INTRODUCTION
Considerable advances in the understanding and management of acute pain have occurred in the last few decades\(^1\). Despite these, patients with acute exacerbations of chronic pain still experience inadequately treated pain with a substantial impact on their daily lives\(^2\). Conventional analgesics are often ineffective or high doses are required leading to side effects limiting their use. External factors can contribute to chronic pain including life stressors, social supports and coping skills\(^3\). This latter “4\(^{th}\) Pain Dimension” is poorly addressed in acute pain strategies. Furthermore, the wide variability in clinical presentation and treatment response in this cohort is such that clinical trials of these pain models are unlikely to provide meaningful results. It is increasingly apparent that an individualistic approach is necessary for these complex cases. We present the management of an acute exacerbation of chronic pain in an 18 year-old patient with severe juvenile rheumatoid arthritis (JRA).

METHODS
The patient provided written consent for the reporting and publication of this case report. Details from the acute pain management software (ACUPAM) and hospital charts were used to document the treatment steps taken and the patient’s response. A literature search of current analgesic recommendations for rheumatoid arthritis was done to compare our treatment approach to others experience and existing guidelines.

RESULTS
This case highlights the challenges of implementing a multi-modal approach for severe uncontrolled pain in a complex patient with limited options due to previous analgesic experiences, sedative sensitivity, and the psychosocial impact of chronic disease. Ultimately, the patient required a multi-disciplinary approach with disease management (Rheumatology), anxiety and depression control (Psychiatry), and careful analgesic therapy (Acute Pain). A step-wise, severity-based, opioid-sparing approach was instituted with an epidural initially, followed by an IV lidocaine infusion and a patient controlled analgesia device with morphine and ketamine. His pain was eventually well controlled and he was discharged for rehabilitation with oral multimodal analgesia.
DISCUSSION
Models of acute pain that are difficult to treat include patients with acute on chronic pain where altered pathways lead to ineffectiveness of conventional pain management strategies\textsuperscript{4}. Increased awareness of pro-nociception has led us to modify the conventional step ladder approach with additional non-opioid anti-hyperalgesic therapies (Figure 1). Our case report is unique in identifying opioid-sparing techniques, including the role of an interventional technique for severe pain during a JRA flare. We also demonstrate the limited effectiveness of conventional opioids to control severe acute JRA flare pain. This case highlights the importance of early recognition and aggressive management of ‘pro-nociception’ with appropriate anti-hyperalgesic, non-opioid adjuvant therapies- pregabalin, ketamine and IV lidocaine.

References:

INTRODUCTION
Dexmedetomidine is an alpha-2 adrenergic agonist approved for procedural sedation and sedation in ICU patients for up to 24 hours. Emerging evidence supports its use in reducing intraoperative opioid consumption (1,2), prolonging nerve blocks (3) and preventing emergence delirium (4). We report the use of dexmedetomidine for the management of acute postoperative pain. Both patients have consented to the publication of this case series.

Case 1
A healthy 35 year-old man was admitted following an ATV accident with a crush injury to his leg. Surgical management was complicated by wound infection, sepsis and rhabdomyolysis. Acute Pain Service (APS) started with IVPCA hydromorphone and a multimodal oral analgesia protocol of acetaminophen, celecoxib, tramadol and pregabalin. He underwent 5 surgeries over 10 days, and by post-op day (POD) 12, he suffered recurrent acute pain crises. In a fully monitored Trauma Unit, he was administered 1mcg/kg dexmedetomidine iv bolus. Pain reduced to 4/10. An infusion of dexmedetomidine was initiated (0.4 mcg/kg/hr) for 24 hours. Oral clonidine was initiated and titrated to 0.2 mg po tid. He had the benefit of an epidural for his 6th surgery; but once removed, a pain crisis resulted. Dexmedetomidine was restarted and continued for 3 days with monitoring (range 0.1- 0.4 mcg/kg/hr). Pain scores and opioid requirements gradually reduced. Pain was stabilized and controlled with multimodal oral analgesics until discharge.

Case 2
A 70 year-old woman with chronic pain at multiple foci due to severe rheumatoid arthritis required a revision occipito-cervical fusion. Her baseline pain was 8/10 on a regime of acetaminophen, tramadol, oxycodone, fentanyl CADD IV, pregabalin, memantine, methadone and meloxicam. Postoperatively, she was transferred intubated to the ICU for postoperative care and pain control. APS initiated a ketamine infusion (20mg/hr) and fentanyl infusion (100mcg/hr), in place of her CADD. On POD 1, ICU stopped her propofol sedation to assess for possible extubation. She became agitated due to pain. Propofol was restarted along with a dexmedetomidine infusion at 0.2mcg/kg/hr IV as per APS orders. Later that same afternoon, the patient was assessed by APS and she appeared more comfortable with her eyes opening spontaneously and obeying commands. On POD 2, she remained intubated, but awoke
easily to voice and was comfortable. The patient was successfully extubated later that day. Dexmedetomidine was discontinued on POD 3 and the patient transferred out of the ICU.

**DISCUSSION**

These patients' pain management represents our first APS experiences with dexmedetomidine for the management of severe post-operative pain. Literature review suggests that dexmedetomidine has only been used **pre-emptively** for **intraoperative** pain management. Its use for acute painful exacerbations has not been previously reported. Further investigation is needed to explore the anti-nociceptive role of dexmedetomidine for postoperative pain.

**References:**

INTRODUCTION
Pain control is a fundamental right of every patient, and the ethical obligation of the physician(1,2). Postoperative pain control in low resource and developing countries is often inadequately treated(3,4,5) and may expose patients to an increased risk of perioperative and long-term complications(6,7). We evaluated the efficacy of subcutaneous ketamine administration for the management of postoperative pain in patients undergoing major surgery in a low resource setting.

METHODS
Appropriate ethics approval was obtained from all institutions involved. Informed consent was obtained from all participating patients. 59 patients undergoing major abdominal, head & neck, plastic, gynecological surgeries were studied in a double blinded randomized control trial. In addition to standard care, patients received 5 subcutaneous injections of ketamine 1mg/kg (Group K; n = 31) or normal saline (Group P; n = 28) during their post operative period. The first injection was administered immediately after surgery, and then every 12 hrs thereafter starting at 20:00 on the day of surgery. Pain was assessed using an 11-point verbal rating scale three times per day. Patients were also assessed for side effects; PONV, Hallucinations, Nightmares, Sedation, HTN, Seizure.

RESULTS
Patients in the interventional arm had lower visual analog scale pain rating than those receiving placebo; 3.7 vs 4.9 (p value 0.003) respectively. Hallucinations and sedation were associated with ketamine administration when compared to placebo; p = 0.001, p = 0.003 respectively
DISCUSSION
Subcutaneous administration of Ketamine at a dose 1mg/kg is a safe and effective strategy to reduce post operative pain in patients undergoing major surgery in low resource settings.

References:

INTRODUCTION
This study investigated whether the blood testosterone levels before noxious stimulation are associated with pain and pain-related unpleasantness ratings (1).

METHODS
Local Ethics Committee approval was obtained. Twenty-six healthy men were recruited to participate in the pain experiment. A venous blood sample was drawn from the right forearm to determine the testosterone levels before the experiment. The participants were classified into two groups (high vs. low testosterone) according to their blood testosterone levels (each group = 13). To induce noxious stimulation, the distal phalanges and distal two-thirds of the middle phalanges of the left-hand middle fingers were immersed in an 850-ml water bath maintained at 50°C. The noxious stimulation lasted 30 s and was repeated five times. The ratings during the noxious stimulation were assessed on a numerical rating scale (0 = no pain, unpleasantness, anxiety, and fear; 100 = maximum imaginable pain, unpleasantness, anxiety, and fear).

RESULTS
The participants with high testosterone levels showed significantly lower pain and pain-related unpleasantness ratings than those with lower testosterone levels (Table 1) (p = 0.047). Moreover, the anxiety and fear ratings were statistically significantly lower in the high testosterone group than in the low testosterone group (Table 1). The fear ratings during the noxious stimulation were negatively correlated with the testosterone levels in all participants (r = -0.40, p = 0.043, n = 26).

CONCLUSION
The results indicated that pain and pain-related unpleasantness ratings were statistically significantly lower for participants with high testosterone levels than for those with low testosterone levels. Those findings also suggested that acute clinical pain may be relieved by controlling patients’ testosterone levels.

References:
(1). Anaesthesia 2012 67: 1146-51
Opioid-induced hyperalgesia (OIH) is the paradoxical increase in pain and pain sensitivity despite escalating opioid doses\(^1\). This may result from central sensitization through increased NMDA receptor activity, increased spinal dynorphin concentrations, and alterations in descending inhibitory control and opioid receptor G-protein activity\(^1\). We present a case of OIH in a patient admitted with abdominal pain with a history of chronic pancreatitis and chronic opioid use. Patient consent was obtained.

A 46 year old male with 3 year history of alcohol-related chronic pancreatitis was admitted with two weeks of worsening epigastric pain. It radiated to his back, and was associated with diarrhea and nausea. He had several past admissions for abdominal pain. His history includes HIV-related neuropathy, left-sided sciatica treated with lumbar discectomy, fibromyalgia, Bowen’s disease, former alcohol abuse, and depression. His medications included oxycodone 5mg/acetaminophen 325mg, 12 tablets per day, cyclobenzaprine, amitriptyline, and marijuana. He was started on parenteral morphine 5mg q6h PRN; though he took it regularly, his pain worsened and became more generalized.

On examination, the patient was in discomfort. Abdominal exam revealed sharp pain and guarding with light and deep palpation of the epigastrium and right upper quadrant. Brush-evoked allodynia was exhibited over the entire abdomen. There was no peritonitis. Upper extremities demonstrated deep allodynia bilaterally, which differed from his fibromyalgia. Investigations revealed normal leukocyte count, liver enzymes, lipase, amylase, and bilirubin.

Given his escalating dose of narcotics without improvement, his oxycodone/acetaminophen was rotated to a 30% less equivalent of morphine sustained release 40mg BID. He started dextromethorphan 15 mg TID and clonidine 0.1-0.2 mg TID PRN for withdrawal symptoms. The patient’s pain was significantly reduced and he was discharged within 3 days. His abdominal and arm allodynia resolved.
OIH is a concern with patients receiving opioids in both acute and chronic settings\textsuperscript{2}. An association between higher opioid doses and lower pain tolerance has been found\textsuperscript{3}. The differential for OIH includes progression of the disease process, a new disease, fibromyalgia, opioid tolerance. The diagnosis is challenging as the symptoms mimic opioid tolerance. A key feature of OIH is the paradoxical increase in pain with opioid dose escalation. Symptoms suggestive of OIH include presence of new or changed pain, such as brush-evoked allodynia in our patient, and pain in other dermatomes or locations.

Treatment modalities include opioid rotation, buprenorphine, NMDA receptor antagonists (e.g., ketamine, dextromethorphan), methadone, COX-2 inhibitors, and \( \alpha_2 \) receptor agonists\textsuperscript{4}. Treatment can be time consuming and frustrating, and many patients are reluctant to decrease their narcotic dose.

References:

EMERGENCY DEPARTMENT VISITS FOR OPIOID ANALGESICS IN CHRONIC PAIN PATIENTS

Author(s)
Yuan-Wen Lee
Department of Anesthesiology, Taipei Medical University Hospital, Taipei, Taiwan
Presenting Author

Co-Authors(s)
Hsiao-Chien Tsai - Taipei Medical University Hospital, Taipei, Taiwan
Ta-Liang Chen - Taipei Medical University Hospital, Taipei, Taiwan

INTRODUCTION
Opioids are widely used for treatment of severe acute pain and chronic cancer pain. Although there was no sufficient evidence to support the use of opioids in chronic noncancer pain, long-term opioid therapy for noncancer pain increased rapidly in the past two decades. In the meantime, the safety of long-term opioid use attracted more and more attentions. Because of the concern about abuse, overdose, and adverse effects of opioid analgesics, clinical recommendations suggested that clinicians should avoid the routine prescribing of opioids for patients with an exacerbation of chronic pain in emergency departments. There were few studies investigating the reasons of emergency department visits for opioid analgesics in chronic noncancer pain patients.

METHODS
We used National Health Insurance Database to conduct a retrospective population-based cohort study. The chronic noncancer pain patients who received opioid analgesics for more than 90 days were included in this study. We used logistic regression to examine factors associated with the emergency department visit during the one year follow-up period. This study was approved by local Institutional Review Board with a waiver of informed consent.

RESULTS
A total of 4,834 chronic pain patients were included in this study. We found that 16.4% of these patients had at least one emergency department visit and received parenteral opioid therapy during the follow-up period. The most common reasons for chronic pain patients to receive opioid injections in the emergency department were abdominal pain, back pain, and fracture.
DISCUSSION
The results of this study suggest that we have to pay more attention to those chronic patients who visited emergency department for parenteral opioids. Future studies are needed to investigate the clinical outcomes related to the additional opioid therapies in emergency department.

References: