

EVALUATING THE IMPACT OF A TRIBAL NALOXONE PROGRAM THROUGH PRE AND POST SURVEYS FROM FIRST RESPONDERS

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Abstract: The Choctaw Nation Health Care Center established a first responder naloxone program in 2015. Limited data is available on community naloxone programs specific to tribal communities and the opinions of first responders who may utilize naloxone in the field. The purpose of this article is to highlight the model of a tribal first responder naloxone program in Talihina, Oklahoma and present analysis of the impact of program trainings on first responders' understanding and willingness to administer intranasal naloxone through pre- and post-surveys (n = 758) collected from May 2018 to November 2019. Descriptive analyses were conducted to compare first responders' rating of their support, willingness, and confidence in using naloxone. Overall, 95.1% of first responders reported learning something new from the training. However, the most significant changes in pre- to post-test results were among first responders that had never been at the scene of an overdose. Almost 77% of trainees who reported they never were at a scene of an overdose and responded "not very willing" in administering naloxone at pre-test, responded that they were "very willing" to administer naloxone at post-test.

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) reports almost 450,000 people died from an opioid overdose from 1999-2018 in the United States (CDC, 2020). In the state of Oklahoma, data show that over 6,500 people died from opioid overdose from 1999-2016 (ODMHSAS, 2021). Data available on the CDC website shows a statistically significant decrease in opioid overdose deaths from 2018-2019 (172 deaths in 2018, 133 deaths in 2019; CDC, 2021). However, in late 2020 the CDC issued a health advisory stating that an increase in opioid overdose deaths was observed during the pandemic across the United States. Provisional data in this report

showed overdoses involving synthetic opioids in the state of Oklahoma had more than a 50% increase from June 2019 to May 2020 (CDC, 2020).

In Southeastern Oklahoma, it is common for first responders such as police or firefighters to be the first at the scene of a medical emergency due to the rural nature of the area. The Choctaw Nation jurisdiction spans over approximately 11,000 square miles in Southeastern Oklahoma with an average population per square mile of 23.9 (CNO, 2021). The most populated county per square mile is Le Flore County at 54.5 versus Pushmataha County at 8.3. Seven out of the eleven total counties have a population per square mile of less than 20 people (US Census, 2010). Equipping these professionals with Narcan (naloxone) can lead to faster administration of the lifesaving medication to reverse an opioid overdose, without having to wait on an ambulance.

Because of compelling data and the rural nature of the Choctaw Nation jurisdiction, the Talihina pharmacy department started a small naloxone program that began by training and equipping tribal police with naloxone in 2015 (35 tribal officers trained). Due to positive feedback and community impact, the team applied for and received SAMHSA's First Responders – Comprehensive Addiction and Recovery Act (FR-CARA) grant in 2017, a program created to provide funding to equip first responders with naloxone to administer for emergency treatment of an opioid overdose while also initiating appropriate processes for referral to treatment and recovery (SAMHSA, 2017). Receiving this award allowed the existing program to hire an additional full-time employee and expand naloxone access to all first responders within the 10 ½ counties of the Choctaw Nation jurisdiction.

Staff for the Addressing Opioid Overdose Death (AOOD) program consists of a pharmacist that serves as the Project Director with 25% effort and a Certified Alcohol and Drug Counselor (CADC) with 100% effort that serves as the Project Coordinator. The director is responsible for overall program management, budget, naloxone inventory, and sustainability efforts. The Project Coordinator provides naloxone trainings to first responders, tracks naloxone kit utilization, meets local and federal grant reporting deadlines, and is available to provide information on treatment resources to tribal and community members.

The objective of this article is to describe the AOOD program model and to determine if AOOD naloxone trainings impacted first responder's understanding and willingness to administer naloxone in the field through pre- and post-surveys.

METHODS

Participants

All participants were first responders that worked within the 10 ½ counties of the Choctaw Nation jurisdiction. The first responders worked at a variety of agencies including fire departments, police departments, tribal police and security, state parks, schools, college universities, and emergency medical services (EMS). A total of 901 first responders received the AOOD First Responder naloxone training. The majority of trainees agreed to complete surveys ($n = 758$, 84.13%) with 714 trainees completing most items on the pre- and post-training surveys. On average, trainees worked as first responders for 10.55 years ($SD = 9.52$ years, range = 0.00 years to 44.00 years).

Procedure

Before the training started and prior to providing any information, first responders were given a pre-training survey that included assessing the first responders' opinion on being authorized to administer naloxone, willingness to administer naloxone on a victim, and confidence in utilizing the lifesaving medication. Once the pre-training surveys were completed, the project coordinator began the training utilizing a PowerPoint in a traditional classroom style. The training consisted of opioid education, tribal impact of opioid epidemic, overdose identification, Good Samaritan law review, use of intranasal naloxone, appropriate response to an opioid overdose, and actions to take after they use an intranasal naloxone device. After the training was completed, a group verbal competency is reviewed to assess basic knowledge of naloxone use. After the competency, first responders were given a post-training survey to determine their opinion on authorization to administer, willingness, confidence, and if they learned new information or skills as a result of the training.

At the end of each quarter, the project coordinator submitted all pre- and post-surveys to Council Oak Training and Evaluation (COTE), the contracted evaluation services for data analyses. COTE compiled all data from matching pre- and post-surveys, entered anonymous information into database, and provided reports and presentations as needed. This information was shared with the staff, AOOD Advisory Board, and SAMHSA. On a monthly basis AOOD staff completed an Excel tracking log on the number of trainings, number in attendance, number of naloxone kits distributed, and number of kits used. This log was sent to COTE for data analysis.

The data from the pre- and post-surveys used in this publication were completed during an 18-month period from May 2018 to November 2019.

Pre-Training Survey

A 7-item survey was administered prior to receiving the training. Items included questions on their experiences at a scene of an overdose, attitudes towards first responders' authorization to administer naloxone, and being present at a scene of an overdose.

Time Since Last Scene of Overdose

Trainees identified the last time they were present at the scene of a serious heroin or opiate pain medication overdose: (1) within the past 12 months, (2) more than a year ago, or (3) never.

Presence of First Responders at Scene of Overdose

Trainees were asked to identify how often first responders were present at the scene of an overdose based on their experience on a five-point Likert scale (1 = always, 2 = usually, 3 = sometimes, 4 = rarely, 5 = never).

Importance of First Responders' Presence at Scene of Overdose

Trainees were asked to rate first responders' importance at a scene of an overdose for the purpose of keeping medical personnel safe and enforcing laws. Each were rated on a four-point scale (1 = very important, 2 = somewhat important, 3 = not very important, 4 = not important at all).

Support First Responders' Authorization to Use Naloxone

Trainees were asked to rate their support for first responders' authorization to use naloxone on a five-point Likert scale (1 = strongly support, 2 = somewhat support, 3 = neutral, 4 = somewhat against, 5 = strongly against). This item was reversed scored to reflect higher scores meaning more support. Trainees ($n = 71$) who reported "don't know" or did not respond were excluded from analyses.

Willingness to Administer Naloxone

Trainees were asked to rate their willingness to administer naloxone to an overdose victim on a four-point Likert scale (1 = very willing, 2 = somewhat willing, 3 = not very willing, 4 = definitely would not). This item was reversed scored to reflect higher scores meaning more

willingness. Trainees ($n = 86$) who reported “don’t know” or did not respond were excluded from analyses.

Confidence in Using Naloxone

Trainees were asked to rate their confidence in using naloxone on a four-point Likert scale (1 = very confident, 2 = somewhat confident, 3 = not very confident, 4 = not confident at all). This item was reversed scored to reflect higher scores meaning more confidence. Trainees ($n = 146$) who reported “don’t know” or did not respond were excluded from analyses.

Post-Training Survey

A four-item survey was administered after the training. Trainees were asked again to rate their support for first responders’ authorization to use naloxone, willingness to administer naloxone, and confidence in using naloxone. In addition, trainees identified if they learned new information and/or skills as a result of this training (0 = yes, 1 = no).

Analytical Plan

First, descriptive analyses were conducted on all survey items. Next, the endorsement of pre- to post-response categories for trainees’ rating of their support, willingness, and confidence in using naloxone was examined to determine movement in ratings from pre- to post-test. Then, the endorsement of pre- to post-response categories for trainees’ rating of their support, willingness, and confidence in using naloxone by time since last scene of serious overdose (never, within the past 12 months, more than a year) was examined to determine movement in ratings from pre- to post-test.

Ethics Approvals

The Choctaw Nation Institutional Review Board (CNO IRB) exists to protect the rights of people who are or could potentially be research participants. The CNO IRB reviewed and approved the project and deemed it appropriate for continuation.

RESULTS

Last Time at the Scene During an Overdose

Approximately half reported that they had never been at a scene of a serious heroin or opiate pain medication overdose ($n = 391$, 51.6%). About 25% of trainees reported the last time they were at a scene of an overdose was more than a year ago ($n = 191$, 25.2%) and about 23% reported the last time was within the past 12 months ($n = 171$, 22.6%). Five trainees did not respond (0.7%).

Presence of First Responders at Scene of Overdose

Overall, trainees reported that in their experience, first responders were present at the scene of an overdose “always” or “usually” ($n = 132$, 17.4%; $n = 288$, 38.0%, respectively), followed by “sometimes” ($n = 221$, 29.2%), “rarely” ($n = 65$, 8.6%), and “never” ($n = 40$, 5.3%). Twelve trainees did not respond (1.6%).

Importance of First Responders

The majority of trainees reported that first responders are “very important” for the purpose of keeping medical personnel safe at the scene of an overdose ($n = 569$, 75.1%), followed by “somewhat important” ($n = 130$, 17.2%), “not very important” ($n = 10$, 1.3%), and “not important at all” ($n = 3$, 0.4%). The remaining trainees ($n = 46$, 6.1%) reported “I don’t know” or did not respond. In addition, trainees reported that first responders are “very important” for the purpose of enforcing the law at the scene of an overdose ($n = 334$, 44.1%), followed by “somewhat important” ($n = 224$, 29.6%), “not very important” ($n = 75$, 9.9%), and “not important at all” ($n = 57$, 7.5%). The remaining trainees ($n = 68$, 9.0%) reported “I don’t know” or did not respond.

New Information

Overall, 95.1% of first responders reported learning something new from the AOOD training.

Support, Willingness, and Confidence Administering Naloxone

Means and standard deviations for pre- and post-test trainees' scores of support for first responders authorization to use naloxone, willingness to use naloxone in the field, and confidence in using naloxone in the field are provided in Table 1.

Endorsement of post-response categories by pre-response categories are provided in Table 2. Across the three domains (support, willingness, and confidence), the majority of trainees who reported they "strongly supported," were "very willing," or were "very confident" at pre-test maintained their endorsement at post-test (99.0%, 97.5%, and 97.4%, respectively). The majority of trainees who responded they were "neutral" in supporting naloxone administration at pre-test, responded that they "strongly support" administering naloxone at post-test. About 58% trainees who responded they were "not very willing" to administer naloxone to an overdose victim at pre-test responded "very willing" at post-test. The majority of trainees who responded "not very confident" or "not confident at all" at pre-test, reported they were "very confident" in administering naloxone to an overdose victim at post-test (70.5%, 69.0%, respectively).

Table 1
Pre- and post-training responses for trainees who have never used naloxone in the field, M(SD)

	Pre	Post
Support	4.58 (0.74)	4.87 (0.44)
Willingness	3.68 (0.55)	3.89 (0.33)
Confidence	3.18 (0.90)	3.85 (0.40)

Table 2
Support, willingness, and confidence endorsement of post-test response categories by pre-test response

	Support	Post-Test				
		Strongly Support	Somewhat Support	Neutral	Somewhat Against	Strongly Against
Pre-Test	Strongly Support	490 (99.0%)	4 (0.8%)	0 (0.0%)	1 (0.2%)	0 (0.0%)
	Somewhat Support	73 (74.5%)	23 (23.5%)	2 (2.0%)	0 (0.0%)	0 (0.0%)
	Neutral	56 (63.6%)	18 (20.5%)	14 (15.9%)	0 (0.0%)	0 (0.0%)
	Somewhat Against	2 (50.0%)	0 (0.0%)	2 (50.0%)	0 (0.0%)	0 (0.0%)
	Strongly Against	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)

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Table 2 continued
Support, willingness, and confidence endorsement of post-test response categories by pre-test response

		Post-Test			
Pre-Test	Willingness	Very Willing	Somewhat Willing	Not Very Willing	Definitely Would Not
	Very Willing	470 (97.5%)	12 (2.5%)	0 (0.0%)	0 (0.0%)
	Somewhat Willing	120 (72.3%)	46 (27.7%)	0 (0.0%)	0 (0.0%)
	Not Very Willing	11 (57.9%)	7 (36.8%)	1 (5.3%)	0 (0.0%)
	Definitely Would Not	1 (33.3%)	1 (33.3%)	0 (0.0%)	1 (33.3%)
		Post-Test			
Pre-Test	Confidence	Very Confident	Somewhat Confident	Not Very Confident	Not Confident at All
	Very Confident	263 (97.4%)	7 (2.6%)	0 (0.0%)	0 (0.0%)
	Somewhat Confident	179 (81.7%)	40 (18.3%)	0 (0.0%)	0 (0.0%)
	Not Very Confident	55 (70.5%)	20 (25.6%)	1 (1.3%)	2 (2.6%)
	Not Confident at All	29 (69.0%)	10 (23.3%)	3 (7.1%)	0 (0.0%)

Table 3
Pre and post training descriptives by time since last experience at overdose scene, M(SD)

	Within the past 12 months		More than 1 year		Never	
	Pre	Post	Pre	Post	Pre	Post
Support	4.69 (0.63)	4.89 (0.36)	4.61 (0.69)	4.90 (0.34)	4.50 (0.81)	4.81 (0.59)
Willingness	3.85 (0.37)	3.95 (0.21)	3.71 (0.51)	3.86 (0.36)	3.58 (0.62)	3.82 (0.42)
Confidence	3.46 (0.73)	3.90 (0.36)	3.27 (0.80)	3.84 (0.37)	2.96 (1.00)	3.79 (0.46)

By Time Since Last Experience at Scene of an Overdose

Means and standard deviations for pre- and post-test trainees’ scores of support for first responders’ authorization to use naloxone, willingness to use naloxone in the field, and confidence in using naloxone in the field by trainees’ reported time since last experience at scene of an overdose are provided in Table 3.

Support

Post-response categories on support for first responders’ authorization to use naloxone by pre-response categories are provided in Table 4. Majority of trainees who reported they “strongly supported” naloxone use at pre-test maintained their endorsement at post-test across the three categories of time since last at overdose scene (never: 97.8%, within the last 12 months: 100.0%,

more than one year: 100.0%). The majority of trainees (68.0%) who reported they never were at a scene of an overdose and responded “neutral” in supporting naloxone administration at pre-test, responded that they “strongly support” administering naloxone at post-test.

Table 4
Support: Endorsement of post-test response categories by pre-test response and by time since last at overdose scene

		Post-Test				
	Never	Strongly Support	Somewhat Support	Neutral	Somewhat Against	Strongly Against
Pre-Test	Strongly Support	223 (97.8%)	4 (1.8%)	0 (0.0%)	1 (0.4%)	0 (0.0%)
	Somewhat Support	38 (79.2%)	9 (18.8%)	1 (2.1%)	0 (0.0%)	0 (0.0%)
	Neutral	34 (68.0%)	5 (10.0%)	11 (22.0%)	0 (0.0%)	0 (0.0%)
	Somewhat Against	2 (50.0%)	0 (0.0%)	2 (50.0%)	0 (0.0%)	0 (0.0%)
	Strongly Against	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
		Post-Test				
	Within the last 12 months	Strongly Support	Somewhat Support	Neutral	Somewhat Against	Strongly Against
Pre-Test	Strongly Support	130 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Somewhat Support	13 (61.9%)	7 (33.3%)	1 (4.8%)	0 (0.0%)	0 (0.0%)
	Neutral	10 (66.7%)	4 (26.7%)	1 (6.7%)	0 (0.0%)	0 (0.0%)
	Somewhat Against	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Strongly Against	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Post-Test				
	More than one year	Strongly Support	Somewhat Support	Neutral	Somewhat Against	Strongly Against
Pre-Test	Strongly Support	136 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Somewhat Support	21 (75.0%)	7 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Neutral	11 (50.0%)	9 (40.9%)	2 (9.1%)	0 (0.0%)	0 (0.0%)
	Somewhat Against	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Strongly Against	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Willingness

Post-response categories on willingness to administer naloxone by pre-response categories are provided in Table 5. Majority of trainees who reported they were “very willing” at pre-test maintained their endorsement at post-test among trainees across the three categories of time since last at overdose scene (never: 95.7%, within the last 12 months: 98.6%, more than one year:

99.3%). Almost 77% of trainees who reported they never were at a scene of an overdose and responded “not very willing” to administer naloxone at pre-test responded that they were “very willing” to administer naloxone at post-test.

Confidence

Post-response categories on confidence in administering naloxone by pre-response categories are provided in Table 6. The majority of trainees who reported they were “very confident” at pre-test maintained their endorsement at post-test among trainees across the three categories of time since last at overdose scene (never: 98.0%, within the last 12 months: 96.6%, more than one year: 97.5%). The majority of trainees who reported they were “not very confident” at pre-test responded that they were “very confident” in administering naloxone at post-test across the three categories of time since last at overdose scene (never: 66.7%, within the last 12 months: 86.7%, more than one year: 66.7%).

Table 5
Willingness: Endorsement of post-test response categories by pre-test response and by time since last at overdose scene

		Post-Test			
Never		Very Willing	Somewhat Willing	Not Very Willing	Definitely Would Not
Pre-Test	Very Willing	198 (95.7%)	9 (4.3%)	0 (0.0%)	0 (0.0%)
	Somewhat Willing	73 (73.7%)	26 (26.3%)	0 (0.0%)	0 (0.0%)
	Not Very Willing	10 (76.9%)	3 (23.1%)	0 (0.0%)	0 (0.0%)
	Definitely Would Not	1 (33.3%)	1 (33.3%)	0 (0.0%)	1 (33.3%)
		Post-Test			
Within the last 12 months		Very Willing	Somewhat Willing	Not Very Willing	Definitely Would Not
Pre-Test	Very Willing	136 (98.6%)	2 (1.4%)	0 (0.0%)	0 (0.0%)
	Somewhat Willing	19 (86.4%)	3 (13.6%)	0 (0.0%)	0 (0.0%)
	Not Very Willing	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)
	Definitely Would Not	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Post-Test			
More than one year		Very Willing	Somewhat Willing	Not Very Willing	Definitely Would Not
Pre-Test	Very Willing	134 (99.3%)	1 (0.7%)	0 (0.0%)	0 (0.0%)
	Somewhat Willing	27 (61.4%)	17 (38.6%)	0 (0.0%)	0 (0.0%)
	Not Very Willing	1 (20.0%)	3 (60.0%)	1 (20.0%)	0 (0.0%)
	Definitely Would Not	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Table 6
Confidence: Endorsement of post-test response categories by pre-test response and by time since last at overdose scene

		Post-Test			
Never		Very Confident	Somewhat Confident	Not Very Confident	Not Confident at All
Pre-Test	Very Confident	98 (98.0%)	2 (2.0%)	0 (0.0%)	0 (0.0%)
	Somewhat Confident	88 (82.2%)	18 (16.8%)	0 (0.0%)	0 (0.0%)
	Not Very Confident	28 (66.7%)	12 (28.6%)	1 (2.4%)	1 (2.4%)
	Not Confident at All	25 (71.4%)	6 (17.1%)	3 (8.6%)	0 (0.0%)
		Post-Test			
Within the last 12 months		Very Confident	Somewhat Confident	Not Very Confident	Not Confident at All
Pre-Test	Very Confident	85 (96.6%)	3 (3.4%)	0 (0.0%)	0 (0.0%)
	Somewhat Confident	38 (86.4%)	6 (13.6%)	0 (0.0%)	0 (0.0%)
	Not Very Confident	13 (86.7%)	1 (6.7%)	0 (0.0%)	1 (6.7%)
	Not Confident at All	2 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Post-Test			
More than one year		Very Confident	Somewhat Confident	Not Very Confident	Not Confident at All
Pre-Test	Very Confident	79 (97.5%)	2 (2.5%)	0 (0.0%)	0 (0.0%)
	Somewhat Confident	52 (76.5%)	16 (23.5%)	0 (0.0%)	0 (0.0%)
	Not Very Confident	14 (66.7%)	7 (33.3%)	0 (0.0%)	0 (0.0%)
	Not Confident at All	2 (33.3%)	4 (66.7%)	0 (0.0%)	0 (0.0%)

DISCUSSION

Overall, the AOOD naloxone training increased the confidence to administer naloxone among first responders that reported “not confident at all” on the pre-test (69%). Across the three domains (support, willingness, and confidence), the majority of trainees who reported they “strongly supported,” were “very willing,” or were “very confident” at pre-test maintained their endorsement at post-test (99.0%, 97.5%, and 97.4%, respectively). According to the first responder’s last experience at the scene of an overdose, trainees who were never at a scene of an overdose and reported that they “somewhat support,” were “neutral,” or were “somewhat against” at pre-test collectively changed their endorsement to strongly support (79.2%, 68%, and 50% respectively) post-test. Based on this data, it could be inferred that first responders who have never been at the scene of an overdose may benefit more from naloxone training than those who have responded to an opioid overdose previously. However, the overall data shows that 95.1% of first

responders reported learning something new because of the training. Overall pre- and post-survey results show that very few trainees were unsupportive or unwilling to use naloxone in the field after completing the training. Post-survey evaluations indicate that most first responders are supportive, willing, and confident to use naloxone in the field.

This program showcases a model that could be easily replicated at other health systems and pharmacies. Naloxone educational resources are plentiful online, and pharmacies are uniquely positioned to provide opioid overdose training and naloxone distribution to communities from an inventory and medication knowledge standpoint. Pharmacy staff can manage naloxone ordering and storage within their current processes. Pharmacy staff are also well versed in proper medication storage, use, and side effects. Limitations to starting a program of this nature in the health system or pharmacy setting could be the additional staffing requirements due to time required to train and maintain appropriate records of community naloxone kits. Another constraint may be the funding of additional staff members and the naloxone kits. Applying for grants can be a solution to the potential financial and staffing restrictions.

Some limitations of this study include a small data set that includes first responders from the same regional area. Due to this, results may not be generalizable to other first responders across the nation. First responders may have also responded to the pre- and post-survey questions the way they thought was correct due to the desire to give the “right” answer. More studies from similar naloxone programs are needed to assess the opinion of first responders utilizing naloxone more accurately on a broader scale.

CONCLUSION

The AOOD program showcases a first responder naloxone program in a rural, tribal jurisdiction aiming to increase access to naloxone through community trainings. Since the beginning of the AOOD program, staff have trained 1,932 first responders and have 24 documented lives saved. The program demonstrates the impact that grant programs, like SAMHSA’s FR-CARA grant, can have on communities. Post-hoc analysis showed that first responders that had never responded to an opioid overdose situation showed a greater change in willingness and confidence to administer naloxone than those who had been at an overdose within the past year. The AOOD program has proven to be especially beneficial to first responders that have never been at the scene of an opioid overdose. Greater access to naloxone is still needed

despite progress being made over the past several years, particularly due to increased opioid overdoses since the onset of the COVID-19 pandemic.

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FUNDING INFORMATION

The project described was funded by the Substance Abuse and Mental Health Services Administration (SAMHSA) First Responders-Comprehensive Addiction and Recovery Act (FR-CARA) award. The views and opinions contained in the publication do not necessarily reflect

those of SAMHSA or the U.S. Department of Health and Human Services and should not be construed as such.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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