Integrative (“non-pharmacologic”) pain treatments and teaching kids integrative strategies for pain modulation

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Pediatric Pain - Status Quo

- Pain in children’s hospitals is common, under recognized and under treated
  - USA: 20% of all children surveyed experienced moderate, 30% severe pain in previous 24 hours
  - 12% reported having pain routinely before admission
  - None of the 15 children with ≥ 1 severe pain score documented received consultation from Pain & Palliative Care

- Canada: 3,822 pediatric inpatients (32 units):
  - 33% moderate to severe pain
  - 88% acute, 12% chronic pain

- 88% acute, 12% chronic pain

- History’s first acupuncture
  - www.jackoakley.com

5-year old Marius: Procedural Pain Management


Don't have enough staff for pediatric pain control...?

Funny, how there is always enough staff to restrain a child.

Inappropriate Analgesia: Why Bother...

- Children with persistent pain suffer more physical symptoms in adult life, more anxiety and more depression
  (1946 Medical Research Council and 1958 National Child Development Study)

- Inadequate analgesia for initial procedures in children diminishes effect of adequate analgesia in subsequent procedures

- NICU: increased morbidity & mortality

- Exposure to neonatal pain in premature infants related to higher pain self-ratings during venipuncture at school age
  (Valeri, Beatriz Oliveira Bc, MSc, PhD; Ranger, Manon PhD; Chau, Cecil M.Y. MSc; Cepeda, Ivan L. MSc; Synnes, Anne MDCM, MHSC, FRCPC; Linhares, Maria Beatriz Martins PhD; Grunau, Ruth E. PhD: Neonatal Invasive Procedures Predict Pain Intensity at School Age in Children Born Very Preterm. The Clinical Journal of Pain. 2016)

- Up to 25% of adults have fear of needles with most fears developing in childhood: avoidance of health care (including non-adherence with vaccination schedules)
So, how do we treat the individual pain patient in front of us?

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

Case Example: Chronic-on-acute pain

- Roman (11-years old) Nov 2014 - March 2015
- Single left-ventricle, status post 3 palliative surgeries
- Protein-losing 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

Integrative Pain Management

State of the art pain management in the 21st century demands that pharmacological management must be combined with supportive and integrative, non-pharmacological therapies to manage a child’s pain.

- Physical methods (e.g. cuddle/hug, massage, comfort positioning, heat, cold, TENS)
- Cognitive behavioral techniques (e.g. guided imagery, hypnosis, abdominal breathing, distraction, biofeedback)
- Acupuncture, acupressure, aromatherapy
Integrative modalities effective in management of pediatric pain

include
• hypnosis
• guided imagery
  Dobson, C.E.; Byrne, M.W. Original research: Using guided imagery to manage pain in young children with sickle cell disease. The American journal of nursing 2014, 114, 26-36; test 37, 47.
• yoga
• acupuncture
• massage
• biofeedback

Multimodal Analgesia
No Needless Pain: The Children’s Comfort Promise
https://vimeo.com/20329079

Nociceptive Pathways & Primary Sites of Action of Analgesics

Thalamus

NSAIDs

Injury

Acetaminophen (Paracetamol)
Brain Regions that Modulate Pain and Emotion

- Somatosensory Cortex
- Insular Cortex
- Prefrontal Cortex
- Thalamus
- Hippocampus
- Amygdala
- Anterior Cingulate Cortex

Both
Pain

Slide with Permission: Barry Cole, Bob Dworkin, Roy Freeman, Charles Argoff, Howard Fields

6-year-old Cassandra with severe pain due to chest tube insertion

Fentanyl PCA “the pump” and blowing bubbles “going to bubble land”

Nociceptive Pathways & Primary Sites of Action of Analgesics

- Thalamus
- Periaqueductal grey (endorphins)
- Opioids
- Integrative (non-pharmacological) therapies

Descending pathways that mediate consciousness of noxious inputs originate in periaqueductal grey and locus coeruleus, anterior cingulate cortex, amygdala, and hypothalamus, and descend through brainstem nuclei such as the PAG and medulla to spinal cord. Inhibitory neurotransmitters involved in these pathways include norepinephrine, serotonin, dopamine, and endogenous opioids.

- NSAIDs
- Acetaminophen (Paracetamol)

Injury
How does this stuff work...


- Distraction significantly increased activation of cingulo-frontal cortex including orbitofrontal & perigenual anterior cingulate cortex (ACC), as well as periaqueductal gray (PAG) & the posterior thalamus.

- Active distraction techniques, such as imagery, appear to modulate endorphine release in the midbrain, including the periaqueductal grey and thereby decreasing nociception from the dorsal horn resulting in gate pain modulation during distraction.

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Nociceptive Pathways & Primary Sites of Action of Analgesics

**Cortex:**
- Stress
- Anxiety
- Catastrophizing
- Depression
- Perceived injustice
- Disturbed sleep

**Thalamus**

**NSAIDs**

**Acetaminophen (Paracetamol)**

**Opioids**

**Integrative (non-pharmacological) therapies**

**Periaqueductal grey (endorphins)**

**Injury**
Integrative Pain & Symptom Management

A Pediatrician’s Top 10 Apps for Distraction & Pain Management [http://NoNeedlessPain.org](http://NoNeedlessPain.org)

- Aromatherapy
  - Diluted in carrier oils and applied topically
  - Placed on a cotton ball and inhaled
  - Used with a variety of diffusion devices
  - Added to steaming water and inhaled
  - Select oils are available orally

Aromatherapy

- Atlas cedarwood (cedrus atlantica)
- Lavender (Lavandula angustifolia)
- Lemon (Citrus limon)
- Peppermint (Mentha piperita)
- Spearmint (Mentha spicata)
- Sweet orange (sweet orange)

Let’s have a closer look at this “hypnotherapy”…

What is Self-Hypnosis?

- Altered state of consciousness
- Increased attention leads to an openness to suggestion
- Therapist guides the child’s stream of consciousness
- Adjunct
- Goal: gives the child a sense of mastery and control of symptoms
Misconceptions

- Being asleep or unconscious
- Loss of Control
- “Magic” or “put under a spell”
- Revelation of secrets
- Not being de-hypnotised

Address child's and parents' fears / concerns!

Phenomena of Hypnosis

- Relaxation
- Increased Suggestibility
- Dissociation
- Anesthesia
- Ideomotor responses
- Post-hypnotic suggestion
- Self-hypnosis

When is Hypnosis Indicated?

- Child is responsive to hypnotic induction
- A problem is treatable using hypnosis
- Competent Therapist
- Good rapport between child and therapist
- Child is motivated to solve the problem

- The parents are agreeable to treatment
- No harm is anticipated using hypnosis
When is Hypnosis Contraindicated?

- Used for “fun” or entertainment
- Risking aggravation of emotional problems
- Hypnotherapy based on misdiagnosis
- Medical diagnosis and treatment takes precedence
- Child who is actively psychotic
- Another form of treatment is indicated

Clinical Problems Responding to Hypnosis

- Acute and Chronic/Complex Pain
- Palliative Care
- Anxiety
- Enuresis and Encopresis
- Habit disorders
- Dermatological Problems
- Asthma

Childhood Hypnotic Responsiveness

- Age
- Imaginative involvement
- Trust in therapist (rapport)
- Misconceptions – child’s and parents’
Do You Want to Go to Your Favorite Place?

Pediatric Hypnosis Workshops
Minneapolis

Pediatric Clinical Hypnosis Training
Introductory - Intermediate - Advanced Levels
National Pediatric Hypnosis Training Institute
(formerly associated with the SDBP)

www.nphst.org

The Magic Glove
Pamela: The Magic Glove

Leora Kuttner, PhD: “No Tears, No Fears: Children with Cancer Coping with Pain” re-released through Crown House Publishers 877-925-1213
www.Crownhousepublishing.com

The Magic Glove

https://www.youtube.com/watch?v=cyApK8Z_SQQ

Do you remember Marius...?

How about a Plan B?
LET Anesthesia

- Sitting upright
- Distraction
- Topical Anesthesia

- 3mL LET-gel: Lidocaine 4%-Epinephrine 0.18% - Tetracaine 0.5%


STEP 1: Topical Local Anesthetics

@NoNeedlessPain

Flu shot @childrensmn for my 3 kids today. STEP 1: Numb the skin (over-the-counter 4% lidocaine cream, > 30 min)

STEP 3: Positioning

@NoNeedlessPain

STEP 3: NEVER ever hold a child down for vaccinations or other needle procedures (babies: swaddle or skin2skin)
STEP 4: Distraction


Ow! I didn’t feel it @childrensmn
ComfortPromise: numb the skin, sitting upright & distract
childrensMN.org/comfortpromise

Roman - 3 1/2 months later
Conclusions

• Withholding evidence-based analgesia to children in pain is not only unethical, but causes immediate and long-term harm

• Effective & safe integrative modalities can be easily taught and integrated into clinical practice

• Distraction, massage, aromatherapy, biofeedback, self-hypnosis appear to be highly effective in therapy of acute and chronic pain

• Use multimodal (opioid-sparing) analgesia: Multiple agents, interventions, rehabilitation, psychological and integrative therapies act synergistically for more effective pediatric pain control with fewer side effects than single analgesic or modality

Further Links


• The New York Times (Dec 16, 2015) essay by Dr. Stefan Friedrichsdorf “When a Baby Dies” http://opinionator.blogs.nytimes.com/2015/12/16/when-a-baby-dies/?_r=1

• Video: Kiran Stordalen and Horst Rechelbacher Pediatric Pain, Palliative and Integrative Medicine Clinic Tour https://vimeo.com/122654881


• Short Movie: Meet the Interdisciplinary Chronic Pain Clinic Team at Children’s Minnesota LittleStars TV https://www.youtube.com/watch?v=13xk3l8kiHi&hl=en

• Video Tour of the Kiran Stordalen and Horst Rechelbacher Pediatric Pain, Palliative and Integrative Medicine Clinic at Children’s Hospitals and Clinics of Minnesota and an overview of the three programs that are offered at Children’s under this clinic. https://vimeo.com/123357796

• Short Movie: LittleStars Film: ‘Kali’s Story - Beyond the NICU’ This amazing pediatric palliative care short movie (7 min) features 8-year-old Kali’s journey at Children’s Hospitals and Clinics of Minnesota from NICU to today, receiving care by the Pain & Palliative & Integrative Medicine program while inpatient, in the clinic, and at home (Jan 22, 2015) http://www.littlestars.tv/short-film/beyond-the-nicu
Recommended Reading

Further Training

10th Annual Pediatric Pain Master Class
- Minneapolis, Minnesota, USA | June 17-23, 2017

Education in Palliative & End-of-life Care (EPEC): Become an EPEC-Pediatrics Trainer
- Montréal, Québec, Canada | April 29-30, 2017 (Professional Development Workshop: 04/28/17)

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