touching sterile areas, and (5) centrally positioning fish to avoid excess patient movement. All recommendations were implemented and no adverse events were reported. Conclusions: AWC found the VR program to be an acceptable, easy to use, and a safe distraction activity while undergoing SCP access. Next steps include feasibility testing using a repeated-measures cross-over pilot randomized controlled trial.

31. Paediatric Project ECHO: Exploring the educational needs of Ontario healthcare providers with interest in paediatric acute and chronic pain

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Background and Objectives: Project ECHO® is an innovative, interactive model for medical education and healthcare delivery that expands access and capacity to provide evidence-informed care. It uses a Hub-and-Spoke structure to virtually connect specialist interprofessional teams at an academic "Hub" to community healthcare providers (HCPs) called "Spokes". This project focuses on the first paediatric implementation of Project ECHO for acute and chronic pain in Ontario. In preparation for program launch in October 2017, a needs assessment was conducted with the objectives of: (1) informing the pain-specific ECHO curriculum; (2) assessing Spoke preferences for program format. Design: An online survey (49 items; 15-minutes) was distributed via targeted emails to professional networks, associations, and allied health organizations related to pain throughout Ontario. The survey assessed interest in specific educational topics as well as program format preferences. Results: N=35 HCPs completed the survey and expressed interest in being Spokes for Paediatric ECHO. Of these participants, 94% practiced primarily in suburban or urban settings, 63% practiced for >5 years, and 46% practiced for >10 years. Profession breakdown was: 34% nurses, 26% physicians, and 40% allied health professionals. Overall, 43% of participants practiced in academic hospitals, 22% in non-academic hospitals, and 35% in other community settings. In terms of program format, 60% preferred weekly 1-hour educational sessions versus longer sessions. The most popular topics were mind-body techniques, mental health assessment, interdisciplinary approaches to pain assessment and treatment, educational resources for patients and families, acceptance and commitment therapy, and mindfulness. Conclusions: HCPs who expressed interest in Paediatric ECHO for pain are generally experienced professionals. They prefer short educational sessions, and are particularly interested in learning about psychological approaches to pain management. These data are being used to inform development of Paediatric ECHO curriculum. This project is funded by the Ontario Ministry of Health and Long-Term Care.

32. Adolescent Post-Surgical Pain Trajectories and the Associated Risk and Resilience Factors and Functional Outcomes

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Abstract:

Background: Roughly 65,000 Canadian children undergo surgery every year (Wright & Menaker, 2011) and a substantial number (20%) continue to experience pain long after the expected healing time (Connelly et al., 2014; Page et al., 2013). Pain that has persisted for even 1 month after surgery has been associated with a decline in health-related quality of life (Rabbits et al., 2014). Specific pain trajectory patterns have been identified in adult populations (Page et al., 2015) and predictors of the trajectories have been used to develop targeted interventions aimed at preventing persistent pain (Katz et al., 2015). To date, only two studies have identified pain trajectories in pediatric postsurgical populations but their findings have been limited by small sample size, problematic data collection points and a focus on risk factors (Sieberg et al., 2013; Rabbits et al., 2015).

Objective & Design: The present study aims to extend the current literature by identifying pain trajectories, trajectory predictors (i.e., risk and protective factors) and functional outcomes among an adolescent post-surgical population using data gathered from multiple Canadian sites over multiple time points in the first year after surgery.

Participants: Participants include 229 children aged 10-18 years old who were scheduled to undergo spinal fusion with instrumentation for adolescent idiopathic scoliosis.

Procedure & Measures: Participants completed measures of pain, anxiety, pain-catastrophizing, optimism, functional disability, quality of life and body image at baseline, in-hospital, 1 week, 4-6 weeks, 3 months, 6 months and 12 months after surgery.

Results & Discussion: Pain trajectory data will be presented as well as proposed predictors of the trajectories (e.g., catastrophizing, optimism). Additionally, relations between trajectory membership and functional outcomes will be discussed.

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33. Pain Flare Session: An Educational Tool for the Mitigation of Chronic Pain in a Pediatric Setting

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Background: The Chronic Pain team at the Children's Hospital of Eastern Ontario (CHEO) noticed, during periods of high stress (e.g. exams), that there was an increase in need from their service as they received an influx of calls from patients and their families reporting pain crises. To meet this increased demand and to better support patients and their families through these difficult times, they developed a pain flare management workshop. The 2-hour session is offered by the Chronic Pain team's nurse case manager and occupational therapist and targets both patients and their parents/caregivers.

Objectives: The goals of the Pain Flare Session are to: 1) Provide education and practical tools to prevent and manage their pain flares, 2) Promote effective communication between youth and their parents during a pain flare, 3) Create an individualized pain flare management plan, 4) Give patients and parents a platform to connect with others to address their feelings of loneliness and isolation, and 5) Increase confidence and self-efficacy in managing a pain flare.

Methods: Participant eligibility is determined through referrals to the CHEO Chronic Pain Service for pain flares. Thirty participants including youth aged 12-18 years (n=16) and their parents (n=14) have been recruited to date. Satisfaction surveys are distributed to youth and parents at the end of the session to assess overall satisfaction.

Results: Participants report finding the session informative and helpful. Preliminary results show that patients and their parents/caregivers leave the session having learned new strategies for pain flare management and feel more confident in their ability to manage their chronic pain.

Conclusions: It is evident that the Pain Flare Session is an important resource for youth and their families looking to manage their chronic pain. Furthermore, the value provided by this workshop is in line with patient and healthcare expectations.

34. The Reach of the #KidsCancerPain Campaign: A Partnership to Improve Parent Awareness and Use of Evidence-Based Pain Management in Children with Cancer

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Abstract:

Background: Children with cancer experience pain, often severe and prolonged, throughout their disease and treatment. Knowledge-to-action gaps in managing children's pain are well documented and unfortunately, children with cancer do not always receive the best pain management possible. Social media is increasingly being used by parents for children's health information. The translation and sharing of evidence-based health research knowledge over social media has the potential to reach parents at a time when they need it most.

Aim: To describe the reach (i.e., potential audience size) of a social media campaign, 'Making Cancer Less Painful for Kids' (#KidsCancerPain), intended to improve parent awareness and use of evidence-based pain management in children with cancer.

Methods: The #KidsCancerPain campaign shared high quality, credible evidence in a parent-friendly manner via a partnership with Cancer Knowledge Network (CKN), North America's most widely read cancer education resource. The campaign was led by a research team of interdisciplinary scientists and clinicians who generated and vetted evidence and also engaged a parent/patient panel. #KidsCancerPain had the support of various cancer organizations (e.g., Meaghan's Walk, Max Cure Foundation, Ontario Parents Advocating for Children with Cancer, Team Finn Foundation, etc.).

Results: The campaign (launched July 2016) consisted of 14 months of targeted dissemination of evidence-based, parent-friendly content about children's cancer pain via 1 Thunderclap, 7 blog posts, 3 videos, 9 social media images, 5 Facebook questions, and 1 Twitter chat. Social listening data for Twitter collected at 1 year indicated a reach (i.e., estimated unique users who saw #KidsCancerPain tweets) of 3.4 million with 6,812 tweets by 2, 337 users. Additional reach analytics, such as content views, captured at the conclusion of the campaign will be presented.

Discussion: The #KidsCancerPain campaign demonstrates the effectiveness of social media and partnerships in reaching a very large number of users to increase awareness. The impact of spreading research evidence via social media on pain outcomes in the pediatric oncology population should be evaluated.

35. #PasBesoinDeFaireMal: The Reach of a French version of a YouTube Video for Parents (#PasBesoinDeFaireMal: La portée d'une adaptation francophone d'un vidéo Youtube pour les parents)

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Background: Social media is increasingly being used by parents for child health information and has the potential to reach a wide audience. In 2013, we released a video for parents, "It Doesn't Have to Hurt: Strategies for Helping Children with Shots and Needles" (http://ow.ly/x3Rs30bMqm3), which has 200,000+ views in 150+ countries. In Canada, 23% of the population uses French as its first language, representing a large population to reach with evidence-based information on needle pain management in their primary language.

Methods: The goal of this project was to partner with Réseau québécois de recherche sur la douleur (RQRD; aka Quebec Pain Research Network/QPRN) to produce a professionally

French-dubbed version, “Ça n’a pas besoin de faire mal – Conseils pour aider les enfants à recevoir une piqûre” (http://ow.ly/77JR30bMqtN). It was published on April 19, 2017 and promoted via email, social media, advertising, and through engaging supporters.

Results: Data from the first two weeks of dissemination indicated it has been viewed 10,280 times in 85 countries. Viewers have been primarily women (58%), between the ages of 25-44 (78%), and located in Canada (18%), Turkey (6.5%), France (6.5%), and Vietnam (6%). The average view duration was 34% (48seconds). Social listening data from Twitter using the #PasBesoinDeFaireMal hashtag indicate a reach of 580,978 impressions through 162 tweets by 64 users. Key partners sharing the video included, funding organizations (e.g., Fonds de recherche du Québec-Santé; Nova Scotia Health Research Foundation; Canadian Institutes of Health Research), professional organizations (e.g., Ministère de la Santé et des Services sociaux du Québec; ImmunizeCanada; Canadian Association of Pediatric Health Centres), and influencers (e.g., Andre Picard, reporter).

Conclusion: Social media is an effective strategy for translation of child health research evidence to parents to targeted populations. We successfully engaged credible and influential partners to support dissemination and reach a French-language audience.

36. The management of pain in newborns: a guideline

Objectives: a) To develop and validate, for Brazil, a pain management guideline for neonates hospitalized at NICU, addressing non-pharmacological and sweetened solution. B) Produce and record a video on the management of pain in newborns to be used for the training of NICU professionals.

Methodology: Based on the methodology proposed for the development of guidelines by the National Commission for the Incorporation of Technologies of the Ministry of Health, Brazil.
1) Limiting the theme: Develop the scope of the thematic, so as to elaborate as questions that will give rise to the sub-themes.
2) Development of the guideline: a) Assignment of each sub-theme to a multiprofessional group of experts for the development of the preliminary text, through search of evidence in the scientific literature, as well its possible application in Brazil. b) Holding consensus meetings to discuss each sub-theme. At these meetings, besides the experts, will be present representatives of patients, of managers and of the Ministry of Health.
3) Finalization: organize a seminar to finalize the guideline and its placement in public consultation.
4) Record an educational vídeo.

Preliminary results: The scope of the topic was developed, the questions were elaborated and the sub-themes were established: 1) painful procedures, 2) non-nutritive suction as pain management for the newborn, 3) Kangaroo method and containment as a pain management of newborns, 4) sweetened solution as a pain management of newborns, 5) evaluation of the pain of neonates hospitalized in Utin, 6) consequences of neonatal pain: development of newborns. Each sub-theme has already been delivered to a group of experts, who have already started working on scientific searches.

AAP COMMITTEE ON FETUS AND NEWBORN SECTION ON ANESTHESIOLOGY AND PAIN MEDICINE. Prevention and Management of Procedural Pain in the Neonate: An Update. Pediatrics. 2016;137(2):e20154271.

37. The pain frequency in the newborn during the use of nasal CPAP

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Objective: The objective of this study is to evaluate the pain frequency in the newborn during the use of Continuos Positive Airway Pressure (nasal CPAP).

Methodology: This is a cross-sectional pilot study, conducted at a Federal Hospital, in Rio de Janeiro, Brazil.

Participants: Newborns using nasal CPAP at the NICU will be evaluated from July to November 2017.

Data Collection: A video of the newborns will be performed during a period of 6 (six) hours. Through this film, an evaluation of the use of nasal CPAP will be performed through a checklist, seeing: positioning, fixation, nasal prong size, septum protector, damping of the prong before insertion and fluidification of the nostrils before insertion and how often reinsertion of the prong occurs. To evaluate pain during the use of nasal CPAP will be applied the Neonatal Facial Coding System (NFCS). The assessment by the checklist and NFCS will always be done at the same time, to ensure a temporal association between nasal CPAP and pain. Both assessment will be done any time something happens out of the nasal CPAP protocol or any reinsertion of the prong occurs.

Preliminary result: A baby was recorded for 2h21min, for filming adjustments. During this period, the checklist was applied once during reinsertion of the nasal prong. The NFCS was 5 points, signaling that the baby felt pain during the reinsertion of the nasal prong.

Conclusion: This research has as benefits the evaluation of pain during the use of nasal CPAP, aiming its treatment to minimize the harmful effects pain can cause for the newborn. Project approved by the Research Ethics Committee/IFF.

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38. Youth and Parent Psychosocial Factors Associated with Quality of Life in Youth with Chronic Pain

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Background/Aims: Pediatric chronic pain is a prevalent health concern that impacts 11-38% of youth and is accompanied by concomitant psychosocial issues that interfere with optimal functioning. However, some youth show remarkably optimal pain adaptation and maintained quality of life, raising the question: what factors differentiate outcomes in youth with chronic pain? Several youth (i.e., pain acceptance and pain self-efficacy) and parent (i.e., parental responses and psychological flexibility) psychosocial factors have been identified as factors associated with optimal outcomes in youth with chronic pain. However, these youth and parent factors have yet to be investigated in the same sample. Further, certain parental constructs, such as parental distraction, have not yet been examined in the context of pediatric chronic pain. Therefore, this study examined these selected youth and parent psychosocial factors.

Methods: Patients between 8 and 17 years and a parent were approached through the Pediatric Chronic Pain Program at McMaster Children's Hospital. Sixty youth (M_{age}= 14.35, *SD*=2.39) completed measures on their average pain intensity, quality of life, pain acceptance, and pain self-efficacy. Parents completed measures on their own psychological flexibility and use of protective or distraction responses to their children's pain.

Results: Data collection is ongoing. Preliminary results suggest positive associations among youth pain acceptance, pain self-efficacy, quality of life and parental psychological flexibility (strong to moderate effect sizes). Parental protectiveness and distraction appear to be inversely related to youth quality of life. Parental distraction may partially mediate the relation between parental psychological flexibility and youth quality of life; a mediation model through parental protectiveness was not found.

Conclusions: Results from this study provide further evidence for a risk-resilience model of pediatric chronic pain, and highlight important youth and parental psychosocial factors that may lead to differences in quality of life.

39. Using Automated facial Recognition to Distinguish Voluntary and Genuine Pain States in Youth

Huang, J.S., Xu, X., Diaz, D., Craig, K.D., Goodwin, M., & de Sa, V. (2017).

Clinical pain assessment combines verbal and nonverbal information. Verbal information can contribute important information but clinicians realize voluntary processing of reports can introduce biases and the report can reflect personal and situational determinants other than the pain itself. Nonverbal expression of pain has a more automatic/reflexive character, but also can be voluntarily controlled. In this study, 48 youth (5-17 yr) were video-recorded post-operative (laparoscopic appendectomy) during 10 sec of abdominal pressure adjacent to the wound site, then were asked to suppress pain expression to the same stimulus and later (~3 weeks) asked to pretend they were in pain. We trained an automated machine learning model to differentiate expressions classified as real v. faked v. masked using Emotient software. Machine performance was compared to human judgements in prior studies. The facial machine model was able to discriminate the dissembled displays substantially better than human judgements. Facial recognition software may be a useful adjunct in post-operative pain assessment.

40. Sibling Relationship Quality and Brothers' and Sisters' Behaviours During the Cold Pressor Task

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Objective: The study examined the relation between sibling relationship quality and siblings' behaviour during a pediatric pain task.
Methods: 92 sibling dyads ages 8-12-years-old completed individual questionnaires examining sibling relationship quality, a dyadic problem-solving task, and took turns completing the cold-pressor task (CPT) with their sibling present. Sibling relationship quality was coded for positivity and negativity during the problem-solving task, and the behaviour of the observing and participating siblings during the CPT were coded as attending (e.g., symptom talk), non-attending (e.g., distraction), and coping/encouragement behaviour.

Results: Structural equation modelling, including actor-partner interdependence model analyses, was conducted. Greater levels of warmth/closeness reported by the sibling who completed the CPT first was related to their own greater levels of non-attending behaviours while participating in the CPT ($b^* = .23$, $p < .05$). Greater levels of conflict reported by the sibling who completed the CPT first was marginally related to their sibling (i.e., the second participating sibling) engaging in fewer coping behaviours while completing the CPT ($b^* = -.14$, $p = .05$). Greater levels of coded positivity was related to the sibling who completed the CPT second engaging in fewer attending behaviours ($b^* = -.22$, $p < .05$), and greater non-attending behaviours ($b^* = .31$, $p < .01$) while completing the CPT. Lastly, greater levels of coded negativity was related to the first participating sibling engaging in greater levels of attending behaviours ($b^* = .24$, $p < .05$), and the second participating sibling engaging in fewer attending behaviours ($b^* = -.23$, $p < .05$) while completing the CPT.

Conclusions: The quality of children's sibling relationship was related to their behaviour while they were in pain with their sibling present. Siblings with more positivity/warmth in their relationship tended to engage in more helpful behaviours while in pain.