1. Multidisciplinary Pain Management Program in Japan
   a. Presenter: Naoto Takahashi, MD., PhD
   b. First Author: Naoto Takahashi, MD., PhD
   c. First Author Affiliations: Department of Pain Medicine, Fukushima Medical University School of Medicine
   d. Co-Author(s): Satoshi Kasahara, MD., PhD., Shoji Yabuki, MD., PhD
   e. Background: Multidisciplinary pain management is a useful method for the treatment of intractable chronic musculoskeletal pain. There are few facilities in Japan that administer a multidisciplinary pain management program, especially an inpatient program. We are implementing an inpatient multidisciplinary pain management program based on biopsychosocial model guided by the IASP recommendations.
   f. Objective: To describe our inpatient multidisciplinary pain management program using the biopsychosocial method of self-pain management, and to report preliminary results of the program.
   g. Methods: Fourteen patients were analyzed. Comparing results before and after the program, the following statistically significant improvement were seen in BPI (p = 0.001), PCS (p=0.003), PDAS (p=0.02), HADS anxiety and depression scale (p=0.004, p=0.03), PSEQ (p=0.0002), EQ5D (p=0.04), 30-sec standing test (muscle endurance)(p=0.02), and 6-minute walking test (physical fitness) (p=0.03).
   h. Results: Fourteen patients were analyzed. Comparing results before and after the program, the following statistically significant improvement were seen in BPI (p = 0.001), PCS (p=0.003), PDAS (p=0.02), HADS anxiety and depression scale (p=0.004, p=0.03), PSEQ (p=0.0002), EQ5D (p=0.04), 30-sec standing test (muscle endurance)(p=0.02), and 6-minute walking test (physical fitness) (p=0.03).
   i. Conclusions: We have developed an inpatient pain management program. We may be able to improve the coping mechanisms of our patients for dealing with intractable chronic musculoskeletal pain, and that the program can improve their quality of life and flexibility. The inpatient multidisciplinary pain management program should be indicated for the intractable chronic musculoskeletal pain patients
   j. References: None.
   k. Disclosure: None.

2. Interdisciplinary, Self-management Course for Chronic Pain
   a. Presenter: Joel Kailia
   b. First Author: Joel Kailia, MD
   c. First Author Affiliations: UBC
   d. Co-Author(s): Vincent Zenarosa, MD
   e. Co-author(s) Affiliations: UBC
   f. Background: Patients suffering with chronic non-cancer pain (CNCP) experience a diminished quality-of-life, which has been found to be the same as, or worse than, the quality-of-life experienced by patients with advanced palliative cancer. Most CNCP care is done in the primary care settings. Pain self-management interventions (SMI) can be done in these settings and are one potential for good pain management.
g. **Objective:** The objectives are to (1) create and implement an 8-week interdisciplinary course for patients living with chronic pain with the goal of educating, empowering, and supporting them and (2) to make this course feasible, enjoyable, and reproducible both for further study and for transporting to other communities. We hypothesize that this (SMI) course will show improved pain scores for CNCP patients.

h. **Methods:** We recruited 8 subjects diagnosed with chronic pain from RISE BC Wellness Centre in Nelson, British Columbia. The subjects participated in weekly 2-hour SMI sessions for 8-weeks. These sessions covered a variety of topics including: pain education, mindfulness based stress reduction, cognitive behavioral therapy, kinesiology, yoga therapy. Self-reported questionnaires were completed and analyzed.

i. **Results:** We decided to use the t-test due to the small number of subjects recruited for this pilot study and the robustness of the t-test with smaller sample sizes. Quantitative analysis showed that 7 out of 8 subjects improved on the mean interference score for pain. The result was statistically significant at p<0.05. Qualitative feedback was positive for all the subjects with regards to the course.

j. **Conclusions:** SMIs were effective in decreasing pain severity by empowering the subjects with tools to overcome their pain. Subjects responded positively to this educational and exercise based group course. SMIs would be a great alternative for family practitioners to use for their chronic non-cancer pain patients as this is less expensive, enforced faster than waiting to be seen by a pain specialist's clinic.

k. **References:**
   - Lynch ME. 2011.
   - Robert A. Moore, DSc. 2014.

l. **Disclosure:** None

m. **Encore:** No

3. **Enhancing the Success of Functional Restoration Using Integrative Pain Therapies: a Comparative Effectiveness Analysis of Active Duty Service Members with Chronic Pain**

   a. **Presenter:** Honor McQuinn DNP ARNP
   b. **First Author:** Diane Flynn MD MPH FAAP
   c. **First Author Affiliations:** US Army
   d. **Co-Author(s):** Ardith Doorenbos PhD, RN, FAAN
   e. **Co-author(s) Affiliations:** University of Washington
   f. **Background:** Pain is a leading cause of disability among active duty service members. The Army established Interdisciplinary Pain Centers at Army medical centers. Functional Restoration (FR) is an intensive, medically supervised interdisciplinary program for pain management. This study tests the hypothesis that a program of complimentary therapies prior to FR will improve outcomes relative to standard care.
   g. **Objective:** Evaluate the benefit of a program of multimodal pain management therapies prior to an intensive functional restoration program, relative to standard care. Identify prognostic factors, including demographic factors, psychological factors, and readiness factors that predict successful outcomes on pain severity and function, following intensive interdisciplinary functional restoration.
   h. **Methods:** A comparative effectiveness analysis, using a prospective randomized cohort design. Participants randomized to 3-weeks of FR ramp-up comprised of either: Standard Care (SC) (PT, OT, health psychology +/- clinical pharmacology), or Complementary and Integrative pain therapies (chiropractic, acupuncture, yoga +/- massage) in addition to SC. Following this, both groups participate in 3 weeks FR.
   i. **Results:** Ongoing study, in clinical phase, recruitment >120 enrolled.
j. **Conclusions:** There is a high demand for CIM pain therapies and FR among active duty service members. Participation require a substantial commitment of 90-110 hours of treatment over six weeks, yet drop-out rates are low (12%).


l. **Disclosure:** N/A

m. **Encore:** No

4. **An Integrative Pain Medicine Technique to Reduce Opioid Use**
   a. **Presenter:** Peter M. Carney, M.D., F.A.A.N.S.
   b. **First Author:** Peter M. Carney, M.D., F.A.A.N.S.
   c. **First Author Affiliations:** Cutting Edge Integrative Pain Centers
   d. **Co-Author(s):**
   e. **Co-author(s) Affiliations**
   f. **Background:** For over 5,000 years the juice of the white poppy and its derivatives have been used to reduce pain and produce euphoria creating both benefits and harm to society.

   On August 10, 2017 President Trump declared that our current treatment of chronic pain has created the Opioid Crisis and now is a NATIONAL EMERGENCY, which needs "innovative strategies to curb the escalating health crisis." (1)

   g. **Objective:**
      1. To help meet the President's need for innovative strategies by advancing the AIPM's plan that: we must accelerate access to existing - as well as discover - new evidence-based pharmacologic, nonpharmacologic and integrative chronic pain treatments.
      2. To show that a nonpharmacologic, integrative technique, which uses the principles of physics and is called EST/CET, does reduce opioid use. (2)
   h. **Methods:** The use of EST and CET employs complex FM signals and an overriding AM frequency that emphasize chaotic signaling and self-focusing mechanisms to re-establish proper pain signaling, heal nerves, and regenerate nerves. (3) Two recent articles, looking at opioid use in chronic pain patients (3) and patients with peripheral neuropathy (4) confirmed that these techniques also decrease opioid use.
   i. **Results:** 16 patients with various pain syndromes received EST/CET with a 67% reduction in their opioid use. Eight totally stopped opioid use, 2 had a 50% reduction, 3 had a 33% reduction and another 3 had a 25% reduction.

   Four of 14 painful neuropathy patients took opioids prior to therapy. At their final follow-up visit 3 of these 4 had an average opioid reduction of 72% (50, 65, & 100% respectively)
   j. **Conclusions:** These studies showed that patients with a wide variety of pain syndromes reduced their opioid usage by exploiting the principles of physics rather than pharmacology.

   AIPM and its supporting institutions have a golden opportunity to "accelerate access to ... nonpharmacologic and integrative chronic pain treatments" by validating the concept that using physics will transform our treatment of pain.
   k. **References:** 1. Gostin et al. "Reframing the Opioid Epidemic as a National Emergency" JAMA online. August 23, 2017
      4. Odell RH & Carney PM. "Regenerating Nerves" AAPM MEETING March, 2017
   l. **Disclosure:** None
   m. **Encore:** No

5. **DHEA Deficiency in Fibromyalgia**
a. **Presenter:** Thomas J. Romano MD, PhD FACP FACR DAAPM ABIM

b. **First Author:** Thomas J. Romano MD, PhD FACP FACR DAAPM ABIM

c. **First Author Affiliations:** Private Practice

d. **Background:** Fibromyalgia (FM) is a chronic, common, and painful disorder that can be debilitating. Treating FM patients is often challenging. The term, "resistant fibromyalgia" has been coined, particularly if co-morbidities exist. Co-morbidities described include arthritis, endocrine problems, and electrolyte abnormalities. It has been suggested that Dehydroepiandrosterone (DHEA) may be deficient in FM patients.

e. **Objective:** To obtain serum levels of DHEA-sulfate from FM patients and determine if DHEA deficiency exists in such patients, and, if so, how prevalent it is.

f. **Methods:** 108 female FM patients, mean age 49 yrs (range 25-68 yrs.), were evaluated in a solo community-based rheumatology practice between 2012 and 2016. All fulfilled American College of Rheumatology 1990 and 2010 FM criteria. Blood samples were obtained at the initial visit and sent to Quest Diagnostics (Pittsburgh, PA, USA) for analysis. DHEA-S levels in FM patients were compared to published norms.

g. **Results:** Of the 108 female FM patients tested, 83 (77%) had low-for-age DHEA-S levels. Six patients had no detectable DHEA-S. The levels ranged from 0 to 679 mcg/dl with 75 patients having levels below 100 mcg/dl. The mean DHEA-S level was 96.8 mcg/dl in the FM patients compared to the expected level of approximately 150 mcg/dl.

h. **Conclusions:** A very high percentage of female FM patients had DHEA deficiency which could account for such symptoms as fatigue, low stamina, and decreased libido often seen in such patients. This suggests that DHEA supplementation could improve the quality of life for many FM patients.


j. **Disclosure:** N/A

k. **Encore:** No.

6. **Tolerability And Acceptance Of Microglial Suppressing Agents**

a. **Presenter:** Forest Tennant M.D., Dr. P.H.

b. **First Author:** K. Scott Guess, PharmD, MS Pharm, R.Ph, DAAPM

c. **First Author Affiliations:** Veract Intractable Pain Clinic

d. **Co-Author(s):** Forest Tennant M.D., Dr. P.H.

e. **Co-author(s) Affiliations:** Veract Intractable Pain Clinic

f. **Background:** Neuroinflammation and centralization of pain is now known to occur due to microglial activation. Animal and in-vitro studies have identified these three agents that suppress microglial activity: (1) acetazolamide; (2) metformin; and (3) pentoxifylline.

g. **Objective:** To date, there are no reports whether these agents will be tolerated and accepted by chronic pain patients who are in pain treatment and may benefit by adding one or more to a standard pain treatment regimen.

h. **Methods:** Intractable pain patients in treatment with a variety of symptomatic, neuropathic agents and opioids were initially given one of these agents: (1) acetazolamide (N=11); (2) metformin (N=22); or (3) pentoxifylline (N=19). Starting dosages of each drug were as follows: (1) acetazolamide 75 mg every other day; (2) metformin 500 mg at bedtime; and (3) pentoxifylline 400 mg every other day.

i. **Results:** Eleven (11) patients who started with acetazolamide had the other two agents added within 90 days of its initiation. All 11 tolerated, accepted, and desired to continue all 3 agents, as they perceived enhanced pain control and functional stability. Patients who were started on pentoxifylline or metformin and then had the other agents added found the combinations to be tolerable and effective.

j. **Conclusions:** All patients accepted these agents at low starting dosages and perceived them to be tolerable and effective in reducing pain. Suppression of microglial activity to reduce neuroinflammation and enhance pain relief and neuroregeneration is a new concept in pain management. This pilot study suggests that microglial suppressors should be added to standard pain treatment regimens.
7. Electromagnetic Energy Lowers C-Reactive Protein Levels
   a. **Presenter:** Forest Tennant M.D., Dr. P.H.
   b. **First Author:** Forest Tennant M.D., Dr. P.H.
   c. **First Author Affiliations:** Veract Intractable Pain Clinic
   d. **Co-Author(s):** John Moffett, PhD
   e. **Co-author(s) Affiliations:** Regenesis Biomedical, Inc.
   f. **Background:** Persistent pain following lumbar back surgeries is a problem of long-standing. Both the cause and treatment of post-operative lumbar back pain (POLBP) are unclear and uncertain. A problem in evaluation and treatment of POLBP is the lack of objective measurements.
   g. **Objective:** Inflammation is generally thought to play a role in POLBP. Pulsed electromagnetic field therapy (PEMF) is believed to reduce inflammation, but there is essentially no data in human subjects to document this belief. The objective of this study was to determine if PEMF may lower serum high-sensitivity C-reactive protein (hsCRP) levels.
   h. **Methods:** Thirty-three (33) POLBP patients were randomly and blindly assigned to receive sham treatment (N=13) or PEMF at a pulse width of 38 µs (N=11) or 42 µs (N=9). PEMF or sham treatment was administered 2 times a day for 60 days. Pain scores were determined every 5 days, and hsCRP was determined at the start and on days 15, 30, and 60 or treatment.
   i. **Results:** Pain scores dropped in all 3 groups over 60 days, however the greatest drop was in the group treated with PEMF at a pulse width of 42 µs. This same group significantly dropped their mean hsCRP serum protein levels from 3.2 ± 2.72 to 2.7 ± 2.32 (P<.05). The sham and 38 µs pulse width groups did not lower their hsCRP.
   j. **Conclusions:** PEMF therapy has long been believed to reduce pain by reducing inflammation and increasing blood and lymph flow. Since hsCRP significantly lowered in the 42 µs group of patients, objective evidence is provided that this specific energetic of PEMF meaningfully reduces inflammation.
   k. **References:** None
   l. **Disclosure:** None
   m. **Encore:** No

8. A Rapid Screening Tool For Adhesive Arachnoiditis
   a. **Presenter:** Forest Tennant M.D., Dr. P.H.
   b. **First Author:** Forest Tennant M.D., Dr. P.H.
   c. **First Author Affiliations:** Veract Intractable Pain Clinic
   d. **Co-Author(s):**
   e. **Co-author(s) Affiliations**
   f. **Background:** Adhesive arachnoiditis (AA) is rapidly increasing in incidence and prevalence. Common, chronic spinal disorders such as herniated discs, stenosis, arthritis, scoliosis, and osteoporosis may all lead to cauda equina nerve root neuroinflammation which may later form adhesions to the arachnoid lining of the spinal canal (i.e. thecal sac).
   g. **Objective:** Early diagnosis of AA is essential as it may produce severe constant pain and progressive, neurologic impairments. The purpose of this study was to develop a rapid screening tool to identify back pain patients who may have AA, so that treatment may be initiated to retard progression of the disease.
   h. **Methods:** Thirty (30) patients with documented AA by magnetic resonance imaging (MRI) were asked these 5 questions: Do you have constant back pain?; Do you have difficulty starting of stopping urination?; Do you have burning on the bottom of your feet?; Do you have blurred vision or ringing in the ears?; and Do you have to stand after you have sat for 10 minutes?
i. **Results:** All 30 AA patients answered yes to 4 or 5 of the questions. Although the screening questions may appear unrelated, AA may entrap neural connections to the bladder, gastrointestinal tract, sex organs, and lower extremities and impair spinal fluid flow.

j. **Conclusions:** Treatment protocols have now been developed, so the diagnosis of AA should be made as soon as possible. Severe, back pain patients, particularly those with neurologic symptoms seemingly unrelated to the lower spine, should be screened for AA so treatment can be initiated in an effort to restrain progression of this neuroinflammatory disease.

k. **References:** None.

l. **Disclosure:** None

m. **Encore:** No

9. **Undiagnosed Ehlers-Danlos Syndrome In Chronic Pain Patients**

a. **Presenter:** Forest Tennant M.D., Dr. P.H.

b. **First Author:** Forest Tennant M.D., Dr. P.H.

c. **First Author Affiliations:** Veract Intractable Pain Clinic

d. **Co-Author(s):** Caron Pedersen, FNP-C, DC, BSN, BS-PT and K. Scott Guess, PharmD, MS Pharm, R.Ph, DAAPM

e. **Co-author(s) Affiliations:** Veract Intractable Pain Clinic

f. **Background:** Some patients present for pain treatment with vague or multi-system pain complaints. The pain may be severe, disabling, and the patient and family may demand high dose opioid therapy as non-opioid and low dose opioid measures have failed to provide comfort and allow daily function.

h. **Objective:** We have found that some patients who present with manifestations of common painful conditions have Ehlers-Danlos Syndrome (EDS). This condition is a genetic, connective tissue disorder that can produce, over-time, a breakdown of tissue structures in almost any organ of the body. Severe pain, may, therefore, appear in unusual patterns that can mimic a number of painful conditions.

i. **Methods:** One –hundred-thirty-seven (137) chronic pain patients in treatment were screened for EDS by questions regarding double-jointedness, extremity flexibility, bending, and joint dislocation. If some screening questions were answered "yes", patients were further assessed by a Beighton score and the diagnostic criteria of the International Consortium of Ehlers-Danlos Syndrome and Related Disorders.

j. **Results:** All 137 patients had been referred for pain treatment with a non-EDS diagnosis and were taking multiple pharmacologic agents. Eleven (11) of the 137 (8.0%) were found to have undiagnosed EDS. The referring pain diagnoses were: head and spine pain (3); fibromyalgia (3); adhesive arachnoiditis (2); abdominal adhesions (1); Lyme disease (1), and rheumatoid arthritis (1).

k. **Conclusions:** EDS is a generalized, genetic connective tissue disorder that may develop a variety of very painful, clinical manifestations. Aggressive pain treatment including high dose, daily opioids may be required. All severe chronic pain patients should be screened for EDS.

l. **Disclosure:** None

m. **Encore:** No

10. **Sublingual Oxytocin and Ketamine For Pain Relief**

a. **Presenter:** Forest Tennant MD, DrPH

b. **First Author:** Forest Tennant MD, DrPH

c. **First Author Affiliations:** Veract Intractable Pain Clinic

d. **Co-Author(s):** Caron Pedersen, FNP-C, DC, BSN, BS-PT

e. **Co-author(s) Affiliations:** Veract Intractable Pain Clinic

f. **Background:** There is currently a national public health movement to reduce opioid use and it’s complications. Urgently needed are potent non-opioid analgesics. To date, a variety of anti-seizure, antidepressant, anti-inflammatory, and adrenergic blocking agents have proven to provide mild to moderate pain relief but not substitute for opioids in cases of severe pain.
g. **Objective:** Ketamine and oxytocin provide analgesia by mechanisms other than stimulating opioid receptors. We have given these agents to multiple pain patients by the nasal, oral, and sublingual routes to find an effective dosage and route of administration. Our objective here was to determine if these agents, given in liquid form by the sublingual route, may substitute for potent opioids.

h. **Methods:** Five chronic pain patients who had used oxycodone, morphine, hydrocodone, or hydromorphone for over a year were tested 2 to 4 hours after their last oral, opioid dosage. They were given liquid oxytocin, 0.5 ml (20 units) of a 40 units per ml concentration sublingually followed within 15 minutes by .25 to .50 ml (12.5 to 25 mg) of liquid ketamine at a concentration of 50 mg per ml.

i. **Results:** Within 10 minutes all five patients reported varying degrees of pain relief from oxytocin. Ketamine enhanced this pain relief. Two patients became pain free. Relief lasted about 4 hours. There were no side effects.

j. **Conclusions:** This investigation indicates that liquid oxytocin and/or ketamine given sublingually may substitute for some potent, oral opioids. Immediate and further investigation of these non-opioid agents is needed.

k. **References:** None

l. **Disclosure:** None

m. **Encore:** No

11. **Genetic Variations in Pain Patients Taking High Dose Opioids**

a. **Presenter:** Forest Tennant MD, DrPH

b. **First Author:** Forest Tennant MD, DrPH

c. **First Author Affiliations:** Veract Intractable Pain Clinic

d. **Co-Author(s):** Ram Vairavan, PhD

e. **Co-author(s) Affiliations:** AutoGenomics, Inc

f. **Background:** More than 100 million people suffer from acute or chronic pain every year according to the National Institute of Medicine. A small percentage of these patients require high dose opioids for adequate pain control.

g. **Objective:** Genetic factors are believed to play a role in opioid prescription addiction as well which agents are effective for pain control. The purpose of this study is to assess the utility of a multi-variant genetic panel to help identify chronic pain patients who require high dose opioids or who may be at risk for abuse and addiction.

h. **Methods:** Seventy severe chronic pain patients who were taking over 100 mg a day of morphine equivalence were genetically tested. Sixteen (16) single nucleotid polymorphisms involved in the brain reward pathway were analyzed with four categories of genetic markers: (1) Receptor Binding and Activity; (2) Neurotransmitter transporters; (3) Central Nervous System (CNS) Enzymes; (4) Cytochrome P450 Enzymes.

i. **Results:** All 70 patients had a genetic variation in one or more dopamine receptors (DRD1, DRD4, DOR). Only 17 (30%) had variants in the 3 opioid receptors which were tested. Forty-one of 70 (58.6%) had one or more cytochrome P450 defects. No markers except the dopamine receptor markers had over 90% genetic variation.

j. **Conclusions:** It is interesting that all patients had defects in their dopamine receptor system. These findings need to be investigated in normal subjects and other groups of pain patients who require high dose opioids to determine if dopaminergic defects are an underlying, genetic cause of high dose opioid requirements.

k. **References:** None

l. **Disclosure:** None

m. **Encore:** No

12. **An Ongoing Cymbalta Pregnancy Registry: 7-year Experience**

a. **Presenter:** Hu Li

b. **First Author:** Hu Li
c. **First Author Affiliations:** Eli Lilly and Company
d. **Co-Author(s):** Mark Bangs MD, Himanshu P Upadhyaya MD, Renata Mehta MSc
e. **Co-author(s) Affiliations:** Mrs. Renata Mehta is affiliated with Focus Clinical Consulting Inc.
f. **Background:** Cymbalta (duloxetine hydrochloride) is a serotonin-norepinephrine reuptake inhibitor approved in the U.S. Many of the approved indications are prevalent in women of childbearing age. A pregnancy registry was established in July 2009 and is ongoing. The registry is overseen by an independent advisory committee, and managed by INC Research on behalf of Eli Lilly and Company.
g. **Objective:** The primary objective of this prospective observational study is to estimate the risk of major congenital anomalies among pregnancies exposed to duloxetine during pregnancy in the U.S. The enrollment target is 484 pregnancies. Since the planned enrollment target is not yet reached, this report is based on a 7-year experience with the registry.
h. **Methods:** This is an ongoing U.S.-based, voluntary, observational, exposure-registration and follow-up study of women taking duloxetine during pregnancy. Data are collected at study registration, the end of the second trimester, the outcome of pregnancy, and 4 and 12 months postpartum. Breastfeeding mothers complete a questionnaire at 3, 6, 9, and 12 months postpartum.
i. **Results:** From July 2009 to August 2016, only 97 prospective cases were enrolled: 85 with known pregnancy outcomes (83 live births, 2 spontaneous abortions, and 0 non-live births or fetal deaths), 4 with pending pregnancy outcomes, and 8 lost to follow-up. Reported outcomes included 8 premature births and 4 birth defects. Two infants experienced symptoms of neonatal withdrawal or poor neonatal adaptation.
j. **Conclusions:** The registry supplements the ongoing monitoring of duloxetine safety during pregnancy. The inability to calculate accurate birth defect rates due to the very slow enrollment and small number of reported cases limits any reliable conclusion. Information regarding the registry may be obtained by calling 1-866-814-6975 or by visiting www.cymbaltapregnancyregistry.com.

k. **References:** N/A
l. **Disclosure:** N/A
m. **Encore:** No

13. **Adverse events in chronic pain patients treated with opioids**
a. **Presenter:** Zah Vladimir, PhD
b. **First Author:** Zah Vladimir, PhD
c. **First Author Affiliations:** ZRx Outcomes Research Inc., Toronto, ON, Canada
d. **Co-Authors:** Martina Imro MSc 1, Simona Tatovic MSc 1, Ana Sikora MSc 1, Marta Sokolowska PhD 2
e. **Co-author(s) Affiliations:** 1 ZRx Outcomes Research Inc., Toronto, ON, Canada., 2 Depomed Inc. San Francisco, CA, USA
f. **Background:** There is a growing concern about possibility of opioid analgesics to cause various adverse effects (AEs) in patients with chronic pain. Tapentadol Extended Release (TapER) has demonstrated in several clinical trials its lower ability to cause AEs when compared to some other widely used opioids. These data are yet to be confirmed with Real World Evidence (RWE).
g. **Objective:** To obtain RWE on safety of TapER vs. widely prescribed ER opioids (oxycodone ER (OxnER) or morphine sulfate ER (MsER)) using IBM Truven Health MarketScan® Commercial Claims and Encounters Database dating from October 2010 through March 2016.
h. **Methods:** Total of 72,781 patients was observed. The adherent (proportion of days covered ≥0.8) patients were selected for comparison during 90, 180, and 365 days of LAO therapy (Tx). Constipation, nausea/vomiting and headache were assessed with ICD9/10 code claims. Proportions of patients experiencing AEs common for opioids were compared, in regard to their LAO treatment and its duration.
i. **Results:** Constipation was lower on TapER vs. OxnER and MsER on 90-day Tx (2.5% vs. 3.6% and 4.2%, p<0.001 each), 180-day Tx (4% vs. 4.9%, p<0.05, and 5.7%, p<0.001) and 365-day Tx for TapER vs. MsER (6.5% vs. 8.1%,p<0.05). Nausea/vomiting was lower for TapER vs. MsER (2.3% vs. 3%, p<0.05) during 90-day Tx. Meanwhile, headaches were more frequent on TapER vs. OxnER and MsER (6% vs. 4.7% and 5%,p<0.05 each).
Conclusions: Using RWE, TapER showed statistically significantly lower rates of constipation compared to OxnER and MsER during 90- and 180-day therapy, and compared to MsER during one year long LAO treatment. The rates of nausea/vomiting were statistically significantly lower on TapER compared to MsER during 90-day LAO therapy, with more frequent headaches reported for TapER during the first 90 days.


Disclosure: This study was sponsored by Depomed, Inc. the manufacturer of tapentadol ER, through an unrestricted grant. All authors were involved in the study design. VZ, MI, ST and NM did the data analyses. VZ, NM, MI and ST analyzed and interpreted the results. VZ accepts overall responsibility for the accuracy of the data, its analysis and this abstract.

Encore: No
a. **Presenter:** Zah Vladimir, PhD.
b. **First Author:** Zah Vladimir, PhD.
c. **First Author Affiliations:** ZRx Outcomes Research Inc., Toronto, ON, Canada
d. **Co-Author(s):** Martina Imro MSc. 1, Simona Tatovic MSc. 1, Ana Sikora MSc. 1, Marta Sokolowska PhD. 2
e. **Co-author(s) Affiliations:** 1. ZRx Outcomes Research Inc., Toronto, ON, Canada; 2. Depomed Inc. San Francisco, CA, USA
f. **Background:** The high rates of chronic pain conditions represent a healthcare problem with a substantial economic burden. The wide use of long-acting opioids (LAOs) in chronic pain substantiates a need to obtain real world evidence, as previous studies identified a lower total healthcare costs per month (HCPM) comparing tapentadol Extended Release (TapER) to oxycodone ER (OxnER) in chronic pain population.
g. **Objective:** To compare HCPM in a subset of matched patients with chronic pain (musculoskeletal pain, neuropathic pain, and neoplasm-related pain), treated with TapER or OxnER for at least 90 and up to 400 days, adherent to LAO treatment. Patients were selected using data from IBM Truven Health MarketScan® Commercial Claims and Encounters Database, for the period of October 2010 through March 2016.
h. **Methods:** All patients were ≥18 years old, continuously insured 12 months before and during the LAO treatment period. Patients were classified based on Medical Possession Ratio (MPR) and Proportion of Days covered (PDC), with MPR=0.8-1.1 and PDC≥0.8. The patients were matched using propensity score, based on baseline variables that significantly impact HCPM in ratio of 1:6, TapER:OxnER.
i. **Results:** Overall 2,824 TapER were matched to 16,716 OxnER patients. Significantly lower HCPM was observed in patients on TapER treatment vs. OxnER (mean (SD), $2,512(4,218) vs. $3,722(7,612), p<0.001). Patients treated with TapER vs. OxnER had significantly lower inpatient cost per month ($502(3,025) vs. $1,091(4,769), p<0.001) and lower emergency room cost per month ($97(348) vs. $141(560), p<0.001).
j. **Conclusions:** This study confirmed chronic pain population previous findings that even among matched chronic pain patients, being on tapentadol extended release and oxycodone extended release treatment, average cost of monthly TapER treatment appears to be less, accounting for drug, inpatient and outpatient costs.
l. **Disclosure:** This study was sponsored by Depomed, Inc. the manufacturer of tapentadol ER, through an unrestricted grant. All authors were involved in the study design. VZ, MI, ST and AS did the data analyses. VZ, MI, AS and ST analyzed and interpreted the results. VZ accepts overall responsibility for the accuracy of the data, its analysis and this abstract.
m. **Encore:** No.

16. **Total Healthcare Costs of Opioids Based on Chronic Pain Type**
a. **Presenter:** Zah Vladimir, PhD.
b. **First Author:** Zah Vladimir, PhD.
c. **First Author Affiliations:** ZRx Outcomes Research Inc., Toronto, ON, Canada
d. **Co-Author(s):** Martina Imro MSc. 1, Simona Tatovic MSc. 1, Ana Sikora MSc. 1, Marta Sokolowska PhD. 2
e. **Co-author(s) Affiliations:** 1. ZRx Outcomes Research Inc., Toronto, ON, Canada; 2. Depomed Inc. San Francisco, CA, USA
f. **Background:** As highly effective in providing relief in patients suffering from moderate to severe chronic pain, long-acting opioids (LAO) are prescribed for various chronic pain conditions.
g. **Objective:** To compare total healthcare costs per month (HCPM) between patients on treatment with tapentadol Extended Release (TapER), oxycodone ER (OxnER) and morphine sulfate ER (MsER), classified by their type of chronic pain: musculoskeletal pain (MS), neuropathic pain (NP) or cancer-related pain (CP), using IBM Truven Health MarketScan® Commercial Claims and Encounters Database, October 2010 – March 2016
h. **Methods:** Patients being ≥18 years old on LAO treatment for 90 up to 400 days, with chronic pain assessed with ICD9/10 coded outpatient and inpatient claims. All patients had continuous health plan enrollment for at least 12 months prior to index date (first prescription date of selected opioid) and during analgesic treatment. Total HCPM was compared across LAO treatment groups, based on chronic pain type.

i. **Results:** Total of 72,672 patients were identified. HCPM for MS were significantly lower for TapER vs. OxnER and MsER (mean (SD) $2,446(4,349) vs. $4,074(8,020) and $3,068(7,305), p<0.001 each), as well as for CP patients ($10,226(16,827) vs. $21,926(20,144) vs. $19,999(17,863), p<0.05 each), respectively. In NP patients, HCPM were lower for TapER vs. OxnER ($4,048(8,197) vs. $5,555(8,299), p<0.05).

j. **Conclusions:** Patients suffering from pain caused by cancer, demonstrated substantially higher total healthcare cost in comparison to patients with musculoskeletal or neuropathic pain, in each opioid treatment group, as anticipated. Tapentadol ER treatment appears to be significantly less expensive in comparison to oxycodone ER and morphine sulfate ER treatments, regardless of type of chronic pain.

k. **References:** None.

l. **Disclosure:** This study was sponsored by Depomed, Inc. the manufacturer of tapentadol ER, through an unrestricted grant. All authors were involved in the study design. VZ, AS, ST and MI did the data analyses. VZ, AS, MI and ST analyzed and interpreted the results. VZ accepts overall responsibility for the accuracy of the data, its analysis and this abstract.

17. **Prescribing Trends for Unapproved topical Pain Products**

a. **Presenter:** Ria Westergaard, PharmD

b. **First Author:** Ria Westergaard, PharmD

c. **First Author Affiliations:** Express Scripts

d. **Co-Author(s):** Aanal Patel, MSIT; Rebecca Levin, MPH

e. **Co-author(s) Affiliations:** Aanal Patel: Express Scripts; Rebecca Levin: United BioSource

f. **Background:** The Food and Drug Act requires that prescription drugs demonstrate both safety and efficacy prior to marketing. Some prescription products, however, enter the marketplace without having formal approval. Prescribers therefore cannot assume that all marketed drugs have been reviewed by the Food and Drug Administration (FDA).1 Coverage of these products by pharmacy benefit managers may also vary.

g. **Objective:** This analysis examines the volume, cost, and demographic information associated with prescriptions for products used for pain-related conditions that have not received formal FDA-approval or undergone formal clinical effectiveness studies. It focuses on the most widely prescribed products classified as “unapproved drug other,” as noted by the FDA Online Label Repository.2

h. **Methods:** This retrospective cohort analysis of Express Scripts’ pharmacy claims database (July 1, 2016 to June 30, 2017) identified the top “unapproved drug other” paid and rejected claims for patients who have Express Scripts as their pharmacy benefit manager. Profiles of patients whose claims were rejected were further analyzed to determine whether alternate prescription therapy was prescribed.

i. **Results:** In 12 months, 13,402 patients were prescribed 22,651 prescriptions for a select group of topical products; 85% of which were rejected. Lidocaine-containing formulations represented 97% of the claim volume with remaining claims attributed to topical patches containing menthol and capsaicin. Plan sponsors were billed $23,781,278, equating to an average wholesale price (AWP) of $1,049.90 per claim.

j. **Conclusions:** This study demonstrates that a number of products classified as “unapproved drug other” are being prescribed, usually at a much higher price than alternative therapies. FDA-approved therapeutic alternatives that contain similar ingredients are available and offer cost-savings opportunities to patients and plan sponsors.


l. **Disclosure:** No.

m. **Encore:** No.
18. **Single level sonogram guided lumbar facet joint injection**
   a. **Presenter**: Abraham T. Rasul, Jr., MD, FAAPMR
   b. **First Author**: Abraham T. Rasul, Jr., MD, FAAPMR
   c. **First Author Affiliations**: Neuro Spine Institute Sierra Vista Regional Medical Center
   d. **Background**: Facet joint injections done with imaging guidance had been associated with relief of pain. These injections had been done using fluoroscopy and computed tomography (CT) scanning. Sonogram guided lumbar facet joint injections had shown success in a number of studies. This eliminates exposure to radiation for both the patient and the provider.
   e. **Objective**: The purpose of this study is to demonstrate the feasibility and results of doing sonogram guided lumbar facet injections in an office setting.
   f. **Methods**: Two hundred fifty three patients with lumbar facet joint pain were included in this study. Patients who did not get any relief or could not tolerate the oral steroid received the single level sonogram guided lumbar facet joint injection done in the office. Treatment effectiveness was assessed using the visual analogue scale (VAS), physical examination, reduction in use of pain medications.
   g. **Results**: Of the ninety-two patients who did not respond to or could not take the oral steroids, almost half (48.2%) had significant relief after one single level injection while less than half of this group (43.6%), noted relief only after getting 2 or more subsequent injections.
   h. **Conclusions**: Sonogram guided lumbar facet injections done in an office setting provide a safe and viable cost efficient treatment of lumbar facet pain.
   j. **Disclosure**: N/A
   k. **Encore**: No.

19. **Mental Health and Functioning in an Active Duty Pain Clinic**
   a. **Presenter**: Emmanuel P Espejo, Ph.D.
   b. **First Author**: Emmanuel P Espejo, Ph.D.
   c. **First Author Affiliations**: Navy Medical Center San Diego
   d. **Co-Author(s)**: Sheila Medina, MPD, and Ian Fowler, MD
   e. **Co-author(s) Affiliations**: Navy Medical Center San Diego
   f. **Background**: Emotional distress is increasingly recognized as playing a role in the experience of chronic pain and chronic pain disability. Recent meta-analyses indicate that emotional distress accounts for up to 30% of the relationship between pain and disability (Lee et al., 2015). Thus, addressing emotional distress in patients with chronic pain may be critical to their successful treatment.
   g. **Objective**: To characterize emotional distress symptoms, including anxiety, depression, anger, fatigue, and sleep impairment, endorsed by a sample of patients seeking treatment in a pain specialty clinic for active-duty military. To identify specific dimensions of emotional distress most predictive of disability in an active-duty treatment seeking sample.
   h. **Methods**: The current study includes 669 active duty service members, approximately 80% male, who presented for an evaluation at the Pain Management Clinic at Naval Medical Center San Diego. Patients completed a battery of questionnaires including measures of anxiety, depression, anger, fatigue, and sleep impairment, as well as measures of pain interference and physical and social functioning.
   i. **Results**: Approximately 70% of patients reported clinically elevated levels on at least one of the five symptom scales, with sleep impairment and fatigue being the most common complaints. Regression analyses revealed that sleep impairment, fatigue, and depression were significant predictors of pain interference and physical and social functioning after controlling for reported average pain level (ps < .05).
   j. **Conclusions**: Clinically elevated levels of emotional distress are highly common in active-duty military members seeking treatment for pain. Sleep impairment, fatigue, and depression likely influence patient functioning beyond reported pain levels. Psychosocial and psychiatric interventions targeting sleep impairment, fatigue, and depression may help improve functional outcomes in this treatment population.

l. **Disclosure:** The views expressed in this abstract are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government.

m. **Encore:** No

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20. **HRV Biofeedback Reduces Symptoms in Chronic Pain Patients**

   a. **Presenter:** JP Ginsberg, PhD
   
   b. **First Author:** JP Ginsberg, PhD, Licensed Clinical Psychologist/Neuropsychologist
   
   c. **First Author Affiliations:** Dorn VAMC, USC School of Medicine
   
   d. **Co-Author(s):**
   
   e. **Co-author(s) Affiliations**
   
   f. **Background:** Effects of chronic pain include stress, depression, fatigue and sleep disorder. Sympathetic overdrive shown as reduced heart rate variability (HRV) is a common factor of this symptom cluster. HRV can be increased with HRV biofeedback (HRVB) leading to improved outcomes in chronic disease patients with pain.
   
   g. **Objective:** Conduct a series of randomized, controlled clinical studies to assess symptom cluster including pain, stress, depression, fatigue, catastrophizing, and sleep outcomes after HRVB interventions in chronic pain patients. Changes in HRV and outcome variables will be measured pre-post training intervention.
   
   h. **Methods:** Assess effect of HRVB on symptom cluster in 3 studies: 1. Pilot; Veterans with chronic pain, treatment as usual (TAU) control; pre-post; single primary endpoint of pain and stress ratings; 2. Phase 1; cancer survivors; TAU control; pre-post; primary, secondary endpoints; 3. Phase 1; Veterans with chronic pain, inactive treatment control; 4 timepoints; primary, secondary, exploratory endpoints
   
   i. **Results:** Study 1: n=18; Post-HRVB significantly lower than control on all outcome measures (p’s<.05); Study 2: n=34; HRVB is feasible, symptom cluster indicators intercorrelated; HRV increased by HRVB; all symptom cluster indicators significantly decreased; Study 3: n=80; collecting data; 30 enrolled; symptom cluster indicators including catastrophizing all intercorrelated; group effects not analyzed yet
   
   j. **Conclusions:** Benefits on symptom cluster outcomes shown by all 3 studies. HRVB is a promising intervention. Planned research: (1) NIH RO1, Phase 2, single site, Veteran cancer survivors; psychoeducational self-management control; 4 timepoints; primary, secondary, exploratory endpoints (2) NCI NCORP, Phase 2, multi-site, cancer survivors.; pre-post; primary, secondary, exploratory endpoints
   
   
   Gharbo, R et al 2016 Heart Rate Variability, Chronic Pain, and Rehabilitating the Autonomic Nervous System Pain Pract 26,5 (17-18)
   
   O'Rourke, M et al 2017 HRV training for symptom control in cancer survivors J Clin Ocol 35, 15-S 10
   
   l. **Disclosure:** None
   
   m. **Encore:** No

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21. **Real World Experience of Flavocoxid Use in Pain Management**

   **Presenter:** Lata Handiwala, PharmD
   
   **First Author:** Lata Handiwala, PharmD
   
   **First Author Affiliations:**
   
   **Co-Author(s):** Kit S. Mays, MD
   
   **Co-author(s) Affiliations**
   
   **Background:** Older adults (≥65) with chronic inflammatory pain can often only find relief with the addition of an opioid. Studies have shown 46% of all opioid prescriptions were for those between 40 and 59 years old, with 28% in those over 65. Over time, clinicians find that these patients may need to escalate their opioid dose in order to achieve adequate pain control.
**Objective:** Our study sought to investigate the alternatives for inflammatory pain management in older adults, and whether it would be possible to either reduce the use of opioids or at least be effective enough to keep from escalating the opioid dose.

**Methods:** A single-site, retrospective chart review was conducted in 108 patients, at a specialty pain clinic. A chart was eligible for review if the patient was being treated with flavocoxid and followed for at least 3 months. Patients were assessed for opioid usage/dosing at baseline and after flavocoxid therapy, pain severity scores at baseline and at 6 months, and adverse events.

**Results:** About 70% of patients (74/108) were ≥65 years (mean age: 77). The average duration of flavocoxid use was 12.5 months. At 6 months, 50% of elderly patients reported pain scores to be better or much better and 20% reported no change. Most patients (81%) had no change in opioid dosing or had their dose decreased. Two adverse events, diarrhea and headache, were reported.

**Conclusions:** This retrospective real world analysis suggests that flavocoxid improves/maintains pain scores at 6 months and is effective at reducing the need to increase opioid dosing in the elderly population. Flavocoxid could be an adjunctive therapy to help reduce opioid use, particularly in patients with chronic disease and multiple co-morbidities. This analysis warrants further prospective investigations.


**Disclosure:** Lata Handiwala is currently a consultant to Augur Health, a healthcare consultant agency that works with pharmaceutical and device companies.

Dr. Kit Mays is currently the Clinical Assistant Professor at University of Tennessee, College of Medicine. He founded and practices at the Mays and Schnapp Pain Clinic and Rehabilitation Center.

**Encore:** No.
22. New Pain Treatment Helps Eliminate the Need for Opioids (PT/electro)

**Presenter:** John E. Garzione, DPT, DAAPM

**First Author:** Kristen M. Lake, PT, DPT

**First Author Affiliations:**

Co-Author(s): John E. Garzione, DPT, DAAPM

**Co-author(s) Affiliations**

**Background:** With the recent CDC guidelines for opioid prescription the push for non-drug treatment has increased over the past few years. Many patients are attempting to decrease their opioid intake and are searching for ways to modulate their pain during that process. In this case study, the adjunctive use of BAUD (Bio-Acoustical Utilization Device) enabled one patient to end his 35-year history of opioid use.

**Objective:** Patient is a 64-year-old male who has medical history of Fibromyalgia, chronic low back and neck pain. He was first given opioids in 1982 to manage his pain after an acute shoulder injury. Over the years he was prescribed Hydrocodone, Oxycodone, Methadone and Fentanyl patches. In 2015 the patient was referred to Physical Therapy (PT) by his Primary Care Provider (PCP) for vertigo...

**Methods:** The patient was highly motivated to discontinue Opioid use and was willing to try alternative methods to modulate his chronic pain during his physical therapy for spinal. He was treated with electrical stimulation, iontophoresis, thermotherapy, and therapeutic exercise. In addition to these treatments he was given BAUD for 15 minutes with settings chosen that the patient confirmed reduced his pain.

**Results:** Before BAUD his pain was 10/10 on the numeric rating scale, and after BAUD his pain was rated as 5/10. When asked if he believed the use of BAUD helped him modulate his pain while decreasing use of opioids he responded, “Yes! Using the BAUD really helped reduce my pain when I was having really bad days, if it wasn’t for that I don't know if I could have done it.”

**Conclusions:** Patient was seen in therapy twice a week and had 8 total Baud treatments until he started having spinal injections in July 2017 and was discharged. In August 2017, the patient came to the clinic to give an update. He was doing well for a few days after the first injection and was scheduled for a second in the following weeks. His pain level remained low and was not taking any opioids...


please see e-mail attachment for full references.

**Disclosure:** None

**Encore:** No
23. *Pain May Predict Traumatic Stress in Persons With Cancer* BH

**Presenter:** Beth L. Dinoff, PhD  
**First Author:** Beth L. Dinoff, PhD  
**First Author Affiliations:** University of North Carolina Chapel Hill  
**Co-Author(s):** M. Lindsey Jacobs, PhD, and Emily Venezia, BGS  
**Co-author(s) Affiliations:** Jacobs (Boston VA Medical Center) and Venezia (UNC Chapel Hill)

**Background:** We propose a new perspective on the role of pain as a marker for traumatic stress in patients who have undergone surgery for malignant neoplasms. The intersections between comorbid pain and PTSD have been explored previously; however, in this poster we highlight pain as a marker for trauma in cancer patients with post-surgical pains. Many people with various cancers undergo disfiguring surgeries.

**Objective:** The IOM’s “Relieving Pain in America” listed prevention of chronic pain as one of its guiding principles. Health and Human Services recommendations emphasize the need to reduce the incidence of post-surgical pain. Given the current opioid crisis, understanding pain as a marker for trauma may lead to reduction in opioid use, improved medical outcomes, and enhancement of research strategies.

**Methods:** We review the acute and chronic presentations of trauma and pain. We also examine the incidence and prevalence of comorbid pain in people who have undergone surgical treatment for cancer, including mastectomy, amputation, and treatment of head and neck cancers. Finally, we briefly offer a conceptual rationale for understanding pain as a marker for traumatic stress in people with post-surgical pain.

**Results:** Pain and traumatic stress frequently co-occur in the population of patients undergoing surgical interventions for cancer. When people have comorbid pain and traumatic stress, they frequently experience worse outcomes, higher levels of disability, and the need for higher doses of opioids. We recommend that clinicians recognize pain as a marker for traumatic stress and develop early detection plans.

**Conclusions:** Acute and chronic presentations of trauma and pain are reviewed. We also examine the incidence and prevalence of comorbid pain in people who have undergone surgical treatment for cancer, including mastectomy, amputation, and resection of head/neck cancers. Finally, we propose a conceptual rationale for understanding pain as a marker for traumatic stress in people experience post-surgical pain.


**Disclosure:** None.

**Encore:** No.
24. Efficacy of Early Vertebroplasty, Kyphoplasty, or Vertebral Augmentation after Vertebral Compression Fractures.

a. Presenter: Aldo F. Berti MD
b. First Author: Aldo F. Berti MD
c. First Author Affiliations: University of New Mexico Hospital
d. Co-Authors: Eugene Koshkin, MD, Timothy Petersen, PhD, Danielle Eckart Sorte, MD
e. Co-Author Affiliations: University of New Mexico Hospital
f. Background: Vertebral compression fractures (VCF), typically osteoporotic, traumatic, or pathologic/neoplastic, are common affecting 1.5 million (750,000 from osteoporosis) Americans each year and are a significant source of back pain, disability, healthcare expenditures, and lost wages. There is increasing evidence that early VCF surgical correction (<6 weeks from injury) leads to better long-term outcome.

g. Objective: We undertook a pilot study to evaluate early versus delayed minimally invasive VCF treatment using the primary endpoints of pain and opiate use. We hoped to obtain preliminary data in anticipation of a larger, prospective trial.

h. Methods: We retrospectively reviewed 38 patients (60 levels) with painful compression fractures and collected patient age and gender, level treated, type of fracture, weeks elapsed between fracture and final treatment date, type of intervention (vertebroplasty, balloon kyphoplasty, or vertebral augmentation with cement and implant placement), pain level before procedure and at first follow up, opioid usage before procedure and at first follow up. Statistical analysis was done using correlation.

i. Results: Time to treatment (TTT) in weeks and difference in pain before and after had a statistically significant relationship (p=0.0046) with 15% of the variation in pain level difference attributable to TTT (r=0.39). TTT and difference in opioid use before and after had a statistically significant relationship (p=0.0425) with 8.5% of variation in opioid reduction attributable to TTT (r=0.29).

j. Conclusions: There were weak but statistically significant positive relationships between TTT and both pain difference and opioid usage difference. All of the cases (N=9) that had a pain difference ≥ 6 had their procedures performed within 8 weeks of fracture date. Our goal was to generate a power calculation for a prospective study with primary outcomes of opiate use, length of hospital stay, and pain levels.

I. Disclosure: N/A

[xi] Pradhan BK, Parikh T, Makani R, Sahoo M

I. Disclosure: No

25. Quadratus Lumborum and Total Hip: A Retrospective Study
a. Presenter: Ayesha Hameed, MD
b. First Author: Ayesha Hameed, MD

c. First Author Affiliations: n/a

d. Background: Pain management following total hip replacement surgery (THA) continues to be a concern despite the growing number of procedures performed annually. The purpose of this study is to examine the efficacy of the QL block as part of a multimodal pain management protocol in the management of THA postoperative pain.

e. Objective: We hypothesize that the use of quadratus lumborum block as part of a multimodal THA postoperative pain management protocol will lead to improved pain relief while resulting in decreased opioid usage and opioid-related adverse events such as nausea and vomiting, thus improving patient recovery and satisfaction.

f. Methods: Data for patients aged 18 and older undergoing THA at LIJMC from January 2016 to Feb 2017. Several outcomes including narcotic use, length of stay, and physical therapy milestones were compared. Various statistical analysis was performed. A p-value of <0.05 will be considered significant.

g. Results: A total of 128 anesthesia records were reviewed- 65 subjects received spinal anesthesia (Group 1) and 63 subjects received spinal anesthesia with quadratus lumborum block. Groups were similar with respect demographics (ASA status, age, BMI, gender race and ethnicity). Postop opioid use, measured in morphine equivalents, within first 24 hrs were significantly decreased in QL group.

h. Conclusions: Based on this retrospective data, the QL block offers tremendous potential in managing post op analgesia for total hip arthroplasty. In the future, we hope to perform a prospective randomized control trial to further elicit other outcomes of significance and advantage.


j. Disclosure: None

26. Ketamine for the treatment of pain and depression
a. Presenter: Jonathan Dang, M.D.

b. First Author: Jonathan Dang, M.D.

c. First Author Affiliations:

d. Co-Author(s): Waguih IsHak, M.D., Charles Louy, M.D., Brigitte Vanle, PhD., Lekeisha Sumner, PhD.
e. **Background:** The effectiveness of the treatment is limited with just 30-40% of the patients showing adequate pain relief and remission of depressive symptoms- suggesting that a single treatment of ketamine may be useful for addressing pain and depression.

f. **Objective:**
1. Acquire knowledge about current treatment of pain and depression
2. Share and discuss two ketamine protocols used by expert at Cedars-Sinai Medical Center.
3. Present pilot clinical data of ketamine effectiveness for treating pain and depression
4. Discuss ongoing challenges of ketamine in terms of effectiveness and implementation

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**27. Ketamine, Yoga, Mindfulness, CBT for Chronic Pain (YMBCTpain)**

a. **Presenter:** Robert Gessman MD Pain Management Fellow Cooper University Hospital

b. **First Author:** Dr. Basant K. Pradhan, MD

c. **First Author Affiliations:** Cooper University Hospital in Camden, New Jersey.

d. **o-Author(s):** Michael Sabia MD, Robert Gessman MD

e. **Co-Author Affiliations:** Cooper University Hospital

f. **Background:** Ketamine for Pain Modulation - analgesic and dissociative anesthetic inhibiting NMDAR[v], [vi]
   1. Benefits chronic pain, depression, and PTSD
   2. May provide lasting improvement for months following infusions of 1-6 sub-anesthetic doses. [iv],[vii],[viii]

g. **Objective:**
   1. Identify five key components from the core of pain experience: maladaptive sensations/perceptions, feelings, thoughts, memories, maladaptive urges/impulses
   2. Develop awareness of pain components and develop better coping skills using meditation, mindfulness, yoga, and Cognitive Behavioral Therapy (CBT)
   3. Incorporate philosophy of Buddha’s “The Middle Way” advocating moderation and balance

h. **Methods:**
   1. Sub-anesthetic IV ketamine 1mg/kg over 1hr to achieve dissociation of pain pathway while allowing patients to participate in meditation and mindfulness practice
   2. Ashtanga Yoga (a subtype of Hatha) links movement breath based on Pantajali’s (postures) to relax the patient’s specific pain condition
   3. FA (Focused-Attention) Mindfulness

**Disclosure:** None
4. Mindfulness-Based Graded Exposure Therapy (MB-GET):
used to change the contents of the dysfunctional thoughts, feelings, and behaviors while improving coping mechanisms in regards to avoidance

i. Results: N/A (concept poster)

j. Conclusions: N/A - Future study currently seeking funding:
Conduct a randomized controlled trial of 50 patients with chronic pain comparing 3-weekly sub-anesthetic ketamine infusions + 10 office visits to incorporate Y-MBCTpain protocol vs conservative pain management.

k. References: References


[v] Orser BA, Pennefather PS, MacDonald JF. Multiple mechanisms of ketamine blocka


28. *Effects of Mindfulness on Anxiety & Academic Goals in Medical Students*

a. Presenter: Jennifer Golden, OMS-IV

b. First Author: Jennifer Golden, OMS-IV


f. Background: Research has shown that mindfulness training has helped medical students reduce anxiety and stress (Shapiro et al., 1998), as well as fatigue, bewilderment, and emotional distress (Rosenzweig, et al., 2003). Research also indicates that this effect persists during stressful exam periods (Shapiro et al., 1998). However, no studies have investigated these effects in the medical student population.

g. Objective: To study the effects of an 8-week Mindfulness Based Stress Reduction course within the medical student population over the course of three months. The researchers were interested in observing the effects of Mindfulness on the outcomes of anxiety and academic goal achievement in the high stress environment of medical school.

h. Methods: Volunteers from the MBSR group (n = 8) and control group (n = 15) completed bimonthly electronic surveys for three months. The survey gathered data on how many minutes the student utilized MBSR techniques, amount of minutes using exercise, their score on the Generalized Anxiety Scale (GAD-7), and a numeric scale of how the subject thought they were achieving their academic goals.

i. Results: Amount of mindfulness that students utilized was correlated with reduced anxiety scores on the GAD-7. Specifically, the participants in the group that was taught mindfulness techniques consistently reported reduced nervousness and worry. We did not discover a correlation between duration of exercise and stress score, nor duration of mindfulness with the likelihood of academic goal achievement.

j. Conclusions: Performing MBSR decreased anxiety among students but did not reveal a significant impact on academic goal achievement. The group that was trained in MBSR showed
they did in fact perform more minutes in mindfulness compared to the control group over three months.

Hjeltness A, Binder PE, Moltu C, Dundas I.

**29. West Virginia's Neighborhood Nutrition Project**

**a. Presenter:** Jennifer Golden, OMS-IV

**b. First Author:** Jennifer Golden, OMS-IV

**d. Co-Author(s):**

**f. Background:** WVNNP is a farm to patient concept for the application of clinical nutrition. By uniting community clinics, farmers markets, and SWC medical students we can promote nutritional education and access to quality foods at affordable prices throughout the state of West Virginia. This project would enable the expansion of our pilot program started in 2015 at WVSOM, Health Yeah!.

**g. Objective:** Monthly cooking workshops organized and led by medical students to give them the opportunity for interactive nutritional education experiences with patients with food provided by local growers from the community. Patients will learn nutritional facts, how to access healthy food, and how to create meals for disease prevention and better health outcomes. Farmers increase sales and thrive.

**h. Methods:** Surveys will be conducted on a volunteer basis by students hosting the cooking workshops to gain an idea of whether this project is enhancing their nutritional education and their competency to communicate effectively with patients on the subject of nutrition.

Patients will complete surveys on a volunteer basis to measure continued interest and achievement of objectives.

**i. Results:** Outcome survey results will be assessed for objective achievement and used to inspire continued grant funding

**j. Conclusions:** In a state plagued by obesity and opioid crises yet hosts vast agriculture production, the largest barrier to health seems to be convincing people of the benefits of real food that is grown next door and satiates the palate. This issue lends itself well to developing an experiential educational process to promote clinical nutritional for students and patients while supporting local farmers.

**k. References:** West Virginia School of Osteopathic Medicine, Health Yeah!