Opioid Use In Pediatric Patients

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Disclosure Declaration

Julie Tuccillo-Stracener is employed by the University of New Mexico Hospital and Cibola Grants Hospital
Speaker does not have any conflicts of interest with regards to content in this presentation
Information contained in this presentation is known to be accurate as of 12/29/2019
Presentation includes Unlabeled Uses

- Tramadol
- Naltrexone
- Buprenorphine
- Methadone

Learning Objectives

Pharmacists

- Explain safe and appropriate use of opioids and non-opioids in acute pain management of pediatric patients
- Describe the opioid epidemic in the pediatric patient population
- Discuss co-prescribing of naloxone in pediatric patients
- Identify medication-assisted treatments in pediatrics with opioid use disorder
Learning Objectives

Technicians
- List opioids used in pediatric patients, and opioids that have FDA contraindications in pediatric patients
- Discuss the benefits of co-prescribing of naloxone in pediatric patients
- Recognize patients that would benefit from co-prescribing of Naloxone

Outline
- Pain management in pediatrics
- Pediatric Opioid Epidemic
- Naloxone co-prescribing
- Medication Assisted Therapy of Opioid Use Disorder
Pediatric Pharmacy Association (PPA) Position Statement 2019

- Recommends pharmacists participate in pain management
- Recommends pharmacists provide naloxone recommendations
- Recommends pharmacists review prescription drug–monitoring programs prior to dispensing opioids
- Supports education by pharmacists of proper opioid administration, storage, and disposal
- Advocates for increased access to evidence-based pharmacotherapy for adolescents with opioid use disorder


World Health Organization (WHO) Guidelines on the Pharmacological Treatment of Pain in Children

- Comprehensive approach – non-opioid and opioid analgesics, adjuvants and non-pharmacological strategies
- Two step approach according to pain severity
- Regular dosing intervals
- Appropriate route of administration
- Adapting treatment to the individual child

WHO: Two-Step Strategy

Step 1
Mild Pain
Acetaminophen (APAP)
Ibuprofen

Step 2
Moderate to severe pain
Opioid therapy
Morphine or alternatives


Step 1 - Mild Pain

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen (APAP)</td>
<td>PO: 10-15 mg/kg/dose q 4-6 h PR: 10-40 mg/kg/dose q 4-6 h Fixed dosing chart for infants to children 11 years of age Max 75 mg/kg/day, NTE 4 g/day</td>
<td>Duplicate therapy issues Duration of therapy OTC use: Pain Infants: 3 days Pain Children &lt; 12 years: 5 days Pain Children ≥ 12 years: 10 days Boxed Warning: Dosing errors, and total daily dose of APAP from all sources does not exceed daily max</td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>Infants &gt;6 months to children &lt; 50 kg: 4 to 10 mg/kg/dose q 6 to 8 h Fixed dosing chart for infants to children 11 years of age Max 40 mg/kg/day 400 mg/dose; 1200 mg/day</td>
<td>Duration of therapy OTC use: &gt; 10 days not recommended Oral liquid products are available in two concentrations Potential cause of acute kidney injury (AKI) in children Boxed warning for gastrointestinal events Boxed warning for cardiovascular thrombotic events</td>
</tr>
</tbody>
</table>
Step 2 – Opioids for Moderate to Severe Pain

Opioid Warnings

CNS depression
Constipation
Hypotension
Respiratory depression [US Boxed Warning]
Opioid abuse/misuse/diversion, REMS program, [US Boxed Warning]
Accidental ingestion [US Boxed Warning]
Abrupt withdrawal
Concomitant use of benzodiazepines or other CNS depressants [US Boxed Warning]
Oral solution risk of dosing errors [US Boxed Warning]
## Step 2: Oral Opioids – Moderate to Severe Pain

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morphine</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Infants ≤6 months: | 0.08 to 0.1 mg/kg/dose q 3-4 h | Hepatic conversion to active metabolites  
Causes histamine release  
Additional warnings:  
Respiratory depression post tonsillectomy  
Phenanthrene hypersensitivity  
Ethanol use [US Boxed Warning] |
| <50 kg: | 0.2 to 0.5 mg/kg/dose q3-4 h |                                                                          |
| ≥50 kg: | 15 to 20 mg q3-4 h |                                                                          |
| **Hydromorphone** |                                           |                                                                          |
| Infants >6 months to children >10 kg: | 0.03 mg/kg/dose q 4 h | Synthetic derivative of morphine  
7x more potent  
10x more lipophilic  
Less nausea and pruritis than morphine  
Additional warning: Phenanthrene hypersensitivity |
| <50 kg: | 0.03 to 0.08 mg/kg/dose q 3-4 h |                                                                          |
| ≥50 kg: | 15 to 20 mg q3-4 h |                                                                          |
| **Oxycodone** |                                           |                                                                          |
| Infants ≤6 months: | 0.025 to 0.05 mg/kg/dose q 4-6 h | ± APAP or ibuprofen  
Multiple concentrations of liquid form  
Extended release products available |
| Infants >6 months and <50 kg: | 0.1 to 0.2 mg/kg/dose q 4-6 h |                                                                          |
| ≥50 kg: | 5 to 10 mg q 4-6 h | Additional warnings:  
Phenanthrene hypersensitivity  
CYP450 interactions [US Boxed Warning] |
| Usual max: 20 mg/dose |                                           |                                                                          |
| **Hydrocodone ± APAP** |                                           |                                                                          |
| Infants: consider reduced doses and close monitoring | Hepatic conversion to active metabolite hydromorphone  
Multiple concentrations of liquid form |
| <50 kg: | Hydrocodone 0.1-0.2 mg/kg/dose q 4-6 h | Additional warnings:  
Must check total daily APAP doses  
Phenanthrene hypersensitivity  
Ethanol use (with Sohydro ER) [US Boxed Warning]  
CYP450 interactions [US Boxed Warning]  
Hepatotoxicity (APAP component) |
| ≥50 kg: | Hydrocodone 5-10 mg q 4-6 h |                                                                          |
# Step 2: Oral Opioids – Moderate to Severe Pain

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Methadone</td>
<td>Infants ≤6 months: 0.025 to 0.05 mg/kg/dose q 4-8 h</td>
<td>Long acting</td>
</tr>
<tr>
<td></td>
<td>Infants &gt;6 months and &lt;50 kg: 0.1 mg/kg/dose q 4-8 h</td>
<td>Lipophilic</td>
</tr>
<tr>
<td></td>
<td>Infants &gt;6 months and ≥50 kg: 5 to 8 mg q 4-8 h</td>
<td>US Boxed Warnings:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiratory depression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QT prolongation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cytochrome P450 interactions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concomitant use of CNS depressants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additional warnings: Serotonin syndrome</td>
</tr>
</tbody>
</table>

*Lexicomp. Wolters Kluwer. 2019*

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1986 WHO 3 step approach

1. **Moderate pain**
   - Intermediate opioid therapy
   - Codeine or tramadol


Codeine

Previously recommended opioid analgesic for mild to moderate pain

Metabolism
- CYP2D6 – codeine metabolized to morphine
- Ultra-rapid metabolizers of CYP2D6
  - Extensive conversion to morphine
  - Increased opioid-mediated effects (ie, respiratory depression)

Adverse Events (1965-2015)
- 64 cases of life threatening and fatal respiratory depression
- 21 deaths in infants and children
- Removed from WHO List of Essential Medications in Children 2011


Codeine: Time to Say “No”

February 2013: FDA issued new Boxed Warning and Contraindication on use after tonsillectomy and/or adenoidectomy

October 2016: American Academy of Pediatrics (AAP) article, Codeine: Time to Say “No”, recommended against the use of codeine in all pediatric patients

April 2017: FDA issues contraindication of codeine use in pediatrics < 12 years of age

January 2018: FDA requires labeling changes for opioid cough and cold medicines to limit use to adults

U.S. Food and Drug Administration.
Tramadol

Previously recommended opioid analgesic for mild to moderate pain

Activity
- Activates µ-opioid receptor
- Weak inhibition of norepinephrine and serotonin reuptake

Metabolism
- CYP2D6 – tramadol to active metabolite O-desmethyltramadol (M1)
- Variable responses due to CYP2D6 polymorphisms

Adverse Events (1969-2016)
- 9 cases of life threatening and fatal respiratory depression
- 3 deaths in infants and children
- Overdoses vs ultra metabolizer?


Tramadol

September 2015: FDA evaluates risk of risks of using tramadol in children ≤ 17 years

April 2017: FDA issues contraindication of tramadol use in pediatrics < 12 years of age and contraindication of tramadol use in children <18 for post tonsillectomy/adenoidectomy

January 2018: FDA requires labeling changes for opioid cough and cold medicines to limit use to adults


What other analgesics are metabolized by CYP2D6?

Hydrocodone
Active metabolite hydromorphone

Oxycodone
Active metabolite oxymorphone

Are these analgesics restricted?

Counseling Points for Opioids

Safe Use of Opioids
- Limit to prescribed dose
- Avoid unsafe combinations of drugs:
  - Opioids + alcohol
  - Opioids + benzodiazepines
  - Opioids + alcohol + benzodiazepines
  - Alcohol + benzodiazepines

Mixing drugs is the main cause of ** overdose ** in New Mexico
Educate about the dangers of mixing alcohol with medications

The Opioid Epidemic in Children

Prescription Opioid Exposures in Pediatrics

Poison Control Center recorded exposures 2000 - 2015 for < 20 years old
- 188,468 opioid exposures
- 11,779 exposures annually

Exposures in age 0 to 5 years was most common (59.7%)
Exposures in teenagers was second most common (29.9%)

Most common medications
- Hydrocodone (28.7%)
- Oxycodone (17.6%)
- Codeine (16.5%)
Prescription Opioid Exposures in Pediatrics

Unintentional exposures: 56.1%
- Exploratory most common in ages 0 to 5 (85.5%)
- Therapeutic errors (18.1%)
  - Age 0 to 5 years (13.4%)
  - Age 6 to 12 years (54.5%)
  - Teenagers 14.7%

Intentional exposures: 22.5%
- Teenagers 71.5%
  - Suspected suicide 34.2%
  - Abuse 20.8%
  - Misuse 11.2%

56.6% of exposures referred to health care facility (HCF)
- 12% of exposures admitted to HCF

Medical Outcomes
- 28.6% experienced at least one exposure related symptom
- 6.6% experienced serious medical outcomes
- 4.6% exposure cases received naloxone
- 175 fatalities (0.1%)
- 49.1% of intentional exposures
Poison Control Center Data Trivia

TWO DRUGS MOST LIKELY TO RESULT IN HCF ADMISSIONS ALL AGES COMBINED

- Buprenorphine: 47.1%
- Methadone: 33.9%
- Fentanyl: 35.0% for teenagers

MOST LIKELY DRUG TO RESULT IN SERIOUS MEDICAL OUTCOMES IN TEENAGERS

- Fentanyl: 29.3% and Methadone: 24.9%

MOST LIKELY DRUG EXPOSURE TO RESULT IN PEDIATRIC FATALITIES

- Methadone: 40.0% and Oxycodone: 22.9%

Trends in Pediatric Prescription Opioid Exposures

2000 to 2009
- Increase in overall exposures by 86%
- Increase in exposure rate 79.9%

2009 to 2015
- Decrease in overall exposures -31.4%
- Decrease in exposure rate -30.4%

Notable Exceptions
- Buprenorphine - declined from 2011 to 2013, increased from 2014 to 2015
- Tramadol - declined from 2000 to 2003, increased until 2012 and plateaued
- Suspected suicide rate increased by 52.7% from 2000 to 2015
US Opioid Epidemic in Adolescents 2015 & 2016

- 10.5 million adolescents reported opioid use in previous year
- 8.6 million adolescents reported legitimate opioid use
- 1.9 million adolescents reported opioid misuse
- 1.3 million adolescents reported opioid use disorder
- Legitimate opioid use associated with ↑ risk of future opioid misuse by 33%
- Opioid misuse ± use disorder associated with ↑ risk of future opioid misuse by 33%
- Opioid misuse ± use disorder associated with ↑ risk of future opioid misuse by 33%
- Opioid misuse ± use disorder associated with 9x ↑ risk heroin use
- Opioid misuse ± use disorder associated with ↑ risk of future opioid misuse by 33%

Pediatric Deaths from Prescription and Illicit Opioids from 1999-2016

- 8986 total deaths ↑ 268.2%
- 6.7% ages 0 to 4 years
- 1.1% ages 5 to 9 years
- 4.1% ages 10 to 14 years
- 88.1% ages 15 to 19 years
- 7263 unintentional deaths 80.8%
- 1872 deaths from adolescent heroin use ↑ 404.8%

Trends in Pediatric Prescription Opioid Exposures

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◦ Increase in overall exposures by 86%
◦ Increase in exposure rate 79.9%

2009 to 2015
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Naloxone Co-prescribing
Opioid Overdose

Recognizing overdose
- Unconscious, unresponsive
- Pale or blue lips, face and fingertips
- Pin point pupils
- Respiratory depression – slow, shallow or raspy breathing, not breathing

What to do
- Rouse the person – call their name, shake them, or sternal rub
- Listen for breath sounds
- Call 911
- Begin rescue breathing
- Prepare naloxone

Naloxone

Reverses the effects of opioid overdose

Competitive opioid antagonist

No agonistic activity

New Mexico Overdose Law 2001
- NM - highest per capita heroin-related death rate in the nation
- NM passed 1st law funding overdose prevention and Naloxone distribution
## Naloxone

<table>
<thead>
<tr>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
</table>
| **Narcan Nasal Spray:** Infants through adults: 4 mg IN spray x 1; may repeat q 2-3 min, alternate nostrils | Safe and rapid opioid withdrawal  
Safely used in pregnant women |
| **Alternate dosing:** Parenteral formulation (1 mg/mL injection) for IN use: Adolescents ≥13 years: 2 mg (1 mg per nostril) | Protect from temperature extremes and sunlight.  
Should be colorless |
| **Auto-injector:** Evzio: Infants through adults: 0.4 mg or 2 mg (contents of 1 auto-injector) x 1; may repeat q 2-3 min | Abrupt reversal of opioids may result in: nausea, vomiting, sweating, tachycardia, increased blood pressure, tremors  
Abrupt reversal of opioid effects in pts with physical dependence may precipitate withdrawal symptoms: pain, fever, sweating, runny nose, sneezing, piloerrection, yawning, weakness, shivering, trembling, nervousness, restlessness, irritability, diarrhea, abdominal cramps |

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**Call 911**

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### Naloxone Options

- **Adolescents ≥ 13 years**  
Requires assembly

- **Infants through adults**
Naloxone Assembly

- Box opens easily from one side
- Pull long yellow cap off of syringe
- Screw atomizer onto syringe
- Flick cap off bottom of syringe
- Flick cap off medication vial
- Gently screw the medication vial into the syringe ~about 3 turns
- Naloxone will start to spray out of the syringe
- Place the atomizer in one nostril
- Push quickly on the vial to administer half of the dose
- Administer other half dose into other nostril
- If no response, use a 2nd box of naloxone
- Perform rescue breathing


Benefits for Naloxone Co-prescribing

- Immediate reversal of opioid overdose
- May decrease opioid related emergency room visits
- May change patient behavior by increasing awareness of opioid risks

Mandatory co-prescribing with opioids ≥ 5 days

Candidates for Naloxone Co-prescribing

- Use opioids for chronic pain
- Use of long acting opioids
- Using multiple opioids
- Concurrent use of other medications that can cause respiratory depression
- Patients over age 65 using opioids
- Households with people at risk of overdose
- Patients with limited access to health care facility
- Suspected history of opioid misuse, substance abuse, history of overdose
- Anyone

Medication-Assisted Treatment (MAT) of Adolescents with Opioid Use Disorders

Opioid use disorder (OUD) – neurologic changes in the reward center of brain responsible for cravings and compulsive substance abuse

AAP Policy Statement on MAT for Adolescents 2016
• Advocates for increasing resources to improve access to MAT
• Recommends pediatricians consider offering MAT or offer referral
• Supports further research on developmentally appropriate treatment (behavioral and medication)

Benefits of MAT

Reduces opioid use
Protects against opioid related overdoses
Prevents injection behaviors
Reduces criminal behavior and risk of becoming a victim of violent crime
Decreased infectious disease transmission
Pregnant patients - decreased risk of low birth weight, premature birth and obstetric complications.
Implements retention in treatment and decreases relapse rates.
Decreased risk of death (all causes) 15X !!!!
Medications Options for treating Opioid Use Disorders

- Buprenorphine ± naloxone
- Naltrexone
- Methadone

Buprenorphine is the only FDA approved medication for OUD in adolescents age 16 years and older.

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**Opioid Activity Levels**

- Full Agonist: Methadone
- Partial Agonist: Buprenorphine
- Antagonist: Naltrexone

(“How High”) vs. (% Mu Receptor Intrinsic Activity)

(“How Much”) vs. (Drug Dose)
Methadone Maintenance Therapy

Full mu agonist with long elimination half-life
Reduces euphoria of subsequent opioid use
Infrequently used in adolescents due to restrictions
- Requirement for written parent/guardian consent
- Documentation of at least two prior treatment failures in last 12 months
- Daily doses dispensed only from federally-qualified methadone clinics
- Not all states allow dispensing to minors

Efficacy
- Improves treatment retention in adolescents
- Decreased opioid use in adolescents that remain in treatment
- Adolescent treatment retention possibly better than with buprenorphine
- Adolescents on methadone more likely to continue treatment than behavioral services alone

Benefits
- Daily observed dosing
- Often paired with behavior and mental health treatments
- Shown to decrease use of IV drug use
- Safe and effective in pregnant woman

Risks
- Increased risk of mortality during induction
- Challenging pharmacokinetics and pharmacodynamics
- Access – restricted to outpatient treatment programs
  - Special approval required for dispensing to adolescents
**Methadone**

<table>
<thead>
<tr>
<th>Dosage Form</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral tablets, oral</td>
<td>FDA approved for adult use only Initial: 20 to 30 mg (as a single</td>
<td>Dose when no signs of sedation or intoxication and patient shows</td>
</tr>
<tr>
<td>liquids</td>
<td>dose) May need additional 5 to 10 mg for withdrawal symptoms Total</td>
<td>symptoms of withdrawal</td>
</tr>
<tr>
<td></td>
<td>daily dose on the first day should not exceed 40 mg</td>
<td>Consider lower dose in patients with low tolerance at initiation</td>
</tr>
<tr>
<td></td>
<td>Maintenance: Titrate cautiously to an effective dose for 24 hour</td>
<td>Do not increase dose without waiting for steady-state to be achieved</td>
</tr>
<tr>
<td></td>
<td>period Usual range: 80 to 120 mg/day</td>
<td>US Boxed Warnings:</td>
</tr>
<tr>
<td></td>
<td>Withdrawal: Dose reductions should be &lt;10% of the maintenance dose,</td>
<td>Respiratory depression QI prolongation Cytochrome P450 interactions</td>
</tr>
<tr>
<td></td>
<td>every 10 to 14 days</td>
<td>Concomitant use of CNS depressants</td>
</tr>
</tbody>
</table>

**Buprenorphine ± Naloxone**

Partial opioid agonist (plateau effect), long half-life

Approved for OUD in patients 16 years and older

Office based prescribing with DEA waiver or “X license”
- 8 hour online training
- Adolescent-focused version for pediatricians endorsed by AAP

**Efficacy**
- Data suggests - Improves treatment retention in adolescents
- Data suggests - Decreased opioid use in adolescents that remain in treatment
- Adolescents receiving buprenorphine more likely to continue treatment than behavioral services alone

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Buprenorphine ± Naloxone

Benefits
- Decreased risk of respiratory depression and overdose compared to methadone
- Fewer drug interactions and QT prolongation less likely than methadone
- Less euphoric effect than other opioids
- Shown to decrease use of IV drug use in adults
- Can be prescribed by primary care provider and taken home

Risks
- Diversion and misuse
- Unintentional ingestion and overdose risk
- Limited access to office based therapy for adolescents
- Case report of adolescent with increased liver enzymes

MAT - Buprenorphine

<table>
<thead>
<tr>
<th>Dosage Form</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sublingual tablet</td>
<td>Dosing for adolescents: ASAM vs manufacturer Induction: 2 to 4 mg, with increases in increments of 2 to 4 mg vs 8 mg/day divided Maintenance: daily dose usually ≥8 mg/day (range 4 to 24 mg/day) Maximum daily dose 24 mg/day</td>
<td>Do not start induction until withdrawal signs are apparent Preferred induction treatment for long-acting opioids or methadone No advantage to increase oral doses &gt; 24 mg/day Switch to combination product for maintenance and unsupervised therapy Change to oral therapy after implantation to each arm</td>
</tr>
<tr>
<td>Subdermal implant</td>
<td>Adolescents ≥16 years: Insert 4 implants subdermally in the inner side of the upper arm, remove within 6 months</td>
<td></td>
</tr>
</tbody>
</table>
**MAT – Buprenorphine/naloxone**

<table>
<thead>
<tr>
<th>Dosage Forms and Dosing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sublingual tablets or film (buprenorphine:naloxone of 4:1)</td>
<td>Do not start induction until withdrawal signs are apparent</td>
</tr>
<tr>
<td>Dosing for Adolescents:</td>
<td>Preferred for induction period for short-acting opioid dependence</td>
</tr>
<tr>
<td>Induction: 2 to 4 mg, with increases in increments of 2 to 4 mg</td>
<td><strong>Switching between sublingual tablets and sublingual film:</strong> The same dosage should be used. <strong>Note:</strong> Potential for greater bioavailability with certain film strengths compared to sublingual tablet</td>
</tr>
<tr>
<td>Maintenance: daily dose usually ≥8 mg/day (range 4 to 24 mg/day)</td>
<td>Monitor for over- or under-dosing when switching between formulations</td>
</tr>
<tr>
<td>Maximum daily dose: 24 mg/day</td>
<td><strong>Switching between sublingual film strengths:</strong> Systemic exposure may differ with various film strengths; pharmacists should not substitute</td>
</tr>
<tr>
<td></td>
<td>Monitor for over- or under-dosing when switching products</td>
</tr>
</tbody>
</table>

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**Naltrexone**

U opioid antagonist

Oral formulation
- No difference in opioid abstinence or treatment retention (vs placebo)

Long acting formulations

Efficacy
- Data suggests long-acting naltrexone is feasible and effective for adolescents
- Long-acting naltrexone decreased rates of opiate overdose compared with oral naltrexone
- XR-naltrexone well tolerated, increased treatment retention, good outcomes

Naltrexone

Benefits
◦ No addictive properties; little diversion risk
◦ Adolescents receiving naltrexone more likely to continue treatment than behavioral services alone
◦ XR-naltrexone is once-monthly dosing
◦ XR form might assist adolescents transitioning from inpatient to outpatient
◦ Also treats alcohol use disorder

Risks
◦ No data that oral formulation prevents relapse
◦ Oral and XR formulations may increase risk of overdose
◦ Long acting formulation requires detoxification first
◦ Complicates pain treatment

MAT – Naltrexone

<table>
<thead>
<tr>
<th>Dosage Form</th>
<th>Dosing</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Oral tablet | Adult dosing:  
Induction: 25 mg; if no withdrawal signs increase to 50 mg/day  
Alternative maintenance regimens include: 50 mg on weekdays with a 100 mg dose on Saturday; 100 mg every other day; or 150 mg every 3 days | Do not initiate therapy until patient is opioid-free for at least 7 days as determined by urinalysis; consider naloxone challenge test to confirm patient is opioid-free  
Do not start induction until withdrawal signs are apparent |
| IM | 380 mg once every 4 weeks |
Additional Opioid Counseling Notes

Pharmacists should provide family-based overdose-prevention education

- Overdose risks
- Safe storage of medications
- Proper methods of medication disposal
- Signs/symptoms of opioid overdose
- Offer naloxone
- Provide naloxone education

Pharmacists should encourage parental involvement when minors are treated with opioids or opioid use disorder

Summary

WHO guidelines recommend a two-step approach to pediatric pain management

- APAP and ibuprofen for mild pain
- Appropriate opioids for moderate to severe pain

Adolescents are vulnerable to opioid misuse/abuse, overdose and death

Naloxone co-prescribing saves lives

Medication assisted treatment of opioid use disorder is effective in adolescents
Questions?