



# Methadone Maintenance Treatment (MMT): Overview and Provider's Perspective

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## Introduction

The current opioid crisis or epidemic necessitates that providers, families, and patients should all be familiar with the various modalities of treatment that are available for the opioid dependent individual. Abuse of illicit and prescription opioids has caused the deaths of over 600,000 Americans from 1999 to 2016, with close to 150 deaths daily [1]. In the U.S. opioid use disorders (OUDs) have become epidemic in the past two decades. In 2015 there were 12,727 deaths in the U.S. from natural or semisynthetic opioids, and 12,989 deaths due to heroin. Excluding methadone this represents a 72.2% increase over 2014 in the death rate due to synthetic opioids such as fentanyl [2].

Opioids are naturally occurring or synthetic substances that act on opioid receptors in the brain and body. They are potent pain relievers but additionally produce the side effect of euphoria, which makes them attractive to users. Naturally occurring opioids are called opiates and are derived from the opium poppy *Papaver somniferum*. They include morphine, codeine, and opium. Synthetic opioids are man-made and include such substances as hydrocodone (Vicodin), oxycodone (Percocet, OxyContin) and fentanyl. Heroin is a semi-synthetic opioid that is derived from the naturally occurring opioid morphine [3].

Opioid dependence or addiction generally refers to individuals who require opioids to prevent physical withdrawal symptoms. Three or more of the seven criteria are required to meet the diagnosis of opioid dependence: spending large amounts of time using, obtaining, or recovering from opioids; inability to limit opioid use and using them for other than intended use; requiring more opioids to achieve the desired effects; being unable to stop or cut down on use; continued use even after suffering adverse consequences; continued use while they eliminate or reduce social participation; and experiencing withdrawal symptoms [4]. Opioid withdrawal symptoms include body aches; runny nose (rhinorrhea); watery eyes (lacrimation); goose bumps (piloerection); irritability; increased anxiety; loose stools (diarrhoea); abdominal cramps; increased blood pressure and pulse; nausea and vomiting; and chills.

While many forms of treatment are available to treat the opioid dependent patient this article focuses on the experience and perspective of this provider's 16 years of working in a Methadone Maintenance Treatment (MMT) facility located in a state in the north-eastern region of the United States. The various forms of treatment available to those who are addicted to opioids include: detoxification and rehabilitation; buprenorphine; therapeutic communities; and naltrexone. As individuals are all different the different treatment modalities work better for one person than another. For example buprenorphine may work well for a person who is working, has a stable living arrangement, and is reluctant to seek treatment at a methadone program due to the stigmatism attached to those programs.

Alternatively medical detoxification followed by a several week rehabilitation program teaching skills to abstain from opioid abuse may be more suited to individuals who are new to treatment. Naltrexone involves taking pills or injections of an opioid antagonist in order to prevent cravings to use illicit opioids. MMT works best for a segment of opioid dependent patients who generally need a lot of structure and who are refractory to other forms of treatment.

## Methadone Maintenance Treatment (MMT)

Methadone hydrochloride (Dolophine) is a synthetic opioid that was developed in Germany prior to World War II as a pain medication or analgesic. In 1949 researchers in Lexington, Kentucky demonstrated that methadone was the most effective medication for withdrawing addicts from heroin. This is because methadone is a long-acting agonist with a half-life of 24-36 hours and can be used to prevent cravings and alleviate withdrawal symptoms in heroin addicts. In 1964 methadone maintenance began as a research project at Rockefeller University in New York, and by 1966 inpatients maintained on methadone started to be maintained on methadone at outpatient facilities [5].

In the United States there are approximately 1,396 MMT programs. While there are many myths and misconceptions surrounding MMT, this modality of treatment has proven to reduce the use of illicit opioids; associated crime; resultant morbidity and mortality; and spread of associated infectious diseases such as human immunodeficiency virus (HIV) and the Hepatitis C virus (HCV). The cost of opioid dependence to society has also been greatly reduced by MMT programs making it a valuable and viable form of treatment [6].

## Rules and Regulations Governing MMT

The Substance Abuse and Mental Health Service Administration (SAMHSA), a division of the U.S. Department of Health and Human Services (HHS) has compiled a comprehensive and rigorous set of federal guidelines for opioid treatment programs. To be eligible for MMT programs individuals must be 18 years of age or older. The exception to this is that individuals 16-18 may enroll in MMT if they have documented proof of at least two prior unsuccessful detoxification efforts. An additional requirement for eligibility is that patients must demonstrate a one-year history of physiologic dependence to a narcotic [7].

By Federal Regulations methadone for addiction can only be prescribed through a DEA licensed methadone clinic. Methadone can be prescribed for pain by family medicine practitioners but not to treat addiction [8]. The initial dose of methadone cannot exceed 30 mg. The patient can be assessed several hours later and if still exhibiting withdrawal symptoms can receive an additional 10 mg of methadone,

bringing the day one total to no more than 40 mg. typically after day one methadone dose increases occur gradually in 5 mg-10 mg increments until the target dose is reached.

The number of methadone take-home doses are also strictly regulated by federal regulations with: one unobserved take home dose being allowed in the first 90 days of treatment; two take-home doses being allowed in the next 90 days of treatment between 90-180 days; three take-home doses allowed in the next 90 days of treatment between 180-270 days; six take-homes allowed after 9 months in treatment between 270-365 days; a maximum of two weeks of take-homes after one year of treatment; and a maximum of a one-month supply of take-homes after two years of treatment. Additional criteria for methadone take-home doses include: absence of recent illicit drug use; regular attendance in the clinic; absence of recent known criminal activity; stability of patient's home situation and social relationships; that take-homes can be safely stored in the patient's home; and that the rehabilitative benefit outweighs the risk of diversion [9].

Federal regulations also include guidelines for urine drug testing. When applying to a MMT program patients should be tested for opioids, methadone, buprenorphine, amphetamines, cocaine, marijuana, and benzodiazepines. All methadone patients must receive a minimum of eight toxicology tests per year. A typical panel includes opioids, benzodiazepines, barbiturates, cocaine, marijuana, methadone, buprenorphine, amphetamines, and alcohol but testing is not limited to these substances and based on local drug patterns and patient individual needs [9].

Closely aligned with federal regulations are Joint Commission (JC) standards. For example MMT programs are required to assess for pain and patient's methadone dose to treat addiction should not be lowered due to pain management regimens. Referral to child care services is mandated for patients enrolled in MMT with children. Referral for other health care needs such as primary care is required within three months. Pregnant patients need to be referred for prenatal care and if they refuse care the refusal must be documented in writing [10].

## Individualized Treatment

Both federal regulations and JC standards mandate that the treatment of patients on MMT programs be tailored to their individual needs. For example a woman in her third trimester of pregnancy has different needs than a dual diagnosed patient or an elderly patient. Evidence suggests that women in their 3<sup>rd</sup> trimester should receive a split daily methadone dose. The shorter half-life of methadone in late pregnancy indicates that twice daily dosing may decrease the total daily methadone requirement for these patients [11]. Federal guidelines mandate that a pregnant woman should not be medically withdrawn from methadone before 14 weeks or after 32 weeks of gestation [9].

High doses of methadone and rapid titration of methadone can lead to a prolonged QT wave, which in turn can lead to Torsade de pointes, a life threatening cardiac arrhythmia. Federal guidelines make recommendations on electrocardiograms (EKGs) but these recommendations also address individual cardiac risks [9]. For example patients with a history of cardiac problems may require more frequent monitoring.

Methadone target doses are also individualized. Evidence suggests that most patients do well on a daily dose of methadone of 80 mg-100 mg [12]. While this is the norm some patients may require lower doses

and others higher doses of methadone to prevent cravings and withdrawal symptoms. Federal guidelines stipulate that doses should be individualized and that there be no ceiling on the maximum daily dose [9].

Methadone clinics vary in their clinic rules regarding administrative or involuntary withdrawal from methadone. For example some clinics may detoxify and discharge a patient for passing falsified urine toxicology, selling methadone doses, or assaultive behaviours. The JC mandates that administrative withdrawal should be determined on a case-to-case basis and not subject to a rigid set of clinic policies [10]. Additionally federal guidelines mandate that administrative withdrawal should be conducted humanely with regular medical assessments. Administrative withdrawal should not be less than 21 days and a plan should be in place for ongoing treatment such as transfer to another methadone clinic (SAMHSA, 2014).

## Provider's Perspective

This provider had the privilege and pleasure of working for a large (150-250 patient) inner city methadone program for approximately 16 years. The most rewarding part of working in the clinic was seeing the improvement in a patient's life and the frequent expressions of gratitude from patients and family members. A typical scenario would be a patient entering treatment with severe withdrawal symptoms, an unstable home situation, and unmet medical and psychiatric care needs. It was not unusual to see an intravenous drug user (IVDU) with fresh IV track marks and abscesses on their arms. Typically they would present with some or all of the following symptoms: restlessness; increased anxiety; sweating (diaphoresis); watery eyes (lacrimation); runny nose (rhinorrhoea); dilated pupils; goose bumps (piloerection); abdominal cramps; increased vital signs; insomnia; body aches; and nausea.

Over time patients could be stabilized on methadone with resultant absence of withdrawal symptoms, cravings, and illicit drug use. They could be referred for medical and psychiatric care when indicated to have necessary problems addressed and treated. For example testing for the HCV and if positive referral to the liver clinic for appropriate treatment could be initiated. Counselling could contribute to acquiring and maintaining a place to live, or even return to the work force. While a small percentage of patients dropped out of treatment they would often return at a later time and have a successful treatment episode.

It was this provider's observation that non-judgmental care that was not punitive would yield the best results. Viewing opioid dependence as a disease and not a character deficit is essential to a patient's success. Establishing trust and a good rapport with a patient may ultimately keep them in treatment. Conversely a draconian approach may cause them to leave the treatment facility prematurely. An example would be not taking a patient off take-home privileges for a one time relapse or "slip". Allowing them to retain their take-homes while increasing counselling visits to explore triggers to relapse along with increased frequency of urine toxicology screening is a more humane approach.

## Conclusion

The escalating opioid crisis necessitates that patients, families, and providers all be aware of the different modalities of treatment available to treat the opioid dependent patient. While many forms of treatment are available this article focused on MMT as a modality of treatment that works well for many patients refractory to other forms of treatment and who need a great deal of structure in the treatment

setting. A brief overview of MMT and federal guidelines was provided along with this provider's perspective. While MMT and buprenorphine are supported heavily by evidence as first line treatment modalities for opioid dependent patients, less than half of the 2.5 million people in the U.S. with opioid use disorders (OUDs) have access to evidenced based treatment [1].

Federal guidelines and accrediting bodies such as the JC assure that MMT programs are strictly regulated with patients receiving high-quality comprehensive treatment. Stabilization on methadone has proven to reduce illicit opioid and other drug use with resultant reduction in morbidity and mortality; associated crime; and acquisition and spread of infectious diseases such as HCV and HIV. Family life and work functioning have also been noted to improve. Methadone programs may save a loved one's life. Families and health care providers are in a unique position to assist and support an opioid dependent individual to access, enroll, and remain in a MMT program. Compassion and non-judgmental treatment should be the goal for all involved.

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