METHADONE

GETTING COMFORTABLE WITH IT’S USE IN THE HOSPICE PATIENT

Presented by Nicolle Shumaker RN, CHPN
Avera McKennan Hospice

Objectives:

- Describe pharmacological properties and side effects from methadone
- Discuss nursing care and follow up recommended for patients on methadone
- Identify patients who could benefit from methadone pain management
Why Methadone?

- Cost effective medication for pain
- Good alternative when concerned about drug diversion – little street value
- Minimal side effects

Cost Savings/Comparison

- Methadone 2mg TID #90 tablets $14.00
- MS Contin 30mg BID #60 tablets $82.00
- Oxycontin 20mg BID #60 tablets $170.00
- Duragesic Patch 50mcg #10 patches $215.00

(6/14/11)
Methadone Characteristics

- Synthetic opioid
- Receptors:
  - Mu opioid agonist
  - Inhibit serotonin and norepinephrine neuronal re-uptake and inhibit NMDA receptor

Pharmacokinetics

- Absorption:
- Distribution
- Multiple routes: PO, SL, PR, SQ, IV, G Tube
- Lipophilic
- 60–90% bound to alpha-1-acid glycoprotein
- Metabolized– in liver
- Half life=2–3 hours
- Beta-half-life (slow elimination phase)– of 15–60 hours (up to 130 hours reported)
- Excretion– Fecal excretion majority, urinary minor
Drug–drug interactions

INHIBITORS
Ketoconazole, fluconazole, itraconazole
Macrolides – erythromycin, clarithromycin
Quinolones – ciprofloxacin, norfloxacin
Antiviral – ritonavir, nelfinavir
SSRI’s – fluvoxamine, fluoxetine, paroxetine, sertraline
Nefazodone
CCB’s – diltiazem, verapamil
Amiodarone
Cimetadine
Diazepam
Grapefruit juice (large amounts)

INDUCERS
Rifampin
Rifabutin
Anticonvulsants – phenytoin, fosphenytoin, carbamazepine, phenobarbital
HIV Antivirals – amprenavir, efavirenz, nevirapine, ritonavir, abacavir
Corticosteroids – prednisone, dexamethasone
Estrogen
Risperidone
St. John’s Wart
Alcohol abuse

Side effects

- Sedation, nausea and vomiting, respiratory depression, dizziness, pruritis, constipation
- Subcutaneous administration–inflammatory skin reaction at injection site
- Arrhythmia–QTC Prolongation
- Contraindications: known allergy to methadone/MAOI use(??)
Availability

- Tablets: 5mg, 10mg, 40 mg
- Solution: 5mg/5ml, 10mg/5ml, 10mg/ml
- Injection: 10mg/ml
- Special dose compounding

PROBLEMS WITH CURRENT ANALGESICS

- Subset of patients with pain unresponsive to morphine or oxycodone
- Subset of patients with dose limiting toxicities (nausea, myoclonias, delirium, sedation)
- Use in patients with lowered renal function
WHY CONSIDER METHADONE

- Lacks neuroactive metabolites that accumulate in renal failure
- Has long and short acting properties
- Active in neuropathic pain syndromes (N-methyl-D-aspartate) NMDA receptors

WHY METHADONE

- Oral bioavailability 80% (3x greater than morphine)
- Eliminated by non-renal routes
- Does not accumulate in renal failure
- Can be given rectally with oral:rectal dosing 1:1
- Onset of analgesia: 30–60 min
- Duration of analgesia initially 3–6 hours, but increases to 8–12 hr with chronic use
METHADONE INDICATIONS

- HIGH DOSE ANALGESICS AND NOT RESPONDING
- INTOLERANT TO OTHERS
- COMPONENT OF NEUROPATHIC PAIN
- RENAL FAILURE
- COST CONCERNS

METHADONE CONTRAINDICATIONS

- TRUE ALLERGY
- SEVERE RESPIRATORY DEPRESSION
- ? EKG SHOWING PROLONGED QT INTERVAL (? >200 MG/D OF METHADONE)
- ? NO CAREGIVER TO MONITOR PATIENT
EQUIANALGESIC DOSE WITH MORPHINE VARIES DEPENDING ON THE AMOUNT OF MORPHINE EQUIVALENTS USED/24 HOURS

INITIAL DOSING (OPIOID NAÏVE): 0.5 MG Q 8 HOURS SCHEDULED, FRAIL/ELDERLY WITH DOSE CHANGES EVERY 5–7 DAYS

METHADONE CONVERSION FROM OTHER OPIOID

UK HOSPICE MODEL

MILAN MODEL

EDMONTON CONVERSION MODEL

Next slide Avera McKennan Hospice Conversion table used.
Titration

- No more than every 4 days—literature recommends 5–7 days
- Breakthrough dosing recommendations varied based on client’s current PRN use

Conversion Table Avera McKennan Hospice

Conversion factors for commonly used narcotics

**PO: IV/SC**
- Morphine
- Dilaudid

<table>
<thead>
<tr>
<th></th>
<th>IV</th>
<th>PO</th>
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<tbody>
<tr>
<td>Morphine</td>
<td>3:1</td>
<td>5:1</td>
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<tr>
<td>(30mg PO = 10mg IV)</td>
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<tr>
<td>(7.5mg PO = 1.5mg IV)</td>
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**PO: PO**
- PO Oxycontin: PO Morphine
- PO Hydrocodone: PO Morphine

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<tbody>
<tr>
<td>Morphine</td>
<td>2:3</td>
<td>1:1</td>
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<tr>
<td>(40mg Oxycontin = 60mg Morphine)</td>
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<tr>
<td>(PO Morphine)</td>
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<tr>
<td>these are equivalent in dosing</td>
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**Transdermal: PO**
- Fentanyl patch: Morphine PO

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<tbody>
<tr>
<td>Morphine</td>
<td>1:3</td>
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<tr>
<td>(25mcg Fentanyl patch = 75mg Morphine PO)</td>
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**IV:IV**
- IV Dilaudid: IV Morphine

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<th>IV</th>
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<tbody>
<tr>
<td>Morphine</td>
<td>1:7</td>
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<tr>
<td>(1.5mg Dilaudid = 10mg Morphine)</td>
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Pain Management Considerations

- Patient assessment
- Determine total daily dose of current opioid
- Decide treatment plan—which opioid to switch to
- Individualize dose
- Patient monitoring and reassessment

Why switch

- Current opioid no longer effective
- Intolerable side effects
- Patient status change
- Other reasons:
  - Current therapy expensive
  - Safety of narcotics in home
Nursing management

- If pain is not managed in current setting /level of care consider acute care stay and drug conversion
- If transitions at home: Home visits at least 3 times per week (more often if needed for patient monitoring)
- Phone contact daily if not visiting patient

Precautions

- Lack of caregiver to monitor patient
- Very limited prognosis
- Receiving medications that inhibit or induce methadone metabolism—administer lower dose
- Risk of QT prolongation
Nursing follow up/monitoring

- Monitor for side effects:
- Cognition changes
- Sedation
- Monitor for palpitations of syncope with patients at risk for QTc prolongation

Patient education

- How to use:
  - Take this medicine by mouth with a drink of water. If the medicine upsets your stomach, take it with food.
- Missed doses:
  - If you miss a dose take it as soon as you can. Do not take double or extra doses.
Patient Education

- Side effects to report:
  - Skin rash, itching or hives, swelling of the face, lips, or tongue
  - Breathing problems
  - Chest pain
  - Confusion
  - Unusually fast or slow heart rate
  - Unusually weak or tired.

Problem solving

- Drowsy but arousable during conversation—consider reducing dose 25%
- Somnolent, minimal or no response to physical stimulation—hold dose until able to wake—drop dose by 50%
- Pain—Convert break through dose every 4–6 days into daily dose or increase methadone 25–50%
Summary

Concerns
- Stigma to addiction therapy
- Accumulation and toxicity
- Lack of education
- Lack of experience

Benefits
- Multiple administration routes
- Very effective for neuropathic pain
- Long half life
- Lower cost
- No active metabolite accumulation
- Low incidence of side effects

References/Resources
- Fast Facts: [www.eperc.mcw.edu](http://www.eperc.mcw.edu)
- [www.clinicalpharmacology](http://www.clinicalpharmacology)
- Handout from Nicole Paterson, PharmD BCPS