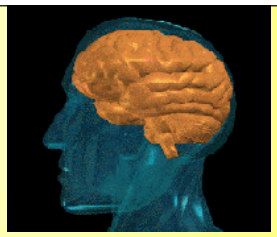


C.O.R.E. Medical Clinic, Inc.

Chapter I

Opioids and the Brain

Chapter Overview

- Introduction
- Addiction vs. Dependence
- Methadone: Historical Background
- Brain Chemistry: Before & After Opiate Use
- Methadone & the Brain
- Proper Dose
- Tapering off of Methadone
- Endorphin Deficiency Syndrome
- Medication Side Effects
- Dual Diagnosis
- Urinalysis
- Methadone Advocacy Organizations
- Conclusion

Introduction

C.O.R.E. is a medical facility dedicated to treating the whole person.

In order to effectively treat addiction, psychiatric and medical problems must be addressed.

C.O.R.E. staff will aid the patient in both identifying physical and mental health problems and providing the resources necessary to treat these problems.

The patient must be vested in the process of identifying his/her illness (mental and physical) for optimal treatment.

Addiction vs. Dependence

There is a difference between addiction and dependence.

Addiction:

There is a misuse of drugs which continues despite adverse consequences, such as job, family, and health problems.

The common denominator of all patients entering the program is their misuse of opioids. These opioids could be heroin, opium, prescribed opioids, or opioids obtained through the internet or on the street.

Addiction vs. Dependence

Dependence:

When a patient takes methadone, he/she becomes dependent on methadone (i.e. if a patient does not get a dose of methadone daily, he/she will experience withdrawal symptoms).

Dependence on methadone does not imply misuse of this medication. It *does* mean that it needs to be taken every day.

A patient on methadone should consider himself/herself dependent in the same way a diabetic would be dependent on insulin.

Methadone: Historical Background

Methadone was first synthesized during World War II by the Germans who were attempting to find a long-acting pain killer to treat war-related injuries. Its therapeutic uses in addiction were studied in the 1950's and 1960's. Due to its longer duration of action and unique action at the cellular membrane compared to other opioids, methadone became a treatment option for opioid addiction.

Its acceptance was a result of the dramatic success rate of individuals who were abusing short-acting opioids compared to the abstinence model.

C.O.R.E. Medical Clinic is one of several clinics in Northern California licensed and able to dispense methadone for opioid addiction.

Buprenorphine: Historical Background

Buprenorphine was initially manufactured by Reckitt Benckiser. It comes in two forms (Suboxone and Subutex).

-**Subutex** is pure buprenorphine hydrochloride.

-**Suboxone** is buprenorphine hydrochloride mixed with naloxone at a 4:1 ratio.

In 2010, Roxanne Laboratories developed a generic version of Subutex. There is currently no generic available for Suboxone.

Federal regulations, referred to as "DATA 2000", allow office-based physicians to treat opioid dependence through the use of these medications.

Buprenorphine vs. Methadone

Similarities

-Both function to prevent withdrawal symptoms and block abused opioid effects.

-Both medications are opioid derivatives.

-Both medications have a long half-life.

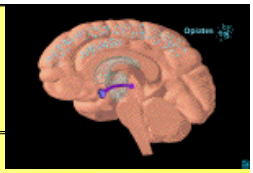
Differences

-Buprenorphine contains a "ceiling effect", which acts as a safety mechanism designed to reduce accidental overdoses or toxicity.

-Buprenorphine is a sublingual medication in pill form. Methadone is available in pill and liquid form.

-Methadone is approved for treating pregnancy while buprenorphine is still being tested in clinical trials for safety and efficacy.

The Brain and Reward System



There are over 100 billion neurons in the brain. Each cell has a body with tentacles that may connect to as many as 10,000 other neurons. Connection patterns are altered by drugs of abuse.

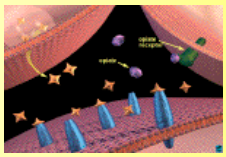
There are reward areas in the brain, such as the nucleus accumbens. These areas of the brain tell us if something is positive or pleasurable. Examples of activities that may activate the reward areas of the brain are reading, watching a favorite TV program, or attending sporting events.

The Brain and Reward System…

All drugs that humans abuse have an effect on the reward areas of the brain. When a person takes a synthetic opioid like heroin, it quickly enters the brain and powerfully stimulates the reward areas. Unlike natural pleasure-inducing compounds like endorphins, heroin is not immediately broken down.

This powerful connection at the receptor creates an intense high ("like ten orgasms" said one patient), leaving the user hoping/longing to re-experience the feeling. Unfortunately, the receptor begins to change and becomes less responsive to drugs that stimulate it. The reduced sensitivity and development of additional receptors lead to the requirement of more drug to achieve a 'high' and/or to prevent withdrawal.

Brain Chemistry After Opiate Use



Gradually, the endorphin system (nature's feel good system) stops working or is greatly reduced in its effectiveness. As a result, what the person previously enjoyed becomes gradually less pleasurable or unimportant. Humor, joy, and pleasure become harder to experience.

Methadone and The Brain

Methadone helps restore normal functioning of important areas of the brain.

One example is that women who abuse short-acting opioids often lose their menstrual cycle. After stabilization on methadone, their menstrual cycle usually returns.

Methadone and The Body

An individual using heroin or other opioids is prone to infection (cellulitis, abscesses, bronchitis, pneumonia, etc). When maintained on a proper dose of methadone, the body's ability to fight infections returns to normal.

Often irregular sleep patterns become regular and fluctuating levels of pain become more predictable and proportionate to underlying medical conditions such as arthritis and low back problems.

How The Body Metabolizes Methadone

When the patient takes methadone, it moves through the digestive tract and passes through the liver before it enters the blood stream.

The liver both metabolizes (breaks down) and stores methadone. Some individuals' livers are quite active (rapid metabolizers), which may prevent adequate brain levels of methadone. This is not related to Hepatitis C or other medical conditions. Some individuals have more active livers than others, which means higher doses or split doses will be required. Knowledge is key in eliminating any stigma attached to the dose amount.

Proper Dose

The proper dose will cover the reward area brain receptors and will correlate with normal brain functioning. For instance, the majority of patients require doses between 60 and 100 mg to achieve this. Slow metabolizers require less; rapid metabolizers require more.

It is important for the patient to "tune into" their body and to try to find a dose that makes them feel most normal - the way they felt before they used opioids. For some, they may not remember what it feels like to be normal. These individuals must experiment with a dose that helps them achieve a more normal sleep cycle, appetite, energy level, etc.

Initial Dosage Considerations

Many patients have a significant degree of opiate dependence and may go through withdrawal the first few days or weeks of treatment.

For safety reasons, the initial dose is low and is raised slowly to prevent a small risk of sudden death the first 1 - 2 weeks of treatment on methadone. This relates to different levels of sensitivity to the breathing center of the brain and possible changes in EKG. It may require a period of several weeks (or longer if higher doses are required) to stabilize on the proper dose of methadone.

Doses are adjusted up or down, usually in 5 or 10 mg increments approximately every 3-5 days because it takes that amount of time to stabilize after each dose. C.O.R.E. medical staff may test a patient's blood serum level to assure the proper dose is being administered.

Proper Dose Conclusion:

It is important that the patient communicate with his/her counselor and medical staff to help achieve the proper dose.

Once the brain stabilizes and functions more normally, it enables the human potential to "work" in counseling on the recovery process.

Everyone has flaws. With a biologically stable brain, the patient can better address these. It is this combined biological and counseling process provided by C.O.R.E. which will aid the patient in identifying and dealing with his/her weaknesses and experience growth and maturity. This is called medication assisted treatment (MAT).

Tapering Off Methadone

There are two phases when tapering off methadone and attempting to return the brain to normal without methadone.

First Phase

The receptors in the brain may adjust more readily when the maintenance dose is lowered to about half **or** into the 30-50 mg range. The brain may be eliminating extra receptors and readjusting other receptors.

Second Phase

This is the harder of the two phases for the brain. Many patients relapse during this phase, without understanding why. This is demoralizing and tragic, especially if one has been doing well on therapeutic doses of methadone.

Tapering Off Methadone…

Second Phase (Continued)

When a patient further reduces his/her dose, his/her endorphin system must "kick in" or they will develop the **Endorphin Deficiency Syndrome**.

The endorphin system may or may not recover. Patients must anticipate this phase and must participate in activity that stimulates the endorphins to maximize the likelihood of endorphin recovery. Suggestions include exercise, proper diet, massage, acupuncture, practicing humor, developing hobbies and interests, and attending to spiritual needs.

Patients should consult their counselor and medical staff for details.

Endorphin Deficiency Syndrome

We currently do not have the technology available to measure endorphin function but know from clinical experience that the incidence of the Endorphin Deficiency Syndrome is significant, perhaps as high as 90 - 95%. We feel this is a major contributor to the high incidence of relapse in the opiate addictions.

During dose reduction, it is extremely important to monitor for symptoms of endorphin deficiency. The most common symptoms are:

- Return of opiate craving or opiate hunger
- 'Dope' dreams
- Drop in level of overall functioning
- Lack of motivation or desire
- Depression
- Insomnia
- Increase in body aches and pains
- Loss of sense of humor or feelings of pleasure
- Loss of interest in things previously enjoyed

Medication Side Effects

All medications have some side effects. Methadone is no exception, but on a comparative basis is remarkably safe and low in side effects.

Methadone has been used and carefully studied for over 50 years. It does **not** damage bones, the liver, or other parts of the body as perpetuated by some myths. The evidence is quite contrary. Once an individual stops abusing opioids and receives methadone treatment, overall health is *improved*.

It is relatively safe during pregnancy, with babies doing better compared to babies born to opioid-dependent mothers not receiving methadone. The abstinence syndrome for the baby can be relatively mild and, if more severe, can be managed by the hospital medical staff.

Medication Side Effects

Joint stiffness

Some patients complain about joint stiffness, usually in the morning. This likely relates to some fluid retention that is a side effect of methadone. Methadone does not harm bones or tissues. This is an old myth with no scientific support.

Constipation

This is the most common side effect of methadone. Drinking 2 to 4 glasses of water a day, a diet high in fiber (bran, fruits and vegetables), and moderate exercise usually treats this side effect. Constipation is often dose-related, so lowering the dose can help. Consult the medical staff if constipation does not respond to these recommendations. Vitadone, a vitamin/amino acid supplement, often helps reduce constipation issues. C.O.R.E. offers Vitadone at cost.

Medication Side Effects...

Drug interactions (Increased sensitivity)

Taking more than one medication may influence the effects or side effects of the other medications. Many medications have sedation as a side effect (e.g., antidepressants, muscle relaxants, and tranquilizers). Sedating medications can cause a person to appear to be under the influence when mixed with methadone. Each patient must insure he/she is alert, coordinated, and well oriented before driving or operating machinery.

It is important that patients consult with their doctor and C.O.R.E. medical staff when they are prescribed other medications. Always report prescription medications to your counselor, so they can be included in your record.

Mixing medication (Potentially Lethal)

Mixing methadone with some medications such as benzodiazepines (e.g., valium, xanax, ativan, klonopin) may cause serious reactions. When mixed together, they can slow or stop breathing, resulting in serious medical complications or death.

Medication Side Effects...

Insomnia

Insomnia is a common medical problem while adjusting to the right dose of methadone. Dose adjustments often treat this problem. If insomnia persists, it may be a symptom of depression or other psychiatric/medical disorders.

Co-Occurring Disorders: Psychiatric

Many patients began to use opioids as a way to self-medicate their psychiatric disorders or medical problems.

Opioids are often used to self-medicate problems such as anxiety and/or depression. It is important that patients recognize their conditions and seek proper treatment through the direction of their doctor or the C.O.R.E. medical staff.

Co-Occurring Disorders: Medical

Contaminated drugs and/or sharing needles are extremely dangerous and have serious consequences. Viruses such as HIV and Hepatitis B and C are spread through sharing needles. Although bleaching the needle between uses may help reduce the risk of spreading diseases, it is not 100% effective. Proper bleaching techniques must be followed.

HIV/STD's:

Safe sex is vital to disease prevention. C.O.R.E. provides condoms and information to reduce these risks.

Dual Diagnosis: Medical Problems….

Hepatitis C:

Hepatitis C is very common in IV drug users. Anyone who has ever shared a needle is at risk for having Hepatitis C. It can lead to liver diseases such as cirrhosis or cancer.

Patients infected with Hepatitis C should practice safe sex and not share needles. There is risk of re-infection and passing the virus to others with needle sharing.

See the C.O.R.E. medical staff team for information on current Hepatitis C treatment.

Co-Occurring Disorders: Polysubstance Use

It is not uncommon for our patients to have multiple drug problems:

Alcohol

Alcohol is toxic to tissues in the body and causes brain and liver damage. Patients who are Hepatitis C positive should refrain from consuming alcohol since it can increase the rate of liver damage and other complications.

Benzodiazepines/Prescribed Medications

Benzodiazepines and other prescribed medications can have side effects when mixed with methadone. Mixing benzodiazepines with methadone can slow or stop breathing.

Also, as stated previously, patients should inform their C.O.R.E. counselor and/or medical staff of all other medication(s).

Co-Occurring Disorders: Polysubstance use…

Stimulants

Stimulants are very addictive. Cocaine and methamphetamines can cause a number of psychiatric and physical problems. Psychiatric disorders such as depression, anxiety, panic attacks, and paranoia are common among stimulant abusers.

Stimulants can restrict blood flow to the brain and heart, causing strokes or heart attacks. Relapse prevention groups are important and are available at C.O.R.E.

Urinalysis Testing

Urinalysis testing is done monthly on a random basis. Urinalysis testing plays a critical role in detecting relapse, diversion, and meeting regulatory requirements.

Urinalysis testing is imperative to the patient's safety. Severe problems occur when medications are improperly mixed. Urine is tested for benzodiazepines, methadone, opioids, stimulants, and other drugs of abuse.

Urinalysis Testing...

Often, stigma or shame prevents a patient from telling their counselor of illicit drug use for fear of judgment.

C.O.R.E. and its staff are not here to judge - they are here to help. By identifying the problem through UA testing, proper treatment is more likely to occur.

Methadone Advocacy Organizations

There are three main methadone advocacy groups:
Methadone As A Legitimate Treatment Association (MALTA)
California Association of Methadone Patients (CAMP)
National Alliance for Medicated Assisted Recovery (NAMA)

These three advocacy groups were developed as a way to spread the message to the public that methadone is a legitimate treatment.

To counter stigma, MALTA, CAMP, and NAMA provide evidence documenting effectiveness of opiate replacement treatment. All three organizations lobby political bodies through their networking.

Conclusion

C.O.R.E. is a medical facility dedicated to treatment of the whole person. C.O.R.E. will provide necessary resources for the patient to achieve a healthy recovery.

The patient must be an active participant in his/her recovery in order for the treatment to be successful.

There are regular workshops on “Opioids and the Brain” , presented each month by Dr. Stenson (The third Wednesday of every month at 11:00 am). These are open to all and are helpful to staff, patients, family, and the community at large. These workshops are interactive and enrich attendees knowledge of opioid dependence and its evolving treatment, including information on buprenorphine.