Welcome to our Webinar Presentation

An Introduction to Pediatric Pain Assessment and Management
Thursday, May 5th at 9:00am-11:00am

We will begin the presentation at 9:00am.
Remember to check your volume levels for your speakers or headphones.
You may ask a question at any time by typing into the "chat" box below.
For any technical assistance, feel free to email our Admin, Colleen at renison@ohsu.edu, with your best phone number to call you, and she will call you back right away.

An Introduction to Pediatric Pain Assessment and Management
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WHO ARE THE CHILDREN WE CARE FOR?

A Little History
- 1970’s—only half of children treated post-operatively with analgesics.
- 1980’s—only half of the doses of analgesics compared to adults with same operation
- 1990’s—doing better with surgical but not medical pain and certainly not chronic pain.
- Even Now—Up to 40% of providers believe newborns don’t experience pain.

What are the Barriers?

Patient/Family

Providers

Healthcare system

Barriers
- Attitudes/Beliefs
  - Life experiences
  - Culture/socialization
  - Fear, anxiety
  - Genetics—"hardware"
  - Previous treatment experience
Barriers

- Patient
  - Afraid treatment may be worse than pain
  - Don’t want to upset parents
  - Telling a stranger about the pain
  - Anti-drug programs

- Family
  - Measuring the pain
  - Afraid of “strong medicines”
  - Concerns about drug addiction
  - Need to be “good patient/family”

- Provider
  - Personal bias/experience
  - Lack of knowledge
  - Concerns about agency monitoring
    - DEA, Professional Boards

- Healthcare system
  - Entrenched practices
    - Personal and institutional
  - Lack of shared language
  - Multidisciplinary
    - Different causes, different treatments
  - Cultural and political climate

Factors Affecting Pain Perception & Expression

- Sex
- Age
- Cognitive level
- Arousal/anxiety
- Cultural norms
- Expectations
- Consequences
- Exposure to others’ pain
- Past pain experience
- Relevance of pain
- Attentional focus
- Perception of control
- Coping ability and style

Types of Pain

- Acute
- Incident/procedural
- “Chronic acute”
- Chronic nonmalignant
- Cancer
- End of Life
Chronic Pain Syndromes in Pediatrics
- Headaches
- Chronic Abdominal pain
- Myofascial Pain
- Neuropathic Pain
  - Complex Regional Pain Syndrome (RSD/RND)
  - Chemotherapy related neuropathies
- Chronic Pain Related to Medical Conditions
- Other

Incident/Procedural Pain
- Procedural pain - Immunizations, blood sampling, LP’s etc.

Mechanisms of Pain
- Nociceptive
  - Somatic
  - Visceral
- Neuropathic

Effects of Poor Pain Control
- Hyperexcitability also called central sensitization
- Hyperalgesia and allodynia
- Neuro remodeling especially in infants
- Chronic pain

Effects of Poor Pain Control
- Agitation
- Depression/anxiety
- Loss of appetite—weight loss
- Sleep disturbance
- Decreased quality of life
- Interruption in family life
Pain Across Childhood

- Premature Infant
- Infant
- Toddler/Preschooler
- School Age
- Adolescent

Assessment

Premature Infant/Neonate

- Motor
  - Restless, rigidity or flaccidity, ↓ or ↑ sleep, limb withdrawal, thrashing
- Communication
  - +/− crying, grunting
- Facial expression
  - Eyes squeezed shut, brow bulge, nasolabial furrow
- Other behaviors
  - Open lips, ↑ HR, ↓ Sats
- Pain Scale - N-PASS

N-PASS

Pain Scale - FLACC, FPSR

Infant

- Motor
  - Restless, rigidity, arching, ↓ or ↑ sleep
  - Increased frantic activity
- Communication
  - Intense crying, grunting
- Facial expression
  - Grimacing, brows lowered and drawn together
- Other behaviors
  - Loss of appetite, inconsolable, hypersensitive
- Pain Scale - FLACC

Toddler

- Motor
  - Clingy, restless, irritable
- Communication
  - Loud fearful cry
- Facial expression
  - Furrowed brow, tense
- Other behaviors
  - Regression, ↑ or ↓ sleep
- Pain Scale - FLACC, FPSR
Preschooler/Early School-age

- **Motor**
  - Clingy, restless, irritable, aggressive
- **Communication**
  - Verbal aggressiveness, loud fearfu cry
- **Facial expression**
  - Furrowed brow, tense
- **Other behaviors**
  - Regression, ↑ or ↓ sleep
- **Pain Scale** - FLACC, FPSR

FLACC

<table>
<thead>
<tr>
<th>Face</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No particular expression or smile.</td>
<td>Occasional grimace or frown.</td>
<td>Frequent to constant frown.</td>
<td></td>
</tr>
<tr>
<td>Lags</td>
<td>Uneasy, restless, tense.</td>
<td>Kicking, or legs drawn up.</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Lying quietly, normal position, moves easily.</td>
<td>Arched, rigid, or jerking.</td>
<td></td>
</tr>
<tr>
<td>Cry</td>
<td>No cry (awake or asleep).</td>
<td>Cries steadily, screams, sobs, frequent complaints.</td>
<td></td>
</tr>
<tr>
<td>Consolability</td>
<td>Content, relaxed.</td>
<td>Difficult to console or comfort.</td>
<td></td>
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School Age

- **Motor**
  - Irritable, resist movement, localize pain
- **Communication**
  - Verbalizes pain, objective measurements
- **Facial expression**
  - May appear sad, tense
- **Other behaviors**
  - ↑ or ↓ sleep, nightmares
- **Pain Scale** - FPSR, Numeric Scale

Adolescent

- **Motor**
  - ↑ muscle tension, flinches
- **Communication**
  - Very specific about pain qualities, may deny in front of peers
- **Facial expression**
  - Frown, grimace, may avoid eye contact
- **Other behaviors**
  - Difficulty sleeping, anger, sadness
- **Pain Scale** - Numeric scale

Faces Pain Scale Revised

- No tears, no happy face
### Numeric Scale

- No pain
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Severe pain

### Challenges

- Motor Impairment
- Cognitive Impairment
- Language Difficulties
- Chronic Pain

### Finding Help

- Clinical Resources
  - Refer to regional center
  - Refer to local services
- Accessing Limited Resources
  - Few experienced providers
  - Expensive medications
  - Restricted services
  - PT
  - Psychology

### Interdisciplinary Approach

- Doernbecher Pediatric Pain Management Clinic—one afternoon a week
  - Physicians
  - Nurses
  - Psychologists
  - Physical Therapists

### Terminology

- Words ARE important!!!
  - What we say
  - How we say it
Just say no to “Narcotic”
- Legal term
- No such drug class
- Pejorative
- Socially loaded
- Stigmatizing

Definitions

Dependence
- Normal physiologic response
- State of adaptation that is manifested by a drug-class-specific withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, decreasing blood level of the drug, and/or administration of an antagonist.
- Management:
  - Taper off medication. Do not abruptly stop

Definitions

Tolerance
- Biologic adaptation
- May develop at different rates
- Exposure to drug induces changes that result in diminution of one or more of the drug’s effects over time
- This is NOT addiction
- Management:
  - Increased doses
  - Opioid rotation

Definitions

Withdrawal
- Characteristic withdrawal syndrome for the substance
- Drug class specific
- Management:
  - Appropriate weaning

Definitions

Pseudoaddiction
- An iatrogenic misinterpretation caused by under treatment of pain that is misidentified by the clinician as inappropriate drug-seeking behavior
- Behavior ceases when adequate pain relief is provided – NOT addiction!
- Not a diagnosis, rather a description of a clinical interaction

Definitions

Addiction
- A primary, chronic, neurobiologic disease with genetic, psychosocial and environmental factors.
- One or more of characteristic features
  - Impaired control over drug use
  - Compulsive use
  - Continued use despite harm
  - Craving

AAPM, APS, ASAM, 2001

Definitions

Weissman & Haddox, 1989

AAPM, APS, ASAM, 2001
Management Options

- Pharmacological
- Nonpharmacological
- Multimodal

By the Child

- Individualize to the child based on their level of pain, prior experience with opioids, and desired activity level.
- Frequently assess pain level and adjust as necessary.
- In pain crisis - rapid titration to comfort is imperative.
- Goal is to stay ahead of pain as opposed to 'chasing' it.

Non-Opioids

- First line
  - NSAIDS
  - acetaminophen
  - topical agents
- Second line
  - anticonvulsants
  - tricyclic antidepressants
- Third line
  - sedatives
  - anesthetic agents

Topical Anesthetics

- Buffered lidocaine
- EMLA®/Ela-Max®
- Lidoderm patches®
- Lidocaine iontophoresis
- Heat assist lidocaine

Topical Analgesics

- Bacteriostatic saline—benzyl alcohol
- Coolants/Ice
- Heat packs
- Capsaicin creams
- NSAIDS creams
- Compounded creams

Ibuprofen

- Advil®, Motrin®
- Dose: 5 - 10 mg/kg Q6H
  - 24hr max 40mg/kg or 2400mg
- Preparations: suspension, tablets
  - OTC and Rx
Ketorolac
- Toradol®
- Dose: 0.5 mg/kg (30mg max) IV Q6H
- PO Dose: 10 mg Q6H
- No more than 120 mg/day IV, 40 mg/day PO
- 5 days treatment maximum (IV & PO)

Acetaminophen
- Indications: mild - moderate pain
- Side effects: hepatotoxicity
- PO: 10 - 20 mg/kg Q4-6H
- PR: Initial dose PR should be 40mg/kg
- Subsequent doses 20mg/kg Q6-8H
- Route: PO, PR, IV
- Often given in combination with opioid

Acetaminophen
- Watch the 24 hour limits
  - Kids 90-100mg/kg
  - Infants 80-90mg/kg
  - Neonates 60-75mg/kg
  - Preterms 45mg/kg
  - OR
  - 75mg/kg/24 hours for ages 2-12 and <50 kg
  - 4000mg/24 hours for >50 kg

Additional Considerations
- Opioid use is often less when acetaminophen (or NSAID) is given concurrently
- Metabolized by the liver
- Can be given with NSAIDS and given at the same time—alternating works best for fever management NOT analgesia

Opioids
- Indications: moderate - severe pain
- Route: PO, PR, IV, transdermal, inhaled, SubQ, epidural, intrathecal
- No ceiling effect on analgesia
- Side effects: nausea, itching, urinary retention, respiratory depression, metabolite toxicity

Morphine
- Most commonly used opioid
- Dose:
  - 0.05 - 0.10 mg/kg (3 - 5 mg) IV Q2H
  - 0.3mg/kg PO Q3-4H
- Individual variation in requirements
- PO forms also available/immediate and sustained release
Hydromorphone
- Dilaudid®
- Dose:
  - 0.015 - 0.03 mg/kg (0.5 - 2 mg) IV Q2H
  - 0.02-0.1 mg/kg PO Q3-4 H
- 7 times more concentrated than morphine
- Also available in sustained release oral and PR

Fentanyl
- A semi-synthetic opioid
- Moderate-high potency
- Available IV/transdermal/transmucosal
- Short half life (if not given continuously)
- Dose: 0.5-2mcg/kg IV Q1H
  - 12, 25, 50, 75, 100 mcg/hour patches
  - 200, 400, 600, 800, 1200, 1600 mcg/lozenges

Methadone
- Dolophine® /Methadose®
- Long half life
- Delay to steady state
- 0.05-0.1 mg IV/PO Q4-24H
- Clinically challenging to use
- Lower doses if patient has been on high doses of other opioids

Fentanyl
- A semi-synthetic opioid
- Moderate-high potency
- Available IV/transdermal/transmucosal
- Short half life (if not given continuously)
- Dose: 0.5-2mcg/kg IV Q1H
  - 12, 25, 50, 75, 100 mcg/hour patches
  - 200, 400, 600, 800, 1200, 1600 mcg/lozenges

Hydrocodone
- Lortab®/Vicodin®/Norco®
- Moderate potency
- Always in combination
  - typically with APAP 325 or 500mg
- PO Only
- Dose: 0.05-0.15 mg/kg Q4H of hydrocodone
  - Elixir: 7.5mg hydrocodone & 500mg APAP/15ml
  - Dose: 0.2ml/kg

Oxycodone
- Percocet®/OxyCONTIN®
- Moderate potency
- PO Only
- Dose: 0.1 - 0.2 mg/kg PO
  - often given with acetaminophen suspension and tablets
- Weak analgesic
- PO Only
- Dose: 0.5 - 1.0 mg/kg PO q4h
  - often given with acetaminophen suspension and tablets
  - Constipation, nausea/vomiting common

Codeine
- Tylenol #3®
- Weak analgesic
- PO Only
- Dose: 0.5 - 1.0 mg/kg PO q4h
  - often given with acetaminophen suspension and tablets
  - Constipation, nausea/vomiting common
**Meperidine**
- Demerol®
- Normeperidine metabolite causes CNS irritability
- Direct cardiac depressant
- Marked variability in IM absorption
- Restricted formulary use

**Opioid Rotation**
- Used when titration of opioid is ineffective or causing intolerable side-effects
- No clear guidelines for when to rotate due to ineffective pain control
- Cross-tolerance between opioids not always complete
  - Use equianalgesic conversion, decrease dose by 25%

**Side Effect Management**
- Nausea
- Itching
- Urinary retention
- Constipation
- Respiratory depression
- Metabolite toxicity

**Nonpharmacological Options**
- Used in isolation or combination with pharmacological options
- Can minimize need for medications
- Have fewer side effects

**Nonpharmacological Options**
- Give patient a sense of control
- Give family sense of involvement
- Use very little time and resources

**Nonpharmacological**
- Infants
  - 24% oral sucrose
  - Positioning—midline, hand to mouth, proper flexion, side lying; facilitated tucking for heel sticks
  - Containment—swaddling
  - Kangaroo Care
  - Nonnutritive Sucking
Nonpharmacological

- Distraction

- Guided Imagery/Hypnosis/Virtual Reality
  - Imagery has the ability to directly influence the autonomic nervous system

- Biofeedback

- Acupuncture

- Relaxation

Multimodal Therapy

- Medications from different classes used together—not multiple drugs from same class

  PLUS

- Nonpharmacological
  - Age appropriate
Resources

- For you—
  - American Society for Pain Management Nursing
  - American Pain Society
  - Pain Society of Oregon
- For patients
  - Camp Pain Retreat, good for 8-12 year old kids
    (abdominal pain/headache info for parents)
  - Painretreat.net

DISCUSSION

Thank you for your participation!

Please complete the evaluation by visiting this link:
http://www.surveymonkey.com/s/Y8QG3RM

We will send this link via email. We ask that everyone participate in the evaluation so we may gain valuable feedback for future webinars. Thank you!