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ELDER CARE

A Resource for Interprofessional Providers

Methadone for Treating Pain in Older Adults

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The number of methadone prescriptions written for pain management grew more than 5-fold between the late 1990s and 2007. Although more recent data have shown a slight decline between 2007 and 2014, methadone is still widely used for the treatment of chronic pain.

Along with the increase in its use for treating pain, there has been an increase in the rate of overdose-related deaths. Factors contributing to the increase in methadone-related deaths are listed in Table 1.

Table 1. Factors Contributing to Methadone-Related Deaths
Lack of clinician knowledge about methadone's unique pharmacologic properties
Initiating methadone at too high of a dose
Too rapid upward titration of dose
Over-reliance on published tables that contain ratios of doses required to get an equal amount of analgesia when converting from other opioids to methadone
Overestimating the tolerance to respiratory depression based on prior opioid use in chronic pain patients
Diversion of methadone for abuse
Prescribing methadone to patients at risk for substance misuse
Prescribing methadone to opioid naïve patients

In addition, there are many age-related changes that can influence how medications are metabolized. These changes can influence which medications are preferable for treatment of pain, and which ones may build up in the body and result in toxicity (Table 2).

Why Use Methadone?

If used properly, methadone has several characteristics that make it an appealing option for treating cancer pain or non-cancer-related chronic pain in older adults. Methadone is not appropriate for as-needed (prn) use, nor for mild pain or acute pain that is not expected to persist (e.g., post-operative pain).

One appealing characteristic is that methadone can be crushed for administration, while other oral long-acting opioids cannot. Crushed pills can be especially useful when a long-acting opioid is needed for pain control and a patient has impaired swallowing or is receiving medication through a feeding tube.

Another characteristic is that methadone has no metabolic byproducts requiring renal excretion. This is a particular advantage for older adults with impaired renal function.

Methadone also has advantages for patients with renal failure on dialysis. Due to its lipophilic properties, neither hemodialysis nor peritoneal dialysis will remove significant

Table 2. Age-Related Changes That Can Affect Opioid Therapy
First-Pass Liver Metabolism Decreases with Age As a result, for some opioids, like morphine, the amount of drug available in the bloodstream after passing through the liver is greater.
Body Fat-Muscle Ratio Increases with Age This can result in longer duration of action for drugs that are distributed in body fat (e.g., fentanyl, methadone)
Renal Function Decreases with Age The resulting renal excretion of drugs or their byproducts (e.g., morphine), can extend drug action.

TIPS FOR PRESCRIBING METHADONE TO OLDER ADULTS WITH CHRONIC PAIN

- Consider prescribing methadone when patients need long-acting opioid pills that can be crushed for administration orally or via a feeding-tube.
- Consider methadone for patients on dialysis.
- Do not prescribe methadone to patients who have a prolonged QT-interval on ECG.
- Obtain training to assure methadone is prescribed safely and correctly.

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amounts of methadone from the circulation. In contrast to other opioids, like morphine, hydromorphone, and oxycodone, which are removed by dialysis and thus require higher doses and post-dialysis dosing, methadone does not, and can be administered in lower doses.

Yet another advantage of methadone is that the drug acts on both opioid and N-Methyl-D-aspartate (NMDA) receptors. The latter action results in some benefit for treating neuropathic pain.

In addition, methadone's unique metabolism results in a longer duration of analgesic activity with increased use. This allows the dosing interval to be spread out over time, potentially enhancing patient adherence to therapy. Longer dosing intervals also decrease the chance of opioid-induced respiratory depression.

Finally, methadone is inexpensive, costing just a fraction of the cost of an equi-analgesic dose of other long-acting opioids such as morphine or oxycodone (Table 3). For many patients, this can be an important advantage.

Routes of Administration

Methadone can be given orally, rectally, and parenterally. When given subcutaneously, local toxicities can occur so the intravenous route is preferred for parenteral administration. Rectal administration can be used, and absorption is thought to be similar to oral administration.

Adverse Effects

Methadone has a side effect profile similar to other opioids. It can cause respiratory depression, nausea,

itching, constipation, and endocrinologic effects such as hypogonadism and hypotestosteronism.

Methadone also has cardiac effects, with a potential to cause QT-interval prolongation and torsades de pointes (a potentially fatal cardiac arrhythmia). An EKG should be done before starting methadone therapy and when doses are increased to assure that QT prolongation is not present. If QT prolongation is present, clinicians and patients need to thoughtfully weigh the benefits and risks associated with starting therapy.

Clinicians should also assess a patient's behavioral and drug use histories. Risks associated with using methadone (and other opioids) in individuals who have a history of substance abuse should be carefully weighed before initiating these medications. Using these agents for individuals with cognitive impairment or mental illness affecting judgment, may pose additional risk of unintentional misuse. Opioids can contribute to an increase in fall risk. Finally, individuals with severe depression and suicide risk may not be appropriate candidates for opioid therapy.

Clinician Training

While clinicians must have special licensing to prescribe methadone for opioid addiction, such licensing is not required when prescribing methadone for pain. But, when prescribing methadone for pain, it is crucial that clinicians have a good understanding of its complexities and unique properties and include the indication of "pain" on the prescription. There are a number of resources to which clinicians can refer including training provided by professional societies like the Center to

Advance Palliative Care (CAPC.org) and the American Association of Hospice and Palliative Medicine (AAHPM.org). The Palliative Care Network of Wisconsin (www.mypcnow.org) hosts Fast Facts which are short evidence-based resources written for clinicians about a number of palliative and end-of-life topics including suggestions and resources for symptom management.

Table 3. Cash Price of Methadone vs Other Long-Acting Opioids

Opioid	Total Daily Dose (mg)	Cash Price for Generic/Day
Methadone	30	\$1.50
Morphine extended release	360	\$35.41
Oxycodone extended release	240	\$48.02

References and Resources

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