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For a patient taking methadone for chronic pain control, what are unique pre-operative evaluation considerations, and also what are appropriate post-operative analgesia recommendations?

The guideline does not address management of patients prescribed methadone chronically in the operative setting. However, management of opioid-tolerant patients is becoming an increasing issue as these patients often require higher doses of opioids for pain relief and may have pain that is more difficult to control. Methadone specifically can also be an issue for prescribing in the post-operative setting b/c of its long half-life, that can make dose adjustments complicated. Patients on other opioids may benefit particularly from multimodal approaches that include non-opioid medications such as gabapentin/pregabalin, NSAIDs, and possibly ketamine and may require consultation with a pain specialist for optimal management.

What would recommendation for a terminally ill patient who is bedbound/home bound and unable to leave the house to get an ECG?

There is very little data in these kinds of palliative care settings. However, a risk factor approach can still be applied; methadone may be considered without ECG monitoring in patients without risk factors as long as long as the doses stay relatively low (e.g., <60-90 mg/day). In patients with risk factors for QTc prolongation, use of an alternative opioid, including short-acting or transdermal opioids, might be a preferable option.

What is an appropriate schedule for tapering methadone and what are effective non-narcotic alternatives?

Typically, methadone (or any long acting opioid) can be effectively tapered by 5-10% every 1-2 weeks without causing significant opioid withdrawal symptoms. However, if the patient has significant risks that necessitate the need of a more rapid taper (i.e. somnolence, QTc prolongation >500ms, abuse or misuse, etc), methadone can be safely and effectively tapered over a 7-14 day period. In my experience, dose reductions of 20-30% have allowed dramatic decreases in methadone-related side effects. Medications that can help with opioid withdrawal symptoms during a taper include clonidine, hydroxyzine, Tylenol or ibuprofen, hydrosamine, ondansetron or Phenergan, and fluids.
How do you monitor for sedation? Patient interview? Caregiver interview?

As noted in the guideline, monitoring can be done via a clinic visit or through telephone interview in appropriate patients. It would be reasonable to get information from both patients and caregivers if possible.

In case 1, would you consider continuing the methadone but at a lowered dose with ongoing monitoring?

In this case, the degree of QTc prolongation is high enough that an alternative opioid would generally be recommended due to the increased risk.

Did the guideline committee discuss co-prescription of naloxone?

We are not aware of any studies of methadone with co-prescription of naloxone, so the committee was not able to make any recommendations about it.

How soon do you check EKG after methadone dose titration?

<table>
<thead>
<tr>
<th>Situation</th>
<th>Initial dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk factors for QTc prolongation, prior ECG with QTc &gt;450 ms, or history of syncope</td>
<td>Follow-up ECG 2-4 weeks after initiation of methadone and following significant dose increases</td>
</tr>
<tr>
<td>Methadone dose increased</td>
<td>Follow-up ECG when methadone dose reaches 30 to 40 mg/day and again at 100 mg/day</td>
</tr>
<tr>
<td>New risk factors for QTc interval prolongation or signs or symptoms of arrhythmia</td>
<td>Follow-up ECG</td>
</tr>
</tbody>
</table>

Does butrans require a special provider license?

Butrans (transdermal buprenorphine) is approved for management of chronic pain and does not require an additional DEA waiver to prescribe.

According to the FDA, Methadone HCl is included in the list of Long Acting Opioid Medications. Is there a guideline as to what medications are best if a breakthrough medication is considered? What percent of the total opioid should be appropriate when using Methadone as the long acting medication? Several mail order pharmacies require that the long acting medication be no less than 80% of the total morphine equivalent total daily dose.
There is very little data to guide use of breakthrough opioids in patients on long-acting opioids. Short-acting opioids are recommended for management of acute pain including breakthrough pain. We are not aware of any evidence-based rationale for requiring 80% of the total MED to be long-acting opioid.

**Why would you recommend use of buprenorphine in pts with QTc risk or prolongation when it can also cause this?**

Buprenorphine has not been shown to increase QTc interval at clinically prescribed doses; in addition studies show that patients with prolonged QTc interval switched from methadone to buprenorphine have improvement in QTc intervals and we are unaware of cases of torsades in patients prescribed buprenorphine. Therefore, effects of buprenorphine on QTc interval appear to be largely theoretical.

**How do you covert methadone for acute pain/ chronic pain to other opioids- e.g. I have a patient on methadone and iv dilaudid that we will like to switch to a fentanyl patch.**

There is not a lot of evidence to guide switching from methadone to other opioids; however the conversion ratios are not thought to be bidirectional, there is potential incomplete cross-tolerance, there is high interindividual variability in dose conversion ratios, and conversions are complicated by the long half-life of methadone. We recommend very cautious conversion ratios (e.g., 7:1 or higher) with close monitoring; pharmacist assistance may be very helpful.

**Can you provide any guidance on transitioning from methadone to another opioid?**

See above.

**At doses fewer than 60mg, what are the risks of QTc prolongation or torsades? Is there any literature?**

Risks of QTc prolongation appear to be dose-dependent and relatively low at doses less than 60 mg, and most cases of torsades have been reported in patients on relatively high doses. However, some studies have shown QTc prolongation at even relatively low doses, which may have clinically relevant effects in patients with relatively long QTc intervals at baseline (prior to initiation of methadone).

**Does the equianalgesic table shown work both directions? e.g. If someone is on methadone 100 mg, can you use the table to determine the Morphine equivalent?**

See above.

**If the patient is like the 1st example but if it were in a treatment program how would you switch them and switch them with a QTc high?**

If the first case were a patient in a methadone maintenance treatment program, we would first correct his reversible risk factors (i.e. his hypokalemia and look for other risk factors), then if this did not correct his QTc prolongation, start to reduce his dose by 20% and recheck an ECG in 1-2 weeks. If this still did not correct his QTc prolongation to a level <450ms, we would discuss switching him from methadone to suboxone. This would necessitate that his methadone dose be decreased to a dose of at least 30mg before switching to suboxone.

**How would you recommend weaning methadone in a patient who is on Methadone at MED of >1000, specifically patients with Sickle Cell Disease?**
Unfortunately, there is no data to guide this; however, in general practice, I would recommend that you taper the patient by 5-10% every 1-2 weeks as long as there is no urgent need for the taper (i.e. somnolence, QTc prolongation >500ms, abuse or misuse, etc). If there is an urgent need for a taper, the patient may need to be admitted to the hospital to switch him or her to a more reasonable and safe pain regimen. Medications that can help with opioid withdrawal symptoms during a taper include clonidine, hydroxyzine, Tylenol or ibuprofen, hyocosamine, ondansetron or Phenergan, and fluids.

**Legally, can you prescribe methadone for chronic pain at a substance abuse inpatient treatment center or does the provider need to be pain doctor or primary care provider?**

Legally, you can only prescribe methadone for the treatment of an opioid use disorder in an outpatient methadone maintenance program. That said, methadone dose typically provide at least 4-6 hours of analgesic benefit to patients in these programs. Inpatient treatment centers may allow their patients to be prescribed methadone for chronic pain in the absence of an opioid use disorder, but that would be up to the individual treatment center.