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# The Development and Implementation of Nurse-Managed Community-Based Medication Assisted Treatment Services for an Underserved Non-Metropolitan Northern California Community

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The Development and Implementation of Nurse-Managed Community-Based Medication  
Assisted Treatment Services for an Underserved Non-Metropolitan Northern California  
Community

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**Table of Contents**

**Section I: Introduction**

Background Knowledge..... 7

Problem Description..... 8

Specific Aims..... 11

PICOT..... 12

Search Process..... 12

Evidence Appraisal Tool..... 13

Review of the Evidence..... 13

Theoretical Framework..... 14

**Section II: Methods**

Setting..... 16

Context..... 17

Key Stakeholders..... 18

Communication Matrix..... 19

GANTT Chart..... 19

Gap Analysis..... 20

SWOT Analysis..... 20

Budget..... 22

Interventions..... 25

Method of Evaluation..... 29

Analysis..... 31

Ethical Considerations..... 31

<b>Section III: Results</b> .....	32
<b>Section IV: Discussion</b>	
Summary.....	41
Interpretation.....	43
Limitations.....	44
Conclusion.....	45
<b>Section V: Other Information</b>	
Funding.....	46
<b>References</b> .....	47
<b>Appendices</b>	
Appendix A: DNP Statement of Non-Research Determination Form.....	54
Appendix B: Letter of Approval from CoRR Grass Valley.....	57
Appendix C: SWOT Analysis.....	58
Appendix D: Grant Budget.....	59
Appendix E: Grant Reporting Monthly Invoice Form.....	61
Appendix F: Budget and Cost Benefit Analysis.....	62
Appendix G: Work Breakdown Structure.....	64
Appendix H: Communication Plan.....	65
Appendix I: Gap Analysis.....	66
Appendix J: GANTT Chart.....	67
Appendix K: MAT Wednesday Pilot Program Schedule CoRR Grass Valley.....	68
Appendix L: Updated Maintenance Therapy Suboxone Progress Note for MAT.....	69
Appendix M: CoRR Wednesday MAT Group Protocol.....	71

Appendix N: Standard Procedures for the Nurse Practitioner at CoRR..... 72

Appendix O: Patient Satisfaction Survey..... 93

Appendix P: Provider Satisfaction Survey..... 94

Appendix Q: MAT Group Benchmark Data..... 95

Appendix R: Review of the Evidence..... 97

## Abstract

**Objectives:** The purpose of this Doctorate in Nursing Practice (DNP) project was to improve health outcomes among underserved residents of Nevada county by increasing access to inter-professional team-based medication assisted therapy (MAT) for opioid use disorder. The over-arching goal of this DNP project was to develop evidence based, interdisciplinary, nurse-managed MAT services through the initiation of the pilot program for the newly developed MAT patient delivery system and the development of evidence-based nurse practitioner process protocols.

**Methods:** This DNP project involved the coordination of an evidence-based, structured, nurse-managed MAT group on Wednesdays at Community Recovery Resources (CoRR) Grass Valley. The group was led by an interdisciplinary team and was attended by patients who were on a stable dose of an opioid agonist medication. The patients were required to attend the newly structured Wednesday group to obtain their Suboxone medication refill and any clinical concerns that the patient had or issues with their current maintenance therapy dose could be addressed by the provider at that time. Education regarding opioid use disorder, the use of Suboxone in the treatment of opioid use disorder as well as common side effects of the medication was provided during the group. The DNP author also assisted with the development of evidence-based nurse practitioner process protocols for the clinic site.

**Results:** The retention rate for the patients in the newly developed MAT patient delivery system exceeded the established benchmark goal of 60%. The initial results of the patient satisfaction surveys regarding the MAT program were overwhelmingly positive. In addition, to accommodate the increased number of MAT patients who expressed interest in the new group format, an additional MAT group day was added on Tuesdays with plans to expand the group

format to additional CoRR campuses. The results of the provider satisfaction surveys regarding the MAT program will be added once all results are received.

**Conclusion:** Medication-assisted treatment (MAT) has proven to be the most effective evidence-based treatment option for patients with opioid dependence combined with psychosocial treatment. Treatment of opioid misuse disorder with buprenorphine and naloxone and/or buprenorphine has been proven to be safe and an effective treatment option in the office-based setting to decrease opioid use and cravings. Due to the new and evolving nature of the field of substance abuse and medication assisted treatment, it would be beneficial to obtain further research regarding best practices for providing MAT services to underserved non-metropolitan communities.

Keywords: *medication-assisted treatment, opioids, substance use disorder, drug abuse, heroin, overdose deaths, opioid addiction, buprenorphine, opioid related disorders, rural, primary health care, mortality, and safety net.*

## **Section I: Introduction**

### **Background Knowledge**

The American Society of Addiction Medicine (2016) characterizes addiction as a “primary, chronic and relapsing brain disease characterized by an individual pathologically pursuing reward and/or relief by substance use and other behaviors.” Opioids are a class of drugs that communicates with opioid receptors on nerve cells in the brain and the nervous system which results in feelings of pleasure and pain relief (American Society of Addiction Medicine, 2016). This category of drugs includes prescription pain relievers such as oxycodone, hydrocodone, codeine, morphine and fentanyl and the illicit drug heroin. The Centers for Disease Control and Prevention (2017) reported that 42,000 Americans died from Opiates in 2016 which surpassed any other year on record. This number includes death from prescription opioids, heroin and fentanyl (Centers for Disease Control and Prevention, 2017). According to the California Healthcare Foundation (2016), California ranks 37<sup>th</sup> for prescription opioid deaths although rural northern California counties had some of the highest overdose death rates in the country and limited access to addiction treatment. The development of Medication Assisted Therapy Services, frequently referred to as MAT services, was initiated in response to the significant increase in heroin and opioid-related overdoses in the United States and the adverse health outcomes associated with opioid addiction (SAMHSA-HRSA Center for Integrated Health Solutions, 2014). According to the SAMHSA-HRSA Center for Integrated Health Solutions (2014), there is increased access to MAT services in many states through the development and reform of Medicaid for those with substance use disorders, although, many do not receive these services do to underutilization or restricted access to these programs. The data indicates a significant need for nurse-managed community-based MAT services, especially in non-



metropolitan Northern California counties, where opioid overdose rates remain high and access to services limited. Community Recovery Resources (CoRR) Grass Valley is a non-profit organization located in the Sierra Nevada foothills serving those with drug and alcohol addiction and related mental health disorders making it an ideal location for the implementation of nurse-managed community-based MAT services, especially since its location is in a high risk non-metropolitan Northern California county (Community Recovery Resources, 2018).

### **Problem Description**

The opioid epidemic in America traces its roots back to the Civil War where opioids we're being prescribed for pain, various illnesses and stress (Center for Substance Abuse Treatment, 2005). As the years passed the demographics of those addicted to opioids shifted to middle- and upper-class white women who were prescribed these medications for "female troubles" and Civil War veterans who were given opioids for medical procedures (Center for Substance Abuse Treatment, 2005). Although, physicians became less inclined to prescribe opioids by the close of the 19th century, and in turn, the amount of Americans addicted to opioids declined. In addition, social attitudes toward opioid addiction shifted from that of compassion and empathy to a society that viewed it as unethical and something that was frowned upon (Center for Substance Abuse Treatment, 2005).

The opioid epidemic continues to be a significant medical and social issue in the United States today with the amount of overdoses due to opioids rising. The Centers for Disease Control and Prevention (2017) reported that 42,000 Americans died from Opioids in 2016 which surpassed any other year on record. This number includes death from prescription opioids, heroin and fentanyl (Centers for Disease Control and Prevention, 2017). Alarming, in the United States, drug overdoses are the leading cause of injury death and the rate of drug overdose deaths

is increasing in non-metropolitan areas compared to urban areas (Centers for Disease Control, 2018). Mack, Jones and Ballesteros (2017) found in their report that the prevalence of drug use in non-metropolitan areas was lower than that of their urban counterparts but the ramifications of drug use in rural areas was increased (i.e. diagnosed with Hepatitis C virus or HIV). In addition, the authors stated that availability and access to substance abuse treatment services was less prevalent in non-metropolitan communities (Mack, Jones, & Ballesteros, 2017). Noonan (2017) details the disparities that non-metropolitan communities face such as socio-economic factors, health practices and access to health care services which makes these communities vulnerable to the opioid epidemic.

Although the total opioid related death rates in California are lower than the numbers in other states, there remains specific counties in California that have some of the highest opioid prescribing rates and death rates in the United States (Joshi & Urada, 2017). Rural Northern California counties have the leading number of opioid prescriptions per 1,000 residents and prescription opioid related deaths per resident is also highest in these same counties (Joshi & Urada, 2017). Furthermore, Joshi and Urada (2017) state that while Nevada, El Dorado, Colusa, Mendocino, Del Norte and Humboldt counties have some of the highest overdose death rates, fewer than 10 patients were enrolled in opioid treatment programs in 2016. In addition, in 2016, the top eight counties in Northern and Central Eastern California with the highest number of opioid overdoses did not have Narcotic Treatment Programs (NTP) (Joshi & Urada, 2017). The data highlights a significant need for treatment options for this patient population specifically in non-metropolitan Northern California counties who remain the hardest hit by the opioid epidemic in California.

In response to the opioid epidemic in California, the state developed a California Hub and Spoke System (H&SS) included in the MAT Expansion Opioid State Targeted Response (STR) grant program which is based on the Vermont Hub and Spoke Model (Darfler et al., 2018). The Vermont Hub and Spoke Model is based on developing a structured specialty and referral network for both higher levels of care and office-based treatment environments (Darfler et al., 2018). The California Hub and Spoke MAT Expansion Program was created to “improve, expand, and increase access to MAT services throughout the state, especially in counties with the highest overdose rates” (Darfler et al., 2018). The goal of this program is to increase the number of providers (i.e. physicians, nurse practitioners, physician assistants) who are prescribing buprenorphine for opioid misuse disorder which in turn would make MAT more accessible for this patient population in the highest risk regions of the state (Darfler et al., 2018).

MAT in conjunction with psychosocial treatment has been shown to be the most effective evidenced based treatment option for this patient population (Jones, 2018). There are several medication options for MAT, but this paper and DNP project focused on Buprenorphine. Buprenorphine is an opioid agonist/antagonist that obstructs the effects of other narcotics while at the same time reducing the withdrawal risk and has several different formulation options (Center for Substance Abuse Treatment, 2016). An advantage of Buprenorphine in comparison to Methadone treatment for opioid dependency is that Buprenorphine is the first medication that is authorized to be prescribed and given in a healthcare provider’s office instead of a highly structured clinic increasing patient access to treatment (Center for Substance Abuse Treatment, 2016). Although, the use of this medication is not intended to be in isolation and is most effective in combination with counseling and behavioral therapy representing a comprehensive “whole-patient approach” (Center for Substance Abuse Treatment, 2016). Physicians are

mandated to attend an 8-hour training session to be granted a Drug Enforcement Agency (DEA) waiver to have prescribing ability of Buprenorphine and prescribing ability for other health care providers is broadening (Jones, 2018).

The location of Community Recovery Resources (CoRR) Grass Valley in a non-metropolitan Northern California county made it an ideal location to serve a community at high risk for prescription and illicit opioid dependence and opioid related death. As previously discussed, the research indicates that non-metropolitan communities have high rates of prescription and illicit opioid use and related deaths and decreased access to medication assisted therapy. In addition, according to the Community Recovery Resources (CoRR) Chief Executive Officer (CEO), approximately 75% of people receiving services at CoRR are low income (Curtis, 2018). This presented an opportunity to better serve this high-risk community through the development and implementation of a nurse managed community-based medication assisted therapy services, through the support of the California H&SS grant, to address and combat the effects of the opioid epidemic in this area and support continued sobriety and health and well-being in this patient population.

### **Specific Aims**

The over-arching aim of this DNP project was to improve health outcomes among underserved residents of Nevada county by increasing access to inter-professional team-based MAT for opioid use disorder through the development of evidence based, interdisciplinary, nurse-managed MAT services through the initiation of the pilot program for the newly developed MAT patient delivery system and the development of evidence-based nurse practitioner process protocols. An aim statement was created to address the proposed programs intended improvement to practice and is as follows, by March 2019, Community Recovery Resources

(CoRR) Grass Valley Campus will develop and implement nurse-managed community-based medication assisted treatment services in Nevada county to improve access and health outcomes for those with opioid use disorder with a retention rate benchmark goal of 60% for patients in the program. In addition, based on the success of this DNP project, an aim is to expand the nurse managed-community based medication assisted treatment services to be offered on additional days at the CoRR Grass Valley campus as well as to additional campus locations.

### **PICOT**

The PICOT question developed for the aforementioned DNP project is as follows: In patients with opioid use disorder in an underserved non-metropolitan Northern California community, will increasing access to interprofessional team-based MAT for opioid use disorder improve health outcomes?

### **Search Process**

A review of the literature was conducted to examine the lack of access to MAT for underserved residents in non-metropolitan communities with opioid misuse disorder. In addition, a literature search was conducted to determine the current demographic landscape of illicit and prescription opioid dependent users and the economic impact of prescription opioid overdoses, abuse and dependence. Although there are several options for maintenance therapy for opioid dependence, the focus of this DNP project and research was specifically on office-based use of buprenorphine-naloxone. Lastly, the research conducted also evaluates the decreased risk of other comorbidities, such as Hepatitis C, in opioid dependent patients who receive opioid agonist therapy. The key words used in the search process were: *medication-assisted treatment, opioids, substance use disorder, drug abuse, heroin, overdose deaths, opioid addiction, buprenorphine, opioid related disorders, rural, primary health care, mortality, and safety net*. The databases

utilized in the search were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, Google Scholar and Cochrane. The search was conducted in September-November of 2018 and generated 107 articles. The inclusion criteria for articles that were selected were articles published between the years of 2001-2018, those written in English, those examining illicit and prescription opioid use, medication assisted therapy for opioid abuse/dependence, demographic characteristics of opioid misuse and the economic impact of opioid overdose, abuse and dependence. The exclusion criteria included articles not written in English and those published before 2001.

### **Evidence Appraisal Tool**

The research articles selected for this DNP project were appraised utilizing the John Hopkins Evidence-Based Practice (JHNEBP) Research Evidence Appraisal Tool (Appendix R). This rating scale examines the strength of the evidence (i.e. Level I-V) and the quality of the evidence (i.e. A-C).

### **Review of the Evidence**

The opioid epidemic remains at the forefront as a significant medical and social issue in the United States today. Although California as a state has lower opioid related death rates when compared to the numbers in other states, specific counties in California continue to have some of the highest opioid prescribing rates and death rates in the United States (Joshi & Urada, 2017). As previously mentioned, Joshi and Urada (2017) further state that specifically counties in rural Northern California counties have some of the highest prescription opioid prescribing rates and prescription opioid related death rates in the country. Cicero et al. (2014) describes the demographic shift in Heroin users, many previously prescription opioid dependent, from minority inner city users to Caucasian men and women living in non-metropolitan areas.

Although the data has demonstrated a significant amount of opioid misuse and dependence in non-metropolitan areas, Rosenblatt et al. (2015) report that only 3% of primary care providers had received the Drug Enforcement Administration (DEA) DATA waivers which represents the biggest group of providers in non-metropolitan areas in the U.S, indicating a lack of access to office-based treatment for opioid disorders in rural areas. In addition, Jones (2018) state that health care centers located in non-metropolitan areas were less likely to provide on-site buprenorphine treatment.

Jones (2018) reports that the most effective evidence-based treatment option for patients with opioid dependence is MAT in conjunction with psychosocial treatment. Furthermore, research conducted by Renner et al. (2003) concluded that treatment with combination buprenorphine and naloxone and buprenorphine were safe for use and a reduction in the use of opiates and cravings were seen for patients that were opiate dependent and receiving these opioid agonist medications in the office-based setting. In addition, a study conducted by Tsui et al. (2014) found that the use of opioid agonist therapy, either methadone or buprenorphine, may help to prevent the contraction of hepatitis c infection in this patient population. Increased access to opioid agonist treatment (i.e. methadone or buprenorphine) can also be correlated with a reduction in the number of heroin overdose deaths (Schwartz, 2013).

### **Theoretical Framework**

Treatment of the opioid dependent patient is multi-faceted and dynamic and applying an ecological model for health promotion in this patient population addresses both individual and social environmental factors allowing for more comprehensive interventions and treatment modalities (McLeroy, Bibeau, Steckler & Glanz, 1988).

The ecological perspective is centered on the idea that behavior is affected by “multiple levels of influence” and that an individual’s behavior both affects and is affected by the social environment (U.S. Department of Health and Human Services, National Cancer Institute, 2005). This framework focuses on the interaction of and the interconnection between the different levels of influence of a health problem (U.S. Department of Health and Human Services, National Cancer Institute, 2005). McLeroy, Bibeau, Steckler and Glanz (1988) define five levels of influence when looking at health related behaviors and conditions which consist of 1) intrapersonal or individual factors; 2) interpersonal factors; 3) institutional or organizational factors; 4) community factors; and 5) public policy factors (U.S. Department of Health and Human Services, National Cancer Institute, 2005). Through targeted interventions at all levels of influence a patient’s unhealthy behavior(s) can be changed and modifying the social environment can lead to behavior changes in the individual as well (McLeroy, Bibeau, Steckler & Glanz, 1988).

Providers can target interventions at the intrapersonal level by focusing on the patient’s distinct characteristics that impact their behavior (U.S. Department of Health and Human Services, National Cancer Institute, 2005). Interventions at the intrapersonal level for the opioid dependent patient would include screening measures to prevent further adverse outcomes and educational programs directed at opioid misuse. Based upon findings of screening measures employed, the provider can institute interventions to treat the opioid dependency such as MAT, counseling, support groups etc. Interventions at the inter-personal level would consist of peer support groups (i.e. Narcotics Anonymous, MAT groups), family support groups, group therapy and residential or transitional living support groups. The community level of influence includes institutional and community factors as well as public policy (U.S. Department of Health and



Human Services, National Cancer Institute, 2005). Efforts at the institutional level, when examining opioid dependence, focus on adhering to trusted guidelines for prescribing opioids (Centers for Disease Control and Prevention, 2017) and abiding by state prescription drug monitoring policies (i.e. Cures). Examples of community factors would include social media opioid misuse awareness campaigns and the distribution of Narcan kits to the community. Lastly, an example of interventions directed at the public policy level would include legislation focused on increasing access to medication-assisted therapy for opioid dependent patients in high risk non-metropolitan communities.

This DNP project employed the ecological framework when examining the opioid epidemic and in the development of interventions for the patient with opioid use disorder as this perspective applies a multilevel approach to a health problem and incorporates the role of the social environment. Utilizing the ecological framework as a guide for the DNP project intervention allowed for the provision of comprehensive, interdisciplinary care for the patient with opioid use disorder.

## **Section II: Methods**

### **Setting**

The DNP project implementation site is CoRR in Grass Valley and it is a non-profit organization that has been serving the community since 1974 through substance abuse treatment programs and providing mental health services since 2002 (Community Recovery Resources, 2018). CoRR Grass Valley is located in the Sierra Nevada foothills and offers extensive substance abuse treatment and primary care treatment. The mission of CoRR is to “support the communities [they] serve with a full spectrum of wellness-focused programs to reduce the social, health and economic impact on families and children from all types of substance abuse and

behavioral health issues” (Community Recovery Resources, 2018). The organization focuses on a “whole-person approach in treating substance abuse, related addictions and associated behavioral issues” and has five other campuses in the region (Community Recovery Resources, 2018).

The clinic serves a non-metropolitan high risk opioid dependent population that are either being treated as an outpatient, in residential treatment or are in transitional living. Nevada county is a non-metropolitan county that is located between Sacramento and Tahoe. It has a population of approximately 99, 814 and is predominantly Caucasian (85.2%) (U.S. Census Bureau, 2017). The median household income is \$57,429 which falls below the median income for California (\$63,783) (U.S. Census Bureau, 2017). CoRR has been identified as the primary nonprofit provider of substance use disorder and related behavioral services for Nevada and Placer counties in California. In Nevada county it is estimated that there are 230-594 patient with opioid use disorder that do not have local access to MAT (Clemens-Cope, Epstein, & Wissoker, 2018). Furthermore, in Placer county it is estimated that 686-2,149 patients with opioid use disorder who do not have local access to MAT (Clemens-Cope, Epstein, & Wissoker, 2018).

The treatment team consists of a physician, nurse practitioner, physician assistant, program coordinator and two medical assistants. CoRR Grass Valley received a California Hub and Spoke (H&SS) System Grant to improve and expand access to medication-assisted therapy for opioid dependent patients (Appendix D, E). The clinic was in the initial stages of utilizing the grant funds for medication-assisted treatment and did not have approved process protocols, updated prescribing policies for buprenorphine and naltrexone or updated MAT treatment forms at the initiation of the DNP project.

## **Context**

The DNP project was implemented in a community-based setting at a substance use recovery clinic in a non-metropolitan county in northern California. The identified patient population were underserved residents of a non-metropolitan community who had opioid use disorder.

Prior to the implementation of the project, the DNP student collaborated with the Medical Director, Nurse Practitioner, Physician's Assistant, Clinical Coordinator and the Substance Abuse Counselor to develop a nurse managed, interdisciplinary, evidence-based structured clinical schedule, protocol and workflow for the MAT group patients on Wednesdays (Appendix K, M) and discuss the logistics of the project. There were 47 patients with opioid use disorder, who were on a stable maintenance dose of Suboxone, who participated in the MAT Wednesday pilot program. The MAT Wednesday group was led by the Substance Abuse Counselor, in collaboration with the Medical Director, Nurse Practitioner, Clinical Coordinator DNP student and Medical Assistant for approximately one hours in conference room #104 at the CoRR Grass Valley campus. The Medical Director, Nurse Practitioner and DNP student were available to answer any questions the patients may have during the group and to see patients after group who had a clinical concern or needed an adjustment of their maintenance Suboxone dose. A comprehensive description of the interventions of this DNP project can be found in the interventions section of this paper.

### **Key Stakeholders**

The primary stakeholders of this DNP project were the patients and families served and the Nevada and Placer communities. Feedback from the primary stakeholders regarding the newly developed MAT group was received through the use of anonymous patient satisfaction surveys administered in February 2019 and again in April 2019 for continuous evaluation of the strengths and weaknesses of the program. The organizational stakeholders were Ariel King

Lovett (Chief Executive Officer), Dr. Scott Kellerman (Medical Director, project oversight), Dr. Alexa Curtis, PhD, MPH, FNP-BC (project coordinator), Michelle Otten (Clinical Coordinator), and Lauren Knapp, DNP student intern as the project manager. The organizational stakeholders were involved in the development and revision of the MAT group pilot program through interdisciplinary weekly meetings prior to the start of the group and through email. The implementation of nurse managed community-based medication assisted treatment services for an underserved non-metropolitan northern California community at CoRR Grass Valley was sanctioned by the CoRR Medical Director, Dr. Scott Kellerman, the CoRR Nurse Practitioner, Dr. Alexa Curtis, and the CoRR Clinical Coordinator Michelle Otten. The aforementioned project proposal was approved by committee chair Dr. Alexa Curtis. A written letter of support from Community Recovery Resources (CoRR) is included (Appendix B). Lastly, prior to the implementation of the DNP project a memorandum of agreement (MOU) was signed between the University of San Francisco (USF) and the project site, Community Recovery Resources (CoRR) in Grass Valley.

### **Communication Flow**

The fluid communication flow between all members of the interdisciplinary team was imperative for the success of the DNP project. The DNP student was in direct communication with the Committee Chair and members of the collaborative treatment team at CoRR Grass Valley throughout all stages of the project. Any revisions to the format of the MAT group, updated clinical documentation or change in the process or protocols was communicated to all members of the team. A detailed communication plan was created for the DNP project (Appendix H).

### **GANTT Chart**

A GANTT chart was created to organize each step of the DNP project and highlight the projected milestones (see Appendix J). Prior to the initiation of the project, a literature review was conducted regarding opioid dependence and medication assisted therapy for opioid dependence. After the DNP clinical improvement project topic was approved, the DNP student then created a project team. Meetings with the DNP student and the stakeholders and members of the health care team at the project implementation site were conducted. The DNP student, in collaboration with the Clinical Coordinator and Substance Abuse Counselor, identified patients to be enrolled in the structured MAT Wednesday clinic groups. The development of MAT group policies and workflows, updated prescribing policies, process protocols and patient and provider resources were developed at this time. The DNP project implementation occurred over a four-month period beginning in January to April 2019 after which data was collected analyzed. A Patient satisfaction survey was disseminated in February of 2019, one month after the initiation of the project implementation, and again in April of 2019 to receive feedback from the MAT patients regarding the program and to allow for any revisions to be made to the format of the group. A provider satisfaction survey was also conducted in the month of April 2019. Lastly, the final DNP written project began in April 2019 and the presentation of the project and results were presented to the USF faculty in May 2019.

### **Gap Analysis**

The purpose of a gap analysis is to improve processes through examining the current state of the issue being addressed, determine the future goal of where one would like that state to be, and create a plan of how to achieve that desired state. A gap analysis was conducted for the proposed DNP project (Appendix I). A study conducted by Jones (2018) found that health centers in non-metropolitan areas were less likely to provide on-site buprenorphine treatment and

had decreased odds of having an interest in expanding services to provide buprenorphine treatment. Furthermore, research conducted by Rosenblatt, Andrilla, Catlin, and Larson (2015) concluded that most counties in the United States did not have access to waived physicians to prescribe buprenorphine-naloxone and suggested increasing access to office-based opioid dependence treatment especially in rural areas where access to such services was limited. Currently, as evidenced by the data, there is limited access to MAT services in non-metropolitan areas where opioid prescription rates and prescription opioid related deaths remain high. It is essential that in the future there is increased access to community-based medication assisted therapy for opioid dependence for this high-risk population to counteract the ravaging effects of the opioid epidemic on high risk communities. Community Recovery Resources located in Grass Valley is located in Nevada county, a non-metropolitan community in Northern California that has a high risk opioid dependent population making it an ideal site for practice improvement.

### **SWOT Analysis**

A SWOT analysis was conducted to identify the strengths, weaknesses, opportunities and threats that could affect the implementation of the nurse-managed community-based medication assisted treatment services for the underserved community of Nevada county (see Appendix C). A valuable strength of this project is that it addressed the issue of inadequate access to MAT services for opioid dependent patients in non-metropolitan areas, especially in rural Northern California counties where opioid prescription rates and opioid related death rates are highest. Additional strengths of this project were the potential impact it could have on the rate of prescription opioid related deaths and decreased rates of transmission of communicable diseases such as Hepatitis C. Furthermore, the DNP project could result in a potential cost savings

through the decreased utilization of inpatient detoxification services and the increased distribution of Narcan kits to the community and high-risk groups.

A weakness of the project is the lack of waived prescribers to meet the treatment needs of the MAT patients. In addition, other weaknesses are the lack of patient transportation to CoRR Grass Valley for treatment and patient demographics such as unstable housing, geographical distance from the clinic and lack of support system. Lastly, other weaknesses are patients not being covered by the H&S grant and those who are unable to pay for treatment and patient adherence to Suboxone induction/maintenance therapy.

The DNP project offers an invaluable opportunity to serve the community of Nevada county and those patients that belong to vulnerable, high risk groups. This project provides the opportunity to increase access to MAT services to this non-metropolitan community and reduce the number of illicit and prescription related deaths. There is also an opportunity for continued H&S grant funding for the MAT program at CoRR. An additional opportunity that this project presents is to reduce the transmission of communicable diseases in this high-risk population through the use of opioid agonist medication adherence and education. Lastly, there is an opportunity to provide education to patients, families and the community regarding the use of Narcan and its lifesaving properties and also dispense physical Narcan kits.

The SWOT analysis conducted identified the following potential threats to the project: loss of H&SS funding, opioid dependent patients in need of MAT services unable to access treatment, pharmacies out of stock of opioid agonist medication, patients leave MAT treatment, no change in the rate of illicit and prescription opioid related deaths and a loss of waived prescribers.

## **Budget**

The medication-assisted treatment services at CoRR Grass Valley is funded through the California Hub and Spoke (H&SS) Grant (Appendix D, E). The clinic is directly reimbursed for the salary and benefits of one FTE Nurse and one FTE Clinician/Counselor per 100 H&S patients (i.e. 0-20 patients = 8 hrs. paid per week, 20-40= 16 hrs. paid per week, etc.). For Physicians and Mid-Level waived providers the H&S grant reimburses \$180 for Suboxone induction office visits for uninsured and underinsured patients and \$100 for Suboxone follow-up visits. The grant also reimburses for patient transportation, physician and mid-level time in training and MAT training materials. The Clinical Coordinator submits a monthly invoice form to Aegis for reimbursement, whom the H&S grant is funded through, and reports the monthly personnel costs (i.e. MAT Nurse, MAT clinician), Provider H&S induction and follow-up, treatment services (drug testing, human immunodeficiency virus (HIV) and Hep-C testing, Suboxone/Naloxone/Vivitrol costs, miscellaneous services (i.e. bus passes, gas/fuel cards, trainings, infrastructure) and outreach and advertising expenses (Appendix D, E).

The clinic personnel, providers, treatment services and miscellaneous services are reimbursed through the H&SS Grant and were therefore not included in the DNP project budget. A budget for the development and implementation of this DNP project was created and included direct and indirect costs (Appendix F). Direct costs incurred for the project were for materials, coffee and donuts on the first day of the MAT Wednesday group and NP travel costs (i.e. mileage/gas). The cost of materials totaled \$65.78 and included patient satisfaction surveys, handouts, and writing utensils to fill out the surveys. On the first day of the MAT Wednesday pilot program coffee and donuts were provided for the patients that attended as well as the interdisciplinary team and the cost totaled \$50. Lastly, the DNP student traveled by car to the clinic site in Grass Valley which is approximately 98 miles a week, for at least two Wednesdays



a month, for four months totaling \$240 in fuel cost. The total cost of direct expenses was approximately \$356 paid out-of-pocket by the DNP student. The indirect expenses accounted for the DNP student's time and project management and implementation and totaled \$3,904. The total budget, including both direct and indirect expenses was \$4,260.

Florence, Luo, Xu and Zhou (2016) report that prescription opioids are responsible for 70% of fatal prescription drug overdoses and the number of overdose deaths due to prescription drugs is considered to be an epidemic. It is imperative that the economic impact of prescription opioid overdose, abuse and dependence in the United States be understood as this data will influence future clinical practice in treating this patient population, future research and legislation (Florence, Luo, Xu and Zhou, 2016). Florence, Luo, Xu and Zhou (2016) examined the societal costs of prescription opioid abuse, dependence and fatal overdose in the United States based on the most up to date applicable data for the calendar year 2013 (Appendix F). The authors further differentiated between nonfatal costs such as health care, substance abuse treatment, criminal justice and lost productivity and fatal costs defined as lost productivity and health care (Appendix F) (Florence, Luo, Xu and Zhou, 2016). Florence, Luo, Xu and Zhou (2016) estimate that the total economic cost of prescription opioid overdose, abuse and dependence is \$78.5 billion. Furthermore, they report that \$28.9 billion is spent on increased health care costs and substance abuse treatment expenses which accounts for over one third of the total economic cost (Florence, Luo, Xu and Zhou, 2016). Lastly, the authors report that the public sector absorbs roughly one quarter of the estimated total economic cost through expenditures related to health care, substance abuse treatment and criminal justice (Florence, Luo, Xu and Zhou, 2016).

When examining the cost benefit of this project, the total nonfatal cost of prescription

opioid misuse in the United States in 2015 was examined based on data from Florence et al. (2016) (Council of Economic Advisors, 2017). The nonfatal costs include increased healthcare and substance abuse treatment costs (\$29.4 billion), increased criminal justice costs (\$7.8 billion) and reduced productivity among those who did not die of overdose (\$20.8 billion) (Council of Economic Advisors, 2017). It is to be noted that this data includes the average cost estimates for prescription opioid disorders only (Council of Economic Advisors, 2017). The estimated cost to implement the DNP project for a full year was \$12,779. The benefit of implementing the DNP project over the course of year would be increased access to evidence based, interdisciplinary MAT services for high-risk, underserved patients with opioid use disorder in non-metropolitan communities and in turn decrease the increased healthcare costs, criminal justice costs and decreased productivity associated with the diagnosis. The calculated cost benefit ratio of the DNP project was 2.35 which indicates that it is “economically satisfactory” (Tayari, 2018).

### **Interventions**

*Developmental Phase:* During the initial phase of this project research was conducted on the opioid epidemic in the United States, the current demographics of this epidemic, the economic burden of opioid dependency, abuse and overdose and best practices for medication-assisted therapy for opioid dependence and the California Hub & Spoke Grant for MAT services to address the epidemic. The project manager then proposed the clinical improvement project to the Medical Director, Nurse Practitioner, Physician’s Assistant and Clinical Coordinator at CoRR Grass Valley. During this phase the project manager sought educational opportunities to become more knowledgeable about medication-assisted treatment for opioid addiction in opioid treatment programs through reading the Substance Abuse and Mental Health Services Administration (SAMHSA) “Treatment Improvement Protocol TIP 43”, discussing opioid

dependency and MAT practices with CoRR providers and local experts (i.e. Grace Katie Bell, MSN, RN-BC CARN PHN at Chapa De Indian Health), shadowing an experienced MAT provider at El Dorado Community Health Center and reviewing California's Hub and Spoke System Learning Collaborative power point. The project manager also participated in Wednesday morning staff meetings with the Medical Director, Nurse Practitioner, Physician's Assistant and Clinical Coordinator discussing the development of the MAT program at CoRR, complex patient cases and any current clinical issues.

During this phase, the DNP student met with the Clinical Coordinator and Substance Abuse Counselor to determine which patients would be appropriate to participate in Wednesday MAT group classes with the interdisciplinary team, at which time, Suboxone medication refills for maintenance therapy would be dispensed and any patient clinical concerns or medication dosing concerns would be addressed. The DNP student met with her Committee Chair, Dr. Alexa Curtis, and presented the DNP project proposal which was approved for implementation. A memorandum of agreement (MOU) was obtained between the University of San Francisco and the project implementation site, CoRR Grass Valley prior to implementation.

***Educational and Delivery of Interventions into Practice Phase:*** The DNP student led the coordination of the MAT Wednesday group classes with the interdisciplinary team including securing the conference room for the group, communicating with all members of the team, assisting in notifying patients of acceptance into MAT Wednesday group class and opioid agonist medication refill schedule (i.e. attendance at Wednesday class mandatory for medication refill, any clinical concerns can be addressed at Wednesday group class) (Appendix K).

The Wednesday MAT group class was held by Steve Black, Substance Abuse Counselor at CoRR Grass Valley, and all MAT providers were present during the MAT group. The

interdisciplinary team of MAT providers present at the group included the Medical Director, Nurse Practitioner, Clinical Coordinator, DNP student and Medical Assistant(s). The structure of the Wednesday MAT group to include the interdisciplinary team, and behavioral health therapies in conjunction with pharmaceutical management is aligned with best practice for the treatment of opioid use disorder (American Association of Addiction Medicine (ASAM), 2015). Prior to the start of the MAT group, each patient was expected to provide a urine sample for urine drug screen, in concordance with their contract for being on opioid agonist therapy (i.e. Suboxone), and they were to fill out the first page of the Suboxone maintenance therapy progress note (Appendix L). The progress note allowed the patient to communicate with the MAT provider their current maintenance dose of Suboxone, their refill schedule and preferred form of the medication (i.e. SL strips or tablets), how they were doing on their current maintenance dose, if they had used alcohol in the past week and if they had any clinical concerns or needed to be seen by a provider after the group.

The topics covered during the one-hour MAT group were based on subject matter developed by Kaiser Permanente for the standard medical management of opioid dependence with Suboxone in a group setting (Kaiser Permanente, 2015). There was on average, 12 patients present for each MAT group and each patient would do a “weekly check-in” at the start of each group. Each patient would introduce themselves to the group, state how many “sober days” they had thus far, discuss cravings experienced in the last week, benefits/side effects of buprenorphine/naloxone, what self-help meetings they had attended that week and any emotional or physical pain experienced and the coping skills they had utilized. Patients also were able to ask the MAT providers questions regarding Suboxone, side effects they were experiencing or any other clinical concerns in real time during the group and also had the opportunity to meet

with the MAT provider after the group in the clinic to have their concerns addressed. The DNP student, in collaboration with the Medical Director and Nurse Practitioner, also helped to screen and diagnose opioid use disorder for newly admitted patients and provided MAT services to new and established patients at CoRR.

During this phase, the DNP student assisted in the development of new updated prescribing policies procedures (Appendix M) and a specific maintenance therapy progress note for the MAT group (Appendix K). The updated prescribing policies are awaiting final approval by the Medical Director at the time that this paper was written. In addition, modifications were made to the Wednesday MAT group structure and associated documentation based on patient and provider feedback throughout the course of the program. After the initial MAT groups in January, a need was identified for an updated MAT progress note for the groups as some of the documentation was not pertinent for patients attending the group or could not be obtained due to the nature of the group setting as well as other documentation that was needed that was not on the initial form. Due to the positive feedback and interest after the initial MAT Wednesday groups in January, the program was expanded to include an additional MAT group on Tuesdays. A patient satisfaction survey was disseminated in March, two months after the start of the DNP project, to collect patient feedback on the newly implemented program (Appendix N) and allow for any changes to be made. The DNP project implementation occurred over a four-month period although, was extended into practice after the established completion date due to the success of the program with plans to expand to other CoRR locations.

The interventions of this DNP project were guided by the ecological framework as opioid use disorder is multi-dimensional and the different levels of this perspective allow for comprehensive and collaborative treatment for patients with this disorder. The intrapersonal and

interpersonal levels of the ecological framework were addressed through the interventions through the MAT services provided to the patients and families. The institutional and organizational levels of the framework were fulfilled through the creation of updated policies, procedures and process protocols as well as updated MAT group maintenance therapy progress notes. Lastly, the community aspect of the ecological framework was addressed through the DNP student meeting with community experts on opioid use disorder and stakeholders.

### **Method of Evaluation**

During the educational and delivery phase of the project, a paper patient satisfaction survey was administered two months after the project implementation and at project completion to obtain quantitative data regarding MAT services utilizing a Likert scale. In addition, descriptive statistics were obtained in regard to patient age, gender and poverty level. Qualitative data was obtained through a narrative portion of the patient satisfaction survey and also through individual interviews with MAT patients and providers. A provider satisfaction survey was obtained online through Survey Monkey at the completion of the project to gain feedback about the project. Lastly, retention in recovery will be analyzed through the use of MAT group attendance data and will be evaluated against the benchmark of 60% based on the literature (Lagisetty, Klasa, Bush, Heisler, Chopra, Bohnert, 2018).

The objectives of the DNP project were:

1. Increase access to nurse managed, inter-professional, team-based medication assisted therapy (MAT) for opioid use disorder through the attendance of at least 10 patients at the first Wednesday MAT group on January 2<sup>nd</sup>, 2019.

2. The creation of updated policies, procedures and process protocols based on evidence-based practice for Nurse Practitioners at CoRR, in collaboration with the other MAT team members, by April 24<sup>th</sup>, 2019.
3. Measure the success of the newly developed MAT group delivery system in meeting the needs of the patient with opioid use disorder through the calculation of the retention in recovery rate and compare that against the benchmark of 60% in the literature by April 25<sup>th</sup>, 2019.

**Patient Satisfaction Survey.** A paper patient satisfaction survey regarding the MAT Group program on Tuesdays and Wednesdays was given two months after the start of the program in March 2019, and at the project completion in April 2019 (Appendix N). The patient satisfaction survey questions were appropriated from a patient satisfaction survey created by Lee, Arria, Hsu and Wish (2003) for a pilot study that they conducted regarding patient satisfaction with drug treatment in Maryland. The survey was anonymous and consisted of five questions with the last question allowing for a narrative response from the patient. The responses from the two groups of MAT patients were examined and an excel bar graph was created based on the responses from questions one through four. Patterns were identified from the patient responses to the last narrative question on the survey.

**Provider Satisfaction Survey.** An electronic, anonymous, provider satisfaction survey regarding the MAT Group program was created using Survey monkey and sent to the Medical Director, Nurse Practitioner and Clinical Coordinator at the completion of the DNP project. There were four questions created by the DNP student. The first three questions addressed what qualities or characteristics the provider felt made a successful MAT program, what qualities or characteristics they felt made a successful MAT program at CoRR and what they would like to

see changed or improved upon. The last question asked if they would like to see the Tuesday and Wednesday MAT Group continue at CoRR and allowed for a yes or no answer or “other” with a space provided for comments.

### **Analysis**

The quantitative data obtained from the patient satisfaction surveys regarding satisfaction with MAT Group services, utilizing a Likert scale, was entered into an Excel spreadsheet and a bar graph was generated displaying the results of the survey. Descriptive statistics were collected regarding patient age, gender and poverty level/funding status and were displayed in a table. MAT Group attendance data was entered into an Excel spreadsheet, including demographic data such as gender and age range, and the retention rate in recovery was calculated into a percentage to compare with the benchmark of 60% established in the literature. A provider satisfaction survey was administered electronically, which yielded narrative responses to questions and was included in a table.

### **Ethical Considerations**

The proposed DNP project was approved by the University of San Francisco School of Nursing and Health Professions as a quality improvement project exempt from institutional review board (IRB) (Appendix A). In addition, a memorandum of understand (MOU) was signed between the University of San Francisco and Community Recovery Resources (CoRR) prior to the project’s implementation. The project was in compliance with the Health Insurance Portability and Accountability Act (HIPAA) and any and all patient names and/or identifiers were excluded. The protection of participants physical and psychological well-being was of utmost importance throughout the entirety of this project. There were no conflicts of interest. When reflecting on the Jesuit values, the value of “men and women for and with others” and



“contemplative in action” (Regis University, 2018) was demonstrated in this clinical improvement project. The value of “men and women for and with others” is demonstrated through being of service and supporting the “poor and marginalized” (Regis University, 2018). The purpose of this project was to improve health outcomes and increase access to medication-assisted therapy (MAT) to an underserved population with a goal of being of service and supporting those with opioid use disorder with evidenced based practices as this population are often marginalized by society. Furthermore, the value of “contemplative in action” can be seen in this project through the identification of a social problem and the creation of an action plan to address this issue.

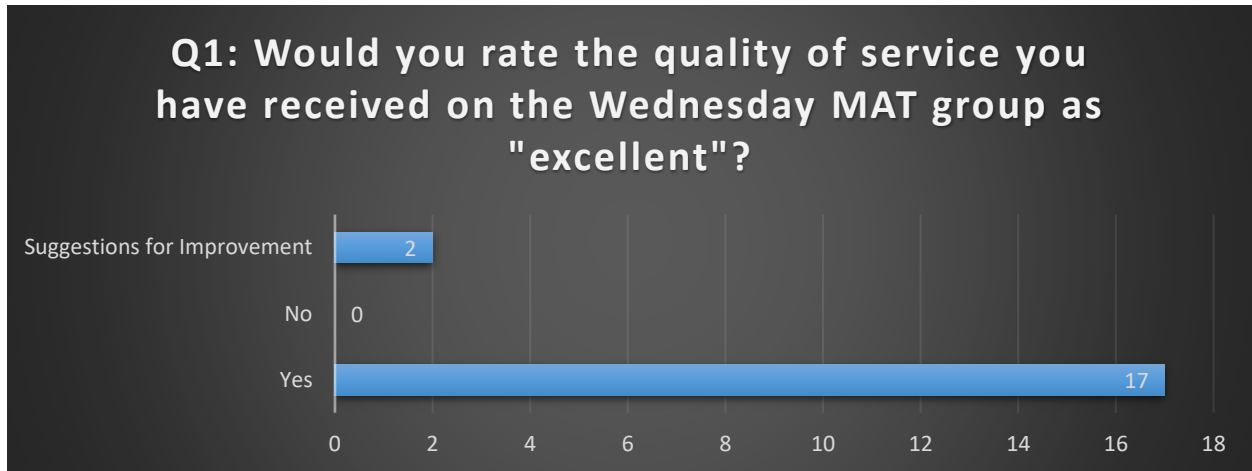
The first provision of the American Nurses Association (ANA) Code of ethics states that the “nurse practices with compassion and respect for the inherent dignity, worth and unique attributes of every person” (American Nurses Association, 2015). Throughout the course of this paper and project implementation, interventions and care have been provided with compassion and respect for the patient and their dignity and worth has been recognized and preserved.

### **Section III: Results**

**Patient Satisfaction Surveys.** A five-question paper patient satisfaction survey was obtained one month after the implementation of the project in February 2019 to provide feedback regarding the MAT services provided on the Tuesday and Wednesday groups yielding 17 respondents (Appendix O). The first question asked, “Would you rate the quality of service you have received on the Wednesday MAT group as “excellent”?” Answer choices included “yes”, “no” or “if not, what suggestions do you have to improve the program?” which included space for a narrative response. One hundred percent of the respondents indicated that the quality of service they had received on the Wednesday MAT groups was “excellent” and two patient wrote a

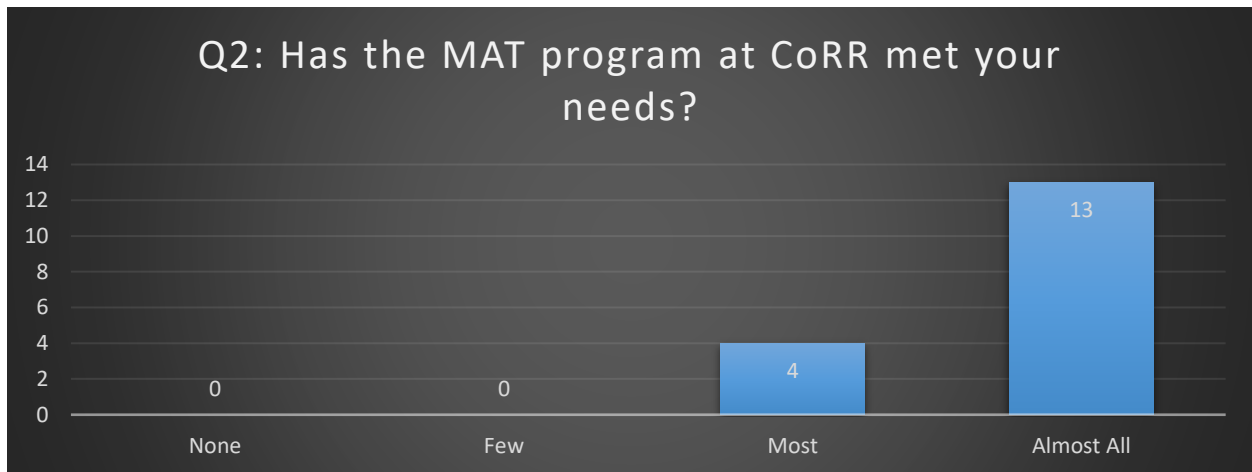
narrative response in addition to circling “yes”, with one patient indicating that “having everyone [there] is perfect for what [they] need right now” and one patient suggesting “less cross talk/interruptions” (Table 1).

**Table 1**



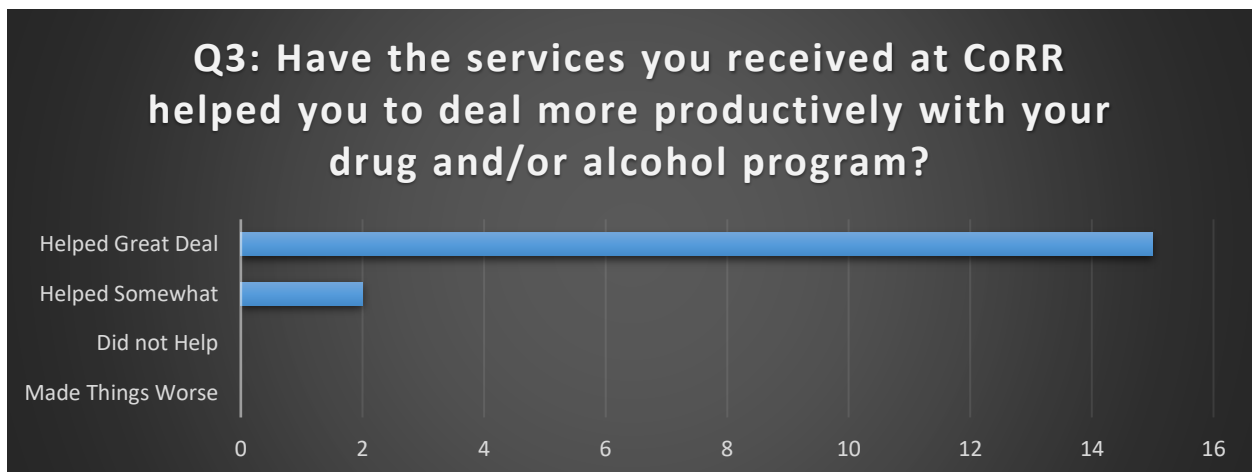
The second question asked, “Has the MAT program at CoRR met your needs?” The answer choices included “none of my needs have been met”, “only a few of my needs have been met”, “most of my needs have been met” and “almost all of my needs have been met.” Seventy-six percent of respondents indicated “almost all of my needs have been met” and 24% indicated that “most of my needs have been met” (Table 2).

**Table 2**



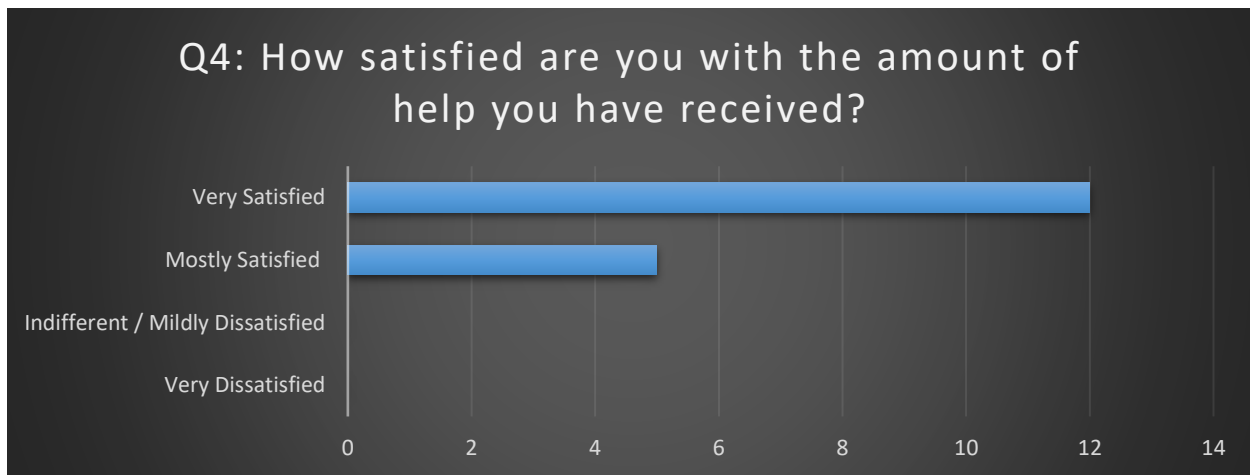
The third patient satisfaction survey question asked, “Have the services you received at CoRR helped you to deal more productively with your drug and/or alcohol program?” The answer choices included “No, they seemed to make things worse”, “No, they didn’t really help”, “Yes, they helped somewhat” and “Yes, they helped a great deal.” Eighty-eight percent of respondents indicated that the services they received at CoRR helped them “a great deal” in dealing more productively with their drug and/or alcohol program and 12% indicated that the services they received at CoRR “helped somewhat” (Table 3).

**Table 3**



The fourth patient satisfaction survey question asked, “How satisfied are you with the amount of help you have received?” The answer choices included “very dissatisfied”, “indifferent or mildly dissatisfied”, “mostly satisfied” or “very satisfied.” Seventy-one percent of respondents indicated that they were “very satisfied” with the amount of help they had received and 29% indicated that they were “mostly satisfied with the amount of help they had received (Table 4).

**Table 4**

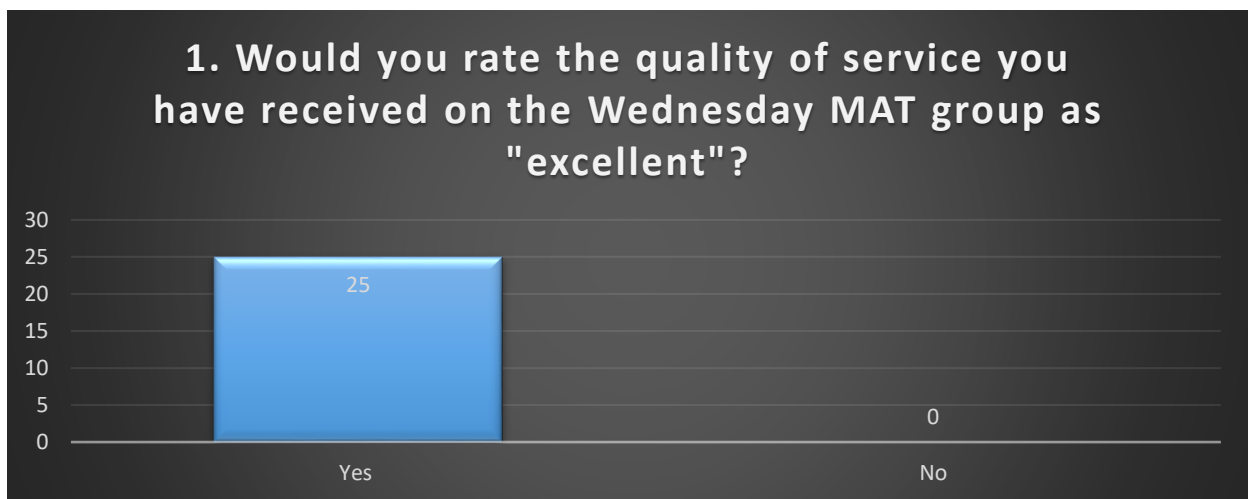


The last question asked if the respondent had “any suggestions for how the MAT program at CoRR can improve” and “What [they] liked about the program or think has been successful thus far?” and a space was provided for a narrative response. When examining the narrative responses to this question, several themes emerged such as the offering of additional MAT group days/times, more support (i.e. help with housing, finances, etc.) and many respondents left a positive response indicating that the program has met their needs. In addition, themes that emerged when patients discussed the benefits of MAT were it “gives you your life back”, controls cravings, decreases drug seeking behaviors, saves money, improved health and improved relationships (Curtis, Knapp

& Otten, 2019). At the time of collection for the initial patient satisfaction survey, the Wednesday MAT group had an average of 103 participant “sober days” (3 months).

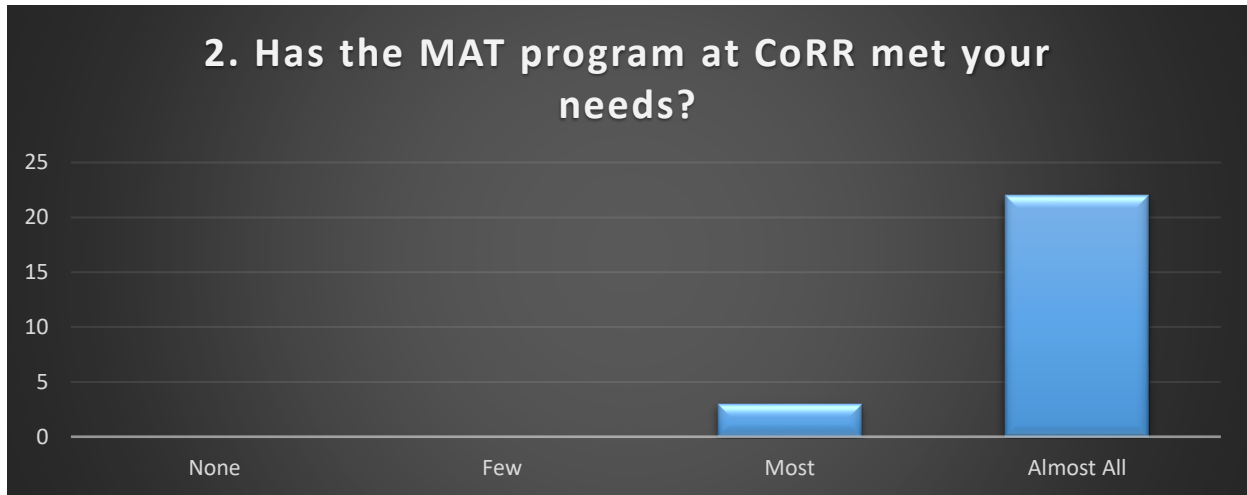
A second patient satisfaction survey was collected at the completion of the DNP project in April 2019 yielding 25 respondents. The first question asked, “Would you rate the quality of service you have received on the Wednesday MAT group as “excellent”? Answer choices included “yes”, “no” or “if not, what suggestions do you have to improve the program?” which included space for a narrative response. One hundred percent of the respondents indicated that the quality of service they had received on the Wednesday MAT groups was “excellent” (Table 5).

**Table 5**



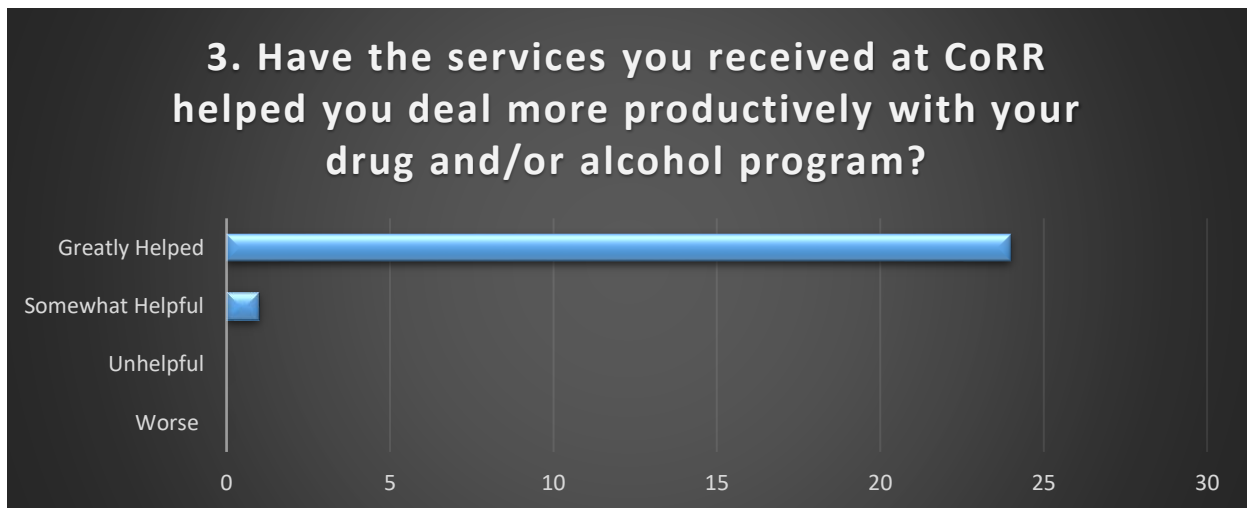
The second question asked, “Has the MAT program at CoRR met your needs?” The answer choices included “none of my needs have been met”, “only a few of my needs have been met”, “most of my needs have been met” and “almost all of my needs have been met.” Eighty-eight percent of respondents indicated that the MAT program at CoRR had met “almost all of my needs have been met” and 12% indicated that “most of my needs have been met” (Table 6).

**Table 6**



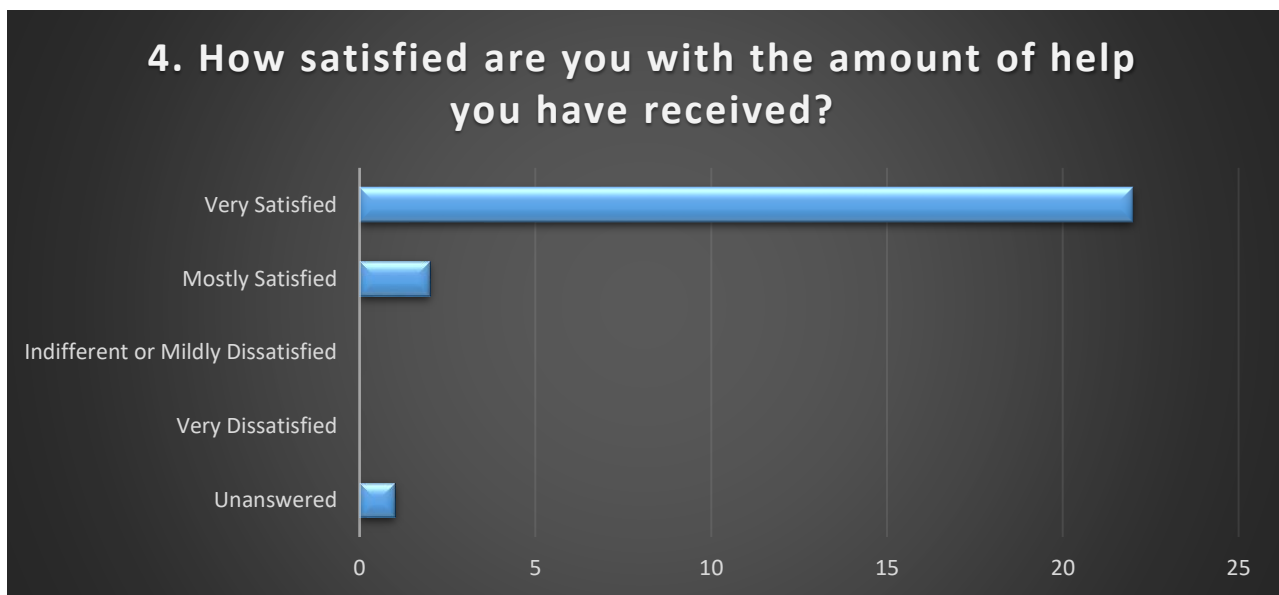
The third patient satisfaction survey question asked, “Have the services you received at CoRR helped you to deal more productively with your drug and/or alcohol program?” The answer choices included “No, they seemed to make things worse”, “No, they didn’t really help”, “Yes, they helped somewhat” and “Yes, they helped a great deal.” Ninety-six percent of respondents indicated that the services that they received at CoRR helped them “a great deal” in dealing more productively with their drug and/or alcohol program and 4% of respondents indicated that the services they received “helped somewhat” (Table 7).

**Table 7**



The fourth patient satisfaction survey question asked, “How satisfied are you with the amount of help you have received?” The answer choices included “very dissatisfied”, “indifferent or mildly dissatisfied”, “mostly satisfied” or “very satisfied.” One respondent left this question blank thus there were only 24 responses total for this question. Ninety-two percent of respondents indicated that they were “very satisfied” with the amount of help they had received and 8% indicated that they were “mostly satisfied with the amount of help they had received (Table 8).

**Table 8**



The last question asked if the respondent had “any suggestions for how the MAT program at CoRR can improve” and “What [they] liked about the program or think has been successful thus far?” and a space was provided for a narrative response. When answering what they liked about the program or think has been successful, many of the respondents wrote that they were thankful for the staff and felt like they “really care” and expressed that they were “getting their life back.”

In addition, many expressed that they felt the amount of support they received was a success of the program. Respondents also indicated that they felt the MAT program helped to lessen their cravings and keep them sober and that the program was patient centered and need based. Furthermore, several respondents indicated that they liked interacting with people that were also on Suboxone. Suggestions from respondents for how the MAT program at CoRR can improve were to offer more group times and provide more information on Suboxone.

**Provider Satisfaction Survey.** An electronic, anonymous, provider satisfaction survey regarding the MAT Group program was created using Survey monkey and sent to the Medical Director, Nurse Practitioner, Substance Abuse Counselor and Clinical Coordinator at the completion of the DNP project at completion of the DNP project in April 2019 (Appendix P). The survey included three questions that allowed for the providers to answer in the narrative format. The survey yielded three responses.

The first question asked what qualities the provider felt made a successful MAT program. The providers indicated that consistency, organization, adherence to clinical standards, patient centered care, boundaries, holistic care, flexibility and sustainable billing practices contributed to a successful MAT program.

The second question asked what qualities providers felt made the MAT program at CoRR successful. The respondents indicated that the quality of care provided by the staff, teamwork, adherence to clinical standards, patient centered care, flexibility, active group meetings with counselors and providers, and comprehensive care for those with opioid use disorder made the MAT program at CoRR successful.

The last question asked that providers indicate what they would like to see improve or change in regard to the MAT program at CoRR. Providers indicated that they would like to see the



implementation of electronic medical records and improved billing procedures. One respondent indicated they would like more extensive training on the policy and procedures at the clinic. In addition, respondents also indicated they would like to see the replication and expansion of the program in other areas and closer collaboration with other federally qualified health centers (FHQC's). Lastly, the providers would like improved access to psychiatric care for patients and improved communication with the local hospital.

**Demographic and Benchmark Data.** At the initiation of the DNP project there were 47 patients identified as eligible for participation in the MAT group program. The final number of participants were 35 as 12 never attended a MAT group on either day and were lost to follow-up or chose not to participate in the program. Patients were counted as being retained in the MAT group if they attended >2 MAT groups on either Tuesday or Wednesday. The data indicates that 74% of patients were retained in the MAT group program at CoRR (Appendix P) which exceeds the recommended benchmark goal of 60% presented in the literature. There were 21 patients who attended the first MAT Wednesday group which exceeded the established objective for the project. To accommodate the increased number of MAT patients who expressed interest in this new group format an additional MAT group was created on Tuesdays. On average, there was about 12 patients who attended each respective MAT group. Participants were predominantly male at 63% male and 37% female and the most common age range were those between the ages of 26-34 years old (Table 5).

**Table 5**

Demographic Data MAT Group (N=35)	
<b>Gender</b>	
Male	22 (63%)

Female	13 (37%)
<b>Age</b>	
18-25 years old	2 (6%)
26-34 years old	21 (60%)
35-55 years old	11 (31%)
55 or older	1 (3%)

The Nurse Practitioner obtained demographic data in the Summer of 2018 in regard to MAT patient race/ethnicity and Medi-Cal eligibility which can be found in the table below (Table 6).

**Table 6**

MAT Demographic Data Summer 2018	
<b>Race/Ethnicity</b>	
White, non-Hispanic	41 (98%)
Other	1 (2%)
<b>Medi-Cal Eligible</b>	
Yes	27 (64%)
No	15 (36%)

(Curtis, Knapp & Otten, 2019)

## Section IV: Discussion

### Summary

The implementation of the DNP project occurred over the course of four months at the CoRR Grass Valley campus. The over-arching aim of this DNP project was to improve health outcomes among underserved residents of Nevada county by increasing access to inter-professional team-based MAT for opioid use disorder through the development of evidence based, interdisciplinary, nurse-managed MAT services through the initiation of the pilot program for the newly developed MAT patient delivery system and the development of evidence-based nurse practitioner process protocols. A measure of the success of the program and increasing access to MAT services for this patient population, was meeting the benchmark goal of 60% for patient retention in the program. The data from this project indicated that there was a 74% retention rate in the MAT group program at CoRR which meets the benchmark goal of 60% suggested in the literature. In addition, the targeted patient population were underserved members of a non-metropolitan community and as previously discussed, Nevada and Placer counties have high rates of opioid use disorder with limited access to MAT services. The project implementation served patients with opioid use disorder from both counties which met the goal of increasing access to MAT services for this under resourced group.

Furthermore, the initial patient satisfaction survey results regarding the nurse managed, interdisciplinary MAT group were positive with 100% of the respondents indicating that the quality of service they had received on the Wednesday MAT groups was “excellent” and 76% respondents indicated “almost all of my needs have been met” by the MAT program at CoRR. In addition, a majority of the patients indicated that the MAT program and helped them deal more productively with their drug and/or alcohol program and were satisfied with the amount of help that they had received. Due to the overwhelming positive feedback from the MAT patients at CoRR, a second team-based MAT group was added on Tuesdays. In addition, the Medical

Director at CoRR indicated that there were plans to expand the newly developed collaborative MAT group format to other CoRR campuses.

The data indicates a significant need for nurse-managed community-based MAT services, especially in non-metropolitan Northern California counties, where opioid overdose rates remain high and access to services limited. This DNP project has assisted in bringing needed MAT services to this underserved non-metropolitan community, and in turn improved health outcomes, where the number of residents with opioid use disorder remains high.

### **Interpretation**

The findings of this DNP quality improvement project found positive and successful outcomes from the nurse-managed community-based medication assisted treatment services for underserved patients with an opioid use disorder in a non-metropolitan Northern California county. The findings were consistent a study conducted by Jones (2018) stating that MAT in conjunction with psychosocial treatment has been shown to be the most effective evidenced based treatment option for this patient population (Jones, 2018).

The treatment of opioid use disorder is multidimensional and requires a comprehensive, interdisciplinary approach when providing MAT services. Employing nurse-managed, collaborative community-based medication treatment services for underserved patients with opioid use disorder in non-metropolitan communities allows for integrative treatment and improved health outcomes and patient satisfaction. This supports the ecological framework that guided this DNP project as the fundamentals of this perspective are supporting all levels of a health problem. The interventions of this project addressed the intrapersonal, interpersonal, institutional/organizational and community factors of the individual with opioid use disorder.

Although the research discussed in this DNP paper states that best practice is MAT in conjunction with psychosocial treatment, some recent research brings this idea into question. The field of substance abuse, and medication assisted treatment, is ever evolving and remains new and thus further research is needed regarding the role of behavioral health in conjunction with MAT. In addition, further research is needed regarding nurse-managed, interdisciplinary medication assisted treatment for opioid use disorder in underserved non-metropolitan communities who remain at high risk.

### **Limitations**

A limitation of this DNP project was the shortage of available providers/prescribers who possessed a waiver to prescribe or dispense buprenorphine. The Drug Addiction Treatment Act of 2000 (DATA 2000) requires that qualified practitioners apply for a waiver to treat opioid dependency with approved buprenorphine products after meeting specific criteria. Once a waiver is obtained, they can treat no more than 30 patients at a time within the first year (Substance Abuse and Mental Health Services Administration, 2019). This limited the amount of MAT patients that could be seen as there were at minimum two providers present at a time who carried a waiver to prescribe Buprenorphine limiting the number of patients that could be prescribed opioid agonist treatment to a maximum of 60. Strategies to mitigate this potential barrier would be to increase the MAT trainings for providers to ensure adequate staffing and collaborate with the CEO and other stakeholders to ensure continued staff development and growth and support for all team members (SAMHSA-HRSA Center for Integrated Health Solutions, 2014)

Another limitation of this project were the attitudes and beliefs of some counselors and members of other support groups in regard to the use of medications in the treatment of opioid use disorder (i.e. buprenorphine). In speaking with the MAT patients during groups and

privately, multiple patients shared that they were told that because they were on Buprenorphine as adjunctive therapy in the treatment of their opioid use disorder they were not considered to be “sober” and they were discouraged from using the medication. To address this potential barrier, providers could provide education to all members of the health care team regarding the medications that are used in MAT, present the data supporting its use, and reinforce education provided to patients regarding the use of medication to support their recovery.

The third limitation of the project was the time frame for delivery. Although the project was implemented over a four-month time period, the DNP student/project manager was only able to attend 2-3 Wednesday MAT groups a month due to scheduling conflicts with her primary employer. The added Tuesday MAT group was not attended by the DNP student. This could have had an effect on the results of the project and being present for the implementation of all MAT groups would have been ideal.

### **Conclusion**

MAT has proven to be the most effective evidence-based treatment option for patients with opioid dependence combined with psychosocial treatment. Treatment of opioid misuse disorder with buprenorphine and naloxone and/or buprenorphine has been proven to be safe and an effective treatment option in the office-based setting to decrease opioid use and cravings. It can also be correlated to lower transmission rates of communicable diseases such as hepatitis c and decreased numbers of heroin overdose deaths. In addition, recent data suggests that counties with high overdose rates, such as certain rural Northern California counties, have decreased access to opioid treatment programs. The implementation of a nurse managed, community-based MAT program for underserved patients in non-metropolitan communities would assist in alleviating this issue by increasing access to these much-needed services.

This nurse-managed, community-based care model for providing MAT services to underserved patients in nonmetropolitan areas combines best practice in treating opioid use disorder and provides comprehensive and collaborative care which yields positive health outcomes and supports recovery. This is further supported by the positive findings of this project with a MAT retention rate which met the benchmark goal and overwhelmingly positive results of the patient satisfaction survey that was administered regarding the MAT services provided. The project implementation and model are reproducible as evidenced by addition of the Tuesday MAT group as well as plans to expand the newly developed MAT group to other campuses within the CoRR organization. Particularly, the role of the Nurse and Nurse Practitioner is essential to connecting these high-risk, vulnerable communities with needed MAT services to improve health outcomes and counteract the devastating effects of the opioid epidemic.

Due to the new and evolving nature of the field of substance abuse and medication assisted treatment, it would be beneficial to obtain further research regarding best practices for providing MAT services to underserved non-metropolitan communities.

### **Section V: Other Information**

#### **Funding**

This DNP project was funded through personal savings as indicated in the budget. The clinic site implementation site, Community Recovery Resources (CoRR), receives funds through the Hub and Spoke grant through Aegis. There are no other financial disclosures related to this DNP project.

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## Appendix A: DNP Statement of Non-Research Determination Form



### DNP Statement of Non-Research Determination Form

**Student Name:** Lauren Knapp

**Title of Project:** The Development and Implementation of Nurse-Managed Community-based Medication Assisted Treatment Services for an Underserved Non-Metropolitan Northern California Community

**Brief Description of Project:** The purpose of this DNP project is to improve health outcomes among underserved residents of a non-metropolitan community in northern California by increasing access to inter professional team based medication assisted therapy (MAT) for opioid use disorder.

**A) Aim Statement:** By March 2019, Community Recovery Resources (CoRR) Grass Valley Campus will develop and implement Nurse-Managed Community-based Medication Assisted Treatment Services for an Underserved Non-Metropolitan Northern California Community to improve access and health outcomes for those with opiate use disorder.

**B) Description of Intervention:**

The DNP student will interview stakeholders to gather information about current medication assisted therapy (MAT) practices, best practices, what has been effective and ineffective and further development of the MAT program within the Community Recovery Resources Grass Valley organization and future goals and objectives for the organization. The DNP student will assist in developing process protocols, based on evidence-based practice, and establish a consistent structure for clinic days with inter professional team for the Medication Assisted Therapy (MAT) program at Community Recovery Resources Grass Valley. The DNP student will pilot the newly developed Medication Assisted Therapy (MAT) delivery system and measure the success of the program through the number of patients seen, responses from the patient satisfaction survey provided, the retention rate for patients in the program with a benchmark goal of 60% and assemble this information over a three month period. The DNP student will report practice improvement project findings to the Chief Executive Officer (CEO), Ariel King Lovett, at Community Recovery Resources Grass Valley.

**C) How will this intervention change practice?** This project will improve health outcomes of members of an Underserved Non-Metropolitan Northern California





community by increasing access to Nurse-managed interprofessional team based medication assisted treatment services for patients with opioid use disorder.

**D) Outcome measurements:** The success of the new developed Nurse-Managed Community-based Medication Assisted Treatment (MAT) Services program will be measured through the number of patients seen, responses from the patient and provider satisfaction survey provided, the retention rate for patients in the program with a benchmark goal of 60% and this information will be assembled over a three month period.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (<http://answers.hhs.gov/ohrp/categories/1569>)

- This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.
- This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

**EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST \***

**Instructions: Answer YES or NO to each of the following statements:**

<b>Project Title:</b>	<b>YES</b>	<b>NO</b>
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	<b>X</b>	
The specific aim is to improve performance on a specific service or program and is <b>a part of usual care</b> . ALL participants will receive standard of care.	<b>X</b>	
The project is <b>NOT</b> designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does <b>NOT</b> follow a protocol that overrides clinical decision-making.	<b>X</b>	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to	<b>X</b>	





ensure that existing quality standards are being met. The project does <b>NOT</b> develop paradigms or untested methods or new untested standards.		
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does <b>NOT</b> seek to test an intervention that is beyond current science and experience.	X	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	X	
The project has <b>NO</b> funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	X	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., <b>not</b> a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	X	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: <i>"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."</i>	X	

**ANSWER KEY:** If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

\*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

**STUDENT NAME (Please print):**

Lauren Knapp

Signature of Student: Lauren Knapp DATE 10/21/18

**SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):**

Dr. Alexa Curtis

Signature of Supervising Faculty Member (Chair):  DATE 10/21/18

Appendix B: Letter of Approval from Community Recovery Resources (CoRR) Grass Valley



To Whom It May Concern:

Lauren Knapp, University of San Francisco BSN-DNP/FNP student, has been approved to initiate her DNP project regarding the development and implementation of nurse-managed, community-based medication assisted treatment services at the Community Recovery Resources Grass Valley campus.

The student is granted permission to utilize the conference room and clinical space at the Grass Valley campus for the implementation of her DNP clinical improvement project.

Sincerely,

*Michelle Otten*

**Medical Services Coordinator,**

Grass Valley Residential

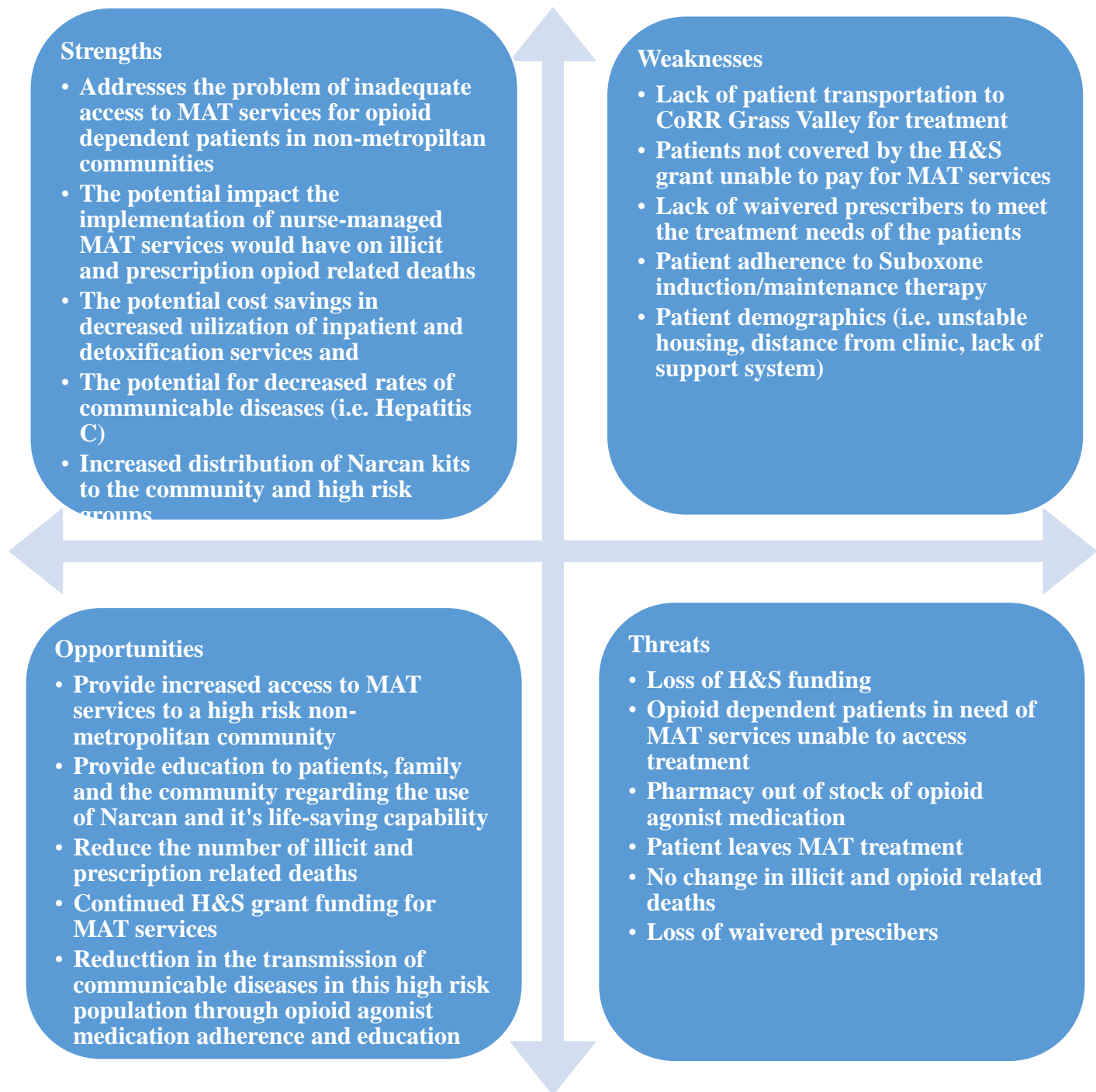
Community Recovery Resources

[www.corr.us](http://www.corr.us)

Tel: (530) 273-9541 ext. 234

Fax: (530) 271-7036

## Appendix C: SWOT Analysis



## Appendix D: Grant Budget

H&S Grant Funded Reimbursable Services Guide

1. **Medication Assisted Treatment (MAT) Team:** this will consist of a Nurse (RN or LVN) and a licensed clinician (LCSW/ ASW/ MFT/ MFTi, etc.) or Substance abuse registered or certified counselor. The grant will directly reimburse the Salary and Benefits of 1 FTE Nurse and 1 FTE Clinician/ Counselor per 100 H&S patients (e.g. 0-20 patients= 8 hrs paid per week, 20-40= 16 hrs paid per week, etc.)
2. **Reimbursement for Physicians & Mid-Level Data 2000 Waived providers** for Suboxone office visits for Uninsured patients and Underinsured patients: \$180 for Suboxone inductions and \$100 for Suboxone follow up visits
3. **Reimbursement for Underinsured patients self-pay/ sliding scale treatment fees** (if their insurance doesn't cover MAT/ Suboxone treatment)
4. **Reimbursement for Underinsured patients self-pay or sliding scale fees** until they meet their deductible (if their insurance covers MAT/ Suboxone treatment)
5. **Reimbursement for Underinsured patients private insurance co-pays** (if their insurance covers MAT/ Suboxone treatment)
6. **Reimburse for Uninsured and Underinsured patients urinalysis testing costs** up to four total tests per month.
7. **Directly for Uninsured and Underinsured patients Suboxone and Naloxone prescriptions** at the pharmacy through contracts with local pharmacies
8. **Purchase or reimburse for Patient Transportation:** Bus vouchers, gas cards, taxi services, etc.
9. **Reimburse Physicians and Mid-levels providers for time in trainings:** Includes data waived trainings, CSAM trainings, other MAT/ opioid related treatment trainings and UCLA led Grant Learning Collaborative trainings
10. **Reimburse for Pre-Authorized Telehealth Equipment:** To provide another option for accessing MAT services to improve access to treatment
11. **Directly pay for Education/Training:** Hiring consultants or utilizing UCLA and/or CSAM team for requested trainings (CE and CME units possible)
12. **Reimburse for MAT Training Materials:** Manuals, books, tools for reference
13. **Directly pay or reimburse for Advertisement and Outreach:** Brochures, Pamphlets, Media, Social media
14. **Opioid Coalition funding:** Additionally the H&S Grant can provide funding to support local existing opioid coalitions and their efforts or can provide funding and support to help create an opioid coalition if one does not already exist

Definitions

**Uninsured patients:** *Patients who do not meet income and dependents eligibility criteria for Medi-Cal. Medi-cal is the payer of first resort. Patients who qualify for Medi-cal must get Medi-Cal and grant funds cannot be utilized for them.*

**Underinsured patients:** *Patients who have Private Insurance that covers MAT/ Suboxone Treatment and have a copay or have not yet met their annual deductibles qualify for grant funding. Patients who have Private Insurance that does not cover MAT/ Suboxone Treatment also qualify for grant funding.*

### Requirements of Spoke Providers for H&S Patients Guide

1. **Assessment:** Ensure all H&S patients complete the TNQ and OBOT Stability Index assessments upon admission and maintain in the patients file/ record
2. **Treatment:**
  - a. Prescribe Suboxone and Naloxone for each H&S patient. Nasal Naloxone kits can be bought by the grant and given directly to the patient at the Spoke location along with basic training on how to use it or Spoke providers can write a prescription for the patient to fill at the pharmacy.
  - b. Ensure a minimum of 50 minutes of individual or group counseling for every H&S patient per month (higher levels recommended)
  - c. Conduct regular urinalysis testing
3. **Referrals & Coordination of Care:**
  - a. Complete a Release of Information for all H&S patients at admit to include: the patients current PCP/ prescribing providers, any collateral counseling providers (if H&S MAT Team counselor does not work for the Spoke agency) and Aegis Treatment Centers.
  - b. If H&S patient does not have a PCP enroll them with the Spoke agency PCP providers (if FQHC/ RHC or outpatient clinic with PCP providers) or refer them to a PCP.
  - c. Refer to other community providers as needed based on patient's needs and ability to treat at the Spoke agency.
  - d. Conduct or refer all H&S patients to complete HIV and HEP C testing.
4. **Monitoring:** Run a CURES/ PAR report at admit for each patient and at least once every 4 months
5. **Learning Collaborative:** Participate in quarterly UCLA Learning Collaborative (video conferencing option available). Additional support trainings are available as well including Project ECHO, CSAM Webinars, etc.
6. **Data Reporting:** Report minimal data each month on the number of current and new H&S patients being treated at the Spoke location.
7. **Invoicing:** Submit monthly invoice form to Aegis by the 3rd of each month for the previous month.



Appendix E: Grant Reporting Monthly Invoice Form

Aegis Treatment Centers, LLC.				
<b>Monthly Invoice Form</b>				
Spoke Name/Address:	Spoke #	H&S Grant:		
<b>MAT Expansion Project: California Hub and Spoke System (CA H&amp;SS)</b>				
E-Mail Completed Form To:		<b>TOTAL NUMBER OF H&amp;S OUD PATIENTS:</b> <span style="border: 1px solid black; padding: 2px;">0</span>		
Judson Lea, Jlea@aegistreatmentcenters.com for Humboldt, Redding, Chico Spokes Sarah Khawaja, Skhawaja@aegistreatmentcenters.com for Marysville, Roseville, Manteca Spokes		Payee:		
		Address:		
		City/Zip:		
		Phone:		
		Email Address:		
Billing Period From: / / To: / /				
<b>Personnel (salaries and benefits for Invoice month)</b>				
<b>MAT Nurse (RN/LVN)</b>	Hourly Rate	# of Hours	% of Benefits	Total
				\$ -
				\$ -
				\$ -
<b>MAT Clinician (LCSW, MFT, Certified AOD Counselor)</b>				
				\$ -
				\$ -
				\$ -
<b>Total of Personnel Services</b>				<b>\$ -</b>
<b>Miscellaneous Services (Submit Receipts and Pt Records with Invoice)</b>				
	# Issued			Total Cost
Bus Passes				\$ -
Gas/Fuel Cards				\$ -
Medication Neutralizers (Deterra, Dispose Rx)				\$ -
Locked Boxes				\$ -
Telehealth Infrastructure and Services				\$ -
Implementation Infrastructure				\$ -
Trainings				\$ -
<b>Total of Miscellaneous Services</b>				<b>\$ -</b>
<b>Treatment Services (Submit Receipts &amp; Pt Records with # of Tests Issued)</b>				
Drug Testing				
HIV Testing				
HEP-C Testing				
Suboxone				
Naloxone				
Vivitrol				
		Cost	# of Induction Visits	
Provider H&S Induction (uninsured/undersured only)		\$180		
		Cost	# of Follow Up Visits	
Provider H&S Follow Up (uninsured/undersured only)		\$100		
Co-Pays for MAT Services (uninsured/undersured)				
Cash Pay/ Sliding Scale for MAT Services (uninsured/undersured)				
<b>Total of Treatment Services</b>				
<b>Outreach and Advertising</b>				
				Total
Advertisement				\$
Outreach				\$
Educational Material for MAT Program				\$
<b>Total of Outreach &amp; Advertising Services</b>				<b>\$</b>
<b>Grand Total: \$ -</b>				
<i>I hereby certify that all costs are consistent with the award.</i>				
Subcontractor Signature <small>(Please use blue ink)</small>		Date: / /	Print name of Subcontractor Representative	
Signature of Aegis CEO		Date: / /	Alex Dodd Aegis CEO	

## Appendix F: Budget and Cost Benefit Analysis

<b>Direct Costs</b>		
<b>Item Description</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Materials (patient and provider surveys, handouts, 24 pk box of ballpoint pens)	\$59.99 for 100 full-color, single sided flyers	\$66 (Paid for by NP)
	\$5.79 for 24 pk box of black Bic ballpoint pens	
Coffee and Donuts on the first day of the MAT Wednesday Pilot Program	Starbucks Coffee Traveler \$12.95 per box (Serves 12) (2 boxes = \$26)	\$50 (Paid for by NP)
	\$20 for 2 dozen Donuts from B.J. Cinnamon Donut Shop in Folsom, CA	
NP Travel Cost (mileage/gas)	98 miles/week \$30 per week (2 Wednesdays/month) x 4 months	\$240 (Paid for by NP)
	<b>Total</b>	<b>\$356</b>
<b>Indirect Costs</b>		
<b>Item Description</b>	<b>Unit Cost</b>	<b>Total Cost</b>
NP Project management/implementation	\$61/hour x 8 hrs/week (2 Wednesdays/month) x 4 months	\$3,904 (NP services/project management provided at no cost)
<b>TOTAL PROJECT EXPENSES (Direct + Indirect Costs)</b>		<b>\$4,260</b>

**Budget****Societal Costs of Prescription Opioid Abuse, Dependence and Fatal Overdose, United States (Millions of 2013 Dollars)**

<b>Nonfatal Costs</b>	<b>Costs (Range based on 95% CI of prevalence)</b>
Health care	\$26, 075 (\$21,372-\$30,778)
Substance Abuse Treatment	\$2,820 (\$2,567-\$3,245)
Criminal Justice	\$7, 654 (public sector costs)
Lost Productivity	\$20, 441 (% 17,286-\$23,751)
<b>Total Nonfatal Costs</b>	<b>\$56,990 (\$48,879-\$65,428)</b>
<b>Fatal Costs</b>	<b>\$21,513 (\$21,182-\$21,844)</b>
<b>Total Nonfatal and Fatal Costs</b>	<b>\$78, 503</b>

Florence, C., Luo, F., Xu, L., & Zhou, C. (2016). The economic burden of prescription opioid overdose, abuse and dependence in the united states, 2013. *Medical Care*, 54(10), 901-906.

**Cost Benefit Calculation**

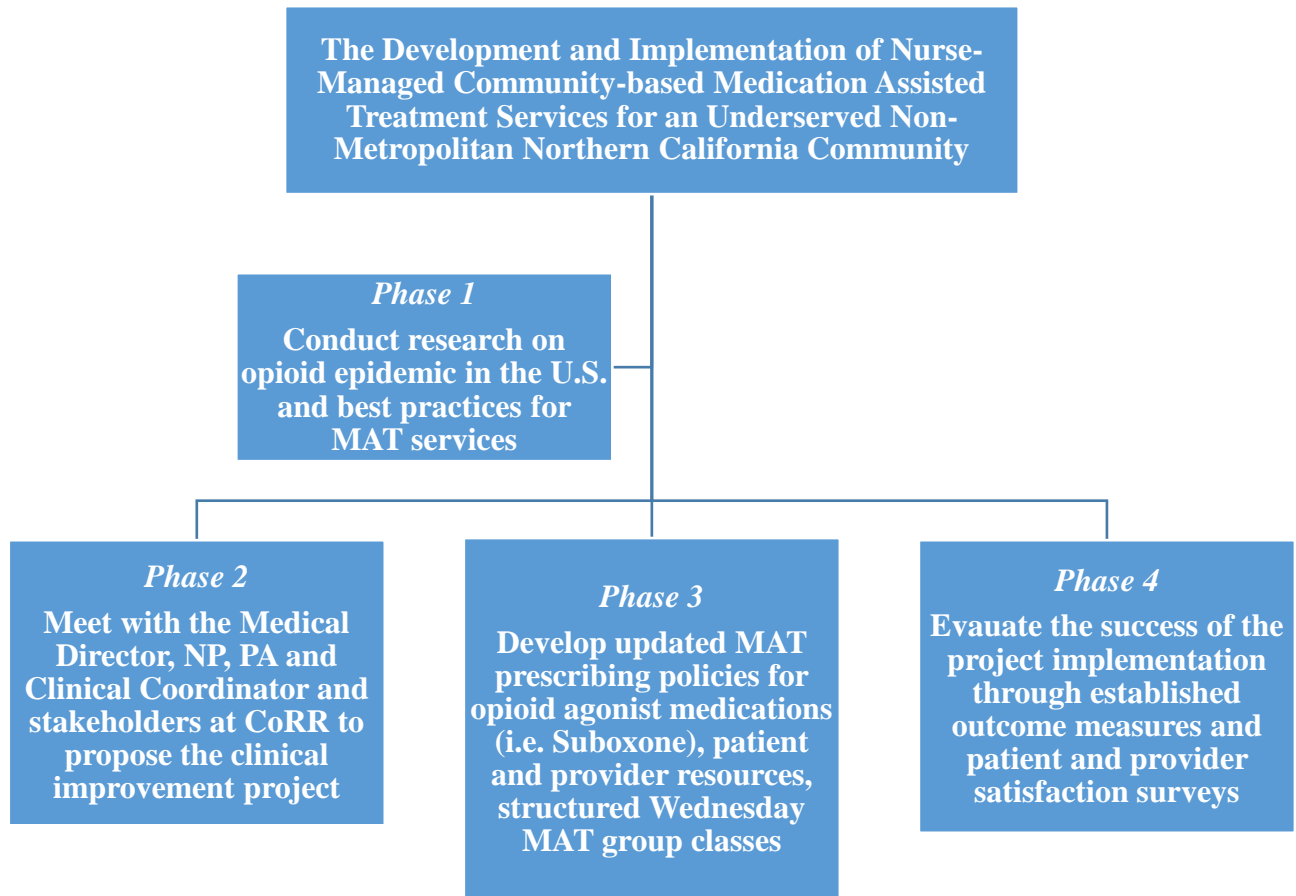
- Total nonfatal cost of prescription opioid misuse \$58 billion
  - This number includes:
    - Increased healthcare and substance abuse treatment costs by \$29.4 billion
    - Increased criminal justice costs by \$7.8 billion
    - Reduced productivity among those who do not die of overdose by \$20.8 billion (2015)
  - Total nonfatal cost of \$58 billion ÷ 1.9 million people in the U.S. with a prescription opioid disorder in 2013 = average cost of \$30,000
    - \*Average cost estimates for prescription opioid disorders only  
(Council of Economic Advisors, 2017)

**Cost Benefit Ratio**

Average nonfatal cost of a person with a prescription opioid disorder in the U.S. in 2013	≈ \$ 30,000
Projected cost for project implementation for one year	\$ 12,779
	<b>\$30,000/\$12,779 = 2.35</b>



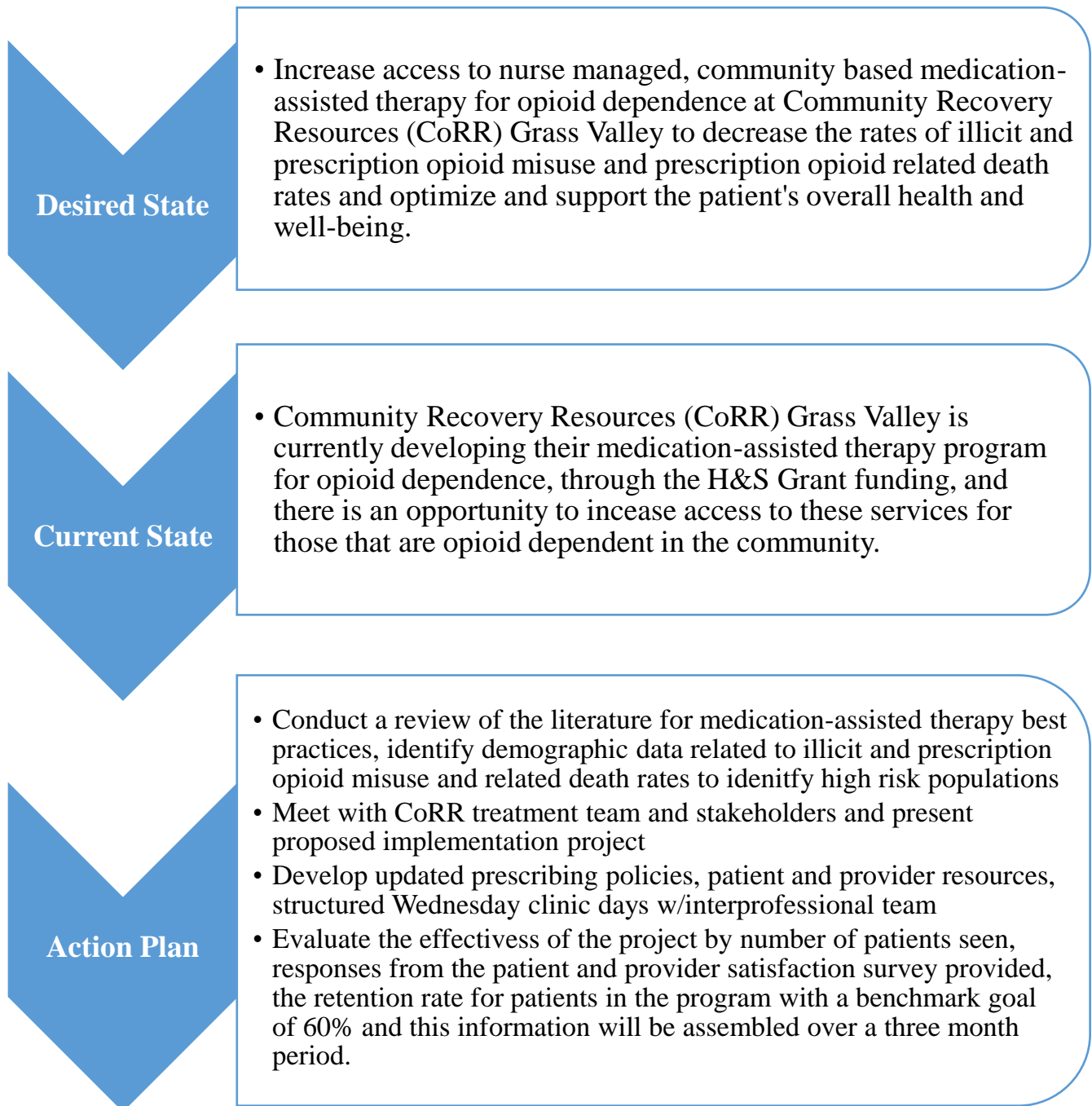
Appendix G: Work Breakdown Structure



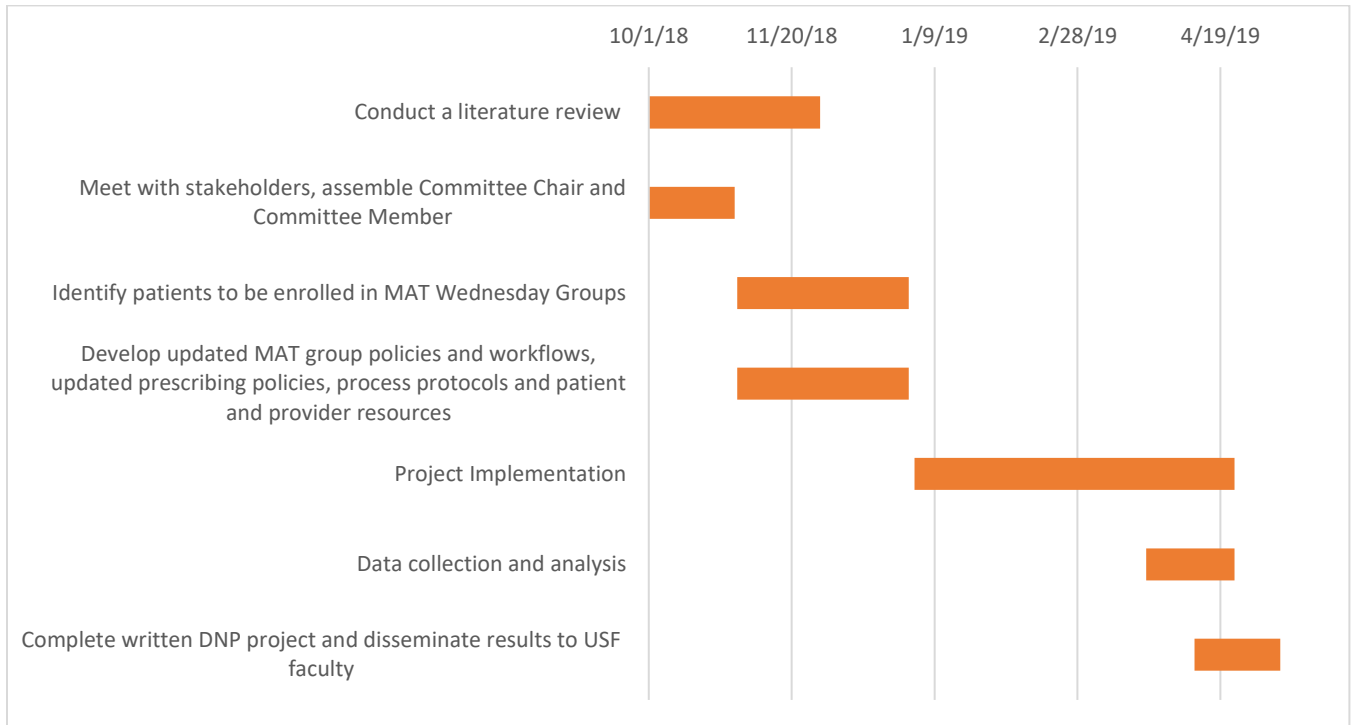
## Appendix H: Communication Plan

<b>Information</b>	<b>Audience</b>	<b>When</b>	<b>Communication Method</b>
DNP project development and coordination	DNP Chair, CoRR Clinical Coordinator, CoRR MD, FNP, PA	Weekly	In-person meeting, Email, Cell phone
DNP project status and any barriers encountered	DNP Chair, CoRR Clinical Coordinator	Weekly	In-person meeting, Email, Cell phone
DNP project revisions	DNP Chair, CoRR Clinical Coordinator	As needed	In-person meeting, Email, Cell phone
DNP project milestones	DNP Chair and Committee Member	Monthly	In-person meeting, Zoom, Email

## Appendix I: Gap Analysis



Appendix J: GANTT Chart



## Appendix K: MAT Wednesday Pilot Program Schedule, CoRR Grass Valley

**MAT Wednesday Pilot Program Schedule**  
**CoRR Grass Valley**

- 0800-0900** Flash Meeting, MAT meeting
- 0900-0930** Patient's arrive, UDS testing (to be completed before or after MAT class)
- 1000-1100** MAT Group Class  
Location: Conference room #104  
Instructors: Steve and Natalie  
6-10 patients initially  
Mandatory attendance—patient unable to receive medication refill if not in attendance
- 1100-1130** Patient UDS testing, if not already completed prior to MAT class  
Patients that have any concerns with their maintenance dose of Suboxone or any clinical concerns can be seen by a provider at this time
- 1200-1300** Lunch
- 1300-1700** Clinic

*Lauren (USF FNP student) will bring refreshments to the first group and patients can be given an extra gas card for attendance.*

Appendix L: Updated Maintenance Therapy Suboxone Progress Note for MAT Group

**Community Recovery Resources**

**Maintenance Therapy Progress report – Suboxone (buprenorphine/naloxone)**

Community Recovery Resources  
159 Brentwood Drive  
Grass Valley, CA 95945  
Ph. (530) 273-9541 / Fax (530) 273-7740

Scott Kellerman MD  
Ca License #  
DEA:  
DEA:

Patient Name: \_\_\_\_\_ DOB: \_\_\_\_\_ Date: \_\_\_\_\_

Prior drug of choice: \_\_\_\_\_ COWS: \_\_\_\_\_

Chief Complaint \_\_\_\_\_

HPI:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Urine Drug Screen results:

\_\_\_\_\_

Patient indicates they would like to be seen by provider after MAT group?  yes  no

I feel like using right now: not at all – mild – moderate – severe

I rate my level of withdrawal: not at all – mild – moderate – severe

Suboxone dose: \_\_\_\_\_mg Taken: Once daily Twice daily Three times daily

strips  tabs

Refilled at what interval: \_\_\_\_\_

Preferred pharmacy: \_\_\_\_\_

Date of last Cures report: \_\_\_\_\_

Have you used alcohol since last visit: Yes No

If “Yes” how much and when: \_\_\_\_\_

Appearance/mental status \_\_\_\_\_

**Neuro/Psyche** (tremor/jerks/follows commands) \_\_\_\_\_

**Recent Lab Results:** \_\_\_\_\_

**Diagnosis:**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_

**Narcan available?** Yes No

**Lab Ordered:** Yes No

*Urine Drug Test (5-8 Items), CBC/differential, comprehensive chemistry panel, GGT, hepatitis B surface antigen - (if positive - reflex to hepatitis quantitative HBV DNA levels), hepatitis B core antibody - (if positive - reflex to quantitative HBV DNA levels), hepatitis B surface antibody, Hepatitis C antibody - (reflex to quantitative HCV RNA level if positive), Chlamydia/Gonorrhea, HIV, RPR*

*If female – pregnancy test. **Additional labs:***

\_\_\_\_\_

**Treatment:** (drug/dose/frequency/duration)

- 1. Suboxone: \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

**Notes:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Consults/therapy/counseling ordered:** Yes No

If Yes to whom? \_\_\_\_\_

**Referral to Primary Care:** Yes No Pt has ongoing outpatient care Provider

If Yes to whom? \_\_\_\_\_

**Return to clinic:** 1 week 2 weeks 3 weeks 4 weeks prn other \_\_\_\_\_

**Provider Signature:** \_\_\_\_\_

## Appendix M: CoRR Wednesday MAT Group Protocol

**Community Recovery Resources (CoRR)**  
**Wednesday MAT Group Protocol**

- I. Criteria for Wednesday MAT group participation
  - A. The patient meets DSM 5 diagnostic criteria for moderate or severe opioid use disorder
  - B. The patient has completed the induction phase of Suboxone® and has demonstrated relative stability on their maintenance dose of Suboxone®
  - C. The patient does not have any prior job commitments that would hinder their ability to be present for the Wednesday MAT group
  - D. Attendance for Wednesday MAT group is mandatory, patient will be unable to receive medication refill if not in attendance.
  
- II. Workflow for Wednesday MAT group
  - A. Each patient will check in 15-30 minutes prior to the start of each group and provide a urine sample for the urine drug screen (UDS). If the patient is unable to provide a urine sample prior to the start of the group, a urine sample will be required for the UDS immediately following the group.
    1. All urine drug screen results will be recorded and given to the health care provider as soon as they are available.
  - B. The health care team comprised of the Counselor(s), MAT Program Director, Medical Assistant, Physician, Nurse Practitioner and Physicians Assistant will all be present during the Wednesday MAT group.
  - C. All patient's charts who are participating in the Wednesday MAT group will be pulled and brought to conference room number 104 at the start of each group and be accessible to the health care provider(s) to chart assessments, progress notes and write medication refill orders.
  - D. Prior to the start of the group, patients will complete a short questionnaire regarding any issues they are having with recovery, cravings/withdrawal symptoms, request for a change in medication dosage and/or a request to meet with their health care provider after the group. After the questionnaire is completed by the patient, each questionnaire will be given to the respective health care provider.
  - E. MAT group meeting will be conducted by Counselor (Natalie or Steve)
  - F. Following the MAT group, patients who requested to see the health care provider, or have an existing appointment with the provider, will be roomed and seen.



Appendix N: Standardized Procedures for the Nurse Practitioners at Community Recovery Resources (CoRR)

**STANDARDIZED PROCEDURES FOR THE  
NURSE PRACTITIONERS AT**

Community Recovery Resources (CoRR)  
Grass Valley Campus

**TABLE OF CONTENTS**

	Page
Introduction to the Standardized Procedures .....	
Statement of Approval and Agreement.....	
General Policies .....	
Development, Approval, Revision and Review .....	
Agreement .....	
Setting .....	
Record of Authorized Nurse Practitioners .....	
Education and Training .....	
Evaluation of Clinical Care .....	
Patient Records.....	
Supervision.....	
Consultation .....	
Health Care Management Standardized Procedures.....	
Health Care Management - Primary Care .....	
Health Care Management - Secondary Care.....	
Health Care Management - Tertiary Care .....	
Procedures and Minor Surgery.....	
Furnishing Drugs and Devices .....	
Ordering Scheduled Controlled Substances .....	
Medication Management.....	
Dispensing Medication .....	
Complimentary Samples .....	
Authorizations .....	
Resources .....	

## INTRODUCTION TO THE STANDARDIZED PROCEDURES

The purpose of these Standardized Procedures is to define the scope of practice of Nurse Practitioners at Community Recovery Resources (CoRR) in order to meet the legal requirements for the provision of health care by nurse practitioners. They are established to assist all health care providers with an understanding of the role and scope of practice of the nurse practitioner and to provide a safeguard so that providers and patients alike may be assured of the best health care possible.

These Standardized Procedures are based on the Guidelines established by the Board of Registered Nursing and the codes and regulations circumscribing California nurse practitioners (collectively referred to as the Nursing Practice Act). In order to provide the highest standard of care, these Standardized Procedures incorporate the following qualities:

**ADAPTABILITY**, in order to allow for the unique management needs of each individual patient;

**FLEXIBILITY**, to accommodate the rapidly changing and complex nature of the health care field and to acknowledge that medicine is not an exact science;

**PRACTICALITY**, in order to be useful in a setting that must incorporate a variety of educational backgrounds and personal management styles; and

**SPECIFICITY**, to address the intent of the Standardized Procedure Guidelines, the codes regulating nurse practitioners and to protect the health care consumer.

The Standardized Procedures consist of the following:

**GENERAL POLICIES:** Define the general conditions of and give authorization to the nurse practitioner to implement the Standardized Procedures.

**HEALTH CARE MANAGEMENT STANDARDIZED PROCEDURES:** Delineate the medical functions requiring a standardized procedure and, using policies and protocols, define the circumstances and requirements for their implementation by the nurse practitioner.

**STATEMENT OF APPROVAL AND AGREEMENT**

This document was jointly developed and approved by the CoRR Medical Director, Dr. Scott Kellerman, and the clinical practice team, for Nurse Practitioners in accordance with the codes regulating nursing practice, on \_\_\_\_[date]\_\_\_\_\_.

Signature on this statement implies

- Approval of the Standardized Procedures and all the policies and protocols contained in this document.
- Agreement to maintain a collaborative and collegial relationship.
- Agreement to abide by the Standardized Procedures in theory and practice.

---

Name/Title Date

---

Name/Title Date

---

Name/Title Date

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Name/Title Date

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Name/Title Date

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Name/Title Date

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Name/Title Date

**GENERAL POLICIES**

## **GENERAL POLICIES**

It is the intent of this document to authorize nurse practitioners at Community Recovery Resources (CoRR) to implement the Standardized Procedures without the immediate supervision or approval of a physician. The Standardized Procedures, including all the policies and protocols, are defined in this document and will be referred to generally as the "Standardized Procedures".

### **DEVELOPMENT, APPROVAL, REVISION AND REVIEW**

The Standardized Procedures have been collaboratively developed and approved by the Nurse Practitioners, Medical Director and CEO of CoRR. Review, and if necessary, revision, of the Procedures will be done yearly by the Nurse Practitioner, the Medical Director and the CEO at CoRR. The completion of these tasks, including notification of revisions, is the responsibility of the Nurse Practitioners, the Medical Director and the CEO at CoRR.

### **AGREEMENT**

All nurse practitioners and associate physicians will signify agreement to the Standardized Procedures following the approval process. Signature on the Statement(s) of Approval and Agreement implies the following: approval of all the policies and protocols in this document, the intent to abide by the Standardized Procedures, and the willingness to maintain a collegial and collaborative relationship with all the parties.

### **SETTING**

The nurse practitioners will perform these Standardized Procedures at Community Recovery Resources (CoRR), in Auburn, Grass Valley, Lincoln, Roseville, Kings Beach and Truckee campuses.

### **RECORD OF AUTHORIZED NURSE PRACTITIONERS**

The Statement of Approval and Agreement signed by the nurse practitioners will act as the record of nurse practitioners authorized to implement the Standardized Procedures.

### **EDUCATION AND TRAINING**

The nurse practitioners must have the following:

- Possession of a valid California License as a Registered Nurse.
- Certification by the State of California, Board of Registered Nursing as a Nurse Practitioner.
- Furnishing Number.
- DEA Number.
- Certification by a national certifying body (AANP or ANCC).

## **EVALUATION OF CLINICAL CARE**

Evaluation of the nurse practitioner will be provided in the following ways:

### **INITIAL EVALUATION**

- Performed at 3 and 6 months through feedback from colleagues and chart review of patient care delivered during the evaluation period.

### **CONTINUING EVALUATION**

- Annual evaluation based on feedback from colleagues and chart review of patient care delivered during the evaluation period.
- Verification of current licensure and certifications.

## **PATIENT RECORDS**

The nurse practitioner will be responsible for the preparation of a complete medical record for each patient contact per existing office policies.

## **SUPERVISION**

The nurse practitioner is authorized to implement the Standardized Procedures in this document without the direct or immediate observation, supervision or approval of a physician. Physician consultation is available at all times, either on-site, by phone or electronically.

## **CONSULTATION**

The nurse practitioner will be providing health care as outlined in this document. In general communication with a physician will be sought for all the following situations, and any others deemed appropriate. Whenever a physician is consulted, a notation to that effect, including the physician's name, must be made in the chart.

- Whenever situations arise which go beyond the intent of the Standardized Procedures or the competence, scope of practice, or experience of the nurse practitioner.
- Whenever patient conditions fail to respond to the management plan as anticipated.
- Any patient with acute decompensation or rare condition.
- Any patient conditions which do not fit the commonly accepted diagnostic patterns for a disease or disorder.
- At the patient's, nurse practitioner's or physician's request.
- All emergency situations after initial stabilizing care has been started.

**HEALTH CARE MANAGEMENT  
STANDARDIZED PROCEDURES**



## **HEALTH CARE MANAGEMENT - PRIMARY CARE**

### **POLICY**

Primary Care includes acute and episodic conditions, chronic conditions, and health care maintenance. Medication-based therapies for opioid use disorder and substance use disorder detoxification are included under primary care in this standardized procedure. The nurse practitioner is authorized to diagnose and manage Primary Care conditions under the following protocols:

### **PROTOCOLS**

- 1) Assessment and treatment plan is developed consistent with accepted clinical guidelines available through the practice resources listed in this document.
- 2) Lab work and diagnostic studies ordered are appropriate to the condition being evaluated and consistent with internal practice policies
- 3) Durable medical goods and therapies ordered, such as physical therapy, occupational therapy, dietary counseling and psychological services, are appropriate to the condition and consistent with internal practice policies.
- 4) Patient education and follow up is provided as appropriate.
- 5) All other applicable Standardized Procedures in this document are followed during health care management.
- 6) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

**HEALTH CARE MANAGEMENT - SECONDARY CARE****POLICY**

Secondary Care conditions are unfamiliar, uncommon, unstable or complex conditions. The nurse practitioner is authorized to evaluate and treat Secondary Care conditions under following protocols:

**PROTOCOLS**

- 1) Assessment to the level of surety plus appropriate differential diagnosis.
- 2) A physician is communicated with regarding the evaluation, diagnosis and/or treatment plan.
- 3) Management of the patient is either in conjunction with a physician or by complete referral to a physician or other treatment center.
- 4) The physician is notified if her/his name is used on a referral to a specialty physician or department.
- 5) The consultation or referral is noted in the patient's chart including name of physician.
- 6) All Secondary Care charts are co-signed by a physician.
- 7) All other applicable Standardized Procedures in this document are followed during health care management.
- 8) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

**HEALTH CARE MANAGEMENT - TERTIARY CARE****POLICY**

Tertiary Care conditions are acute, life-threatening, emergency conditions. The nurse practitioner is authorized to evaluate Tertiary Care conditions under the following protocols:

**PROTOCOLS**

- 1) Initial evaluation and stabilization of the patient may be performed with concomitant notification of a physician or emergency department, and immediate referral.
- 2) The referral is noted in the patient's chart including name of physician and/or facility referred to.
- 3) All other applicable Standardized Procedures in this document are followed during health care management.
- 4) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

## **PROCEDURES AND MINOR SURGERY**

### **POLICY**

The nurse practitioner may perform the listed procedures under the following protocols:

- Chemical or electrocautery of external, non-facial, non-malignant lesions less than 1cm in size, e.g. warts.
- Foreign body removal, simple removal from the skin.
- Epidermal cyst removal (non-facial) less than 3 cm in size.
- Incision and drainage of non-facial abscess less than 5 cm in size.
- Suture non-facial laceration less than 5 cm in size.
- Toenail removal.
- IUD insertion.
- Nexplanon insertion.

### **PROTOCOLS**

- 1) The nurse practitioner has been trained to perform the procedure(s), has been observed satisfactorily performing the procedure(s) by another provider competent in that skill, and continued competency is assessed per written criteria.
- 2) The nurse practitioner is following standard medical technique for the procedures as described in the Resources listed in this document.
- 3) Appropriate patient consent is obtained before the procedure.
- 4) All other applicable Standardized Procedures in this document are followed during health care management.
- 5) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

## **FURNISHING DRUGS AND DEVICES**

### **POLICY**

The nurse practitioner is authorized to furnish drugs and devices under the following protocol:

### **III. PROTOCOL**

- 1) The nurse practitioner has a current furnishing number.
- 2) The Standardized Procedure was developed and approved collaboratively by the medical director and nurse practitioner clinical care team.
- 3) All drugs and devices ordered are limited to the recommendations in the clinical resources listed in this document.
- 4) The drugs and devices ordered are consistent with the nurse practitioner's educational preparation or for which clinical competency has been established and maintained.
- 5) The drug or device ordered is appropriate to the condition being treated.
- 6) Patient education is given regarding the drug or device.
- 7) The name, title, and furnishing number of the nurse practitioner is written on the transmittal order.
- 8) The Statement of Approval and Agreement signed by the nurse practitioners will act as the record of nurse practitioners authorized to furnish.
- 9) No single physician will supervise more than four furnishing nurse practitioners at any one time.
- 10) A physician must be available at all times in person, electronically or by telephone.
- 11) All other applicable Standardized Procedures in this document are followed during health care management.
- 12) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

## **ORDERING SCHEDULED CONTROLLED SUBSTANCES**

### **POLICY**

The nurse practitioner is authorized to order scheduled controlled substances per the following protocols:

### **PROTOCOLS**

#### General

- 1) The nurse practitioner follows the provisions of the Standardized Procedure for Furnishing.
- 2) The nurse practitioner's name, title, furnishing and DEA numbers are on a secure transmittal order.
- 3) Relevant scheduled drug contracts, DEA requirements, and all State and Federal regulations are adhered to.
- 4) A CURES report is run on each patient receiving a controlled substance.
- 5) Schedule III and II substances are ordered following the Patient Specific Protocol (i.e. Medication Assisted Therapy (MAT) protocol, Buprenorphine Induction Protocol, Alcohol Withdrawal (Mild-Moderate) Protocol)
- 6) All other applicable Standardized Procedures in this document are followed during health care management.
- 7) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

## **MEDICATION MANAGEMENT**

### **POLICY**

The nurse practitioner is authorized to manage drugs and devices under the following protocols:

### **PROTOCOLS**

- 1) The management of drugs or devices includes evaluating, initiating, altering, discontinuing, furnishing and ordering of prescriptive and over-the-counter medications.
- 2) Medication evaluation includes assessment of:
  - Other medications being taken.
  - Prior medications used for current condition.
  - Medication allergies and contraindications, including appropriate labs and exams.
  - Cures report (Cures report run every 3 months per clinic policy)
- 4) The drug or device is appropriate to the condition being treated, and:
  - Accepted dosages per references.
  - Generic medications are ordered if appropriate.
- 5) A plan for follow-up and refills is written in the patient's chart.
- 6) The prescription must be written in patient's chart including name of drug, strength, instructions and quantity, and signature of the nurse practitioner.
- 7) All other applicable Standardized Procedures in this document are followed during health care management.
- 8) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

## **IV. DISPENSING MEDICATIONS**

### **POLICY**

The nurse practitioner may dispense pre-packaged prescription drugs and devices, including Schedule II-V controlled substances under the following protocols:

### **PROTOCOLS**

- 1) The drug or device utilizes required pharmacy containers and labeling.
- 2) All appropriate record keeping practices of the dispensary are performed.
- 3) All State and Federal policies on dispensing Controlled Substance must be followed.
- 4) All other applicable Standardized Procedures in this document are followed during health care management.
- 5) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.



## A. COMPLIMENTARY SAMPLES

## V. POLICY

The nurse practitioner is authorized to sign for the request and receipt of complimentary samples of prescription drugs and devices under the following protocols:

## VI. PROTOCOLS

- 1) The list of Authorized Pharmaceutical Samples for Nurse Practitioner Signature is kept in a secured area in the Clinical Coordinator's office.
- 2) Each written request shall contain the name and address of the supplier and the requester, the name and quantity of the specific dangerous drug desired, the name of the nurse practitioner receiving the samples, the date of receipt, and the name and quantity of the dangerous drugs or devices provided. These records shall be preserved by the supplier.
- 3) A review of this process will be part of the review of all the Standardized Procedures.
- 4) All other applicable Standardized Procedures in this document are followed during health care management.
- 5) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

## VII. AUTHORIZATIONS

## VIII. POLICY

The nurse practitioner is authorized, under the following protocols, to:

- Assess Worker's Compensation injuries and illnesses.
- Certify Disability.
- Manage Home Health and Personal Care Services.

## IX. PROTOCOLS

- 1) Workers' Compensation. The Doctor's First Report of Occupational Injury or Illness, co-signed by the nurse practitioner, for a workers' compensation claim can be for a period of time off from work not to exceed three calendar days. The treating physician is required to sign the report and to make any determination of any temporary disability.
- 2) Certify Disability. The nurse practitioner has performed a physical exam and collaborated with a physician and surgeon.
- 3) Home Health and Personal Care Services. Approval, signing, modifying, or adding to a plan of treatment or plan of care is after consultation with the treating physician and surgeon.
- 4) All other applicable Standardized Procedures in this document are followed during health care management.
- 5) All General Policies regarding Review, Approval, Setting, Education, Evaluation, Patient Records, Supervision and Consultation in these Standardized Procedures are in force.

**RESOURCES**

## RESOURCES

### In House Protocols:

- Medication-based therapies for opioid use disorder protocols
- Substance use disorder detoxification protocols

### Examples of References:

- Dynamed
- UptoDate
- Epocrates
- Medscape
- CDC
- USPSTF
- SAMHSA Publications
- ASAM National Practice Guideline
- Current Medical Diagnosis and Treatment, Lange Series.
- Primary Practice Guidelines in Primary Care
- American Academy of Family Physicians. [aafp.org/online](http://aafp.org/online)
- National Heart, Lung and Blood Institute Guidelines. [nhlbi.nih.gov/guidelines](http://nhlbi.nih.gov/guidelines)
- Procedures for the Primary Care Provider
- Ferri's Best Test

**References**

BRN (1998). An Explanation for Nurse Practitioner Requirements for Nurse Practitioner Practice.

Zettler, R. (2016). The process protocol workbook California edition. Retrieved from <http://processprotocols.com>

Appendix O: Patient Satisfaction Survey



**Community Recovery Resources (CoRR) Grass Valley  
Patient Satisfaction Survey**

Thank you for your participation in this survey. Please circle one answer for each of the following questions. Your responses are anonymous and confidential.

1. Would you rate the quality of service you have received on the Wednesday MAT group as excellent?
  - a. Yes
  - b. No
  - c. If not, what suggestions do you have to improve the program?

---



---

2. Has the MAT program at CoRR met your needs?
  - a. None of my needs have been met
  - b. Only a few of my needs have been met
  - c. Most of my needs have been met
  - d. Almost all of my needs have been met
3. Have the services you received at CoRR helped you to deal more productively with your drug and/or alcohol program?
  - a. No, they seemed to make things worse
  - b. No, they really didn't help
  - c. Yes, they helped somewhat
  - d. Yes, they helped a great deal

4. How satisfied are you with the amount of help you have received?
  - a. Very dissatisfied
  - b. Indifferent or mildly dissatisfied
  - c. Mostly satisfied
  - d. Very satisfied

5. Do you have any suggestions for how the MAT program at CoRR can improve? What do you like about the program or think has been successful thus far?

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## Appendix P: Provider Satisfaction Survey

## Survey Monkey

## Provider Satisfaction Survey MAT Group

## 1. Question Title

a) ***1. What qualities do you think make a successful MAT program?***

## 2. Question Title

a) ***2. What qualities or characteristics do you feel have made the MAT program at CoRR successful?***

## 3. Question Title

a) ***3. What would you like to see improve or change in regard to the MAT program at CoRR?***

## 4. Question Title

a) ***4. Would you like to see the interdisciplinary MAT Group on Tuesday and Wednesday continue at CoRR?***

Yes

No

Other (please specify)

DONE

Appendix Q: MAT Group Benchmark Data

CoRR MAT Group Pilot Program Data								
Patient ID by DOB	Age Range	Patient #	Gender	Age	Visits	Retention	Retention By Age (Headcount)	Retention By Age (%)
August 15, 1997	18-25 years	11	F	22	3	1	2	6%
September 1, 1996		10	M	23	8	1		
September 23, 1992	26-34 years	24	F	27	5	1	21	60%
July 11, 1992		21	F	27	4	1		
May 9, 1992		13	M	27	6	1		
December 31, 1991		29	M	27	4	1		
August 14, 1991		25	M	28	3	1		
July 19, 1991		5	F	28	2	1		
December 11, 1990		1	M	28	2	1		
November 15, 1990		19	M	28	4	1		
September 7, 1990		12	M	29	2	1		
June 27, 1990		6	M	29	7	1		
December 25, 1989		33	F	29	6	1		
July 13, 1989		4	M	30	5	1		
March 10, 1989		34	F	30	5	1		
March 6, 1989		31	M	30	2	1		
November 13, 1988		9	M	30	4	1		
June 16, 1988		3	F	31	2	1		
January 5, 1988		14	M	31	5	1		
April 30, 1987		2	F	32	3	1		
April 30, 1987		35	F	32	2	1		
December 29, 1986		20	F	32	8	1		
April 8, 1986	8	M	33	3	1			
August 6, 1984	35-55 years	18	F	35	3	1	21	60%
December 26, 1982		30	M	36	2	1		
January 28, 1982		7	F	37	12	1		
December 10, 1981		16	M	37	5	1		
December 17, 1980		28	M	38	7	1		
February 24, 1979		32	F	40	3	1		
September 15, 1977		17	M	42	5	1		



January 25, 1977		27	M	42	3	1		
December 28, 1972		15	M	46	4	1		
February 3, 1969		22	M	50	8	1		
November 18, 1963		23	M	55	6	1		
December 10, 1949	55 years +	26	M	69	6	1	<b>1</b>	<b>3%</b>
						<b>TOT</b>	<b>35*</b>	<b>100%</b>

<b>MAT Retention Rate (%)</b>	
N = 47	Total Patients
R = 35*	Repeats (2<)
Retention Rate	74%

Appendix R: Review of the Evidence

Citation	Conceptual Framework	Design/Method	Sample/Setting	Variables Studied and their Definitions	Measurement	Findings	Appraisal
<p>Cicero, T.J., Ellis, M.S., Surratt, H.L. Kurtz, S.P. (2014). The changing face of heroin use in the united states a retrospective analysis of the past 50 years. <i>Journal of American Medical Association Psychiatry</i>,7(17), 821-826. doi: 10.1001/jamapsychiatry.2014.366</p>	<p>N/A</p>	<p>Retrospective analysis, utilizing a mixed-method approach</p>	<p>-ongoing nationwide Survey of Key Informants' Patients (SKIP) Program study data employing structured, self-administered surveys to obtain retrospective data on prior drug use patterns for patients enrolling in substance abuse treatment programs across the United States and who had a primary diagnosis (DSM-IV) of heroin use/dependence</p>	<p>-IV: patients with a primary diagnosis (DSM-IV) of heroin use/dependence who were enrolled in substance abuse treatment programs in the United States</p> <p>-DV: past drug use patterns, population demographics and current residential location</p>	<p>-population demographics and current residential location</p> <p>-cross-tabulations to determine prevalence rates in terms of the decade of when the participant first abused opioids for: 1<sup>st</sup> opioid used (i.e. prescription opioid or heroin), sex, race/ethnicity and age at first use</p>	<p>-Researchers found that the demographics of heroin users in the United States has changed from that of a minority and inner-city problem, to one that has a larger geographic impact and is now composed of mostly white men and women (late 20's) that reside outside large urban locations</p> <p>-The research indicated that many heroin users had previously used prescription opioids</p>	<p>Level III, B</p>

			-data collected from unstructured qualitative interviews with a portion of the patients who participated in the structured interview				
Fiellin, D.A., Pantaloni, M.V., Chawarski, M.C., Moore, B.A., Sullivan, L.E., O'Connor, P.G., & Schottenfeld, R.S. (2006). Counseling plus buprenorphine-naloxone maintenance therapy for opioid dependence. <i>The New England Journal of Medicine</i> , 355, 365-374. DOI: 10.1056/NEJMoa055255	N/A	24-week randomized, controlled clinical trial	166 patients who met criteria for opioid dependence and for opioid-agonist medication treatment and were assigned to one of three treatments: -standard medical management  -either once-weekly or thrice-weekly medication dispensing	IV: one of three treatments-- standard medical management, either once-weekly or thrice weekly medication dispensing or enhanced medical management and thrice-weekly medication dispensing  DV: frequency of self-reported drug use and urinalysis testing	Primary outcome measures:  -Self reported frequency of illicit opioid use  -percentage of opioid-negative urine specimens  -self-reported maximum number of consecutive weeks of abstinence from illicit opioids (confirmed w/urinalysis)	-All three of the treatments in the study yielded a decrease in the mean self-reported frequency of opioid use  -No considerable difference among the three treatment groups or the treatments over time  -Frequency of illicit opioid use was decreased from baseline to induction and the lowest numbers were seen during	Level II, C

			<p>-enhanced medical management and thrice-weekly medication dispensing</p> <p>Setting: Primary Care Center of Yale-New Haven Hospital</p>		<p>Secondary outcome measures:</p> <p>-amount of patients remaining in the study</p> <p>-# of days of the study completed</p> <p>-percentage of cocaine-negative urine samples</p> <p>-patient satisfaction</p> <p>-use of health and social services</p>	<p>the maintenance phase in all three treatment groups</p> <p>-Strategies to improve buprenorphine-naloxone adherence necessary</p>	
<p>Florence, C., Luo, F., Xu, L., &amp; Zhou, C. (2016). The economic burden of prescription opioid overdose, abuse and dependence in the united states, 2013. <i>Medical Care</i>, 54(10), 901-906.</p>	<p>Societal perspective</p>	<p>-Incidence of fatal prescription overdose from the National Vital Statistics System</p> <p>-Prevalence of abuse and dependence from the National Survey of Drug Use and Health</p>	<p>-United States population (fatal data)</p> <p>-Representative sample of United States civilian non-institutionalized population ages 12 and older (nonfatal data)</p>	<p>IV: patients with opioid abuse and dependence</p> <p>DV: -Loss of productivity defined as job status and household responsibilities</p>	<p>Monetized strain due to fatal overdose and misuse and prescription opioid dependence</p>	<p>-The researchers estimate that the total economic burden to equal \$78.5 billion</p> <p>-One third of the total amount is due to the increased health care costs and cost of substance</p>	<p>Level III, B</p>

		<p>-Cost data from health care claims data from Truven Health MarketScan Research databases</p> <p>-Cost fatal cases from WISQARS (Web-based injury Statistics Query and Reporting System) cost module</p> <p>-Criminal justice costs from the Justice Expenditure and Employment Extracts from the Department of Justice</p> <p>-Estimates of lost productivity derived from a previously published study</p>		<p>-Cost components which included health care, substance abuse treatment costs, criminal justice costs and lost productivity</p> <p>-Incidence of prescription opioid abuse and dependence</p>		<p>abuse treatment estimated to be \$28.9 billion</p> <p>-One quarter of the total cost is absorbed by the public sector (i.e. health care, substance abuse treatment, criminal justice costs)</p>	
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<p>Fudala, P.J., Bridge, T.P., Herbert, S., Williford, W.O., Chiang, C.N., Jones, K., Collins, J., Raisch, D., Casadonte, P., Goldsmith, R.J., Ling, W., Malkerneker, U., McNicholas, L., Renner, J., Stine, S., &amp; Tusel, D.(2003). Office-based treatment of opiate addiction with a sublingual-tablet formulation of buprenorphine and naloxone. <i>New England Journal of Medicine</i>, 349, 949-958. DOI: 10.1056/NEJMoa022164</p>	N/A	Multicenter, randomized, placebo-controlled trial	<p>-326 patients with opioid dependence (ages 18-59) who received office-based treatment</p> <p>-Patients either received buprenorphine (16mg) w/naloxone (4mg), only buprenorphine (16mg), or a placebo daily for four weeks</p> <p>-“Safety data” collected on 461 patients w/opioid dependence who were enrolled in an open label study of buprenorphine and naloxone (daily doses=24 mg and 6mg) and 11 patients</p>	<p>IV: Patients with opioid dependence receiving office-based treatment w/ either buprenorphine (16mg) w/naloxone (4mg), only buprenorphine (16mg), or a placebo daily for four weeks</p> <p>DV: reduction in the use of opiates and cravings for opiates among opiate addicted patients</p>	<p>-percentage of urine samples (-) opiates</p> <p>-patients self-reported craving for opiates</p>	<p>-Researchers concluded the double-blind trial prematurely as the buprenorphine + naloxone combination and buprenorphine were found to be more effective than the placebo.</p> <p>-combination buprenorphine and naloxone and buprenorphine were found to be safe and a decline in the use of opiates and cravings was seen in opiate dependent patients who received these medications in the office-based setting</p>	Level I, A
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			who were given this medication combination during the trial only				
Jones, E.B. (2018). Medication-Assisted opioid treatment prescribers federally qualified health centers: capacity lags in rural areas. <i>The Journal of Rural Health</i> , 34, 14-22. doi: 10.1111/jrh.12260	N/A	-Descriptive and multivariable analyses with the weighted 2010 Assessment of Behavioral Health Services survey data and the 2010 Uniform Data System  -Stata version 12 (Stat-aCorp LP, College Station, Texas) utilized to conduct the analysis	-2010 Uniform Data System (UDS) administrative data set  -2010 Assessment of Behavioral Health Services in Federally Qualified Health Centers	-Independent variables: number of patients served annually, region, urban status, electronic health record adoption, whether the health center received funding to serve homeless individuals and migrant and seasonal farmworkers, and the percentage of health center staff that were behavioral health specialists (in the models on the availability of on-site buprenorphine and interest in adding or expanding the	-The availability of on-site treatment for substance use disorders in 2010  -The availability of on-site mental health treatment services on-site in 2010	2010 Findings: -47.6% of health centers provided on-site substance use disorder treatment  -12.3% provided buprenorphine treatment for opioids  -38.8% interested in expanding buprenorphine availability  -Health centers located in rural areas had decreased odds of providing on-site buprenorphine treatment (OR=0.49, 95% CI: 0.26-0.94)	Level III, A

				<p>availability of on-site medication-assisted treatment w/buprenorphine)</p> <p>-the insurance status and type of patient caseload (uninsured, Medicaid, Medicare, other public and private)</p>		<p>-Rural health centers had decreased odds of showing interest in growing access to buprenorphine treatment (OR- 0.58, 95% CI: 0.35-0.97)</p>	
<p>Schwartz, R.P., Gryczynski, J., O’Grady, K.E., Sharfstein, J.M., Warren, G., Olsen, Y., Mitchell, S.G., &amp; Jaffe, J.H. (2013). Opioid agonist treatments and heroin overdose deaths in baltimore, maryland, 1995-2009. <i>American Journal of Public Health, 103</i>(5), 917-922. <a href="https://doi.org/10.2105/AJPH.2012.301049">doi:[10.2105/AJPH.2012.301049]</a></p>	N/A	<p>Longitudinal time series analysis of archival data using linear regression with the Newey-West method</p>	<p>-The number of heroin overdose deaths from 1995-2009 from the Baltimore City Health Department</p> <p>-The number of patients participating in Methadone treatment for opioid dependence in Baltimore City from 1995-2009 from the Maryland</p>	<p>IV: the development of opioid agonist (i.e. methadone and buprenorphine) treatment</p> <p>DV: The number of heroin overdose deaths from 1995-2009</p>	<p>The correlation between the development of methadone and buprenorphine treatment and the incidence of heroin overdose deaths in Baltimore Maryland between the years of 1995-2009</p>	<p>-The researchers found that increased access to opioid agonist treatment (i.e. methadone or buprenorphine) were correlated with a decreased number of heroin overdose deaths.</p> <p>-Schwartz et al. recommend enacting policies that are congruent with evidence-based medication treatment of opiate dependence</p>	Level III, B



			<p>Department of Health's Alcohol and Drug Administration</p> <p>-Estimated number of patients being treated with buprenorphine-naloxone (Suboxone) or buprenorphine (Subutex) from Wolters Kluwer Pharma Solutions (WKPS)</p>			<p>as it may lead to a reduction in the amount of heroin overdose deaths</p>	
<p>Tsui, J.I., Evans, J.L., Lum, P.J., Hahn, J.A., &amp; Page, K. (2014). Association of opioid agonist therapy with lower incidence of hepatitis c virus infection in young adult injection drug users. <i>Journal of the American Medical Association Internal Medicine</i>, 174(12),</p>	N/A	<p>Observational cohort study from 01/03/00-08/21/13 with quarterly interviews and blood sampling</p>	<p>Young adults age &lt;30 years who were injection drug users and were (-) anti-HCV antibody and/or HCV RNA in San Francisco</p>	<p>IV: opioid agonist therapy (i.e. buprenorphine or methadone)</p> <p>DV: lower incidence of HCV infection in young adult IV drug users</p>	<p>-HCV infection documented w/new + result for HCV RNA and/or HCV antibodies</p>	<p>-Researchers found that young adult participants with recent maintenance opioid agonist therapy had an associated lower rate of HCV infection.</p> <p>-Maintenance treatment with opioid agonist</p>	<p>Level II, B</p>

1974-1981. doi:10.1001/ jamainternmed.2014. 5416						therapy (i.e. methadone or buprenorphine) for opioid use disorders may help to prevent the contraction of HCV infection in this patient population	
Weiss, R.D., Potter, J.S., Fiellin, D.A., Byrne, M., Connery, H.S., Dickinson, W., Gardin, J., Griffin, M.L., Gourevitch, M.N., Haller, D.L. Hasson, A.L., Huang, Z., Jacobs, P., Kosinski, A.S., Lindblad, R., McCance-Katz, E.F., Provost, S.E., Selzer, J., Somoza, E.C., Sonne, S.C., & Ling, W. (2011). Adjunctive counseling during brief and extended buprenorphine-naloxone treatment for prescription opioid dependence a	N/A	Multi-site randomized clinical trial utilizing a two-phase adaptive treatment research design	-Study participants were age 18 or older and included 653 treatment-seeking outpatients that were dependent on prescription opioids  -10 treatment sites in the United States that complied w/DSM-IV criteria for prescription opioid dependence from June 2006-July 2009	IV: 653 treatment seeking outpatients dependent on prescription opioids at 10 U.S. sites  DV: minimal or no opioid use at phase 1 and/r phase 2	Researchers defined “successful outcome” in phases 1 and 2 if all determined variables demonstrated minimal or no opioid use on urine drug screen confirmed patient self-reports	-The researchers concluded that patients with prescription opioid dependence were “most likely” to decrease opioid use during buprenorphine-naloxone treatment  -Patients that were stabilized on buprenorphine-naloxone had improved outcomes versus those patients who were tapered off.	Level I, B

<p>2-phase randomized controlled trial.  <i>Archive of General Psychiatry</i>, 68(12), 1238-1246.                  Doi:[10.1001/archgenpsychiatry.2011.121]</p>						<p>-Results of the study found that if patients were tapered off buprenorphine-naloxone (including after 12 wks of treatment) there was a higher possibility for unsuccessful outcome even if patients were undergoing counseling with medical management</p>	
<p>Weisner, C., Mertens, J., Parthasarathy, S., Moore, C., &amp; Lu, Y. (2001). Integrating primary medical care with addiction treatment. <i>Journal of American Medical Association</i>, 286(14), 1715-1723. Retrieved from <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3056510/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3056510/</a></p>	<p>N/A</p>	<p>Randomized controlled trial</p>	<p>Adult men and women (n=592) who were admitted to a large health maintenance organization chemical dependency program in Sacramento, CA</p>	<p>IV: integrated care (primary health care + addiction treatment program), independent care groups (separate primary care and substance abuse treatment)                   DV:</p>	<p>-Abstinence outcomes                  -treatment utilization                  -6 month costs after randomization</p>	<p>Researchers found that the patients with substance abuse-related medical conditions benefited from the integrated medical and substance abuse treatment and this method was cost advantageous</p>	<p>Level I, B</p>

<p>Rosenblatt, R.A., Andrilla, C.H.A., Catlin, M., &amp; Larson, E.H. (2015). Geographic and specialty distribution of US physicians trained to treat opioid use disorder. <i>Annals of Family Medicine</i>, 13(1), 23-26. doi:10.1370/afm.1735</p>	<p>N/A</p>	<p>Researchers correlated physicians that were waived to prescribe buprenorphine on the July 2012 DEA Drug Addiction Treatment Act (DATA) Waived Physician List with the American Medical Association Physician Masterfile to identify provider age, specialty, rural or urban status and geographical location</p>	<p>Physicians authorized to prescribe buprenorphine in the United States</p>	<p>IV: Physicians in the United States who have received a DEA DATA waiver to prescribe buprenorphine-naloxone to treat opioid use disorder</p> <p>DV: Access to office-based treatment of opioid use disorder (i.e. buprenorphine-naloxone)</p>	<p>The amount of physicians that were waived to prescribe buprenorphine and demographic data such as provider age, specialty, rural or urban status and geographical location</p>	<p>-16% of psychiatrists held a DEA DATA waiver (41.6% of all MD's w/waivers) but were primarily located in urban areas</p> <p>-3% of primary care providers had received DEA DATA waivers which comprises the biggest group of MDs' in rural areas in the U.S.</p> <p>-Most counties in the U.S. did not have access to physicians' w/waivers to prescribe buprenorphine-naloxone</p> <p>-The authors suggest increasing access to office-based treatment of opioid disorders</p>	<p>Level III, B</p>
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						especially in rural areas in the U.S. to address the combat the increase in opioid use disorder and unintentional overdoses	
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