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# TREATMENT FOR PERSONS WITH HEROIN ADDICTION

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TREATMENT FOR PERSONS WITH HEROIN ADDICTION

By

Angie K. McDuffie

B. S., Southern Illinois University Carbondale 2009

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the

Degree of Master of Science

Rehabilitation Institute

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RESEARCH PAPER APPROVAL

TREATMENT FOR PERSONS WITH HEROIN ADDICTION

BY

Angie K. McDuffie

A Research Paper Submitted in Partial  
Fulfillment of the Requirements  
for the Degree of  
Master of Science  
in the field of Rehabilitation Counseling

Approved by:

Dr. Thomas Upton

Graduate School

Southern Illinois University Carbon

## TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
TABLE OF CONTENTS.....	i
ABSTRACT.....	ii
DEDICATION.....	iii
CHAPTER ONE.....	1
CHAPTER TWO.....	11
CHAPTER THREE.....	23
REFERENCES.....	30
VITA.....	34

AN ABSTRACT OF THE RESEARCH PAPER OF

ANGIE K. MCDUFFIE, for the Master of Science degree in REHABILITATION COUNSELING presented on April 11, 2012, at Southern Illinois University Carbondale.

TITLE: TREATMENT FOR PERSONS WITH HEROIN ADDICTION

MAJOR PROFESSOR: Dr. Thomas Upton

Heroin addiction is devastating to both the person addicted and to society. Attempts to treat heroin addiction have proved difficult due to the extreme addictive qualities of the drug. Medication-assisted recovery or pharmacotherapy, such as methadone and buprenorphine, are controversial in that it is providing a medication that has similar qualities of heroin itself. Behavioral treatments alone have limited success due to many factors. The literature presented will provide a look at heroin and heroin addiction, as well as a comprehensive study of outpatient treatments that are currently being used. The purpose of this study is to determine the most effective way to treat heroin addiction as the number of overdoses and death are on the rise.

## DEDICATION

I dedicate this research paper in the memory of my mother,  
father, and brother who all left this world this past year. Their  
support throughout my life will never be forgotten.

## **CHAPTER ONE**

### **STATEMENT OF DEFENSE OF PROBLEM**

#### **Introduction**

Heroin is an extremely addictive drug and has been determined one of the most devastating and destructive drugs that a person can use: to the person addicted and to society. Due to the extremely addictive qualities of the drug, it makes treating heroin addiction a difficult task. As heroin was once marketed as a miracle drug and thought to be safer than morphine, it has been proven that it is not a miracle drug; its use is a public health concern, as well as a significant burden to society. Not only is heroin addiction a physical illness that affects the central nervous system, it is responsible for annual treatment costs in the billions of dollars and a low success rehabilitation rate. Millions of people all over the world are addicted to heroin with limited effective treatment to achieve abstinence. With abstinence difficult to achieve, is harm reduction by way of pharmacotherapy or behavioral therapies the way to treat heroin addiction? It is important to explore the many ways that heroin can impact lives and society, and to determine how pharmacotherapy and behavioral therapies have been used to attempt control heroin addiction. This study will take a comprehensive look at heroin addiction and current treatment available. Pharmacotherapy will be explored due to its harm reduction versus abstinence controversy, as well as behavioral therapies. Due to the millions of people that continue to use the drug despite the level of destruction it has the potential to cause, it is essential to continue to explore treatment modalities, regardless of controversial opinions.

## **Background to the Problem**

To understand the difficulty in the treatment of heroin addiction, it is important to first know what heroin is and its etiology in an attempt to better understand how it has impacted American and worldwide history. Santella (2007) reported that heroin is a derivative of the opium poppy and that the cultivation of the opium poppy is the oldest drug that has ever been cultivated and even existed prior to the fermentation of alcohol. The author stated that its origin comes from a specific poppy plant called *Papaver somniferum* and is known for its euphoric and analgesic properties. Its earliest cultivation has been highly disputed with one of the earliest known places of cultivation in lower Mesopotamia, which is now Iraq in c.3400 B. C. and then spread to Egypt, Rome, Persia (Iran), India, Greece, China, etc. and over centuries, has made a global sweep across the planet (Santella, 2007). Santella reported that throughout the centuries, opium became both an international and domestic commodity with the exploitation of opium by Portugal in the late 1400s to the move into Britain and America in the 1800s. The market for opium was massive and established through trade, consumption, and drug wars due to the irresistibility of the drug for both its addictive qualities and lucrative money-making opportunities. The drug was originally marketed for its medicinal qualities, but soon was known for its addictive qualities. Opium, that could grow almost anywhere, was considered the perfect product for trade (Santella, 2007).

From that time, many changes took place regarding the composition and administration of opium in the modern era. Santella (2007) reported that in 1803 the British scientist, Serturmer, isolated the active ingredient in opium and called it morphine. This discovery enabled scientists to better control the drug's effects in terms of treating pain and illness. He stated that in 1827, the hypodermic needle was invented that would administer the drug by injecting it directly into the

bloodstream. This was a pivotal discovery for the administration of pain medication during war time, but increased the potency and possibility of developing a dependence on the drug (Hanson, Venturelli, and Fleckenstein, 2006). Another discovery in 1874 by British scientist, C. R. Wright, would alter the future in a most dramatic way; he synthesized morphine by boiling it with acetic acid and called it heroin or diacetylmorphine (Santella, 2007). The author stated that C. R. Wright had no way of knowing at that time that heroin would become one of the century's most dangerous and lethal drug. In 1895, The Bayer Co. began production of diacetylmorphine and called it heroin, as a substitute for morphine. According to Hanson, Venturelli, and Fleckenstein (2006), by 1900 there was an estimated 1 million Americans that were addicted to opiates with many of these being soldiers that had returned from the war addicted to heroin.

As the drug grew in popularity, laws were enacted in an attempt to control the alarming rate of heroin addiction. In 1914, the Harrison Act was passed to regulate opium and its products. In 1924, heroin was banned by the United States to be used for any medicinal purpose (Hanson, Venturelli, and Fleckenstein, 2006). The drug that was first introduced as a cough syrup and an aid to combat other drug addiction was now considered to be a danger to a person's health and well-being. War and use of drugs during war added to the use of heroin and other drugs. The authors stated that the Vietnam War increased the heroin addiction in the United States due to 40% of soldiers that used heroin to combat the stress that accompanied an unpopular war. A smaller percentage continued to use heroin after they had returned to the United States and was significant enough to add to the rising heroin-addicted population (Hanson, Venturelli, and Fleckenstein). Even though heroin had been banned to be used medically, the popularity for the drug by persons addicted remained popular due to the addictive qualities of the drug. In a review

article by Doran (2008), he reported that 80 million people worldwide are abusing heroin and other opiates to date and that figure is a conservative estimate of the prevalence.

### **Significance of the Study**

It has been discussed where and what heroin was derived from and determined that it has a significant global impact on society, but it is also important to explain what heroin actually is and how it impacts a person, both physically and psychosocially. Why does a person want to engage in the use of a drug that has the potential to have such profound negative consequences? The answer is that heroin also has profound positive consequences: euphoria. Once a person has used heroin, the person has a feeling of euphoria, a profound feeling of well-being or elation.

Heroin and other opiates affect the “pleasure system” in the brain involving several brain chemicals called neurotransmitters which include dopamine and endorphins (LeVert, 2006). Dopamine and endorphins are naturally occurring chemicals in the brain and can alter the natural process the brain uses to communicate with the rest of the body. LeVert explained that the human brain and the nervous system create an extensive communication network that affects all aspects of the body’s functions, such as emotions, actions, and physiological functions. She stated these functions are processed through the brain and nerve fibers that extend to the spinal cord and to the body. Each section of the brain is responsible for certain activities. For instance, the cerebral cortex is the largest section and responsible for “thinking” activities, including thought perception, memory, and communication (LeVert, 2006). LeVert reported that other parts of the brain control the physiological functions, such as breathing, blood pressure, etc. The brain must communicate with the body by sending messages from one cell to another. This process is made possible by neurons or cells of the nervous system. Neurons are made of a cell body, dendrites, and the axon. The message travels down the dendrite to the cell body, the

message is processed and it moves out to the axon. Between the end of the axon and the neighboring neuron, there is a gap called the synapse. Before the message can cross over into the dendrites of the neighboring neuron, neurotransmitters or natural chemicals are released so that the message can cross the synapse and bind to receptors. Neurotransmitters and receptors work like a lock and key; neurotransmitters are the key and the receptors are the lock. Once the lock is open, the message has been completed. The use of heroin and other opiates have the potential to interfere and possibly permanently alter this communication network (LeVert, 2006).

LeVert (2006) reported that endorphins, endorphalins, and dynorphin are the neurotransmitters mostly affected by opiates, especially heroin. They are known as endogenous or “internally-occurring opiates” and regulate such functions such as mood control and immune system responses. LeVert stated that the reason the potency of heroin and other opiates affect a person in such a profound way is that they bind to the same receptors as the endogenous opioids: affecting the body in widespread areas. Endorphins are a chemical the brain manufactures to provide respite to a person when they experience pain or stress. Endorphins flood the area between the nerve cells and allow what is called the “firing of the nerve impulse” which in turn creates a pain relief affect (LeVert, 2006). The other neurotransmitter that is severely affected by the use of heroin and other opiates is dopamine, the main element the body needs to feel pleasure. LeVert explained that opiates create an increase of a heightened feeling of pleasure and gives a person a false feeling of well-being. The author stated that in addition to the pleasure system of the brain affected by heroin and other opiates, respiration is also affected. This explains the use of the opiate codeine used in cough medication due to the slowing of respiration. Used to excess, respiration is compromised and death is imminent. The brain’s vomiting center is

triggered by opiate use due to the tendency for nausea or vomiting as a result of opiate use (LeVert, 2006).

LeVert (2006) reported that heroin comes in a powder form and in different colors: white, pink, gray. The author reported the different colors are due to the impurities or additives left over from production and that the darkest form of heroin is called “black tar.” There are many ways that heroin can be ingested: injection, smoking, snorting, swallowing, and rarely, in tablet form. LeVert reported the injection of heroin gives the highest level of euphoria due to the drug being directing injected into the blood stream. LeVert stated that the powder is mixed with citric acid and heated; creating a liquid that can be loaded into a syringe and injected under the skin, called a “skin pop”, into the vein, or into the muscle. She implied the injection of the drug gives the most euphoric, longest lasting effect of the drug, with the effect being felt as soon as 7-8 seconds from injection and lasting as long as 5 hours, depending on the dosage. The author also described smoking the powder form of heroin by melting it on a foil and inhaling it from a straw or tube. The drug is absorbed through the blood vessels in the lungs and reaches the brain in 10-15 minutes. LeVert reminded her readers that this is most commonly known as “chasing the dragon.” Another form of administration is snorting or sniffing the powder through a straw or tube into the nose. The heroin is absorbed through the blood vessels of the nose and its effects are felt within 10-15 minutes. Smoking and snorting heroin are thought to be the least risky of administrations due to reducing the chances of being exposed to the HIV virus or hepatitis; most commonly contracted by way of injection.

The euphoric feeling that using heroin can give a person is a major reason that the drug can be so addicting but there are other physical reactions the body has to the use of the drug. It was earlier reported that the use of heroin most often causes a trigger to the vomiting/nausea

center of the brain. LeVert (2006) reported that many deaths from the use of heroin are caused by a person aspirating on their own vomit during use. Once a person gets past the vomiting/nausea sensation, a person will feel the “rush” that lasts a few seconds and this leads to “on the nod” (LeVert), which is a wakeful and drowsy state, and the “high” that can last up to five hours. Once tolerance builds up, the rush and the high are not as intense as it was when they first began using the drug.

The opiate-addicted person using heroin will continue using to avoid the negative effects of withdrawal from the drug. LeVert reported that a person that is addicted to heroin that does not continue to use the drug will encounter flu-like symptoms due to withdrawal such as, nausea and vomiting, muscle pain, weakness, and irritation. A person that is dependent on the drug, heroin, will most often use again to avoid feeling the negative effects of withdrawal and will use any means available to obtain and use the drug again, regardless of the consequences. This is an area of societal concern due to the increased crime rate associated with heroin use.

On September 1, 2011, the National Drug Control Policy (ONDCP) reported that the Nation’s criminal justice system is a revolving door in regard to the consequences of drug use and is one of the most significant challenges we face. Some of these challenges are crimes that are committed to support a drug habit. The Bureau of Justice (BJS) (2011) reported that as much as 18% of state and federal inmates committed their crimes, such as home invasion, prostitution, theft, domestic abuse, due to getting the drug or under the influence of a drug. Doran (2008) reported that on the average, a heroin user is 40-60% most likely to engage in criminal behavior when they are not incarcerated or in treatment. Doran stated that his findings have shown that treatment lessens the tendency for heroin addicts to commit crimes. Treatment, therefore, is

paramount: for both the health and welfare of the person who is heroin-addicted and society as a whole.

In addition to drug-related crimes, persons that are addicted to heroin will have other aspects of their life impacted, both physically and behaviorally. After a person uses heroin for a period of time, the following physical and behavioral symptoms will increase in frequency: cravings, tolerance builds up and leads to increased use; flu-like withdrawal symptoms when the person is without the drug; unsuccessful attempts at controlled use; time spent obtaining, using, and recovering from drug use which takes time away from other aspects of life that should be priority; occupational, recreational, and social activities that are given up due to use; and continued use despite the physical, psychological issues that are worse due to use. Also, public health issues are created as a result of heroin use, especially when it is administered by injection. These issues are HIV/AIDS and hepatitis due to sharing needles with persons that are infected, high-risk behavior while a person is under the influence, submitting to a lifestyle that is risky, such as prostitution and promiscuity, and the always possible fatal overdose. The National Institute for Drug Abuse (NIDA) (2010) stated the drug also affects all areas of the body over time due to toxic contaminants, such as lungs, liver, kidneys, or brain, causing permanent damage to vital organs. The authors stated that 70-80% of all new hepatitis infections are a direct result of intravenous drug use. LeVert (2006) reported that the lining of the heart is often damaged due to the additives that heroin is often cut with.

Along with the societal issues, such as drug-related crimes, and the physical effects of the use of heroin, there is also the issue of costs to society. Schilling et al. (2006) estimated that untreated heroin and other opiate dependence is responsible for \$1.2 billion per year deficit on the health care system due to more extreme health care needs, as well as poorer health outcomes

than that of the general population. HIV/AIDS, Hepatitis C, and sexually transmitted diseases are some of the biomedical conditions that are prevalent in association with heroin use

### **Purpose and Objectives of the Paper**

It is evident to see the seriousness of this public health concern and the need to find the most effective treatments available to treat this disease. Is abstinence possible for the majority of those in treatment or should the goal be to assist those in treatment with harm reduction? Peele (2002) reported that harm reduction changes the focus from expecting abstinence to assisting a person to have a better quality of life and reduce harm. Peele reported this idea of moving clients to a better place in their life promotes to protect drug users (and non-drug users exposed to drug users) from the worst consequences. Pharmacotherapy is a form of harm reduction and has been used to treat heroin addiction, including detoxification using methadone, buprenorphine, and other medications. Other forms of harm reduction are to provide clean needles and information about risky behavior. Behavioral therapies are also used to aid in treatment of heroin addiction, such as cognitive behavioral therapy and motivational interviewing. This study will show the treatments that are currently being used, the effectiveness of the treatments, and what research is being conducted to improve better treatment outcomes.

### **Definition of terms**

Administration: Otherwise known as route of administration-the path or method of taking a drug into the body.

Agonist: chemical that binds to the receptor of a cell and triggers a response by that cell.

Analgesic: A group of drugs that facilitate the reduction of pain.

Antagonist: chemical that acts within the body to reduce the physiological activity of another chemical substance.

Buprenorphine: A semi-synthetic opioid used to block the opioid receptor and reduce withdrawal symptoms.

Endogenous: Produced or grown within.

Euphoria: It is an emotional state that gives an intense sense of well being.

Harm Reduction: The practical strategies that reduce the negative consequences of drug use.

Methadone: A synthetic opiate that was designed to reduce/eliminate the use of illicit heroin and other opiates.

Modalities: The models of treatment used.

Neurotransmitter: Endogenous chemicals that transmit signals from the neuron to the target cell across a synapse.

Pharmacotherapy: The treatment of disease through the administration of drugs.

Tolerance: A need for markedly increased amounts of the drug to achieve the desired effect.

Tolerance denotes a physiological dependence.

Withdrawal: Physiological dependence symptoms, such as extreme pain, chills, diarrhea, tremors, flu-like symptoms, cramps, etc.

## **CHAPTER TWO**

### **OVERVIEW OF LITERATURE**

There are numerous approaches of pharmacotherapy and behavioral therapies that have been used in the past to treat heroin addiction: some more successful than others. Effective treatment has long been an issue for researchers and treatment providers due to the difficulty for heroin addicts to achieve the ultimate goal of abstinence. There are multiple variables that play a role in this difficulty, such as limited access to methadone clinics, poor economic status of persons' addicted, and a diminishing state and national budget for mental health and substance abuse treatment, including residential and outpatient treatment. Pharmacotherapy is controversial in the rehabilitation field due to the use of medications, with some of the same properties of opiates, to decrease withdrawal symptoms of opiate addiction and used in a tapering off program. Wesson and Smith (2010) reported that there is a controversy surrounding the different modalities of treatment: most wrestle between complete abstinence versus harm reduction. Peele (2002) reported that it replaces the abstinence or zero-tolerance policy with a plan that seeks to better protect the addict from the worst consequences. Behavioral therapies alone do not have a history of successful outcomes for persons addicted to heroin. For this study, information will be presented that will give an overview of the most used methods in an attempt to determine the best method for better outcomes.

#### **Pharmacotherapy**

##### **Methadone Maintenance Therapy (MMT)**

There are many studies and ideas of the effectiveness of MMT for the treatment of heroin and other opiate addiction. For as many people that support the use of MMT, there are as many against the use of MMT. Those that proclaim that methadone is the one and only effective

medication-assisted treatment for heroin addiction often do so because it has been the standard in the treatment of heroin addiction and the most researched for many years. Those that suggest that the use of methadone, that is a synthetic version of heroin, is treating one drug addiction with the use of another drug of possible addiction. Despite the controversy of the use of methadone as a treatment for heroin addiction, there are few alternatives to choose from.

The National Institute of Health (NIH) (2009) reported that methadone is marketed by names such as Dolophine and Methadose and was first introduced into the United States in 1947 by the Eli Lilly and Co as an analgesic. It was not used as a treatment for heroin addiction until 1964. The Substance Abuse and Mental Health Services Administration (SAMHSA) (2009) reported that methadone is a synthetic agent and full agonist that bind to the same receptor site as heroin and other opiates. As a result, methadone blocks the euphoric and sedating effects that persons using heroin and other opiates experience. Taking methadone is reported to relieve craving and withdrawal symptoms that are common with heroin addiction. The authors reported that when used appropriately, methadone is an effective and safe treatment for opiate addiction. Schilling, Dornig, and Lungren (2006) also reported that when used as intended, methadone is safe and effective, and seen as favorable due to respect of cost and keeping people in treatment for longer period of times. The authors reported that when a person is receiving MMT in a methadone clinic, in order to continue to receive their dosage, a federally regulated periodic random drug screen is required and helps track the patients over time, which assists with measuring safety and effectiveness. Part of the issue, and thus part of the controversy, is that methadone is not always used as intended and prescribed.

Schilling et al. (2006) stated that methadone shares many of the same effects of that of heroin, such as addiction, sedation, and respiratory issues when used in higher doses and when

abused. Roche, McCabe, and Smyth (2008) stated that “street” methadone is obtained for many reasons. The authors reported that some of the reasons are as follows: they have never enrolled in MMT and are buying it illegally off the street; they do not feel their dosage is adequate for their cravings and/or withdrawal; or for hedonic reasons. The authors commented that while using methadone obtained illegally is not without risks, it is preferred to heroin use.

Roche et al. (2008) revealed that of the opiate-related deaths in Dublin, 54% of those deaths were related to methadone. SAMHSA (2009) authors reported that although deaths as a result of methadone use is difficult to determine due to a lack of standardized medical examiner techniques, it is known that the increase in deaths due to methadone use is part of an increase in poisoning deaths. Most of these deaths are due to unintentional drug overdoses. SAMHSA reported that according to data from the National Center for Health Statistics that from 1999 to 2005, there was an increase of 468% of methadone-related poisoning deaths. Although this figure is staggering, methadone-related deaths are still below the number of persons that die from the use of heroin (SAMHSA).

Jimenez-Trevino et al. (2011) conducted a study that followed up on patients that were admitted to MMT for the first time and they found that at a 15-year follow-up that 60.4% of those that survived were still enrolled in MMT. The authors also noted that at a 25-year follow-up, the death rate was 49.5%. Although the authors admit there are limitations of the study, such as missing data on causes of death, the percentage of death is very high. This is not to suggest that MMT is the cause of the deaths, but that for those that use heroin, overdoses on heroin and methadone, as well as HIV/AIDS and hepatitis C, are common and rising.

While methadone-related overdoses and deaths are among the issues facing users; there are also physiological issues to deal with as well. Dutra et al. (2008) reported that patients that

are engaged in stable methadone maintenance will still remain vulnerable to drug-related cues and triggers right before expected dosage time which implicates that dependency to methadone could be an issue. The question remains whether MMT is effective enough in the treatment of heroin addiction to take the chance with a person also becoming addicted to methadone. Wang, et al. (2010) determined it is for this reason they felt compelled to study the brain through MRI imaging to further understand the neurobiological response to drug cues and further the development of alternative therapies and improve effectiveness of already existing MMT therapies. Their study results concluded that despite long-term MMT, even persons in recovery for heroin addiction are still susceptible to learned brain response. Mattick, Breen, Kimber, and Davoli (2009) conducted a study that compared MMT to no opioid replacement therapy and found that MMT keeps people that are dependent on heroin in treatment programs longer and with a reduction of their use. A once-a-day dose last four to six times longer than the effects of heroin and is reported to be medically safe, even when used up to 10 years.

Langleben et al. (2008) suggested that while they agree that MMT is the standard agonist therapy for heroin addiction, significant heroin use while in MMT is still an issue. The objective of their study was to determine if environmental drug-related cues were implicated in illicit heroin use while in MMT. The authors reported that their study, using magnetic resonance imaging (MRI), shows that methadone has the potential to cause an intense trigger or craving for heroin. The author's findings concur with Dutra et al. in suggesting that patients in a stable methadone maintenance program are still vulnerable to drug cues and that vulnerability is the highest right before the expected dose of methadone.

Wesson and Smith (2010) reported that in the United States, methadone has been restricted to specialized drug treatment clinics that are under oversight by federal and state

agencies. They stated that other than these clinics, it was prohibited to treat heroin or other opiate addictions with controlled substances. Methadone clinics are not plentiful in rural areas, which is an issue with the typical person that is addicted to heroin due to their psychosocial status because of the lifestyle they are most likely forced to live. As already reported, there is a history of persons becoming addicted to methadone, while not in a clinical treatment program, which obtain the medication in an illegal manner, trading a heroin addiction for a methadone addiction. The use of methadone was intended to be used while gradually reducing the dosage and to eliminate dependency (Falvo, 2009). Methadone Maintenance has received negative feedback and stigma due to illegally obtained methadone use and the lack of gradual reduction of use. According to Dr. John A. Peterson, during a seminar (IAODAPCA Fall Conference) at the Rend Lake Resort and Conference Center in Whittington, IL, the use of methadone has been negatively presented and that the only difference in methadone and buprenorphine (which will be discussed in the next section) is that buprenorphine is presented in a more positive light due to being prescribed by a physician (personal communication, November 2, 2010). He suggested that methadone is effective, affordable, and more easily accessed. Schilling et al. (2006) reported that they believe that methadone is underused. This may be due to the stigma attached to MMT, as well as the lack of adequate facilities in rural areas. Due to the difficulty in treating persons that are addicted to heroin and other opiates, and although there is controversy to the most effective pharmacotherapy, MMT is still the standard treatment.

### **Buprenorphine Maintenance**

Another medication-assisted recovery program is the use of buprenorphine. In 2001, as a result of the Narcotic Addict Treatment Act, an exemption to the restriction that methadone was placed was altered and buprenorphine was approved for the treatment of opiate addiction

(Wesson and Smith, 2010). Wesson and Smith reported that buprenorphine and any products that contain buprenorphine (marketed as Subutex and Suboxone) were approved to be prescribed by “qualified” physicians. Buprenorphine is a Schedule III-V medication that was approved by the Food and Drug administration for the treatment of opiate dependence. The authors reported that as of 2009, there are as many as 13,150 doctors that were approved to administer buprenorphine and able to treat 30 patients, with another 2,500 that could treat 100 patients at a time.

Wesson and Smith (2010) reported that buprenorphine is a semi-synthetic opiate that was created in the late 1960s by Reckitt and Coleman (a pharmaceutical company). It was originally intended to be an analgesic and in 1978 marketed an injectable form called Buprenex. The authors stated that in the late 1970s the drug was presented as a treatment for opiate addiction. While sublingual tablets were introduced in 2002 with dosages of 2 mg and 8 mg, the sublingual film was approved in 2010 and is reported to be faster to dissolve and have a better taste than the tablets. Wesson and Smith reported that Subutex is buprenorphine alone while Suboxone is a combination of buprenorphine and naloxone. Its use is intended to be administered while a person is in moderate withdrawal. The naloxone is a narcotic antagonist that is added to the buprenorphine to prevent the abuse or misuse of the medication. This means that if a person is actively using heroin and ingests Suboxone, it will put a person in immediate withdrawal (Wesson and Smith). This suggests that Suboxone has an advantage over methadone in that it is not as easily abused.

Wesson and Smith conducted a study in a 90-day detoxification with 45 heroin-addicted subjects, double-blind, double-dummy, and found that there was no differences between buprenorphine and methadone in terms of retention, drug use, or symptoms. The authors stated that the only advantage to use buprenorphine may be that qualified physicians can prescribe the

medication while those using methadone either use a methadone clinic or obtain it illegally.

Petitjean, et al. (2001) had similar findings in a double-blind trial comparing buprenorphine and methadone. Although they reported to have limitations in their study, their conclusion was that when taking into consideration less duration of treatment, less withdrawal symptoms, and less dosing, buprenorphine has more advantages.

The injectable form of buprenorphine, Buprenex cannot be legally prescribed for the treatment of opiate addiction because it was approved for the treatment of pain, not opiate addiction. Wesson and Smith (2010) reported that Buprenorphine Maintenance with sublingual buprenorphine has a better potential in regard to societal acceptance than methadone for the following reasons:

- Buprenorphine is less intense in regard to physical dependence than a full opiate agonist.
- It is thought to be safer if it were ingested in an overdose.
- It can be prescribed by qualified physicians.

The authors reported that the duration of buprenorphine maintenance typically last one to two years for intravenous drug users. This is contingent on other changes in the addicted person's life, such as changes in friends, developing activities to replace the time spent in drug use, and continue with additional psychosocial treatment (Wesson & Smith). Wesson and Smith reported that an extended period of maintenance is most effective for the majority of persons addicted to opiates. This extended period of time is intended to ensure that changes in lifestyle have been achieved so that long-term abstinence can be maintained. As with methadone, there is abuse potential for the use of buprenorphine. Some opiate abusers dissolve the sublingual tablets and inject the solution as a replacement for heroin (Wesson & Smith). As reported earlier, Suboxone, buprenorphine with naloxone, reduces this abuse potential. Also with methadone maintenance,

buprenorphine maintenance was also designed for a gradual reduction of dosage to facilitate future abstinence.

Centers for Substance Abuse Treatment (CSAT) (2004) reported that buprenorphine dosing occurs on a less frequent basis than a full agonist, such as methadone, and can be given more infrequently than methadone. While methadone is dosed daily, buprenorphine can be given three times a week. The authors stated that the side effects are similar to methadone, such as nausea, vomiting, and constipation, with the effects not as severe. There are, however, issues with the taste of buprenorphine; when administered sublingually, the taste is reported as very strong and pungent (CSAT). When taken in the tablet form, it slows the effect than when taken sublingually. This issue may be instrumental in persons to cease taking the drug and return to heroin use.

### **Detoxification**

While detoxification is ideally the first step in any treatment program, sometimes heroin addiction has more challenges than other drug dependence in regard to the physical addiction to heroin and the severe withdrawal symptoms when the drug is not being used. Falvo (2009) reported that detoxification is ultimately to initiate abstinence while reducing the symptoms of withdrawal. Due to the seriousness of withdrawal symptoms when endured without a step-down program (such as with methadone and buprenorphine), medical management by a facility that is trained with heroin withdrawal is important. Medical management may consist of treating dehydration, electrolyte balance, administration of vitamins and other nutrients, and monitoring for other complications (Falvo). Falvo reported that Clonidine (Catapres), a non-opiate based medication, also helps block withdrawal symptoms and is sometimes used during the detoxification process. Clonidine, as well as methadone and buprenorphine must be gradually

decreased during the withdrawal period to avoid adverse consequences. NIDA (2005) reported that acute withdrawal symptoms are the most severe for 48-72 hours after the last opiate ingestion and will dissipate after 7-10 days. The author reported that a general feeling of anxiety and restlessness, as well as craving will most likely remain for a longer period of time.

Other periods of detoxification may be the result of drug-related crimes in which the person that is using heroin is forced to cease use due to being incarcerated. This forced abstinence is most often unpleasant at best. Most judicial system facilities do not offer any form of medication to assist with withdrawal symptoms.

### **Depot Naltrexone, Clonidine, Naloxene, Lofexidine**

NIDA (2005) reported the use of other medications that are used to reduce the severity of withdrawal symptoms while either being in a detoxification program or while in an inpatient treatment facility. These medications, referred to as antagonists, are used to block the effects of the use of opiates. Each of the medications is different but serves primarily the same purpose.

## **Behavioral Therapies**

### **Cognitive Behavioral Therapy (CBT)**

In the early 1960s, Dr. Aaron Beck developed a form of psychotherapy called cognitive behavioral therapy (CBT). The concept of the therapy is that irrational or dysfunctional thoughts lead to problematic behaviors (Beck, 2011). Beck reported that every person has a belief system which influences the way they think and behave. She stated that a person can learn to evaluate their thinking in a more realistic way and make decisions based on rational thoughts. Beck reported that CBT has been extensively tested since 1977 and 500+ outcome studies have

demonstrated efficacy in a wide range of psychiatric disorders. Beck contended that CBT is an effective therapy for many disorders, including substance abuse, but did not specify if CBT alone would be effective for active heroin addiction due to the many areas that heroin addiction effects, such as biomedical, environmental, etc. Much of the literature suggested that CBT is an effective therapy to work with persons that have substance abuse and addiction issues but due to the seriousness and difficulty of treating persons with heroin addiction, CBT alone has not proven effective. For instance, Preda and Duneyevich, (2012) supported the idea that CBT alone is not adequate treatment for persons in active heroin addiction. They reported that CBT is effective along with medically managed treatment, as well as relapse prevention and aftercare. They contend that group therapy, using cognitive behavioral skill, is quite effective in addressing the psychosocial aspects of drug addiction. Amato et al. (2009) reviewed 11 studies that involved 1592 patients and found that psychosocial therapy used in conjunction with a pharmacological therapy, regardless of the kind of psychosocial therapy, reduced patient dropouts, decreased heroin use while in treatment, decreased recidivism to further use, and decreased absences from treatment.

### **Contingency Management (CM)**

Another form of behavioral treatment that is used for the treatment of heroin addiction, as well as other forms of addiction, is contingency management. Contingency management is derived from a form of operant conditioning. Stanger and Budney (2010) reported that CM is based on the principal that when a person uses a drug, that person will receive a positive reinforcement from using the drug, such as the “high” or the relief from withdrawal. The positive reinforcement of not using the drug, or abstinence, is better health, improved quality of life, etc. which takes longer to achieve. The authors reported that under these circumstances, motivation

will gravitate to drug use due to the instant gratification. CM is used to offer a desired consequence, such as vouchers to exchange for goods, access to affordable housing, decreased or dropped legal charges (such as in drug court), etc. in exchange for the targeted behavior, such as abstinence. Greenwald (2008) stated that CM has demonstrated the ability to facilitate abstinence from opiates, but that CM was not used as a treatment alone: it was used in conjunction with pharmacotherapy. Greenwald reported that there is an issue that when contingency management has been discontinued, relapse to the drug remains a challenge. The author conducted a study that provided a CM component to an existing pharmacotherapy program and found that the CM demonstrated a significantly more effective treatment than with pharmacotherapy alone. As with CBT, research shows that CM used alone with pharmacological treatment has limited effectiveness. Other potential barriers to using CM are the cost of items, goods, services, vouchers, etc, costs of frequent urinalysis, and training of staff for delivering CM to patients.

### **Motivational Interviewing (MI)**

MI is a form of behavioral therapy that is based on Bill Miller's concept that a person who is ambivalent about change can be motivated to change by providing a direct, client-centered counseling style (Miller and Rose, 2009). The authors stated that resistance to change is not challenged but that the counselor that uses MI will roll with resistance in an empathetic manner. This counseling style was originally developed to work with persons with substance abuse problems but has been tested to be effective for a wide range of targeted behavior (Miller and Rose). The authors reported that research has shown that it decreases maladaptive behaviors as well as increases the desire for positive changes. Miller and Rose reported that the MI therapist style has the potential to improve client treatment outcomes because it sets the stage for

the client to enter treatment. The author's stated that three decades of research clearly show that MI is evidenced –based and diverse in its use.

## CHAPTER THREE

### DISCUSSION AND IMPLICATIONS

#### Summary of Key Findings

The goal of the paper was to present a better understanding of the devastating effects of heroin addiction that is due to heroin's extremely addictive qualities and the negative consequences that extend beyond the individual user, such as crimes committed to obtain the drug, limited support system due to use, etc. By understanding the effects, it clarifies the urgency of determining the best treatment options for the heroin user.

Treatment for heroin addiction has proven difficult at best due to the highly addictive qualities of the drug. Pharmacotherapy medication, such as methadone and buprenorphine, and behavioral therapies, such as CBT and CM, were presented to inform the reader of the interventions being used to combat the disease of heroin addiction. Used separately, each of the treatment modalities fails to treat all complex components of heroin addiction.

The use of pharmacotherapy is controversial in that some researchers believe that the medications used have enough similarities to the heroin, that it is assisting a person that already has one addiction, in developing another addiction. Despite the long-time controversy of the use of pharmacotherapy, the medications have proven to block the effects of heroin and other opiates, as well as eliminating serious withdrawal symptoms (NIDA, 2005). Schilling et al. (2006) reported concerns that methadone and buprenorphine can also be abused and illegally obtained, but that pharmacotherapy, when used as prescribed and under controlled care, are instrumental in allowing the addicted person to return to functioning.

A history of the source of methadone was presented so that a clearer picture of the medication can be understood as a treatment for heroin addiction. Schilling et al. (2006) provided

information that reported the effectiveness of the use of methadone, as well as what they feel is the underutilization of the drug, possibly due to stigma and too few clinics in rural areas. They reported that methadone can be effective to block the withdrawal and cravings symptoms if used as prescribed and under supervision. The authors also stated that there is a propensity to abuse methadone due to several reasons: they have never enrolled in MMT and are buying it illegally off the street; they do not feel their dosage is adequate for their cravings and/or withdrawal; or for hedonic reasons. SAMSHA (2009) offered statistics for those that abuse methadone as having an increase of 468% of methadone-related deaths from 1999 to 2005 suggesting that methadone, while effective, must be used as prescribed and under close monitoring.

Buprenorphine was offered as another form of medication-assisted treatment for persons with heroin addiction. A brief history of its introduction as a pharmacological treatment and information about dosage and effectiveness were also presented. While buprenorphine is also an effective medication used to combat heroin addiction and has some advantages over methadone, such as less frequent dosing and gastrointestinal side effects not as severe, CSAT (2009) stated that there are disadvantages as well. These include pungent after taste of sublingual administration and slower effect rate when taken in tablet form. Buprenorphine also has properties that facilitate abuse. Suboxone, buprenorphine and naloxone, help eliminate the abuse due to naloxone's agonistic properties (Wesson and Smith).

The use of pharmacotherapy might be effective in reducing withdrawal symptoms and block the effects of the use of heroin, but it does not change the psychosocial aspects of a person's life, such as where they live, existing support system, health concerns, etc. These areas of life have the potential to facilitate continued abstinence or to allow the person addicted to return to heroin use. Once a person has become abstinent from heroin, there are other changes

that must be made to ensure the person does not return to the use of the drug. Some of these changes are to change the place of residence if it is an unstable environment for recovery, change the people that the person associated with, obtain and maintain employment, etc., as well as identifying triggers, challenge irrational thoughts, and develop a support system. These support systems could be reconnection with family, spiritual affiliations, Narcotics Anonymous, and other 12-step support groups. These issues can be addressed with cognitive behavioral therapy or one of the other behavioral therapies.

Beck (2011) reported that CBT can be instrumental in assisting clients to maintain abstinence. Preda and Duneyevich (2011) agreed that CBT is helpful to change thinking and behavior, but when used alone, without other interventions, is not effective enough to achieve abstinence. The same could be said about contingency management and motivational interviewing. Both are effective in assisting and motivating a person to change behavior, but used alone do not effectively address the physical aspects of heroin addiction.

## **Conclusion**

While the information presented reported the positive and negative aspects of the pharmacological approach to the treatment of heroin addiction, such as medication-assisted recovery, there was no clear reasoning that pharmacotherapy alone is effective to maintain abstinence for those with heroin addiction. It helps with the physical withdrawal and cravings which is essential to abstinence, but it does not ensure the person will remain abstinent. Many aspects of life have to change in order to improve treatment outcomes. The literature reported the positive aspects of using cognitive behavioral therapy as a way of treating a person in regard to the psychosocial aspects of addiction, such as environmental, socioeconomic, and behavioral issues, but do not aid in the physical aspects of withdrawal and cravings. The implications of

these facts suggest that both treatments in conjunction with one another would produce the most effective treatment outcomes. This is not to say that it is feasible in respect to cost to society in regard to public health care and sufficient provisions available. Heroin addiction is a physical addiction that affects their psychosocial environment and for a person to have the best treatment outcome, it is my opinion that both pharmacotherapy, along with a behavioral therapy be utilized.

### **Implications**

The implication of the facts presented, regarding the most effective treatment for persons addicted to heroin, are intended for researchers and treatment providers (rehabilitation counselors), as well as other agencies that might work with this population, such as social workers. The most important implication is for researchers who dedicate their careers in determining the most effective treatment for persons addicted to heroin, and then for the treatment providers that rely on the researchers to provide the most up-to-date research and findings for evidence-based practice. The research shows that pharmacotherapy is more effective when used along with a behavioral therapy.

Researchers have studied the effects of the use of methadone for many years. Long-term methadone maintenance (10 years or more), such as is reported by NIDA (2005) do not seem to embrace the idea of decreasing the dosage over time to achieve complete abstinence from heroin as well as methadone. The ideal scenario is for the person addicted to heroin to achieve abstinence from the drug completely, in a timely manner, while increasing knowledge of their addiction and the recovery process. In other words, they need to learn how to live life on a daily basis without the drug. Methadone, buprenorphine, or other medication-assisted recovery methods could assist with physical withdrawal and cravings while the person is receiving a

behavioral therapy by way of outpatient counseling, both individual and group. Unfortunately, this ideal scenario involves many agencies, many resources, and willingness on the part of the person who is addicted to heroin. There is also the issue of a continued decrease of mental health and substance abuse funding available and it is unlikely that the majority of persons addicted to heroin are in the position to carry health insurance.

As a rehabilitation counselor, it is important to determine the most effective treatment for the person that is addicted to heroin. It would be ideal to know that treatment works, but it seems from the literature that current treatment works, under the right conditions. Unfortunately, for most, the right conditions are not always available. The stigma that is attached to heroin addiction does not lend itself to social acceptance and there are a vast number of people that look at heroin addiction as a moral flaw instead of a deadly disease. To help change this view of the heroin addict might generate more support in finding a more effective form of treatment.

### **Recommendations**

Current medications being used to assist with withdrawal and cravings, have their own addictive properties, so future research could attempt to isolate a medication that has anti-addictive properties. There is currently a drug being used in other countries that has anti-addictive qualities but is banned in the United States due to the hallucinogenic properties. Donnelly (2011) reported that ibogaine is used in many other countries as an effective medication to use for serious drug addictions, such as with opiates. Ibogaine is a naturally occurring psychoactive drug that is made from the root of the *Tabernanthe iboga* shrub in West Africa (Donnelly). While it has been used for centuries for spiritual ceremonies, it has also been used for medicinal purposes.

Donnelly reported that it was discovered in 1962 that ibogaine alleviated the craving for heroin during an experiment that included a group of college students, with seven of them being heroin addicts. The experiment was to determine the therapeutic value of hallucinogenic drugs (they were not illegal at this time) in which they inadvertently discovered that ibogaine actually relieved their craving for heroin. Donnelly stated that one of the students, Lotsof, ceased using heroin and all other drugs, as well as most of the other members of the group that were addicts, during the six months that followed the initial dose of ibogaine.

Donnelly expressed her dismay at the drug being pulled from the United States market during the 1960s. The author stated that the studies that were conducted on ibogaine showed great promise of alleviating and eliminating craving so the addict can focus on the psychosocial changes needed to be made in their life. She stated that it was due to the extreme effectiveness of ibogaine that the drug was made illegal; pharmaceutical companies have decreased clientele when a drug eliminates the problem.

The drug is considered a Schedule I controlled substance in the United States and is argued that the hallucinogenic properties cause the drug to have no medicinal value, and in fact causes safety concerns (Donnelly). She stated that studies have shown the drug effective enough for more research to be conducted to find a way to isolate the effective part of the shrub and eliminate the hallucinogenic properties. It is her opinion that sadly, there simply is no profit to be made on a drug that only has to be ingested one-two times to show significant decrease in symptoms, and therefore does not warrant further research or study.

It is very disheartening when a drug that is proven effective cannot be used due to the lack of monetary value. It is understandable to raise questions about the use of ibogaine due to the safety concerns of using the drug in its present state, but it is extreme to not explore the

possibilities that the drug can bring to the heroin addict. If the drug were removed from the Schedule I list of medications, it could be considered for research. While is not considered a cure for heroin addiction, the drug has the potential to give the addict hope for recovery and a future.

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