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Minnesota State University, Mankato

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Program Review of Naloxone Training within the Wisconsin Department of
Corrections' Community Corrections Division

By

Chelsea Calhoon

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Sociology

In

Human Services Planning and Administration

Minnesota State University, Mankato

Mankato, Minnesota

May 2019

April 3rd, 2019

Program Review of Naloxone Training within the Wisconsin Department of
Corrections' Community Corrections Division
Chelsea Calhoon

**This thesis has been examined and approved by the following members of
the student's committee.**

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TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
CHAPTERS	
I INTRODUCTION.....	1
II THEORETICAL FRAMEWORK.....	5
Theory Review.....	5
III LITERATURE REVIEW.....	10
Importance of Opioid Epidemic Intervention.....	10
Training Program Effectiveness and Evaluation.....	13
IV RESEARCH DESIGN AND METHODS.....	18
Hypotheses.....	18
Population.....	19
Method of Data Collection.....	20
Variables.....	21
Findings and Data Analysis.....	23
Research Design.....	24
Protection of Human Subjects.....	24
V FINDINGS AND CONCLUSIONS.....	26
Response Rate.....	27
Univariate Analysis.....	27

Calculating Scales.....	28
Multivariate Analyses.....	29
Hypotheses and Tables.....	30
Analysis.....	39
VI DISCUSSION AND POLICY RECOMMENDATIONS.....	42
Limitations of the Study.....	42
Recommendations for Future Research.....	43
Policy Recommendations.....	44
VII REFERENCES.....	46
VIII APPENDICES.....	52
Appendix A: Opioid Overdose Attitudes Scale.....	52
Appendix B: Opioid Overdose Knowledge Scale.....	53
Appendix C: Demographics.....	55
Appendix D: OOKS & OOAS Scoring Instructions.....	57
Appendix E: Initial Email Sent to DOC Employees.....	61
Appendix F: Follow Up Email Sent to DOC Employees.....	62
Appendix G: Wisconsin DOC Research Review Committee Approvals.....	63
Appendix H: Institutional Review Board Approval Letter.....	65

ABSTRACT

Program Review of Naloxone Training within the Wisconsin Department of Corrections' Community Corrections Division

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2019

One of the fastest growing drug problems in the United States is the abuse of opioids (United States Department of Health & Human Services, 2018). With the rising overdose rates, the criminal justice system may offer a pivotal role in the decrease of overdose deaths through opioid overdose recognition and naloxone administration training (World Health Organization, 2014). Training evaluation based on the Effectiveness Theory find significant predictors of training effectiveness and retention to be correlated with the training program, age, and employment tenure (Cowman & McCarthy, 2016).

This thesis' research question is, "Do demographics correlate to training retention for opioid overdose recognition and naloxone administration?" Utilizing the training provided by the Wisconsin Department of Corrections, Division of Community Corrections', training retention was measured through an online questionnaire assessing variances in the demographic variables of age and employment tenure. Based on the Effectiveness Theory, this study predicts employee demographics will influence training retention. Specifically, this study predicts the older age category of employees, as well as those with longer

employment tenure, will have better retention of training about applicable knowledge of dealing with an opioid overdose. This study found that overall tenure of employment was not related to training retention and missing data prevented an analysis of age. However, it was found that overall respondents retained approximately 75% of the information received during the training.

I: INTRODUCTION

This chapter will discuss the rising opioid epidemic. In response to the rising overdose rates, the Wisconsin Department of Corrections' two-year pilot program providing naloxone training will be analyzed. As part of the analysis, the Opioid Overdose Attitudes Scale (OOAS) and the Opioid Overdose Knowledge Scale (OOKS) questionnaires (Williams, Strang, & Marsden, 2013) will be administered to the Division of Community Corrections' employees after they have received training. This chapter will show how the Effectiveness Theory (Cowman & McCarthy, 2015) can provide insight on how retention of the training may be related to age and job tenure.

The topic of the epidemic and overdose crisis has become an overwhelming and frequent headline from the biggest to smallest cities in the United States (Anthony-North, Pope, Pottinger, & Sederbaum, 2018). The emerging opioid epidemic is sweeping across the United States and correctional staff are being asked to help handle this crisis (Anthony-North et al. 2018). With the rising overdose rates, agencies like correctional centers and institutions are implementing naloxone administration supplies, along with opioid overdose recognition training (Anthony-North et al. 2018). The importance of identifying the

perceptions, attitudes, and retention among these employees are key to unique training implementation (Pickens, 2005). Probation and parole agents, including other community corrections personnel can help play a role in responding to this epidemic, but with proper training (Anthony-North et al. 2018).

In response to the epidemic, a voluntary training program was offered to Wisconsin DOC employees and provided by the *Aids Resource Center of Wisconsin- Prevention Department*. The curriculum and purpose of the training covers defining features of naloxone, steps for naloxone administration, overdose prevention tips, signs of an overdose, and important responder notes. Due to Department of Corrections' employees having the opportunity to receive the training, the focus of the current study is to whether employees retain training knowledge.

The Effectiveness Theory finds significant predictors of training effectiveness and retention in regard to the training program, age, and employment tenure. The theory suggests these variables are determinants or predictors of how different jobs and roles within an organization may alter a trainee's perception about the transferability and applicability of the skills and lessons learned (Cowman & McCarthy, 2016). The Effectiveness Theory also states a relationship between age and employment tenure in its effects on training retention. The theory maintains the employees who have more

experience within the organization tend to be more prepared for training, while also believing the content to be relevant and opportunistic (Cowman & McCarthy, 2016).

This study evaluated retention of information from a training offered to Wisconsin DOC employees. Through the use of responses to a voluntary and anonymous questionnaire information will be gathered that will benefit the Wisconsin DOC in evaluating the utility of the training. The questionnaire was administered through Qualtrics, a qualitative research software company, which allows researchers to collect data and analysis online. The questionnaire asked questions from the Opioid Overdose Knowledge Scale (OOKS) (Williams et al. 2013). This scale measures the employee's knowledge about overdose risk factors, signs, aftercare, and implementation of training (Williams et al. 2013). It was also being used because it assesses levels of knowledge of opioid overdose management. In addition, the Opioid Overdose Attitudes Scale (OOAS) was incorporated. This scale analyzes knowledge of the administration of naloxone, importance of naloxone obtainability, and measures competence, concerns, and readiness (Ray, O'Donnell, & Kahre, 2015). The OOKS and OOAS are proven to have face, content, and construct validity (Williams et al. 2013).

A purposive non-probability sample was used to demonstrate that a particular trait exists within this specific population. The potential benefits of the research results could improve and provide a more accepted issuance of

naloxone administration training and standards made through the Wisconsin Department of Corrections (DOC).

The data collection and analysis took place within the first year of the pilot program. Cowman & McCarthy's (2016) Effectiveness Theory introduces significant predictors of training effectiveness and retention based on the training program, age, and employment tenure. The OOAS was used to analyze the administration of naloxone and the importance of naloxone obtainability (Williams et al. 2013). Additionally, the OOKS was incorporated and used to measure the employee's knowledge about overdose risk factors, signs, aftercare, and implementation of training (Williams et al. 2013). Lastly, if the opioid overdose recognition and naloxone administration training is deemed effective, while considering multiple demographics and variables including age and employment tenure, it could potentially reduce the number of opioid-related deaths (National Institute on Drug Abuse, 2017).

II : THEORETICAL FRAMEWORK

This chapter reviews the tenets of Effectiveness Theory and how it has been used to assess training effectiveness. Specifically, the Effectiveness Theory will be used to show how training can be made more effective, in terms of age, and amount of time in the job (employment tenure). In addition, critiques of the theory are discussed, including demographic inconsistencies and time elapsed between training sessions (Cowman & McCarthy, 2016). The end of the chapter focuses on this thesis' study and its potential benefits of training effectiveness related to the opioid epidemic when catering to specific demographics for Wisconsin DOC employees.

Theory Review

The Effectiveness Theory seeks to analyze and find significant predictors of training effectiveness and retention. It contends that success in retention is dependent on various demographic variables, specifically age and employment tenure (Cowman & McCarthy, 2016). In order to improve learning and produce higher performance rates, training and education must be designed to include retention of knowledge (Kim, Ritter, & Koubek, 2010). Skill retention is especially important when a professional must perform certain skills they rarely practice. However, even professionals may forget what they have learned, which can lead to a decreased or less successful performance (Kim et al. 2010).

Training expansion has ensued due to its increasing popularity and complexity of changes occurring in the workplace (Ford, Kozlowski, Kraiger, Salas, & Teachout, 2014). The theory on training effectiveness describes why training does or does not meet proficiency standards. Therefore, training and its effectiveness should be viewed as a central focus to the organizations and its standards (Ford et al. 2014).

Cowman & McCarthy (2016) performed a study while drawing on training evaluation and the Effectiveness Theory. They used the theory to focus on training effectiveness and its relation to the following demographic variables: age, education, position, time since training, tenure, recruitment to the training program, and preparation for training. Their regression analysis found the Effectiveness Theory explained variations in demographics due to the significant impact of information retention, age, and employment tenure (Cowman & McCarthy, 2016).

There is a wide range of training and development programs being offered and delivered to enhance employee skill and performance. Therefore, it is vital for the programs to ensure learning acquirement, transferring, and utilization of skills (Cowman & McCarthy, 2016). Cowman & McCarthy (2016) focused on the impact of demographics and situational factors regarding information retention, or as they phrase it, training transfer. Training transfer happens alongside the development of human resource interventions, which result in changes for post-

training workplace behavior (Cowman & McCarthy, 2016). This study ties to the Effectiveness Theory because of the research question and sample regarding training effectiveness, age, and tenure.

Due to the limited research of the Effectiveness Theory within organizations, studies have reported inconsistencies concerning the effects of demographic variables including age and employment tenure on training effectiveness and transfer (Cowman & McCarthy, 2016). It is recognized that age and employment demographics may be influenced by other demographic, situational, and organizational factors. With the research that has been done, it also shows the dependency of time since completing the training intervention can greatly skew results. As an example, it was seen in Cowman & McCarthy's (2016) study that time since completion of training is significantly associated with training transfer. In their study, the time period that elapsed since the respondents engaged in the training ranged from 6 to 60 months. The data was gathered and divided into five subcategories: <2 years; 2-3 years; 3-4 years; 4-5 years, and 5+ years. However, further studies are needed to investigate the Effectiveness Theory across other training interventions. In the present study, the effect of time since completion of training and employee's retention was assessed.

Moreover, Cowman & McCarthy's study found that respondents' age is significantly associated with transfer of training at a specific job, or directional

level (Cowman & McCarthy, 2016). Age, specifically employees from ages 40-49, show training retention through implementing what they learned in the training more frequently while on the job. Additionally, a small relationship was observed regarding employment tenure. The results may be explained by the fact that older respondents have likely accrued more years' experience working in the field (Cowman & McCarthy, 2016). The theory would suggest that retention depends on the stated demographics.

Cowman & McCarthy (2016) found employment tenure in an organization relevant to training retention. The study found older employees as having a higher ability to achieve sustained training retention. In addition, employment tenure is also relevant to retention because tenure was found to be associated with high learning content transferability. Cowman & McCarthy (2016) argue length of employment enables participants to acquire sufficient technical skills in order to have successful training retention.

This thesis focuses on the effectiveness of training as measured by retention with opioid epidemic information relating to the field of corrections. Following the findings of prior literature, emphasis was based upon age of the participant and time the participant has spent on the job. The results of the research intend to help and inform trainers of potential training perspectives depending on demographics that may foster more applicable training for employees, as well as, help shape future trainings to better cater to a variety of

demographics within Wisconsin DOC staff. Therefore, it could be of valuable information to address how Wisconsin DOC employees assess opioid overdose recognition and naloxone administration training differently. The importance of analyzing their gained knowledge, competence, concerns, and readiness through training, knowledge about overdose risk factors, signs, aftercare, and implementation of training are key to valuable implementation and changes (Williams et al. 2013).

III: LITERATURE REVIEW

In this chapter, the opioid epidemic and the importance of intervention will be discussed. This includes the number of overdose deaths within the United States, an opioid definition, overdose signs and symptoms, and naloxone as an overdose reversal drug. This segues to a discussion of effectiveness of naloxone training programs. Specifically, this chapter includes a review of research studies analyzing the relationship between trainee demographics and retention effectiveness. The end of the chapter introduces the thesis' replication study on the impact of demographic and situational factors of training transfer among Wisconsin Department of Corrections, Division of Community Corrections employees.

Importance of Opioid Epidemic Intervention

With over 64,000 drug overdose deaths in the United States estimated in 2016 (National Institute on Drug Abuse, 2017), the emerging opioid epidemic continues to rise, resulting in the trend of equipping first responders and state employees with opioid overdose recognition and naloxone administration training. Therefore, the definition of an opioid is that of a controlled substance derived from opium or synthetically manufactured medication that commonly include heroin, morphine, codeine, oxycodone, hydrocodone, fentanyl,

hydromorphone, oxymorphone, and methadone (IHS First Responder Manual, 2016). Furthermore, opioid overdose signs and symptoms include unresponsiveness, blue or pale lips/fingertips, slowly or not breathing, slow heartbeat, vomiting, and/or low blood pressure (IHS First Responder Manual, 2016). An opioid overdose can occur for a variety of reasons, including when a person overdoses on an illicit drug, misusing or mixing prescription medication, taking opioid medication that was prescribed for someone else, and many more (SAMHSA, 2015).

Naloxone, or “rescue drug,” was first synthesized in 1961 and became Food and Drug Administration (FDA) approved for use in 1971 (Ray, O’Donnell, & Kahre 2015). It is an opioid antagonist that reverses the respiratory depression that occurs during an overdose (Ray et al. 2015). The active ingredients in the antagonist is naloxone hydrochloride (HCl), Benzalkonium chloride, Disodium ethylenediaminetetraacetate, Sodium chloride, Hydrochloric acid, and purified water (Ray et al. 2015). Naloxone works as a non-schedule medication that competes and knocks opioids out of the receptors in the brain. The medication may be injected in the muscle or vein with a lower concentration of naloxone (.4mg/1mL). Alternatively, the naloxone aerosol spray comes with the concentration of approximately (2mg/2ml) (Ray et al. 2015). Most commonly used, the spray is absorbed through the nasal mucosa, which is deemed

effective, easily administered, and eliminates the risk of using needles (Ray et al. 2015).

It has become prevalent that many first responders and criminal justice professionals are equipped with the opioid antagonist medication, naloxone, which can be used to treat respiratory depression in suspected opioid overdose cases (Faul, Dailey, Sugerman, Sasser, Levy, & Paulozzi, 2015). The naloxone training curriculum includes the benefits and concerns regarding naloxone, myths and facts about overdoses, legislation, medical facts, risk factors, symptom recognition, and protocol for naloxone administration (Dahlem, King, Anderson, Marr, Waddell, & Scalera, 2017).

The Wisconsin DOC contracted the *Aids Resource Center of Wisconsin-Prevention Department* to provide a training program that educates trainees on the general opioid overdose signs and symptoms, along with providing a naloxone training pack and directions for administration. Specifically, the curriculum provides a list of signs of an overdose such as drowsiness, pale and/or cold skin, unconsciousness, gurgling or choking sounds, slowed breathing and/or heartbeat. It also specifies overdose “Do’s and Don’ts.” For example, the curriculum trains someone in an overdose situation to not give the overdose victim anything to eat or drink, not to leave them alone, and to not put them in a

cold bath or shower. It *does* stress to put the overdose victim in a recovery position, perform rescue breaths, call 911, and administer available naloxone. Additionally, the naloxone training pack and directions for administration include the reversal opiate intoxication medication and step by step instructions to administer the medication to an overdose victim.

Training Program Effectiveness and Evaluation

Training program effectiveness is dependent on the training delivery method and trainee demographics (Huang, Strawderman, Babski-Reeves, Ahmed, & Salehi, 2013). The extent of how training retention occurs and sustains over time is due to the effectiveness of workplace training and development. In this section, program effectiveness regarding learning objectives, training delivery method, and trainee attitudes and attributes will be discussed further.

According to Kraiger et al. (1993), training evaluation is the systematic collection of data intended to measure the success of training programs. When there is a specified outcome measure that is related to the learning objectives, constructive evaluation occurs. Kraiger (1993) further states how learning objectives and outcomes are multidimensional; ranging from changes in cognitive functioning, skill capacities, and affective outcomes. The skill-based outcomes include compilation, procedures, composition, and automaticity. Effective

outcomes include attitudinal, motivational disposition, self-efficacy, and goal setting (Kraiger et al. 1993).

Effective training programs are deemed critical for successful employee performance and organization fulfillment (Huang et al. 2013). For example, in-classroom training is considered to be crucial for a quality learning experience due to the opportunities for engagement and enable constructive feedback (Huang et al. 2013). However, difficulties in this delivery method may arise because classroom training elicits additional costs of transportation, various accommodations, and other accessible resources (Huang et al. 2013).

A trainee's attitude and attributes can potentially influence training effectiveness. Attributes include their demographics, characteristics, motivation, and learning styles (Huang et al. 2013). Ramachandran (2010) (as cited in Huang et al. 2013) did a study on the effectiveness of training programs on public sector employees. The outcome data showed differences in employee perception and training effectiveness based on demographic characteristics. Ramachandran (2010) found experiences (age and tenure) as predominating and determining factors of participants in training programs. Lastly, the measurement of training effectiveness can be assessed through various aspects within a training program, such as the training design, the trainee's ability to retain knowledge and information, and participation (Huang et al. 2013).

Huang et al. (2013) mentioned trainees' attitudes and motivations play a factor in influencing volunteer training effectiveness. It is further explained that voluntary program participants tend to require higher levels of motivation to perform well, rather than training programs who offer direct benefits. In addition, Huang et al. (2013) states government employees should have a higher level of motivation and responsibilities for a public-safety related program. Therefore, participants with a higher level of motivation for participating in the training are more willing to retain knowledge from the training.

A separate study was done regarding factors relating to training retention after crisis intervention team training (CIT) for officers. The Crisis Intervention Training model is a specialized program that aims to improve safety during offender and officer encounters (Compton & Chien, 2008). It showed similar program results correlating with trainee demographics. A number of variables were examined as potential predictors of retention from the training, including gender, level of education, and voluntary participation. Of particular importance to this study, they looked at age and employment tenure (Compton & Chien, 2008). This study specifically found that employment tenure and age within the department was correlated with the difference between post-training and follow up knowledge test scores. The authors describe a potential reasoning for this finding due to those trainees as having had more training and relevant encounters within the scope of their job (Compton & Chien, 2008).

In Cowman & McCarthy's (2016) study, a cross-sectional survey utilizing open and closed questions, as well as fill in the blank questions, to gather information about demographic and situational characteristics. The training under investigation was a sixty-hour training program designed specifically for over two hundred public sector health care workers. The objective of the training was to provide health care staff with skills, knowledge and abilities to design, deliver, and evaluate effective physical activities for long-term stay facility patients (Cowman & McCarthy, 2016).

Of particular interest to this thesis, Cowman & McCarthy (2016) looked at specific variables that are being addressing in this study. Employees in both studies were asked to indicate their year of birth, resulting in the ages of employee respondents' ranging between 27 to 69 years, with a mean of 49 years. The age variable was placed into categories and compared between group one of 20 to 39 years; group two of 40 to 49 years; and group three of 50 years or more. These categories were chosen by Cowman & McCarthy (2016) to broadly align with early career, mid-career, and late career phases. Tenure was measured using a single, closed question asking employees to indicate how many years they have been employed in their current organizations. Tenure was also categorized into groups; group one consisted those employees who have worked in their current organization for up to 10 years, group two was from 11 to

20 years, and group three were those working in the organization from 21 years or more.

Cowman & McCarthy's study analyzed significant predictors of respondents' perceptions of their ability to transfer training to different contexts. Predictors involved demographics, specifically regarding the respondents' age, and number of years employed. Reviewed results include a moderate association between 'age' and delivery of training (retention).

The results of the demographics of age and employment tenure regarding training transfer may be explained by the fact that older respondents have likely accrued more years of experience working in the field. The current study is modeled after the study done by Cowman & McCarthy (2016).

IV: RESEARCH DESIGN AND METHODS

In this chapter, this study's research design and methods will be explained in order to analyze the influence of employment tenure, age, and prior training, as well as addressing the study's hypotheses. The research instruments will be discussed as well as the research-based scales: The Opioid Overdose Attitudes Scale and The Opioid Overdose Knowledge Scale, as constructed by Anna Williams, John Strang, and John Marsden from the Addictions Department, Institute of Psychiatry and Psychology and Neuroscience for King's College in London (UK). In addition, the method of data collection will include the benefits, weaknesses, and distribution of variables. Also, the research design will describe the process, reliability, and validity of the research design. Lastly, the protection of human subjects will identify the anonymity and confidentiality factors to make sure that participation in the questionnaires do not affect their job.

Hypotheses

The Effectiveness Theory predicts a relationship between employee demographics and training effectiveness. Furthermore, the theory helps predict that employee's demographics will correlate with their perception and assessment of opioid overdose recognition and naloxone administration training. The theory provides a foundation for the prediction stating that employees who have been employed within the correctional field for a longer period of time will

have higher scores on the Opioid Overdose Knowledge Scale and Opioid Overdose Attitudes Scale. Specifically, this theory predicts the following:

H1: The older category of employees will have better retention of trainings on understanding and applicable knowledge of the opioid overdose and use of naloxone, as indicated by their scores on the Opioid Overdose Knowledge Scale and Opioid Overdose Attitudes Scale.

H2: This will be indicated by their scores on the Opioid Overdose Knowledge Scale and Opioid Overdose Attitudes Scale.

H3: Employees within the Division of Community Corrections who have been employed for a longer period of time will have a more significant understanding and applicable knowledge of dealing with an opioid overdose and use of naloxone. This will be indicated by their scores on the Opioid Overdose Knowledge Scale and Opioid Overdose Attitudes Scale.

Population

The population for this study is all people who have participated in the Wisconsin DOC pilot training program addressing opioid overdose recognition and naloxone administration. The DOC has a list of the group of people who attended the training through the *Aids Resource Center of Wisconsin- Prevention Department*. All participants who attended these trainings were invited to participate in the present study. The sample for the current study includes all of

those who completed the online questionnaire assessing their retention of information presented at the pilot program's training.

The Wisconsin Department of Corrections' Research Review Committee agreed to submit the evaluation questionnaire, via Minnesota State University, Mankato's Qualtrics account. They also submitted an informed consent form to the employees who had completed the training. Participation in the questionnaire was voluntary and anonymous. Distribution was handled through the Department of Corrections' Research Review Committee, who had access to the trainee's employee issued email address. The researcher never saw the names of those who participated in the training nor who agreed to complete the evaluation questionnaire. However, all completed questionnaires were only submitted electronically to the researcher and not to the Wisconsin DOC.

Method of Data Collection

The use of a questionnaire is an appropriate method for this data collection because this method is useful and feasible when analyzing the characteristics of a large population (Babbie, 2010). Online questionnaires are also made more easily available to participants and substantially more cost-effective (Babbie, 2010). A weakness of online questionnaires lies in the difficulty of ensuring that respondents are representative of the general population.

Overall, survey research is comparatively weak on validity, but strong on reliability (Babbie, 2010).

The questionnaire was constructed in cooperation with the Wisconsin DOC and submitted to the Wisconsin Department of Corrections' Research Review Committee. Then, after receiving approval from the Minnesota State University, Mankato Institutional Review Board, the Wisconsin DOC sent the questionnaire link, via email to all who participated in the trainings. This email contained a brief introduction to the evaluation and the Qualtrics link (See Appendix E). A follow up email was sent seven days from the first email to increase the response rate and response quality, seen in Appendix F (Sánchez-Fernández, Muñoz-Leiva, and Montoro-Ríos. 2012).

Variables

The dependent variable is training retention. To operationalize this variable, questions were administered from both the Opioid Overdose Attitudes Scale (OOAS) and Opioid Overdose Knowledge Scale (OOKS). The OOAS and OOKS are both proven to have face, content, and construct validity (Williams et al. 2013). The OOKS offered a positive insight into the construct validity and reliability of the scales. While the OOAS showed similar validity and reliability, but with less variance. Therefore, this study's research instrument includes a twenty-two-question survey questionnaire that measures an employee's assessments

and perceptions of the opioid overdose recognition and naloxone administration training.

The OOAS (Williams et al. 2013) is a self-administered questionnaire which aims to evaluate attitudes towards managing an opioid overdose. Williams et al. (2013) provided the OOAS with measures for sub-scales relating to overdose management: Competence (self-perceived ability to manage an overdose), concerns (concerns on dealing with an overdose), and Readiness (willingness to intervene in an overdose situation). The OOAS provides respondents with a 5-point Likert Scale (Completely Agree coded as a 5 and Completely Disagree coded as a 1) and this was used to standardize response categories. As required by those who created this scale, the OOAS' following items need to be reversed and recoded before computing the total of scale points: 4, 6, 7, 9, 11, 15, 16, 17, 18, 23, 24, and 25. The total scale points can range from 28 to 140 points (Williams et al. 2013). See Appendix D for all questions.

The independent variables to be analyzed are employee demographics, specifically age and employment tenure. To operationalize these variables, participants are asked fill-in-the-blank questions indicating the year they were born and how long they have been employed within the Wisconsin DOC and within the DCC. These are phrased as in the study by Cowman & McCarthy (2016).

To measure employment tenure, two closed-ended questions asked employees to indicate how many years they have been employed in their current organizations. First, “How many years have you been a Wisconsin Department of Corrections employee?” (as based upon Cowman & McCarthy, 2016). Second, “How many years have you been a Wisconsin Division of Community Corrections employee?” This question was used to provide more clarification to the Wisconsin DOC. The variable of age is categorized into three groups: group one of 20 to 39 years; group two of 40 to 49 years; and group three of 50 years or more. These categories were used by Cowman & McCarthy (2016) and chosen to broadly align with early career, mid-career, and late career phases. Both of these variables are categorized into these following groups; group one is those employees who have worked in the current organization for up to 10 years, group two are from 11 to 20 years, and group three are those from 21 or more years.

Findings and Data Analysis

The results of the research are intended to inform and help opioid overdose and naloxone administration trainers. If the variables are relevant, trainers can better cater the training to Wisconsin DOC staff. The importance of analyzing their gained knowledge, competence, concerns, and readiness through training, knowledge about overdose risk factors, signs, aftercare, and

implementation of training are key to valuable implementation and changes (Williams et al. 2013).

Quantitative analysis analyzed the relationship of the OOAS and OOKS by the two independent variables: age and employment tenure. If there are significant differences on either of these variables, recommendations on how to alter the trainings are provided at the end of this study.

Research Design

The questionnaire includes a purposive non-probability sample due to the investigation of certain characteristics found in common among a specific group. These questionnaires measure an employee's assessments and perceptions of the opioid overdose recognition and naloxone administration training, which are proven to have face, content, and construct validity. The research design does include weaknesses such as no pre-test, no control group, and no random assignment (Royse, Thyer, & Padgett, 2016). The results from this study are statistically and compositionally constructed as best as the researcher can do with the data available.

Protection of Human Subjects

The ethical concerns of this research are due to the potential risk of respondents' supervisors learning of their retention levels and/or their criticism of

the pilot program. The potential risk may result in stress, discomfort, and/or undesirable social consequences from completing the questionnaire. Risks were minimized by stating participants are free to stop at any time, skip questions if the participant does not want to answer, or choose to return the incomplete survey. In addition, the privacy and anonymity of participants were protected via encryption and passwords provided by Qualtrics, to ensure participation does not affect their employment status. Using the Survey Protection settings on Qualtrics, password protection for the survey was be used, as well as specifying the date and time for the survey to close. Possible security risks were protected by using the Qualtrics high-end firewall systems with regular scans being performed to ensure that any vulnerabilities are found, and backups are performed daily.

As such, the Wisconsin DOC did not see completed questionnaires. Instead, the analysis only provides them with group data. The Wisconsin DOC are not able to identify responses of a particular employee. In fact, this process means the student researcher does not know the identity of individual respondents. The instruments and research process were approved by both Minnesota State University, Mankato's Protection of Human Subjects review and Wisconsin Research Review Committee.

V: FINDINGS AND CONCLUSIONS

In this section, data will be reviewed and analyzed to investigate the specified hypotheses. The two scales used to collect the data was the Opioid Overdose Knowledge Scale (OOKS) and Opioid Overdose Attitudes Scale (OOAS). The OOKS measures the employee's knowledge about overdose risk factors, signs, aftercare, and implementation of training, as well assessing levels of knowledge of opioid overdose management. The OOAS analyzes knowledge of the administration of naloxone and importance of naloxone obtainability (Williams et al. 2013).

In response to the rising overdose rates, the Wisconsin Department of Corrections' two-year pilot program providing naloxone was analyzed. As part of the analysis, the OOAS and the OOKS questionnaires (Williams et al. 2013) were administered to Wisconsin DOC employees after they have received training. The questionnaires show a relationship between the results and the Effectiveness Theory, which suggests a need for different training tactics to improve training effectiveness and retention among employees based on demographic factors (Cowman & McCarthy, 2016).

The scales are found to be valid and reliable in assessing overdose management knowledge and attitudes. The OOKS and OOAS constitutes important measures to guide monitoring and assessment of future naloxone

training initiatives (Williams et al. 2013). Both scales are deemed suitable for assessing training on overdose management and naloxone administration. Considering the minimal sample size, the findings suggest a minimal relationship among employment tenure and the employee's retention of knowledge.

Response Rate

The sample of the current study included individuals who attended the opioid overdose recognition and naloxone administration training, as well as completed the questionnaire. Thirty-seven respondents participated, of those, two indicated they did not want to participate. For individual questions, some people did not answer and the most notable was for the question regarding age; "What year were you born?" Five were categorized into group one (ages 20-39), two in group two (ages 40-49), and two in group three (ages 50 and above).

Univariate Analysis

One independent variable in this analysis is length of time working in Wisconsin's DOC. A majority of respondents stated that they have been a Wisconsin DOC employee of 11-20 years, and specifically in the DCC for 10.5 years. When answering the question, "What is your involvement with the Wisconsin Department of Corrections?," all respondents answered, "Adult Probation," followed by respondents answering "Parole." In regard to the date of

training, 36% reported Early Training Attendance (July- August, 2018). 56% of respondents reported attendance to the Late Training (September-October, 2018). Approximately 30% of respondents reported attendance to a different, but related Crisis Intervention Training (CIT). In addition, 33% of respondents reported having already received a form of opioid overdose recognition and naloxone administration training. None of the respondents had administered intranasal naloxone before the training, nor have they reported the administering intranasal naloxone after the training.

Calculating Scales

The OOKS aims to assess the level of knowledge of opioid overdose management. The scale records knowledge about risk factors for having an opioid overdose, signs of an opioid overdose, actions to be taken in an overdose situation, naloxone effects and administration, and aftercare procedures. The scale also identifies misinformation and myths about opioid overdose (Williams et al. 2013). The OOAS evaluates attitudes towards managing an opioid overdose (Williams et al. 2013). The OOKS and OOAS was adopted from the structure of the Drug and Drug Problem Perception Questionnaire (Williams et al. 2013) as cited in (Watson, Maclaren, & Kerr, 2007).

The authors of the original study provided the appropriate scoring instructions for each scale. The instructions for the OOKS use a point-oriented

format for the number of correct answers with a total score range from 0 to 45 points. The OOAS is scored continuously using a 5-point Likert scale, reversing negative items, and having a total score range from 28 to 140 points. Stata Statistics was used as the data analysis generator. In addition, the scoring instructions can be seen in Appendix D. The higher the score from the scales correlate to higher training retention rates, which is the outcome desired by the Wisconsin DOC.

All tables below report on this study's analysis using the same criteria as the original authors (Williams et al. 2013). Where presented, mean scores for the primary scales and subscales are accompanied with confidence intervals. A confidence level of 95% is used meaning that statistically, there is a 95% chance of respondents having scores within the range specified by the confidence interval above and below the stated mean. The mean scores within the tables are unable to be compared between each other because the number of question items and possible responses within the OOKS and OOAS varies.

Multivariate Analyses

The overall OOKS mean score was 29.15. Mean score for "Risk Factors for an Overdose" subscale was 7.03 (± 1.25), "Signs of an Overdose" subscale was 7.46 (± 0.64), "Actions to be Taken in an Overdose" subscale 9.38 (± 0.80), and

Naloxone Use & Administration subscale was 5.26 (\pm .51). Due to the different number of items in each subscale, a comparison of the mean scores between subscales cannot be made. However, when dividing the mean scores out of the maximum possible score, the resulting percentages can be interpreted as the average percentage of risk factors correctly identified, signs of overdose correctly identified, etc. Table 1 presents the conversion of the average scores to a percentage of total items in each scale, thus allowing for comparison.

The overall mean score for the OOKS, as seen in Table 1, is 64.78%, which indicates that respondents identified the correct answers about 65% of the time. The first three subscales: risk factors, signs, and actions, range 74.60%-85.23%. It is noteworthy that “Naloxone Use & Administration” is substantially lower with 35.07%. It must be remembered that the latter could partially represent the respondent’s confidence in their ability to apply the training they received.

Table 1 Respondent’s Mean Percentage for OOKS

Overall Mean Score	Risk Factors for an Overdose	Signs of an Overdose	Actions to be Taken in an Overdose	Naloxone Use & Administration
64.78%	78.11%	74.60%	85.23%	35.07%

Analysis of the OOAS scale finds the overall OOAS mean score was 101.28. Mean score for “Competence with Managing an Overdose” subscale was

36.96 (± 2.55), “Concerns on Dealing with an Overdose” subscale was 32.50 (± 1.71), “Readiness to Intervene in an Overdose Situation” subscale 31.38 ($\pm .91$). Similar to Table 1, Table 2 presents the percentages of accuracy for the overall OOAS and its subscales. Overall, the respondent’s average for the OOAS was 72.34% with the “Concerns on Dealing with an Overdose” being slightly higher and “Competence with Managing” an overdose slightly lower.

Table 2 Respondent’s Mean Percentage for OOAS

Overall Mean Score	Competence with Managing an Overdose	Concerns on Dealing with an Overdose	Readiness to Intervene in an Overdose Situation
72.34%	73.92%	81.25%	63.76%

HYPOTHESIS 1: Impact of Age of the Employee

The first hypothesis cannot be tested because, as discussed earlier, of a low response rate to the question regarding age. A possible reason for the low response rates could include the participants having to physically type in the year they were born, rather than clicking pre-categorized age brackets.

HYPOTHESIS 2: Impact of Employment Tenure Within the DOC

Table 3 presents means and confidence intervals for the OOKS and its subscales for three groups based on employment tenure; 10 years or less, 11-20 years, and 21 years or more. While the means for the total OOKS scores appear to increase slightly with increased number of years on the job, the confidence

intervals are overlapping, indicating these differences are not statistically significant. Generally, the mean scores for the subscales tend to show slight increase with longer employment times but again, the confidence intervals indicate that these averages are not statistically distinguishable. The results from Table 3 do not support the second hypothesis and finds that tenure of the job has no impact on the OOKS scale of training retention.

Table 3 Mean OOKS Scores by Wisconsin DOC Tenure Group

	10 Years or Less Working as a DOC Employee (N=15)	11-20 Years Working as a DOC Employee (N=7)	21 Years or More Working as a DOC Employee (N=5)
TOTAL OOKS	7.13 (±1.32)	7.32 (±1.85)	7.50 (±1.93)
Risk Factors for an Overdose	6.92 (±2.07)	6.86 (±2.90)	7.20 (±3.77)
Signs of an Overdose	7.08 (±.94)	7.86 (±1.46)	8.20 (±2.04)
Actions to be Taken in an Overdose	9.15 (±1.46)	9.43 (±1.91)	9.80 (±.56)
Naloxone Use & Administration	5.38 (±.80)	5.14 (±1.12)	4.80 (±1.36)

Table 4 presents means and confidence intervals for the OOAS and its subscales for three groups based on employment tenure. While the means for the total OOAS scores appear to decrease slightly with increased number of years on the job, the confidence intervals are again overlapping, so these differences are not statistically significant. The results from Table 4 do not

support the second hypothesis that employees who have been employed for a longer period of time within the Wisconsin DOC have a better understanding and applicable knowledge of dealing with an opioid overdose and use of naloxone.

Table 4 Mean OOAS Scores by Wisconsin DOC Tenure Group

	10 Years or Less Working as a DOC Employee (N=15)	11-20 Years Working as a DOC Employee (N=7)	21 Years or More Working as a DOC Employee (N=5)
TOTAL OOAS	34.37 (±2.88)	32.64 (±4.28)	32.73 (±2.35)
Competence with Managing an Overdose	38.21 (±4.15)	35.29 (±7.04)	35.60 (±2.26)
Concerns on Dealing with an Overdose	32.69 (±3.04)	32.29 (±4.23)	32.40 (±2.57)
Readiness to Intervene in an Overdose Situation	32.21 (±1.44)	30.33 (±1.58)	30.20 (±2.22)

HYPOTHESIS 3: Impact of Employment Tenure Within the DCC

Table 5 presents means and confidence intervals for the OOKS and its subscales for three groups based on employment tenure. The means for the total OOKS scores appear to have a slight increase for the mid-career tenure group and then decreased with more years on the job. The confidence intervals show overlap, so these differences are not statistically significant. Generally, the mean scores for the subscales tend to show slight increase for 11-20 year tenure, but again, the confidence intervals indicate that these changes are not significant. The results from Table 5 do not support the third hypothesis that employees who

have worked longer in the DCC will have a more significant understanding and applicable knowledge of dealing with an opioid overdose and use of naloxone.

Table 5 Mean OOKS Scores by Length of Time as a Division of Community Corrections Employee

	10 Years or Less Working as a DCC Employee (N=14)	11-20 Years Working as a DCC Employee (N=9)	21 Years or More Working as a DCC Employee (N=3)
TOTAL OOKS	7.23 (±1.25)	7.36 (±1.35)	7.34 (±5.11)
Risk Factors for an Overdose	7.21 (±1.95)	6.89 (±2.09)	6.67 (±10.04)
Signs of an Overdose	7.07 (±.92)	7.78 (±1.08)	8.33 (±5.17)
Actions to be Taken in an Overdose	9.21 (±1.34)	9.56 (±1.39)	9.67 (±1.43)
Naloxone Use & Administration	5.43 (±.78)	5.22 (±.84)	4.67 (±3.79)

Table 6 presents means and confidence intervals for the OOAS and its subscales based on three separate groups based on employment tenure within the DCC. While the means for the total OOAS scores appear to decrease slightly with increased number of years on the job, the confidence intervals show overlap, so these differences are not statistically significant. Generally, the mean scores for the subscales tend to show slight decrease with longer employment times but again, the confidence intervals indicate that these changes are not

significant. The results from Table 6 do not support the third hypothesis that employees who have worked longer in the DCC will have a more significant understanding and applicable knowledge of dealing with an opioid overdose and use of naloxone.

Table 6 Mean OOAS Scores by Length of Time as a Division of Community Corrections Employee

	10 Years or Less Working as a DCC Employee (N=15)	11-20 Years Working as a DCC Employee (N=9)	21 Years or More Working as a DCC Employee (N=3)
TOTAL OOAS	34.53 (±2.47)	32.38 (±3.38)	32.56 (±5.48)
Competence with Managing an Overdose	38.53 (±3.66)	35.00 (±5.31)	35.00 (±4.30)
Concerns on Dealing with an Overdose	32.60 (±2.58)	32.25 (±3.54)	32.67 (±7.17)
Readiness to Intervene in an Overdose Situation	32.47 (±1.16)	29.88 (±1.30)	30.00 (±4.97)

Table 7 presents means and confidence intervals for the OOKS and its subscales for two separate groups of training categories, as well as participation class sizes. The Early Training category consists of trainings that took place from July to August of 2018. The second group, The Late Training, consists of trainings that took place from September to October of 2018. While the means

for the total OOKS scores appear to decrease slightly with the later training participants, the confidence intervals show overlap, with the exception of the significant decrease for “Naloxone Use and Administration.” This is an interesting finding since it is not the more recent training date category, so simple memory could not explain this finding. As far as the researcher is aware, there were no differences among these trainings. Although, this is something that could be further investigated the Wisconsin DOC.

Table 7 Mean OOKS Scores by Date of Participation in the Wisconsin Department of Correction’ Opioid Overdose Recognition and Naloxone Training

	Early Training July- August, 2018 (N=9)	Late Training September- October, 2018 (N=14)
TOTAL OOKS	29.22 (±5.29)	28.69 (±4.00)
Risk Factors for an Overdose	6.89 (±2.62)	7.07 (±1.84)
Signs of an Overdose	7.22 (±1.37)	7.46 (±.91)
Actions to be Taken in an Overdose	9.11 (±1.86)	9.38 (1.22)
Naloxone Use & Administration	6.00 (±.54)	4.77 (±.75)

Table 8 presents means and confidence intervals for the OOAS and its subscales for two separate groups of training categories, as well as participation

class sizes. Again, the Early Training category consists of trainings that took place from July to August of 2018. The second group, The Late Training, consists of trainings that took place from September to October of 2018. While the means for the total OOAS scores appear to decrease slightly with the later training participants, the confidence levels show overlap. Again, this is an interesting finding since it is not the more recent training date category, so simple memory could not explain this finding. As far as the researcher is aware, there were no differences among these trainings. Although, this is something that could be further investigated the Wisconsin DOC.

Table 8 Mean OOAS Scores by Date of Participation in the Wisconsin Department of Correction' Opioid Overdose Recognition and Naloxone Training

	Early Training July- August, 2018 (N=9)	Late Training September- October, 2018 (N=14)
TOTAL OOAS	102.00 (±10.57)	98.75 (±5.28)
Competence with Managing an Overdose	38.11 (±6.48)	35.50 (±2.91)
Concerns on Dealing with an Overdose	32.22 (±3.10)	31.46 (±2.41)
Readiness to Intervene in an Overdose Situation	31.67 (±1.68)	31.23 (±1.42)

Table 9 presents means and confidence intervals for the OOKS and its subscales for two separate groups based on prior attendance to Crisis Intervention Training (CIT). While the means for the total OOKS scores are higher prior CIT. The confidence intervals show overlap, so these differences are not statistically significant.

Table 9 Mean OOKS Scores by Prior Attendance to Crisis Intervention Training (CIT)

	Yes (N=9)	No (N=17)
TOTAL OOKS	7.44 (±1.47)	7.21 (±1.10)
Risk Factors for an Overdose	7.44 (±2.24)	6.82 (±1.68)
Signs of an Overdose	7.56 (±1.28)	7.41 (±.81)
Actions to be Taken in an Overdose	9.44 (±1.34)	9.35 (±1.10)
Naloxone Use & Administration	5.33 (±1.02)	5.24 (±.64)

Table 10 presents means and confidence intervals for the OOAS and its subscales for two separate groups based on prior attendance to Crisis Intervention Training (CIT). While the means for the total OOAS scores are lower with prior CIT, the confidence intervals show overlap on all except, “Concerns on Dealing with an Overdose” and “Readiness to Intervene in an Overdose Situation.” In those two subscales, the confidence levels are statistically significant.

Table 10 Mean OOAS Scores by Prior Attendance to Crisis Intervention Training (CIT)

	Yes (N=9)	No (N=18)
TOTAL OOAS	32.28 (±1.95)	36.22 (±3.04)
Competence with Managing an Overdose	34.83 (±2.76)	41.22 (±4.81)
Concerns on Dealing with an Overdose	30.82 (±1.92)	35.67 (±2.52)
Readiness to Intervene in an Overdose Situation	31.18 (±1.17)	31.78 (±1.79)

In looking at the type of job within the Wisconsin DOC' Division of Community Corrections, it was found that individuals involved with Adult Probation, and Parole had higher slightly higher scores in OOAS and OOKS than others. However, many different positions were listed, some with one or two people in each category, making a statistical comparison inappropriate. The respondents did not leave any feedback to give the trainers when asked, "Do you have any feedback to give the trainers?" The lack of responses could be attributed to the open-ended nature of the question or they simply had no feedback.

Analysis

In general, respondents had an overall score of 65% of the OOKS and 72% of the OOAS, meaning retained over three quarters of the information presented at the training. However, confidence in the use and administration of

naloxone and readiness to intervene in an overdose, were substantially lower than the other subscales. This may be related to the extent of training involving actual application of the knowledge. For example, perhaps the training did not involve physical practice in these skills, but this information is unknown to the researcher.

Hypothesis 1 cannot be analyzed because of the high rate of missing data regarding the age of the respondents.

Hypothesis 2, employees within the Wisconsin Department of Corrections who have been employed for a longer period of time will have a better understanding and applicable knowledge of dealing with an opioid overdose and use of naloxone was not supported by the data. In this study, length of term of employment was not related to variation in retention of training information.

Hypothesis 3, employees within the Division of Community Corrections who have been employed for a longer period of time will have a more significant understanding and applicable knowledge of dealing with an opioid overdose and use of naloxone, was not generally supported by the data. The overall OOKS and OOAS scores did not vary by length of time of employment within the division.

There does appear to be some differences in retention between the two trainings. Those offered during the months of July through August, 2018 had

significantly higher scores on the OOKS subscale of use and administration.

Other scales did not show significant differences.

The impact of prior trainings varied between the OOKS and the OOAS. For the OOKS, there was a positive impact on retention rates when there was prior existence of previous training. For the OOAS, those who attended a previous training did poorer than those who did not attend a previous training.

Overall tenure and type of position had no impact on retention, a finding not predicted by the Effectiveness Theory (Cowman & McCarthy, 2016). A point to note is the use and administration of naloxone was substantially lower in the overall OOKS analysis and appeared to be more of an issue in the latter training.

VI: DISCUSSION AND POLICY RECOMMENDATIONS

This study contributes to what should be done regarding the abuse of opioids as one of the fastest growing drug problems in the United States (United States of Health & Human Services, 2018). Using the Effectiveness Theory, an evaluation of the Wisconsin Department of Corrections, Division of Community Corrections, it was predicted that tenure of employment would be related to retention. However, this relationship was not supported.

The use of the OOKS and OOAS were utilized. The scales developed by Williams et al. (2013) measured training effectiveness and retention among employees based on demographic factors (Cowman & McCarthy, 2016). In Williams et al. (2013), the final versions of the OOKS and OOAS and their item sets have sufficient reliabilities. Much of this evaluation utilized instruments and procedures used by Cowman & McCarthy (2016).

The results of this study found few differences among variables including type of employment and employment tenure. Training dates had an impact, as well as exposure to other prior trainings.

Limitations of the Study

A major limitation of the present study is the relatively small sample size. The Williams et al. (2013) study also had a low sample size but was sufficient to address the basic analysis of the study. With a larger sample, the confidence

intervals could have proven to be (more) statistically significant because a smaller sample increases the margin of error. Although, the small sample size did not allow for more in-depth multivariate analysis of the OOKS and OOAS.

Another limitation is the considerable number of respondents who did not address their age. Perhaps the format of this question prevented respondents from answering it. It can be speculated that asking for the respondent's age, instead of year of birth, would have increased response rate.

In regard to external validity, this study was only administered in one state (Wisconsin) and within a specific subset within the Department of Corrections. As such, this affects the generalizability of these findings to other professions in the state of Wisconsin, and to other states. The OOKS and OOAS were useful in measuring the retention of opioid overdose recognition and naloxone administration training initiatives. Both scales are deemed useful for assessing training on overdose management and naloxone administration, but there are still unanswered questions.

Recommendations for Future Research

Future research should focus on obtaining a larger sample size and collect information about consistency in the trainings. For example, using the same instructors and same training outline. Future research could also include similar trainings offered in other public service agencies within Wisconsin and could be

expanded to similar evaluations in different states. Prospective researchers could also expand on the methods of data collection, for example, participant observation of the actual trainings, face to face interviews of those who attended trainings, and/or content analysis of performance records.

Future research should also address the impact of prior Crisis Intervention Training (CIT) on the OOKS and OOAS. The results in this study were conflicting and future research might analyze the differences among employees who have received different forms of prior training.

Policy Recommendations

Based on the findings of this research, listed policy recommendations for any agency that might be using alike measures or conducting similar trainings can be found below.

1. The Wisconsin DOC should assess the appropriateness of receiving the overall scores of 75% or higher in training retention.
2. If Wisconsin DOC wants to improve retention scores, they should focus on the relatively lower scores of the Naloxone Use and Administration subscale. This suggests that respondents are not comfortable in their skill levels.

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3. The Wisconsin DOC should investigate possible differences between the early and later trainings that may account for the differences in training retention, remembering that the earlier trainings had higher scores.

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VIII: APPENDICES

Appendix A: Opioid Overdose Attitudes Scale

OPIOID OVERDOSE ATTITUDES SCALE

Please, answer the following questions thinking about how you would deal with an opioid overdose (opioids such as: heroin, methadone, morphine, oxycodone, tramadol, fentanyl or codeine).

Before you start answering the questions please read the following definitions:

Opioid Overdose: difficulty breathing, turning blue, lost consciousness unable to be roused, collapsing occurring in conjunction with opioid use (opioids such as: heroin, methadone, morphine, oxycodone, tramadol, fentanyl or codeine).

Naloxone: is a medicine (an kind of 'opioid antidote') commonly used by ambulance services to reverse the effects of an opioid overdose and bring the person back into consciousness.

This scale has been developed and validated by Anna Williams, John Strang and John Marsden from the Addictions Department, Institute of Psychiatry and Neuroscience, King's College London. The psychometric properties were tested and published in: Williams AV, Strang J & Marsden J (2013). Development of Opioid Overdose Knowledge (OOKS) and Attitudes (OOAS) Scales for take-home naloxone training evaluation. Drug Alcohol Dependence. 132(1-2):383-6. Author's contact: anna.v.williams@kcl.ac.uk or annaw06@gmail.com

Please, mark how much you agree with each statement:	Completely Disagree	Disagree	Unsure	Agree	Completely Agree
1. I already have enough information about how to manage an overdose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am already able to inject naloxone into someone who had overdosed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I would be able to check that someone who had an overdose was breathing properly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I would be afraid of giving naloxone in case the person becomes aggressive afterwards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. If someone overdoses, I want to be able to help them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I would be afraid of doing something wrong in an overdose situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I would be reluctant to use naloxone for fear of precipitating withdrawal symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Everyone at risk of witnessing an overdose should be given a naloxone supply	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I couldn't just watch someone overdose, I would have to do something to help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. If someone overdoses, I would call an ambulance but I wouldn't be willing to do anything else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I am going to need more training before I would feel confident to help someone who had overdosed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I would be able to perform mouth to mouth resuscitation to someone who had overdosed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Family and friends of drug users should be prepared to deal with an overdose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I would be able to perform chest compressions to someone who had overdosed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I would be concerned about calling emergency services in case the police come around	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Continue →

Please, mark how much you agree with each statement:	Completely Disagree	Disagree	Unsure	Agree	Completely Agree
16. If I tried to help someone who had overdosed, I might accidentally hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. If I witnessed an overdose, I would call an ambulance straight a way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I would be afraid of suffering a needle stick injury if I had to give someone a naloxone injection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. If I saw an overdose, I would panic and not be able to help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. If someone overdoses, I would know what to do to help them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I would be able to place someone who had overdosed in the recovery position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I would stay with the overdose victim until helps arrives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I would prefer not to help someone who has overdosed, because I'd feel responsible if they died	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I know very little about how to help someone who has overdosed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Needles frighten me and I wouldn't be able to give someone an injection of naloxone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I would be able to deal effectively with an overdose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. If I saw an overdose, I would feel nervous, but I would still take the necessary actions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I will do whatever is necessary to save someone's life in an overdose situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B: Opioid Overdose Knowledge Scale

OPIOID OVERDOSE KNOWLEDGE SCALE

Please answer the following questions about heroin overdose (or an overdose from other opioids such as: methadone, morphine, oxycodone, tramadol, fentanyl or codeine):

1. Which of the following factors increase the risk of a heroin (opioid) overdose? (tick all that apply)

- Taking larger than usual doses of heroin
- Switching from smoking to injecting heroin
- Using heroin with other substances, such as alcohol or sleeping pills
- Increase in heroin purity
- Using heroin again after not having used for a while
- Using heroin when no one else is present around
- A long history of heroin use
- Using heroin again soon after release from prison
- Using heroin again after a detox treatment

2. Which of the following are indicators of an opioid overdose? (tick all that apply)


- Having blood-shot eyes
- Slow/shallow breathing
- Lips, hands or feet turning blue
- Loss of consciousness
- Unresponsive
- Fitting
- Deep snoring
- Very small pupils
- Agitated behaviour
- Rapid heartbeat

3. Which of the following should be done when managing an opioid overdose? (tick all that apply)

- Call an ambulance
- Stay with the person until an ambulance arrives
- Inject the person with salt solution or milk
- Mouth to mouth resuscitation
- Give stimulants (e.g. cocaine or black coffee)
- Place the person in the recovery position (on their side with mouth clear)
- Give Naloxone (opioid antidote)
- Put the person in a bath of cold water
- Check for breathing
- Check for blocked airways (nose and mouth)
- Put the person in bed to sleep it off

4. What is naloxone used for?

- To reverse the effects of an opioid overdose (e.g. heroin, methadone)
- To reverse the effects of an amphetamine overdose
- To reverse the effects of a cocaine overdose
- To reverse the effects of any overdose
- Don't know

Continue 

Appendix B: Opioid Overdose Knowledge Scale Continued

5. How can naloxone be administered? (tick all that apply)

- Into a muscle (intramuscular)
- Into a vein (intravenous)
- Under the skin (subcutaneous)
- Swallowing- liquid
- Swallowing- tablet
- Don't Know

6. Where is the most recommended place for non-expert to administer naloxone?

- Outside of thighs or upper arms
- Any vein
- Heart
- By mouth
- Don't know

7. How long does naloxone takes to start having effect?

- 2-5 minutes
- 5-10 minutes
- 10-20 minutes
- 20-40 minutes
- Don't know

8. How long do the effects of naloxone last for?

- Less than 20 minutes
- About one hour
- 1 to 6 hours
- 6 to12 hours
- Don't know

Please mark "true", "false" or "don't know"

	True	False	Don't Know
9. If the first dose of naloxone has no effect a second dose can be given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. There is no need to call for an ambulance if I know how to manage an overdose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Someone can overdose again even after having received naloxone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The effect of naloxone is shorter than the effect of heroin and methadone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. After recovering from an opioid overdose, the person must not take any heroin, but it is ok for them to drink alcohol or take sleeping tablets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Naloxone can provoke withdrawal symptoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This scale has been developed and validated by Anna Williams, John Strang and John Marsden from the Addictions Department, Institute of Psychiatry and Psychology and Neuroscience, King's College London. The psychometric properties were tested and published in: Williams AV, Strang J & Marsden J (2013). Development of Opioid Overdose Knowledge (OOKS) and Attitudes (OAS) Scales for take-home naloxone training evaluation. Drug Alcohol Dependence.132(1-2):383-6. Author's contact: anna.v.williams@kcl.ac.uk or annaw06@gmail.com

Appendix C: Demographics

What year were you born? _____ (drop down option)

What is your involvement with the Wisconsin Department of Corrections? (check all that apply)

____ Juvenile Probation

____ Adult Probation

____ Parole

____ Administration Staff

____ Electronic Monitoring

____ Other, Explain _____

____ None of the above

Please fill in the next statements appropriately.

How many years have you been a **Wisconsin** Department of Corrections employee?

How many years have you been a **Wisconsin** Division of Community Corrections employee?

When did you participate in the Wisconsin Department of Corrections' Narcan training provided by the *Aids Resource Center of Wisconsin- Prevention Department*?

(List of training - dates, asked to select one)

How many years have you been employed within a similar corrections organization or agency? (County, state, federal...etc.). (drop down option)

Have you ever attended Crisis Intervention Training (CIT)?

Yes

No

Appendix D: OOKS & OOAS Scoring Instructions

OPIOID OVERDOSE KNOWLEDGE SCALE (OOKS): INSTRUCTIONS

⇒ OPIOID OVERDOSE KNOWLEDGE SCALE (OOKS)

The OOKS aims to assess the level of knowledge of opioid overdose management among addiction professionals, patients and family members. It records knowledge about risk factors for having an opioid overdose, signs of an opioid overdose, actions to be taken in an overdose situation, naloxone effects and administration, adverse effects and aftercare procedures. The scale also identifies misinformation and myths about opioid overdose.

The OOKS has scores on four domains:

- *Risk*: risk factors for an overdose
- *Signs*: signs of an overdose
- *Action*: actions to be taken in an overdose
- *Naloxone Use*: naloxone effects, administration and aftercare procedures

It is a self-administered structured questionnaire which takes approximately 10 minutes to complete. The scale is formed of 4 multiple-choice questions, 4 forced-choice questions and 6 true/false statements.

⇒ PSYCHOMETRIC PROPERTIES

The psychometric properties of the OOKS are described in Williams et al (2013). The scale has proved to be internally reliable (alpha coefficient 0.83) and robust over time (Intra-Class Correlations= 0.90). The domain's reliability (ICC) are as follow: risks 0.87, signs 0.69, actions 0.53 and naloxone use 0.83.

The scale has also proven to have face, content and construct validity. Content validity was tested by comparing the scores of addiction professionals and family members of opioid users. Professionals reported significantly higher scores than family members. Concurrent validity was tested by correlating OOKS score and the Brief Overdose Recognition and Response Assessment (BORRA). The OOKS total score was positively correlated with the BORRA's Overdose Recognition ($r=0.5$, $P<0.01$) and BORRA's Naloxone Indication sub-scales ($r=0.44$, $P<0.05$).

⇒ SCORING

The OOKS items use a 'yes/no or don't know'; or 'true/false or don't know' response format. Each correct answer scores one point. 'Don't know' and incorrectly marked responses (mistakes) are scored zero. Total score range: 0-45 points.

Total Score (45 items):

- One point if marked (33 Correct/True items): 1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h, 1i, 2b, 2c, 2d, 2e, 2g, 2h, 3a, 3b, 3d, 3f, 3g, 3i, 3j, 4a, 5a, 5b, 5c, 6a, 7a, 8b, 9T, 11T, 12T, 14T
- One point if NOT marked (12 Incorrect/False items): 2a, 2f, 2i, 2j, 3c, 3e, 3h, 3k, 5d, 5e, 10F, 13F. You might chose to use the 'record into same variables' function of SPSS and inverse the values of these items.

Risk (9 items):

- One point if marked: 1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h, 1i,

Signs (10 items):

- One point if marked: 2b, 2c, 2d, 2e, 2g, 2h
- One point if NOT marked: 2a, 2f, 2i, 2j

Action (11 items):

- One point if marked: 3a, 3b, 3d, 3f, 3g, 3i, 3j,
- One point if NOT marked: 3c, 3e, 3h, 3k,

Naloxone Use (15 items):

- One point if marked: 4a, 5a, 5b, 5c, 6a, 7a, 8b, 9T, 11T, 12T, 14T
- One point if NOT marked: 5d, 5e, 10F, 13F

SPSS data-base and syntaxes can be obtained from the author (please see contact details below).

⇒ **DATA**

The table below presents OOAS values that have been recorded for drug users and family members:

	Family members (n=73)			Drug Users (n=89)		
	Pre-training	Immediately post-training	3-months post-training	Pre-training	Immediately post-training	3-months post-training
Total OOKS	30.41 (±7.1)	39.20 (±3.1)	37.30 (±4.5)	33.14 (±4.6)	39.43 (±3.5)	39.05 (±3.5)
Risks	6.79 (±2.27)	8.41 (±1.4)	7.45 (±1.7)	7.18 (±1.8)	8.25 (±1.1)	7.85 (±1.4)
Signs	6.38 (±1.9)	7.89 (±1.5)	7.48 (±1.4)	7.24 (±1.5)	8.42 (±1.4)	8.08 (±1.2)
Action	9.46 (±1.6)	10.10 (±1.48)	10.25 (±1.1)	9.86 (±0.8)	10.42 (±0.9)	10.64 (±0.5)
Naloxone	7.77 (±3.7)	12.79 (±1.4)	12.21 (±1.8)	8.83 (±2.8)	12.33 (±1.7)	12.48 (±1.7)

The data is available in Anna Williams (2011) PhD thesis and it was published in Williams et al (2013, 2014):

OPIOID OVERDOSE ATTITUDES SCALE (OOAS): INSTRUCTIONS

⇒ **THE OPIOID OVERDOSE ATTITUDES SCALE (OOAS)**

The OOAS is a self-administered questionnaire which aims to evaluate attitudes towards managing an opioid overdose among addiction professionals, patients and their family members. It takes approximately 15 minutes to complete.

The OOAS has 28 items grouped into three sub-scales relating to overdose management: *Competence* (self-perceived ability to manage an overdose), *Concerns* (concerns on dealing with an overdose) and *Readiness* (willingness to intervene in an overdose situation).

- Competence 10 items: 1, 2, 3, 11, 12, 14, 20, 21, 24, 26
- Concerns 8 items: 4, 6, 7, 15, 16, 18, 23, 25
- Readiness 10 items: 5, 8, 9, 10, 13, 17, 19, 22, 27, 28

⇒ **PSYCHOMETRIC PROPERTIES**

The OOAS was adapted from the structure of the Drug and Drug Problem Perception Questionnaire (Watson et al., 2007). Its psychometric properties are described in Williams et al 2013. The scale has proved to be internally reliable (alpha coefficient 0.90) and robust over time (Intra-Class Correlations= 0.82). Competence, concerns and readiness items' scores fall in the fair-to-excellent range for test-retest reliability (ICC=0.92, 0.55 and 0.65, respectively).

The scale has also proven to have face, content and construct validity. Content validity was tested by comparing the scores of addiction professionals and family members of opioid users. Professionals reported significantly higher scores than family members. Concurrent validity was tested by correlating the OOAS score and the General Self-efficacy Scale, but no association was found.

⇒ **SCORING**

The OOAS is scored continuously using a 5-point Likert scale: completely disagree (1 point), disagree (2 points), unsure (3 points), agree (4 points) and completely agree (5 points).

Reverse negative items:

The following negative items need to be reversed before computing the total of scale points: 4, 6, 7, 9, 11, 15, 16, 17, 18, 23, 24, 25. You can use the 'record into same variables'

function of SPSS. Recode these items as: completely disagree (5 point), disagree (4 points), unsure (3 points), agree (2 points) and completely agree (1 points).

Totals Scores:

Once negative items have been reversed, add all items' points. The total scale points can range from 28 to 140 points.

Sub-scores

- Competence: add the points of the following items: 1, 2, 3, 11, 12, 14, 20, 21, 24, 26
- Concerns items: add the points of the following items: 4, 6, 7, 15, 16, 18, 23, 25
- Readiness items: add the points of the following items: 5, 8, 9, 10, 13, 17, 19, 22, 27, 28

SPSS data-base and syntaxes can be obtained from the author (please see contact details below).

⇒ DATA

The table below presents OOAS values that have been recorded for drug users and family members:

	Family members (n=73)			Drug Users (n=89)		
	Pre-training	Immediately post-training	3-months post-training	Pre-training	Immediately post-training	3-months post-training
Total OOAS	97.99 (±12.7)	118.06 (±12.8)	116.25 (±9.7)	102.63 (±10.4)	118.80 (±13.9)	113.44 (±9.9)
Competence	28.28 (±7.1)	41.61 (±4.4)	40.83 (±3.4)	31.46 (±5.8)	42.48 (±5.4)	40.60 (±3.6)
Concerns	28.51 (±6.2)	32.71 (±6.5)	32.08 (±3.7)	28.87 (±4.7)	31.98 (±5.5)	30.44 (±3.9)
Readiness	41.21 (±4.9)	43.73 (±4.7)	43.34 (±4.1)	42.29 (±4.4)	44.34 (±5.1)	42.39 (±3.8)

The data is available in Anna Williams (2011) PhD thesis and it was published in Williams et al (2013, 2014):

Williams AV (2011). Training on overdose management and naloxone administration for family members and carers of opioid users: an evaluation of the short-term benefits using validated measures. Ph.D Thesis. King's College London: UK.

Williams AV, Marsden J & Strang J (2014). Training family members to manage heroin overdose and administer naloxone: randomized trial of effects on knowledge and attitudes. *Addiction*, 109: 250–259.

Appendix E: Initial Email Sent to DOC Employees

Subject Line: Evaluate WI DOC Narcan Training

Dear Wisconsin Department of Corrections' Employee,

You recently completed the Wisconsin Department of Corrections training on the use of Narcan. We want to evaluate this program and we request your help in completing an online survey. This survey will be anonymous and your answers will be sent to Ms. Chelsea Calhoon, at Minnesota State University, Mankato, who has agreed to analyze the findings for us. The survey will analyze your opinion of the training and your retention on the use of naloxone intervention in an opioid overdose. The survey will take approximately 20 minutes to complete. We strongly encourage your participation in this evaluation, it could improve our future trainings. Thank you.

The link to the survey is below, please click the link to continue to the survey.

https://mnsu.co1.qualtrics.com/jfe/form/SV_3mj72jSXquKua1v

If you have any questions or concerns, please feel free to email chelsea.calhoon@mnsu.edu.

MSU IRBNet ID# 1316351

Appendix F: Follow Up Email Sent to DOC Employees

Subject Line: Evaluate WI DOC Narcan Training

Dear Wisconsin Department of Corrections' Employee,

There have been zero people to participate in the research study through Minnesota State University, Mankato. The questionnaire is short - 27 questions and should take no more than thirty minutes to complete. There are relatively few opportunities to provide feedback and your time and input would be greatly appreciated. Your response can assist the Department of Corrections to fully understand their employees' knowledge retention regarding opioid overdose recognition and intranasal naloxone training.

Thank you for your help!

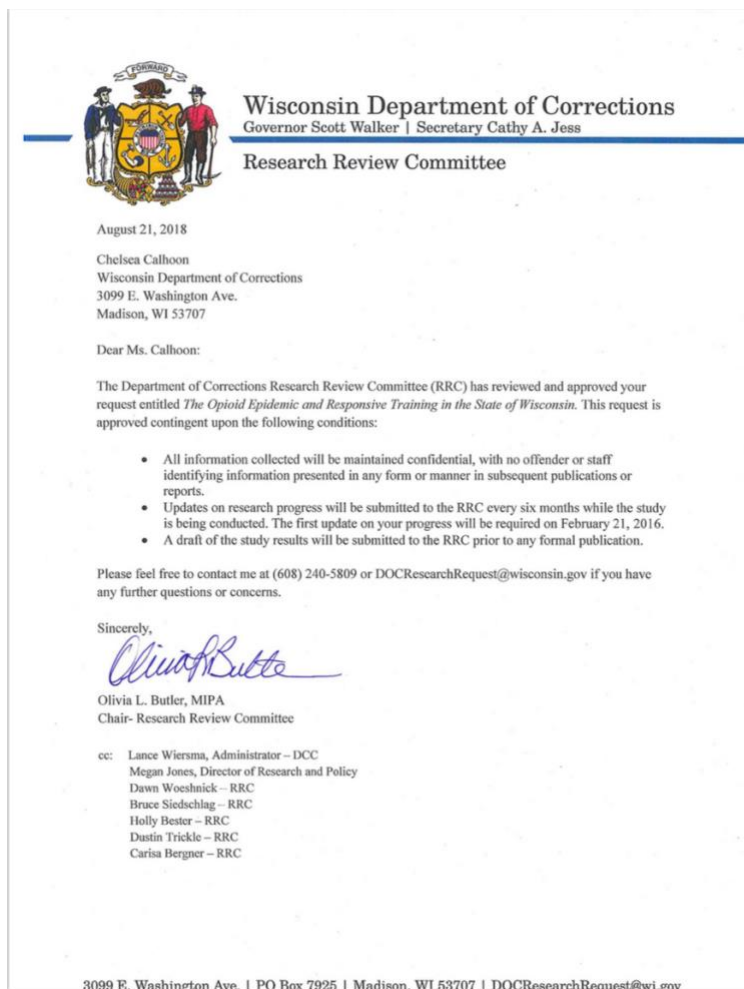
The link to the survey is linked below, please click the link to continue to the survey.

https://mnsu.co1.qualtrics.com/jfe/form/SV_3mj72jSXquKua1v

If you have any questions or concerns, please feel free to email chelsea.calhoon@mnsu.edu.

MSU IRBNet ID# 1316351

Appendix G: Wisconsin Department of Corrections Research Review Committee Approvals





Wisconsin Department of Corrections
Governor Tony Evers | Secretary Kevin A. Carr

January 24, 2019

Chelsea Calhoon
Wisconsin Department of Corrections
3099 E. Washington Ave.
Madison, WI 53707

Dear Ms. Calhoon:

The Department of Corrections Research Review Committee (RRC) has reviewed and approved your request entitled *The Opioid Epidemic and Responsive Training in the State of Wisconsin*. This request is approved contingent upon the following conditions:

- All information collected will be maintained confidential, with no offender or staff identifying information presented in any form or manner in subsequent publications or reports.
- Updates on research progress will be submitted to the RRC every six months while the study is being conducted. The first update on your progress will be required on July 24, 2019.
- Any changes to the location or methodology for the research will be submitted to the RRC for review prior to the implementation of those changes.
- A draft of the study results will be submitted to the RRC prior to any formal publication.

Please feel free to contact me at (608) 240-5806 or DOCRResearchRequest@wisconsin.gov if you have any further questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Zach Baumgart".

Zach Baumgart, PhD
Chair- Research Review Committee

cc: Lance Wiersma, Administrator – DCC
Megan Jones, Director of Research and Policy
Dawn Woeshnick – RRC
Bruce Siedschlag – RRC
Holly Bester – RRC
Dustin Trickle – RRC
Alison Shrift – RRC

Appendix H: Institutional Review Board Approval Letter



January 14, 2019

Dear Barbara Carson, Ph.D.:

Re: IRB Proposal entitled "[1316351-3] Program Review of Naloxone Training within the Wisconsin Department of Corrections' Community Corrections Division"
Review Level: Level II

Your IRB Proposal has been approved as of January 14, 2019. On behalf of the Minnesota State University, Mankato IRB, we wish you success with your study. Remember that you must seek approval for any changes in your study, its design, funding source, consent process, or any part of the study that may affect participants in the study (see <https://grad.mnsu.edu/irb/revision.html>). Should any of the participants in your study suffer a research-related injury or other harmful outcome, you are required to report them to the Associate Vice-President of Research and Dean of Graduate Studies immediately.

When you complete your data collection or should you discontinue your study, you must submit a Closure request (see <https://grad.mnsu.edu/irb/closure.html>). All documents related to this research must be stored for a minimum of three years following the date on your Closure request. Please include your IRBNet ID number with any correspondence with the IRB.

Cordially,

Handwritten signature of Bonnie Berg in cursive.

Bonnie Berg, Ph.D.
Co-Chair

Handwritten signature of Jeffrey Buchanan in cursive.

Jeffrey Buchanan, Ph.D.
IRB Co-Chair

Handwritten signature of Mary Hadley in cursive.

Mary Hadley, Ph.D.
IRB Coordinator

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Minnesota State University, Mankato IRB's records.