Managing primary pain disorders in children with underlying chronic-on-acute conditions

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So, how do we treat the individual patient in front of us?

Hmhh... Spoiler Alert: Crystal-clear answer on 3rd last slide!

Learning Objectives

• Explore obstacles to treat “chronic-on-acute” pain through a rehabilitative pediatric pain program “Attitude”

• Discuss successful interdisciplinary approaches in managing primary pain disorders in children with underlying recurrent acute pain episodes “Knowledge”

• Explore treatment choices and appreciated low importance of pharmacotherapy “Skill”
Case Example

- Your patient with recurrent pain episodes (e.g. Crohn’s, SCD, JIA, VP-Shunt) is currently in remission, but remains in chronic pain (poor sleep, missed >50 days of school) - primary service prescribes increasing doses of extended-release oxycodone without success.

- You are considering offering an effective rehabilitative pain program (including PT, psychology, returning to school and weaning off all opioids)

- Top arguments from your colleagues or parents not to do that?

Chronic Pain in Children

- IASP: pain lasting > 3 months
- Time definition arbitrary
- Pain that extends beyond the expected period of healing.

Pain Assessment

(1) Nociceptive Pain:
arises from the activation of peripheral nerve endings (nociceptors) that respond to noxious stimulation
  - Somatic (for example, muscles, joints)
  - Chronic somatic pain typically well localized & often results from degenerative processes (such as arthritis)
  - Visceral (internal organs)

(2) Neuropathic Pain:
resulting from injury to, or dysfunction of, the somatosensory system.
  - Central pain: caused by a lesion or disease of the central somatosensory nervous system

(3) Psycho-social-spiritual-emotional Pain / Total Pain

(4) Chronic Pain
  - Pain beyond expected time of healing
**Pain versus Disability**


**Metaanalysis 2011 (King et al.)**


- Girls > boys
- Increasing with age
- Psychosocial variables impacting prevalence: anxiety, depression, low-self-esteem, other chronic health problems, lower socioeconomic status

- Range
  - Headaches: 8-83%
  - Abdominal pain 4-53%
  - Musculoskeletal (incl. back) pain 4-49%
  - Pain combinations 4-49%

- Mean prevalence
  - Headaches: 23%
  - Abdominal pain, musculoskeletal pain, and pain combinations: 11-38%

**Chronic-on-acute Pain**


- In USA: > 3.7 million children

- At least (!) 5% of children with sickle cell disease, inflammatory bowel disease, rheumatoid arthritis, congenital heart disease, or cancer are expected to display chronic pain in addition to their underlying somatic pain episodes.

Transition from acute to chronic pain

Chronic post surgical pain (CPSP) after Surgery (Joel Katz, PhD, Toronto)

- Epidemic of CPSP: Adult incidence 0.5-1.5% Hayes, Acute Pain 2002

Chronic post surgical pain (CPSP)
Joel Katz, ISPP 2015

- Incidence of moderate-severe CPSP at 1 year between 5-10% in adults and around 20% in children
- Intraoperative nerve transection/injury
- Presence/severity of pre- and acute post-operative pain are risk factors for child CPSP
- In some cases, preventive analgesia can reduce incidence/intensity of adult CPSP
- Psychological, emotional, social, family/peers might play role in development & maintenance of CPSP in children

Chronic-on-Acute Pain

- Centralized pain or central sensitization can be identified in most patients with FM, and in sub-sets (typically at least 20-30%) of adults with other chronic pain states such as RA, SLE, low back pain, osteoarthritis
- Thus all chronic pain states may be “mixed” pain states with variable peripheral and central contributions in different individuals with the same clinical label
- None of our pharmacological treatments of chronic pain have anything more than modest efficacy when used as stand-alone therapy
- There are several treatments (incl. CBT, exercise) that can lead to significant improvement in symptoms and function that are rarely utilized in routine clinical practice

Daniel J. Clauw: Treatment of Chronic Sickle Pain: Lessons from Fibromyalgia and Other Musculoskeletal Disorders APS Annual Conference 2013
Chronic-on-acute pain (SCD)

- Limited longitudinal and cross-sectional data suggest that Sickle Cell Pain is
dampier C: Treatment of Chronic Sickle Pain: Lessons from Fibromyalgia and Other Musculoskeletal Disorders. APS Annual Conference 2013

- largely episodic in young school-age children
- Increasing frequent and in some cases persistent in preteens and adolescents
- Frequently chronic in adults

- Treatment of persistent/chronic pain has also largely relied on opioids
- Underlying mechanism poorly understood
- Few studies examining role of peripheral and/or central sensitization
- Opioid-induced hyperalgesia seems likely in some cases but lacks definitive studies

Chronic Sickle Cell Pain

- Does chronic SCD pain state only result from patients with nociceptive or inflammatory (vasculopathic) pain, recurrent nearly every day?
- Ischemic veno-occlusive pain not opioid-responsive?

Model of “Chronic post surgical pain” transition from acute to chronic pain applies?

Does persistent pain state represent neuropathic pain?

“Daily” SCD pain in fact chronic musculo-skeletal pain?

Chronic Pain Survivors of Childhood Cancer

- Prevalence of pain during treatment: Outpatient 9-26%, inpatient 39-54%
- Prevalence of pain conditions after treatment: 12% pain/abnormal sensation; 15.5% migraines; 20.5% other headaches; using prescription analgesics higher among survivors than siblings
- Younger age at diagnosis
- Pain: non-Hodgkin lymphoma, Wilms tumor, neuroblastoma (vs leukemia)
- Prescription: bone cancer, soft tissue sarcoma
- Female gender, lower educational attainment, minority status, unemployment, being single
Functional Primary Pain Disorder

- Chronic pain disorder that after appropriate medical assessment cannot be explained in terms of conventionally defined medical disease based on biochemical or structural abnormalities
- Associated with significant disruption of everyday life and often incapacitation
- Not typically responsive to conventional medical therapy but responsible for the consumption of enormous medical resources
- Often pejorative implication, i.e. pain is not organic and therefore not real or serious


Chronic Pain Pathophysiology

- Many different chronic and recurrent pain syndromes, in both adult and pediatric populations, are now considered manifestations of an underlying vulnerability rather than separate disorders


- Considerable evidence, especially from twin studies, points to a role of shared biological sensitivity: “pain vulnerability”, “pain sensitivity”, or “central sensitivity syndrome”


**Psychological Anxiety**
- Stress Sensitivity
- Disordered Pain Processing

**Biological**
- Genetics
- Microtrauma
- Infection
- Injury

**Social**
- School Adverse Events

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**Catastrophizing [“Awfulizing”]**

- A set of negative emotional/cognitive processes such as magnification, rumination and pessimism about pain sensations and feelings of helplessness when in pain.

- Parent catastrophizing was associated with greater pain in children with IBD. Source: H. M., Campbell C., Quinones C., O'Keefe-Henker M., Hupfer A. et al. The role of parent and child catastrophizing in pediatric inflammatory bowel disease pain and functioning. Pain 29th Annual Scientific Meeting of the American Pain Society, Baltimore, May 6-8, 2010


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**Fear of Pain**


- Appears to play both a facilitative and inhibitory role in relation to treatment response:
  - may hinder improvements in disability & depressive symptoms
  - declines are strongly associated with positive functional outcomes
Primary Pain Disorders
...in children who also have acute recurrent pain

- Chronic daily headache
- “Dys-“ Functional abdominal pain
- Chronic musculoskeletal pain (“fibromyalgia”)
- Majority of children experience pain at multiple sites

Case Example: Chronic-on-acute pain

- Roman (11-years old) Nov 2014 - March 2015
- Single left-ventricle, status post 3 palliative surgeries
- Protein-loosing enteropathy (PLE)
- Significant constant “wandering pain everywhere” (pain score VAS 8-10/10), plus chronic headache plus recurrent severe abdominal pain
- Missed > 40 days of school
- Deconditioned
- Disturbed sleep

The Porcupine

“I Guess That Explains The Abdominal Pains”
Gary Larson, The Far Side:
Primary Pain Disorder

Pain Problem

Medical Workup

Positive

Assume manifestations of underlying vulnerability

Negative

Medical Treatment

Chronic-on-acute

Referral to:

Integrative Medicine

Mental Health Therapist

Pain Clinic

(1) Headaches / Migraines

Warning signals requiring further work-up (incl. neuroimaging):

- Focal or abnormal neurological signs, ataxia
- Papilledema (r/o pseudotumor cerebri)
- Age < 3 years
- “Worst headache of my life”
- Progressive worsening headaches
- VP-shunt
- Neurocutaneous syndrome
- Immunocompromized -> CSF! (check with ID)

- Rule out: CO; Obstructive Sleep Apnea

Headaches
Meta-analyses: Pharmacology

Migraine


- Placebo were observed in all trials, with pain relief at 2 hours ranging from 53% to 57.5%

Meta-analyses: Pharmacology

Headaches


- Drugs more effective than placebo for episodic migraines: **topiramate** (difference in headaches per month, -0.71; 95% CI, -1.19 to -0.24); **trazodone** (-0.60; 95% CI, -1.09 to -0.11).

- Other commonly used drugs have no evidence supporting their use in children and adolescents.

- Ineffective drugs: **clonidine, flunarizine, pizotifen, propranolol, and valproate**; single trial of **flusoxetine** for chronic daily headaches

- 10 comparator trials, **flunarizine** more effective than **piracetam**, but no better than aspirin, **dihydroergotamine**, or **propranolol**. Propranolol compared with **valproate**, behavioral treatment, 2 studies compared different doses of **topiramate**: none showed significant differences.

- Placebo: 5.6 -> 2.9 headaches/month [Cochrane Q=8.14]

Medication Overuse Headaches (MOH)

- International Headache Society [ICHD-II] Criteria, 2006

  - headache > 15 days/month > 3 months
  - ergotamine, triptans, or combination analgesics on > 10 days
  - or, simple analgesics or any combination of ergotamine, triptans, analgesics, and opioids on > 15 days/month

  - MOH can be caused by most, if not all acute headache drug therapies

  - Treatment duration?
  - Triptans: 1.7 yrs
  - Ergots: 2.7 years

  - analgesics: 4.8 years


- Therapy: Rapid (or slow?) discontinuation of medication EA MacGregor, TJ Steiner, PTG Davies: Guidelines for All Healthcare Professionals in the Diagnosis and Management of Migraine, Tension-Type, Cluster and Medication-Overuse Headache. 3rd edition (1st revision), September 2010

(2) Dys-Functional Abdominal Pain

Abdominal Pain

- Constipation most common diagnosis in children presenting with abdominal pain in ED (no racial difference)  
  Caprrelli, K., R. Piatti, and K.P. Cross,  

- Endogenous inhibition of somatic pain is impaired in 7-12 year old girls with irritable bowel syndrome compared with healthy peers  

- Mothers with children chronic abdominal pain show pain bias when interpreting ambiguous emotional expressions (possibly contributes to maintenance of the condition via specific parenting behavior?)  

Abdominal Pain

Warning signals requiring further work-up:

- Persistent right upper or right lower quadrant pain
- Pain that wakes child from sleep
- Dysphagia
- Arthritis
- Persistent vomiting
- Perirectal disease
- Gastrointestinal blood loss
- Involuntary weight loss
- Nocturnal diarrhea
- Deceleration of linear growth
- Unexplained fever
Chronic Musculoskeletal Pain

- Low grade in physical education for adolescent girls significantly associated with increased risk of musculoskeletal diagnosis, especially chronic soft tissue pain, 30 years later. Timpka S, Petersson IF, Englund M. The grade in physical education in adolescence as predictor for musculoskeletal joint diagnosis three decades later. Pain. 2010 Sep;150(3):414-9

- Twin Study (n=1,588; age 18-30 years): near-2-fold increased risk for chronic musculoskeletal pain in twins who currently smoked compared to nonsmokers, even when accounting for psychological factors.


Warning signals requiring further work-up:

- Athralgia: Rubor, Calor, Edema
- Pain, stiffness in the morning
- Abnormal radiographic findings
- Pain at rest, relieved by activity
- Pain at night: Worsened by massage, analgesics ineffective
- Bony tenderness
- Poor growth
- Weight loss
- Abnormal CBC, CRP, ESR
How long can we wait?

- Unknown at what point clinical deterioration begins


Who do we need?


Looking for a clinical psychologist!

The Exit Interview

- Pain is real!

- Positive Expectation = Self-fulfilling prophecy?

- Close collaboration with specialist of underlying acute condition to ensure no injury will be caused by rehab treatment
  - Pediatrics
  - Rheumatology
  - Gastroenterology
  - Hematology/Oncology
  - etc.
Exit Interview:
What is the Hard Work...and non-negotiable...?

- **Physical Therapy**
  - Daily home exercise

- **Integrative Medicine**
  - Self-Hypnosis
  - Biofeedback
  - Progressive Muscle relaxation, etc.
  - Daily home exercise
    - Passive: Massage, Acupuncture

Exit Interview
What is the Hard Work...and non-negotiable...?

- **Physical Therapy**
  - Daily home exercise

- **Integrative Medicine**
  - Self-Hypnosis
  - Deep Breathing

Exit Interview

↑ ↑ Pain

↑↑ Stress
Anxiety

Running Marathon

Self-Hypnosis
Exit Interview:
What is the Hard Work...and non-negotiable...?

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  - Progressive Muscle relaxation, etc.
  - Daily home exercise
  - Passive: Massage, Acupuncture
- **Psychology**
  (...if missing school, anxiety, depression...)

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Exit Interview:
What is the Hard Work...and non-negotiable...?

- **Physical Therapy**
  - Daily home exercise
- **Integrative Medicine**
  - Self-Hypnosis
  - Biofeedback
  - Progressive Muscle relaxation
  - Daily home exercise
  - Passive: Massage, Acupuncture
- **Psychology**
  (...if missing school)
- **Normalize Life**
  - Sports/Exercise
  - Sleep-hygiene
  - Social: Having daily fun
  - School: Attending full-time
  (or school-re-entry plan)

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Exit Interview:

- Pain
- Stress
- Anxiety
- Attending School
Exit Interview:
What is the Hard Work...and non-negotiable...?

- **Physical Therapy**
  - Daily home exercise
- **Integrative Medicine**
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- **Family Coaching**
- **Medications...???

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### Medications?

RITALIN

So much easier than parenting.

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### Opioid Analgesia = Self-fulfilling Prophecy?

- Expectation of the success of a pain treatment can markedly influence its effectiveness.


- Authors informed subjects the drug would (1) have no effect, (2) diminish the sensation of pain, or (3) make the pain worse.

- 22 healthy adults were exposed to pain-provoking heat and also given the opioid remifentanil.
Subjects were told remifentanil was stopped (but it wasn’t...)

Are these our chronic pain patients?

Positive treatment expectancy substantially enhanced (doubled) the analgesic benefit of remifentanil.

In contrast, negative treatment expectancy abolished remifentanil.

Functional magnetic resonance imaging (fMRI) examined brain activity.

Thermal pain itself causes activation of a so-called pain circuit, which encompasses numerous brain regions including somatosensory cortex, cingulate cortex, insula, thalamus, and brainstem.

Expectation of increased pain was accompanied by more neural activity in the hippocampus.

Conversely, individuals who expected drug to mitigate their pain showed increases in anterior cingulate cortex and striatum, signs that descending mechanisms of pain inhibition were engaged.
Opioids & Chronic Pain

- **Lack of evidence**
  - supporting long-term effectiveness
- Escalating **misuse** of prescription opioids including abuse and diversion
- Uncertainty about incidence of adverse drug events

- **Endocrine dysfunction** (androgen deficiency)
- **Immunosuppression** & infectious disease
- **Opioid-induced hyperalgesia**
- **Xerostomia**
- **Overdose**
- **Falls & fractures**
- **Psychosocial complications**

Updated Cochrane Review: Effectiveness/safety of long-term opioid therapy for lower back pain remains unproven


- Even after adjusting for substantial number of potential confounders, opioids were associated with worse functioning in back pain patients at 6-month follow-up


- Chronic lower back pain:
  - Increase in opioid use associated with increase in depression, and increase in depression associated with increase in opioid dose


Exit Interview

1. Low-dose Amitriptyline (stimulates)
2. Gabapentin (inhibits)
3. Acetaminophen
4. Ibuprofen (Celecoxib?)
5. Lidocain 5% patch
6. Melatonin
7. Vitamin D?
8. SSRI?
9. Co-Q10, Fish-Oil/Omega 3000, Peppermint oil (coated) [for abdo pain]?

Opioids in the absence of tissue injury or inflammation not indicated!
Gabapentinoids: Ca-channel α2-δ ligands

Voltage-gated Ca-channel

Presynaptic nerve terminal

↓ Glutamate ↓ Substance P

Postsynaptic nerve terminal

α2-δ subunit

[dysfunction/upregulation role in neuropathic pain]

Gabapentin

- **Gabapentin**: NNT: 6.3; NNH: 25.6
- **Extended-release gabapentin**: NNT 8.3; NNH 31.9
- No dose-response effect
- 15 studies (1468 participants) (post-herpetic neuralgia, diabetic neuropathy, cancer related neuropathic pain, phantom limb pain, Guillain Barré syndrome, spinal chord injury pain, various neuropathic pains)
- 42% improved compared to 19% on placebo
- NNT for effective pain relief in diabetic neuropathy 2.9; post herpetic neuralgia 3.9

Pregabalin

- Efficacy worse than gabapentin
- **NNT**: 7.7; **NNH**: 13.9
- Dose-response (600mg/day more effective than 300 mg/day)
- Linear (pregabalin) versus non-linear (gabapentin) bioavailability: Clinical relevance unclear.
- Negative RCTs: HIV neuropathy: central post-stroke pain
- Adverse effects include: Weight increase, dizziness, somnolence, blurred vision, life-threatening angioedema (face, mouth, larynx) - careful concurrent administration with ACE inhibitors


Children with impairment of CNS


<table>
<thead>
<tr>
<th>Age range</th>
<th>Less than 6 years (n=11)</th>
<th>Greater than 6 years (n=11)</th>
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<tr>
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<td>Average daily dose</td>
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<td>5 months - 5 years</td>
<td>60 mg/kg/day (42-72 mg/kg/day)</td>
<td>36 mg/kg/day (32-40 mg/kg/day)</td>
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<td>Suggested guidelines:</td>
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<td>Initial trial 35-40 mg/kg/day</td>
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<td>Increase up to 50-70 mg/kg/day in those &lt;6 years</td>
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Gabapentin

- **Pediatric Dosage:** gradually increasing from 3-5 mg/kg/dose TID to 10-20mg/kg/dose TID, max. 1,200 mg/dose TID
- **Infants:** 4.5 mg PO Q6h (titrated to max. 15 mg Q6h)
- **[Extended release: 300 -> 1800 mg Qday: No pediatric data; NNT worse]**
- wean: decrease gradually x 1-2 weeks!
- **Effect:** days - weeks
- **Adverse effects include:** ataxia, nystagmus, myalgia, hallucination, dizziness, somnolence, aggressive behaviors, hyperactivity, thought disorder, (peripheral edema)

Example: 10-year-old girl, 30 kg

| Day 1: | 100 mg once daily |
| Day 2: | 100 mg BID |
| Day 3: | 100 mg TID |
| Day 4: | 100-100-200 mg |
| Day 9: | 300 mg TID |

Other Anticonvulsants: pediatric pain RCTs (05/2015)

- **Anti-epileptic drugs for pain (adults)**
  - Carbamazepine (Carbatrol, Equetro, Tegretol, Tegretol XR): no RCT
  - Drug levels need be checked; Adverse effects (leukocytosis, thrombocytopenia, agranulocytosis, aplastic anemia, Stevens-Johnson)

- Oxcarbazepine (Trileptal): no RCT
  - Adult: effective, fewer adverse effects

- Felbamate (Felbatol): no RCT

- Lamotrigine (Lamictal): no RCT

- **Adults:** no evidence, small study n=92 for HIV

- **Levetiracetam** (Keppra): no RCT
  - Adult: no evidence

- **Adults:** not effective for headaches

Other Anticonvulsants: pediatric pain RCTs (05/2015)

- **Tiagabine** (Gabitril): no RCT
- **Topiramate** (Topamax): 1 RCT
  - Basilar-type migraine
  - Adult: insufficient data for diabetic neuropathy
- **Valproate** (Depacon): no RCT
  - Adult: insufficient data; Side effects: convulsion, bradycardia, syncope
- **Zonisamide** (Zonegran): no RCT

Other Antiepileptic Drugs

- Most studies negative
  - Topiramate NNT 6; NNH 6.3
  - Zonisamide NNH 2.0
  - Oxcarbazepine / carbamazepine NNH 5.5

Poorest safety profile:

- **Topiramate** NNT 6; NNH 6.3
- **Zonisamide** NNH 2.0

Amitriptyline

- Pediatric Evidence: no RCT’s, few case reports
- Dys-Functional abdominal pain:
  - Positive trial: 6, 10, 13 weeks
  - Negative trial: 4 weeks
- Control group showed very good improvement: Placebo effect? Regression to the mean? Natural history?
Amitriptyline

- NNT: 3.6; NNH: 13.4
  - No dose-response effect
  - Nortriptyline: only 1 study

Efficacy of TCA in central pain

- 2 studies (high effect size): no effect of amitriptyline in HIV neuropathy

- No dose-response effect
- Nortriptyline: only 1 study

Dosage: initial 0.1 mg/kg -> titrate to 0.4 mg/kg p.o., [max. 20-25 mg] (usually not up to 1-2 mg/kg/day) once at night -
  - Wean: decrease gradually!
- Effect: days - weeks; depends on length of symptoms

Adverse effects: arrhythmia: EKG (QTc, WPW?), anticholinergic / antihistamine (dry mouth, constipation, blurred vision, sedation)

Desipramine: anecdotal evidence of sudden death in children

Sodium channels are involved in pain...

- After nerve injury, expression of some Na+ channels increases de novo, the expression of others diminishes, and some translocate into different cellular compartments

- The proliferation of heterotopic sodium channels, such as Nav1.3, Nav1.7, and Nav1.8, may lower the stimulation threshold and provoke ectopic discharge, resulting in spontaneous pain.
Topical Lidocaine


• Cochrane analysis: Small, short-term trials indicate topical lidocaine may be effective in treating neuropathic pain; safety & tolerability were good in all cases Derry S, Wiffen PJ, Moore RA, Quinlan J. Topical lidocaine for neuropathic pain in adults. Cochrane Database Syst Rev. 2014;7:CD010958.


Topical Lidocaine 5% patch

• RCT (n=87) effective adjunct in post-operative (knee replacement) pain management Nafissi A. Lidoderm’s effectiveness in reducing pain in post-operative unilateral knee replacements patients. 50th Annual Scientific Meeting of the American Pain Society May 2011 (Poster)

• For localized pain only

• Patch can be cut to fit

• 12 hours on/12 hours off [possibly longer?]

• Not with severe hepatic dysfunction

• Side effects include skin problems (such as irritation and redness)

IV Lidocaine - Pediatric Experience


• Side Effects: Allergic reaction (serious, but rare), dose related: numbness around mouth, dizziness, slurring of speech, hallucinations, muscle twitches, seizures R. Pout A. How to evaluate and monitor intravenous lidocaine for severe and/or neuropathic pain. The journal of supportive oncology 2004 Jun;2(3):191-4


Other Sodium Channel Blocker

- **IV Lidocaine** for cancer pain: n=51 adult patients: without ECG monitoring; 5 mg/kg infused over 1 hour, option for subsequent doses increased if necessary, maximum of 10 mg/kg; effective analgesia in 49%. Peixoto RD, Hawley P. Intravenous lidocaine for cancer pain without electrocardiographic monitoring: a retrospective review. J Palliat Med. Apr 2015;18(4):373-377.

- **Oral mexiletine, tocainide, flecainide:** High side effect liability from oral drugs: Not recommended

- **How about local lidocaine and novocaine...?**

Chronic Pain & Vitamin D

- Low vitamin D appears to be a marker of chronic disease, not causing pain / chronic disease (exception: osteopenia) Autier P et al. Vitamin D status and ill health: a systematic review. The Lancet Diabetes & Endocrinology, Volume 2, Issue 1, Pages 76 - 89, January 2014


- Concerns about melatonin and sexual development issues in adolescents??

Melatonin = analgesic?


- Concerns about melatonin and sexual development issues in adolescents??
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<tr>
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<th>Good Safety</th>
<th>Poor Safety</th>
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<tr>
<td>positive Evidence</td>
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<td>negative Evidence</td>
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Evidence & Safety

**Individual changes in pain over 14 weeks of treatment with pregabalin 450 mg in 200 patients with fibromyalgia**

Andrew Moore et al. BMJ 2013;346:bmj.f2690

**Small Group work, please**

- How do you choose individual management of your patient with repetitive somatic pain episodes (e.g. Crohn’s disease) AND a primary pain disorder
So, how do we treat the individual patient in front of us?

Crystal clear answer:

“It Depends”
-Socrates

Individualized Medicine

- Medicine is an uncertain science
- Evidence-Based Medicine: Treatment outside the statistically proven not supported until sufficient body of data can be generated from clinical trials
- Little available pediatric data
- Statistics cannot substitute for the child being before you; statistics embody averages, not individuals
- Bayesian analysis (algorithms)
  - History
  - Physical exam
  - Order tests
  - Analyze results
  - Hypotheses: assigning statistical probabilities, based on existing databases, to each symptom, physical abnormality & lab test - > calculate likely diagnosis
- Versus “Tell me about, how you changed from a pain-free person to a person in pain...in your own words”

Individualized Medicine

- Rapport best way of getting story
- Physicians interrupt within 18 seconds of when they began telling their story
  - Attribution error (drunk? diabetic?)
  - Affective error (unpleasant test)
- “Focused exam” (not to neglect any part of the body just because you are focusing on problem in one area)
- Heuristics (shortcuts) from initial 1-3 diagnosis
- “Availability” (ease which relevant examples come to mind)
- “Distorted pattern recognition” (cherry-picking to support dx); “confirmation bias” (selectively accepting or ignoring information) results in “anchoring”
“Yin-Yang Out” Mistake

- Patient after extensive work-up
- You go through checklist of all the avenues that have been explored
  - it seems that each have been explored
  - each was a dead end
  - you have no new direction to go in

“Yin-Yang Out” Mistake: Failure to think of new direction, because you assume all have been explored

- Fair question from patient “What’s the worst thing this can be”
- Finding the right answer often takes time
- Haste makes cognitive errors

Roman - 3 1/2 months later

Need for New Treatment Paradigms

- Multimodal therapy, including pharmacologic and integrative ("non-pharmacologic") therapies, is likely optimum in chronic-on-acute pain disorders as it is in other pain disorders

- However relying on opioids and NSAIDS for chronic pain management largely ignores the progress made in therapy of other chronic pain disorders
Conclusion chronic-on-acute pain

- Many clinicians have historically considered most chronic pain to be largely from peripheral nociceptive input (i.e. damage or inflammation), and data increasingly suggest this is simply not the case.
- Many different chronic and recurrent pain syndromes, in both adult and pediatric populations, are now considered manifestations of an underlying vulnerability rather than separate disorders.
- Close collaboration with specialist of underlying acute condition to ensure no injury will be caused by pain rehab treatment.
- Opioids in the absence of tissue injury or inflammation are contraindicated!
- Importance of rehabilitative, interdisciplinary team approach.

With profound gratitude to our interdisciplinary Pain, Palliative & Integrative Medicine team

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- Julie Yang

Palliative Nursing
- Sarah hose, RN
- Michael McLane

Social Work
- Martha Schremmer, LICSW
- Cyndee Daughtree
- Jessica Convey

Chaplain: Hal Weiden
Child Life: Margaret Monsoon
Music Therapy: Mark Burnet
Clinic nurse: Blanche Amar
Massage
- Candace Limars
- JR Melrud
- Laura Beck
Admin Assistants
- Kara McQuade
- Cheryl Puumala

Clinic staff
- Brock Hebert
- Allison McQuade

Manager
- Tracey Crocoll
- Liz Leighton, RN

Further Training:
CIPPC@ChildrensMN.org

9th Annual Pediatric Pain Master Class
- Minneapolis, MN | June 11-17, 2016

Education in Palliative & End-of-life Care [EPEC]: Become an EPEC-Pediatrics Trainer
- 9th Conference: Chicago, IL | March 12-13, 2016