

# Annals of Emergency Dispatch & Response

THE OFFICIAL RESEARCH JOURNAL OF THE INTERNATIONAL ACADEMIES OF EMERGENCY DISPATCH

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**AIM**

The *Annals of Emergency Dispatch and Response (AEDR)* is an official international peer-reviewed journal published by the International Academies of Emergency Dispatch. The journal provides a unique opportunity for researchers in the fields of emergency dispatch, emergency response, pre-arrival medicine, public safety, public health, and emergency nurse telephone triage and instructions to share their work worldwide. The *AEDR* journal avails a perfect platform to demonstrate the importance of research and development in emergency dispatch, the cornerstone of emergency care.

**SCOPE**

The *Annals of Emergency Dispatch and Response* journal accepts and publishes research conducted within the domains of emergency medical dispatch, emergency fire dispatch, emergency police dispatch, emergency response, emergency nurse telephone triage and instructions, and public health and public safety telecommunications. The articles include original research, case reports, editorials, perspectives, concepts (e.g., systems public health and public safety tele-communications, and configurations, methods etc), and/or reviews. The journal also accepts operational research conducted within the above domains.

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## Welcome Message from the Editor-in-Chief

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As I write this from my workplace office—realizing I’m one of only a few people in our organization who’s not working from home this week—I feel it’s important to recognize that most emergency dispatchers don’t get to choose the work-from-home option. If that’s you, then you know the drill; you must brave going out of the house, working side-by-side with your co-workers, practicing social distancing the best you can, wearing your mask whenever possible, disinfecting your workspace frequently, and enduring all the other risks and inconveniences of the communal workplace in the midst of a deadly pandemic.

And while COVID-19 always occupies a big chunk of your attention and concern, the rest of your work doesn’t stop. There are still domestic violence calls (maybe even more now than before), vehicle crashes (maybe less now than before), childbirths, house fires, electrical hazards, heart attacks, strokes, falls, and dozens of other incident types that must be serviced as if we were not in the middle of something even worse. In these times, to say your work is not for the faint of heart would be an understatement for sure.

With this in mind, we have included a mix of useful research and information in this issue that we feel typifies a few of the varied tasks, incidents, and emotional burdens you’re expected to handle routinely, regardless of the ongoing dire circumstances. Managing suicidal callers and those having a mental health crisis has always been a dilemma for emergency dispatchers since you are not formally trained as mental health professionals—yet you are often the first contact person in the system to speak to these patients. One of our research pieces explores the issue of providing additional training to emergency dispatchers on managing patients with mental health emergencies. Another looks at the

first and most important assessment query that’s common to all Priority Dispatch System™ protocols: “Tell me exactly what happened.” How effective is this question in navigating the emergency dispatcher to the correct Chief Complaint? The answer may surprise you. One other research article examines the use of a free mobile app known as PTSD Coach, designed to help emergency dispatchers manage their stress without seeking more formal mental health treatment, when they so choose.

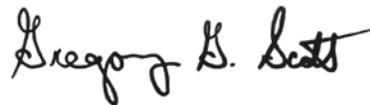
As you might expect, we have an article about the topic on everyone’s mind—the pandemic. In our featured case report, we learn about the first EMS transport of a confirmed COVID-19 patient in North America and the subsequent steps taken by the 911 and EMS authorities to prepare for what was to come.

Also, in this issue, we spotlight a 911 center manager who has turned her attention to dispatch research with great enthusiasm.

Finally, and most important, on behalf of our entire AEDR team, we thank you, our emergency dispatch community, and we honor all the extraordinary work you do to help keep the rest of us safe in these unprecedented times.

By the way, I’m excited and a little overwhelmed (temporarily, I hope) to be taking on a new role with the AEDR as Editor-in-Chief. Please let us know how we’re doing. I look forward to hearing from you.

Sincerely,



Greg Scott, Editor-in-Chief

# Evaluating the Effect of Proper Use of “Tell Me Exactly What Happened” on Chief Complaint Selection and Information Gathering at Emergency Police Dispatch

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## Keywords

Tell Me Exactly What Happened, Chief Complaint, Scripted Protocols, EPD, Police Priority Dispatch System, PPDS, Call Prioritization Time, CPT, Total case time

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## ABSTRACT

**Introduction:** When evaluating the information provided by 911 callers, Emergency Police Dispatchers (EPDs) use scripted protocols to ensure that important details are not missed and that questions are not omitted. Specifically, at the beginning of the call, EPDs ask callers to “Tell me exactly what happened” (TMEWH). Since EPDs must select the correct Chief Complaint (CC) Protocol based on the caller’s response, getting a complete response to TMEWH—and interpreting it correctly—is one of the most significant elements of an EPD’s job. However, no studies have yet evaluated the use of TMEWH in gathering adequate information for CC selection or the impact of that selection on later information gathering by EPDs.

**Objectives:** The primary objective of this study was to determine whether asking TMEWH and/or clarifying provides information that is useful later in the call (in terms of CC selection, Key Question (KQ) answers, and final coding). A secondary objective was to identify the effect of asking TMEWH on call prioritization time (CPT)—the elapsed time from the launch of dispatch system (ProQA) to when a final dispatch code was assigned.

**Methods:** This was a retrospective quantitative study involving review of audio of calls handled on the Police Priority Dispatch System™ (PPDS™) (Priority Dispatch Corp., Salt Lake City, Utah, USA). Calls were collected during normal quality assurance (QA) call review at the participating agencies: Morris County Department of Law and Public Safety and Williamson County Emergency Communications. Measured outcomes included whether TMEWH was asked, how many of the KQs were considered obvious, the total number of KQs, whether the correct CC was chosen, and the CPT.

**Results:** A total of 422 audio files were reviewed. Overall, TMEWH was asked in almost half (48.9%) of cases. A majority of calls (94.1%) resulted in the dispatcher appropriately initially identifying the CC. Asking TMEWH did not have a statistically significant impact on the appropriateness of the initial CC selection ( $p = 0.6682$ ), nor did using the clarifier ( $p = 0.6447$ ). In roughly half of the calls the EPD utilized a clarifier (50.7%). The use of a clarifier did not have significant influence on the selection of an appropriate CC nor on the CPT; however, the occurrence of a spontaneous caller statement was significantly associated with less use of clarifiers ( $p < 0.001$ ). CPT did not differ significantly by whether TMEWH was asked ( $p = 0.1568$ ), nor by whether a clarifier was used ( $p = 0.1116$ ); however, the total number of obvious KQs (or KQs that should have been obvious, given what the caller provided at Case Entry) varied significantly by whether TMEWH was asked ( $p = 0.003$ ), with more questions being considered obvious or “already answered” when TMEWH was not asked.

**Conclusions:** TMEWH does not significantly increase call times and provides important information when callers do not spontaneously present a sufficient problem description. When spontaneous caller statements made at the opening of calls are adequate, EPDs can effectively identify and select the proper CC. EPDs should err on the side of asking TMEWH and use clarifiers when the spontaneous caller statement is not sufficient to appropriately select the CC.

## INTRODUCTION

Emergency police dispatching takes place in a non-visual environment. Unlike on-scene responders, who can evaluate the scene directly, emergency police dispatchers (EPDs) can only evaluate the scene indirectly, via the information

provided by the 911 caller. EPDs gather this information using scripted protocols, ensuring that important information is not missed and questions not overlooked. However, the most critical and difficult part of the EPD’s job may be the gathering of the initial problem description, which uses a scripted question but also requires interpretation on the part of the EPD. Specifically, at the beginning of the call, the EPD asks the caller to “Tell me exactly what happened” (TMEWH). Based on the caller’s response, the EPD selects a Chief Complaint (CC) Protocol—a situation-specific scripted protocol that provides the prompts to drill down into the caller’s situation.

Getting a complete response to TMEWH, and interpreting it correctly, is therefore one of the most important elements of an EPD’s job. Selecting the wrong CC can lead to gathering incomplete information (including missing safety information that is valuable for officers), not providing needed instructions, or sending the wrong type of response. Anecdotal evidence suggests that EPDs do not always ask this important question, instead relying on the caller’s initial statement, provided unprompted at the moment of call pick-up. The problem with relying wholly on such statements has been demonstrated many times by studies of so-called “excited utterances”—the unprompted and often highly emotional statements made to police officers when they arrive on a scene. Recent studies have found that such excited utterances are not only imperfect or incomplete, but are sometimes even retracted by the speaker him- or herself later.<sup>1,2</sup> Similarly, the first unprompted utterance by a 911 caller may or may not provide the complete, relevant information needed to select the most appropriate CC, and may focus instead on quickly-stated, emotional claims.

While some recent research has provided new insight into EPD practices such as the gathering of weapons information,<sup>3</sup> no studies have yet evaluated the use of the question, TMEWH in gathering adequate information for CC selection, or the impact of that selection on later information gathering by the EPD.

## OBJECTIVES

The objectives of this study were to: (a) Determine whether asking TMEWH and/or clarifying the caller’s initial spontaneous statement provides information that is useful later in the call (in terms of CC selection, Key Question (KQ) answers, and final coding), (b) Determine the effect of asking TMEWH per protocol script and clarifier on total call prioritization time (CPT)—the elapsed time from the launch of dispatch system (ProQA) to when a final dispatch code was assigned.

## METHODS

This was a prospective study involving review of audio of calls handled on the Police Priority Dispatch System™ (PPDS). Calls were collected during normal quality assurance (QA) call review at the participating agencies. A minimum of 200 calls were reviewed by an IAED-certified ED-Q at each agency according to a pre-specified collection form designed for this study. Collected data included whether TMEWH was asked, how many of the KQs were considered obvious, the total

number of KQs, whether the correct CC was chosen, and the total time from call answer to time to dispatch determinant. Study reviewers also determined whether the caller provided an initial problem statement (“spontaneous caller statement”).

## Definitions

A KQ was considered obvious when information provided during the spontaneous caller statement made it unnecessary to ask the KQ when it appeared later in the questioning sequence (because the question was already answered). KQs considered obvious included those the reviewers believed should have been obvious, even if the EPD asked the question anyway. Such clarification, which ensures that the correct information has been collected, is considered valid EPD practice, but for this study, all KQs that were or could have been answered using only the spontaneous caller statement or answer to TMEWH were included in the group “obvious or (should have been)” whether the EPD handling the call considered them obvious or not.

CC selection was considered “obvious” when sufficient information was provided by the caller’s initial problem statement to allow the EPD to correctly identify the CC without asking TMEWH. This determination was made by the study reviewers. In some cases, study reviewers did not consider CC selection obvious even when EPDs correctly selected the CC. In these cases, the initial caller statement did not provide enough information to ensure a proper CC selection, so although the EPD did happen to select the correct CC, that became obvious only after later questioning. CC selection was considered inappropriate when another CC would have better fit the spontaneous caller statement or the answer to TMEWH, or when another CC would have gathered critical information that was missed (such as scene safety information) and could have been appropriately determined from the beginning of the call. CC selection was considered “non-compliant” when the EPD did not ask TMEWH and the spontaneous caller statement was also not sufficient for CC selection; in these cases, the EPD followed neither of the accepted methods for obtaining a correct CC.

A clarifier was considered to have been used when the EPD asked a follow-up question to TMEWH (or, in some cases, to the spontaneous caller statement) to elicit additional information for CC selection. Clarifiers may be used on any KQ in the PPDS, but for this study, only CC selection clarifiers were included in the analysis.

Call prioritization time (CPT) was defined as the elapsed time from the launch of dispatch system (ProQA) to when a final dispatch code was assigned.

Total case time was defined as the elapsed time from the launch of the dispatch system (ProQA) to the time when the case is closed/ended.

## Study population

Morris County Department of Law and Public Safety is a consolidated primary Public Safety Answering Point (PSAP) in New Jersey that provides services for approximately 499,693 residents in an area of 460 square miles. The Communications

Division provides dispatch services for 20 municipal police departments, Morris County Sheriff’s Office, Morris County Park Police, Morris County Prosecutor’s Office, 44 fire companies, and 21 emergency medical services (EMS) agencies.

Williamson County Emergency Communications (WCEC) is a multi-agency dispatch primary PSAP in Texas that provides services for approximately 545,412 residents in area of 1134 square miles. WCEC provides dispatch services for the local Sheriff’s Department, Constables, and six police departments, as well as EMS dispatch for the entire county and fire department dispatch for fifteen fire departments.

Both agencies use ProQA, the software version of the (PPDS) (version 6.0, ©2001-2017 International Academies of Emergency Dispatch\*, Utah, USA).

**Data analysis**

R statistical software (version 3.5.2) was used for data analysis. Descriptive statistics (such as frequencies and percentages) were used to characterize the status of asking the TMEWH KQ, use of clarifiers, initial CC selection, obvious KQs (or should have been), and spontaneous caller statement. For continuous measures such as CPT and total case time, median and interquartile range were used. Two-sided Fisher’s Exact test was used to determine any independent associations between categorical measures. However, the non-parametric test median test assessed whether two independent study groups differed in their central tendency for CPT, total case time, or total number of obvious KQs (or should have been). A 0.05 level of significance cut-off was used to determine if differences between study groups were statistically significant.

**RESULTS**

A total of 422 audio files were reviewed (221 from Morris County, New Jersey and 201 from Williamson County, Texas). Median total case time was 2 minutes 38 seconds, and median CPT was 2 minutes 11 seconds. Compliance to the protocol was particularly high in this convenience sample, resulting in only 5.9% of cases being non-compliant.

Overall, TMEWH was asked in almost half (48.9%) of cases. 45% of CCs were observed as being obvious. In roughly 6% of calls, the EPD did not ask TMEWH when the CC was also not obvious. A majority of calls (80.9%) began with a spontaneous caller statement, in which the CC was given immediately following the greeting. Additionally, a majority of calls (94.1%) resulted in the dispatcher appropriately initially identifying the CC. In roughly half of the calls the EPD utilized a clarifier (50.7%). The median number of total obvious (or should have been) KQs per case was two.

The most commonly selected CC Protocols were Traffic Violation/Complaint/Hazard (12.1%), Suspicious/Wanted (10.6%), Animal (8.6%), and Disturbance/Nuisance (8.3%). A majority of CC

categories (62%) were initially selected appropriately. The CC Protocols with the highest proportion of selections identified as inappropriate were Miscellaneous (44.4%), Indecency/Lewdness (33.3%), Mental Disorder (33.3%), and Disturbance/Nuisance (21.2%). All CCs were selected from the PPDS, with the exception of one selected by the EPD from the Medical Priority Dispatch System™ (MPDS™) (Convulsions/Seizures) (Table 2).

Measure	(N = 422) n (%)
TMEWH Asked	
Yes	207 (48.9)
CC Obvious	191 (45.2)
No (non-compliant)	25 (5.9)
Clarifier Used	
Yes	214 (50.7)
No	208 (49.3)
Spontaneous Caller Statement	
Yes	338 (80.9)
No	80 (19.1)
Initial CC appropriate	
Yes	397 (94.1)
No	25 (5.9)
Obvious KQs (or should have been): median (IQR)	2 (2)
Call Prioritization Time: median (IQR)*	2m11s (1m32s)
Total Case Time: median (IQR)*	2m38s (2m23s)

IQR: Interquartile Range of the median  
TMEWH: “Tell Me Exactly What Happened”  
CC: Chief Complaint

**Table 1.** Case summary statistics

Chief Complaint (CC) Protocol*	(N=397 <sup>+</sup> ) n (%)	Inappropriate CC (N=25; 6.3%) <sup>‡</sup> n (%)
Burglary / Home invasion (110)	12 (3.0)	1 (8.3)
Disturbance / Nuisance (113)	33 (8.3)	7 (21.2)
Domestic Disturbance (114)	30 (7.6)	1 (3.3)
Harassment / Stalking / Threat (119)	23 (5.8)	3 (13.0)
Indecency / Lewdness (120)	3 (0.8)	1 (33.3)
Mental Disorder (121)	3 (0.8)	1 (33.3)
Miscellaneous (122)	9 (2.3)	4 (44.4)
Public Service (125)	11 (2.8)	1 (9.1)
Suspicious / Wanted (129)	42 (10.6)	4 (9.5)
Theft (130)	33 (8.3)	1 (3.0)
Trespassing / Unwanted (133)	18 (4.5)	1 (5.6)

\*18 CCs had 0% considered not appropriate: Convulsion/Seizures (12), Abduction, Custody Issue etc (101), Administrative (103), Alarms (104), Animal (105), Assault/Sexual Assault (106), Assist Other Agencies (107), Bomb / Suspicious Package (108), Damage/Vandalism/Mischief (111), Driving Under the Influence (115), Drugs (116), Explosion (117), Fraud/Deception (118), Missing/Runaway/Found Person (123), Suicidal Person/Attempted Suicide (127), Traffic/Transportation Incident (131), Traffic Violation/Complaint/Hazard (132), and Weapons/Firearms (135).

<sup>+</sup>25 cases were excluded in which the EPD was non-compliant to the Protocol.

<sup>‡</sup>The percentage is the proportion of the individual CC selected that were inappropriate.

**Table 2.** Chief Complaints by proportion considered inappropriately selected

Asking the TMEWH KQ did not significantly vary by the presence of a spontaneous caller statement ( $p = 0.7578$ ). However, the occurrence of a spontaneous caller statement was significantly associated with less use of clarifiers ( $p < 0.001$ ). Asking the TMEWH KQ did not have a statistically significant impact on the appropriateness of the initial CC ( $p = 0.6682$ ), nor did using the clarifier ( $p = 0.6447$ ) (Table 3). However, using the clarifier was heavily associated with asking TMEWH ( $p < 0.001$ ). CPT did not differ significantly by whether TMEWH was asked ( $p = 0.1568$ ) nor by whether a clarifier was used ( $p = 0.1116$ ). Total case time differed significantly by whether TMEWH was asked ( $p < 0.001$ ) and also by whether a clarifier was used ( $p = 0.001$ ).

Measures	TMEWH KQ Asked n (%)	CC was Obvious <sup>¥</sup> n (%)	p-value
Initial CC appropriate			
Yes	198 (96.1)	181 (94.8)	0.6682
No	8 (3.9)	10 (5.2)	
Spontaneous Caller Statement			
Yes	132 (64.7)	184 (98.9)	0.7578
No	72 (35.3)	2 (1.1)	
Clarifier Used*			
Yes	204 (98.6)	5 (2.6)	< 0.001
No	3 (1.4)	184 (97.3)	0.0034
Obvious KQs (or should have been): median (IQR)*	1 (2)	2 (2)	0.1568
Call Prioritization Time: median (IQR) <sup>†</sup>	2m18s (1m47s)	2m03s (1m31s)	0.0008
Total Case Time: median (IQR)**	2m54s (2m04s)	2m15s (2m01s)	

CC: Chief Complaint Protocol  
 TMEWH: “Tell Me Exactly What Happened”  
<sup>¥</sup>CC was obvious only includes cases in which TMEWH was not asked  
 \* indicates statistically significant difference at  $p = 0.05$  level

**Table 3.** Call characteristics by Chief Complaint selection method

Measures	Clarifier Used		p-value
	Yes: n (%)	No: n (%)	
Initial CC appropriate			
Yes	200 (96.2)	178 (94.7)	0.6447
No	8 (3.8)	10 (5.3)	
Spontaneous Caller Statement*			
Yes	133 (64.6)	184 (99.5)	< 0.001
No	73 (35.4)	1 (0.54)	
Obvious KQs (or should have been): median (IQR)*	1 (2)	2 (2)	0.0018
Call Prioritization Time: median (IQR) <sup>†</sup>	2m18s (1m34s)	2m03s (1m30s)	0.1116
Total Case Time: median (IQR)**	2m53s (2m56s)	2m18s (2m0s)	0.0017

IQR: Interquartile Range of the median  
 \* indicates statistically significant difference at  $p = 0.05$  level

**Table 4.** Comparison of measures by Chief Complaint clarifier utilization

Additionally, the total number of obvious KQs (or should have been obvious) varied significantly by whether TMEWH was asked ( $p = 0.003$ ) as well as by a clarifier use ( $p = 0.001$ ).

Overall, the use of a clarifier did not have a significant influence on the selection of an appropriate initial CC or on the CPT (Table 4). However, a clarifier was significantly much less used when a caller spontaneously described the problem and when the responses to KQs were obvious—although samples were relatively small for the latter. Additionally, total case time was significantly less for cases in which a clarifier was not used, compared to those in which a clarifier was used.

**DISCUSSION**

EPDs in this study selected an appropriate CC almost all of the time, whether they based this selection on the spontaneous caller statement or on the answer to TMEWH. EPDs would thus appear to be effective at identifying when the spontaneous caller statement is sufficient to determine an appropriate CC and when TMEWH is needed to gather more information. Asking TMEWH was associated with more appropriate initial CC selection, although the correlation was not statistically significant. TMEWH was not associated with either the total number of KQs asked, nor the number of KQs that were obvious (or should have been obvious).

However, this study focused exclusively on whether the CC selection was correct according to the caller’s statement or answer to TMEWH—in other words, whether it was correct according to the information available to the EPD. Determining the true value of spontaneous caller statements (“excited utterances”), as compared to TMEWH, would require an assessment of the situation as officers find it when they arrive on scene. Such a comparison would allow deeper insight into whether spontaneous caller statements provide sufficient and correct information for selecting the CC that best prepares officers for the encounter and identifies what resources to send, both of which better reflect the true purpose of CC selection.

Of note was that asking TMEWH did not have a statistically significant impact on CPT or total case time. In other words, taking the time to elicit a specific problem statement from the caller does not increase overall call time or time to dispatch and provides the opportunity to determine the correct CC when the caller does not spontaneously provide a readily-identifiable CC at the opening of the call.

**Limitations**

This study was limited in its sample. In particular, both of the participating agencies demonstrate very high compliance to the PPDS, meaning that the numbers of non-compliant cases and incorrect CC selections were overall very low—providing limited opportunity to derive correlations between the variables. Asking TMEWH might show significantly more impact in agencies with lower overall compliance or lower overall correct CC selection. Also, this study focused exclusively on the use of TMEWH in police dispatch calls.

There may be a difference in the likelihood of callers providing a spontaneous statement at the beginning of the call—or one that allows the emergency dispatcher to select the correct CC—in the medical or fire dispatch calls.

## CONCLUSION

Asking TMEWH does not significantly increase call times and provides important information when the caller does not present a sufficient problem description spontaneously. When the spontaneous caller statement provided at the opening of a call is sufficient, EPDs appear to be effective at identifying and selecting the appropriate CC. EPDs should err on the side of asking the TMEWH at the beginning of the call when unclear whether the spontaneous caller statement is sufficient to select an appropriate CC.

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## REFERENCES

1. Williams AG. Abolishing the excited utterance exception to the rule against hearsay. *U Kansas Law Review*. 2015;63(3):717-760.
2. Baicker-McKee S. The excited utterance paradox. *Seattle U Law Review*. 2017;41(1):111-178.
3. Broadbent M, Knight C, Warner D, Williams N, Scott G, Clawson JJ, Gardett I, Olola C. Weapons reported on-scene by callers to emergency police dispatch. *Ann Emerg Dispatch & Response*. 2018;6(1):19-25.

# Using a Mobile Application to Address Stress-Related Symptoms in Emergency Dispatchers

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## Keywords

PTSD, Post Traumatic Stress Disorder, Mental Health, PTSD Coach, Stress-Related Symptoms, Work-Related Stress, Mental Health Mobile Application

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## ABSTRACT

**Introduction:** Emergency dispatchers report significant job stress, yet few controlled investigations examine their specific psychological complaints. Additionally, research examining the use of interventions directed at alleviating their work-related stress is limited.

**Objective:** This study aims to examine the efficacy and feasibility of a mobile application (PTSD Coach) on various indicators of psychosocial well-being among emergency telecommunicator dispatchers.

**Methods:** A sample of 117 emergency dispatchers attending the 2018 NAVIGATOR conference agreed to participate in a study examining the impact of Post-traumatic stress disorder (PTSD) Coach on work-related stress. Over a one-month period of use, they completed weekly surveys of mood. The results indicated that dispatchers experience a wide range of emergency calls, some of which create moderate to severe distress.

**Results:** Twenty-three percent (23%) of the sample (n = 27) met criteria for PTSD. Engagement with PTSD Coach over a one-month period resulted in statistically significant decreases in PTSD symptom severity and other psychological indicators.

**Conclusion:** Mobile application such as PTSD Coach offer accessible and often free psychoeducational and self-management tools to those who may shy away from conventional mental health treatment. The tools provided in the PTSD Coach allowed the dispatchers to practice managing their mood discretely. Additional modifications and application relevance are discussed.

## INTRODUCTION

One often under-researched group of first responders is emergency telecommunication dispatchers.<sup>1</sup> Emergency telecommunicators must quickly assess incoming telephone calls to secure the emergency scene and dispatch appropriate help. Coordination in response to emergencies while being physically distant from the situation requires the ability to remain calm and problem-solve in a high-pressure environment. While emergency telecommunicators are not visually in contact with the emergencies, they are responsible for sending other first responders to dangerous environments. They also provide psychological support to civilians on the other end of the call without having direct control over the situation. Additionally, they must respond (often immediately) to the next incoming call without having the opportunity to process the conversation from the previous call. Considering the frequency, nature, and intensity of duty-related traumatic exposures,<sup>2</sup> understanding the impact of these traumatic events on the mental health of emergency telecommunicators is of utmost importance.

A broad range of long-term mental health consequences can result from work-related traumatic exposures.<sup>3,4</sup> For emergency telecommunicators, work-related stress creates significant levels of fatigue, which puts these individuals at considerable risk for burnout, workplace injury, sick leave, or disability.<sup>4</sup> Mental fatigue due to work-related injuries and illnesses in these professionals costs over one million dollars each year.<sup>5</sup> Furthermore, first responders, including emergency dispatchers, frequently experience an array of emotional and behavioral disturbances such as distress, worry, disturbed sleep or concentration, anger outbursts, difficulties with interpersonal relationships, increase in substance use, somatization, anxiety, and depression.<sup>6</sup> Common psychiatric disorders include Acute Stress Disorder (ASD), acute and chronic Posttraumatic Stress Disorder (PTSD), and Major Depression (MD).<sup>7</sup> Additionally, many members of

the first responder community may have subclinical levels of PTSD. Defined by symptoms insufficient in number, distribution, or severity to meet full criteria, individuals nonetheless report significant distress and impairment.<sup>8</sup> Twenty-five percent of those who display subclinical PTSD symptoms go on to develop PTSD.<sup>9,10</sup> Based on the few studies that have examined the rates of PTSD in North American emergency dispatchers, between 9 to 30 percent showed PTSD symptoms,<sup>11,12</sup> which is much higher than the roughly 4% prevalence rate found among the general U.S. population.<sup>13</sup> Hence, early intervention is crucial to reducing the prevalence of stress-related disorders in emergency dispatchers.

With such a high prevalence of mental health disorders, why do emergency dispatchers not seek treatment? While services such as employee assistance programs are available, there is a lack of mental health utilization among all first responders due to the cultural stigma surrounding help-seeking behaviors.<sup>14</sup> There is a sense of criticism toward the utilization of mental health treatment, producing a significant barrier to care.<sup>15</sup> First responders who suffered from a psychiatric condition were much more likely to be viewed negatively by their peers than if they suffered from a physical condition.<sup>14</sup> First responders may also resist acknowledging a need for mental health services as they may have previously judged others who are suffering from stress as failures.<sup>16</sup>

Additionally, dispatchers operate on shift schedules, which may make scheduling appointments difficult. These barriers to care might be overcome through the use of innovative methods of mobile technology, such as a smartphone. The mobile device opens the opportunity for those who would not typically seek care due to stigma, geographic restrictions, or time commitment to do so on their own schedule from their phone.

The evolutionary growth of mobile technologies, such as smartphones, has brought increased focus on specialized e-Health modalities known as mobile health or m-Health. There are over 3.2 billion unique mobile users worldwide.<sup>17</sup> Modern smartphones, are lightweight, easy to operate and have a wide variety of purposes. Mobile applications are well suited for health information dissemination as an individual can inconspicuously manage their needs without judgment. Individuals can choose an application based on their mental health needs and tailor the applications towards managing their specific symptoms and level of severity.

By introducing psychoeducation and coping skills through mobile applications, dispatchers can find resources and help that they need from home or perhaps even during a break at work. Specifically, for telecommunication dispatchers, short times between calls can provide a valuable moment for relaxation. Emotional and behavioral disturbances such as anger outbursts, anxiety and sleep difficulties (often experienced by first responders) overlap significantly with the symptoms of subclinical PTSD and other stress-related disorders experienced by the military population.<sup>6,18</sup> Thus, using a mobile application designed to treat PTSD may be an appropriate intervention due to their similar presentation of PTSD symptoms. The PTSD Coach mobile application, initially designed for veterans, helps individuals learn to manage symptoms of PTSD and other

stressors.<sup>19</sup> PTSD Coach was designed either as a standalone psychoeducation and self-management tool or as an adjunctive tool to more traditional treatment. PTSD Coach uses stress inoculation training to 1) concisely provide psychoeducation of PTSD symptoms, 2) enables the remote practice of stress reduction strategies, and 3) provides direction and mood tracking charting options. A randomized clinical trial for PTSD Coach was effective in reducing PTSD symptoms by 47 percent compared to 26 percent in the waitlist group within the military population.<sup>18</sup> Dispatchers who present with analogous trauma-related symptoms may benefit from PTSD Coach.

Thus far, very few studies have explored the utility of the mobile application for stress symptom reduction with first responders.

## OBJECTIVE

This study aims to examine the acceptability, feasibility, and efficacy of PTSD Coach on various indicators of their psychosocial. It is hypothesized that psychosocial symptoms will decrease after the introduction and use of the PTSD Coach mobile application.

## METHODS

### Participants

One hundred- seventeen participants ranging in age from eighteen to fifty-nine years were recruited in-person from attendees at the 2018 NAVIGATOR emergency dispatcher conference. Participants were active emergency dispatchers with between one to twenty-six years of work experience. Participants had to be at least 18 years old, understand written and spoken English, and have a smartphone capable of downloading a mobile application. Individuals were excluded if they reported active suicidal ideation (determined by the self-report measure PHQ-9) or engaged in uncontrolled episodes of alcohol or drug abuse that require treatment (determined by the AUDIT). Participants received \$25 compensation at pre-intervention and post-intervention for completion of the study. Dispatchers who completed the post-intervention time point was considered as a study completer. Sample characteristics are depicted in Table 1.

To assure that the sample was representative of dispatchers nationwide, we assessed exposure to distressing calls' using a list of 17 potentially traumatic calls, ranging from traffic accidents to shootings that they have experienced during their career. Each call was rated using a five-point scale ranging from 0 (None) to 5 (Extremely) on the degree of distress at the time of the first assessment.

### Assessments

**PTSD Checklist** PCL-5,<sup>20</sup> is a reliable and valid self-report measure of PTSD symptoms based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).<sup>21</sup> The DSM-5 identifies PTSD as the compilation of four symptom clusters: re-experiencing intrusions, persistent avoidance of internal and external trauma-related stimuli, negative cognitions and mood,

Characteristics		
	<i>M</i>	<i>SD</i>
Age	37.38	8.4
Years as telecommunicator	11.07	6.5
	<i>n</i>	%
Gender		
Female	90	76.9
Male	27	23.1
Marital status		
Single	26	22.2
Married	62	53.0
Other	22	24.8
Ethnicity		
Caucasian	91	77.8
African American	7	6.0
Hispanic	12	10.3
American Indian or Alaskan Native	4	3.4
Other	3	2.6
Education		
Less than high school	2	1.7
High school graduate	11	9.4
Some College	49	41.9
Graduate degree	45	38.5
Advanced degree	10	8.5
Psychological Symptoms	<i>M</i>	<i>SD</i>
PCL-5	20.2	15.8
PHQ-9	6.8	5.5
AUDIT	3.2	2.8
DAR-5	9.2	3.4
GAD-7	6.3	5.2

PCL-5 = PTSD Checklist 5; PHQ-9 = Patient Health Questionnaire-Depression Subscale; AUDIT = Alcohol Use Disorders Identification Test; DAR-5 = Dimensions of Anger Reactions; GAD-7 = Generalized Anxiety Disorder Scale.

**Table 1.** Demographic and Baseline Psychological Characteristics (n = 117)

and hyperarousal and reactivity.<sup>21</sup> Respondents indicated the degree to which they were bothered by each of the 20 PTSD symptoms during the past month on a 5-point Likert scale from 1 (*not at all*) to 5 (*extremely*). The item scores are summed to provide a total symptom severity rating from 20 to 100. A score of 33 or above indicates a probable diagnosis of PTSD.<sup>22</sup>

**Patient Health Questionnaire—Depression Subscale 9 (PHQ-9),**<sup>23</sup> is a 9-item, self-report screening tool. The items are based directly on the diagnostic criteria for major depressive disorder in the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV).<sup>24</sup> This measure provides both the presence and severity of depressive symptoms. The PHQ-9 has demonstrated excellent psychometric properties, including test-retest reliability as well as internal consistency for symptoms of depression.<sup>23</sup>

**Alcohol Use Disorders Identification Test (AUDIT),**<sup>25</sup> is a 10-item self-report measure of problematic alcohol use and

associated problems. It assesses the quantity and frequency of alcohol use and the potentially harmful consequences. A total score greater than 15 indicates a positive alcohol use disorder.

**Generalized Anxiety Disorder Scale (GAD-7),**<sup>26</sup> is the 7-item self-report instrument designed to assess anxiety symptoms. Questions are rated using a 4-point Likert scale ranging from 'not at all' to 'nearly every day' past week. A total score greater than 9 on the GAD-7 indicates moderate to severe anxiety symptoms. Internal consistency ( $\alpha = 0.92$ ), test-retest reliability ( $\alpha = 0.83$ ), sensitivity (0.89), and specificity (0.82) indicate the measure symptoms of anxiety adequately.<sup>26</sup>

**Dimensions of Anger Reactions 5 (DAR-5),**<sup>27</sup> contains five items measuring anger frequency, intensity, duration, interpersonal aggressiveness, and the extent to which anger interferes with interpersonal relationships. Items are measured on a 5-point scale, ranging from 1 (not at all) to 5 (very much). A score of 12 or higher indicates anger management issues. The DAR-5 has decent psychometric properties, including high internal consistency and internal reliability, with Cronbach's alpha ranging from 0.86 to 0.90 which captures the symptoms of anger in adults.<sup>28</sup>

**PTSD Coach Acceptability Survey,**<sup>29</sup> assesses the perceived helpfulness of PTSD Coach. Participants were asked how helpful they found PTSD Coach (e.g., learn and manage symptoms) on a 5-point Likert scale 0 (*not at all*), 1 (*slightly*), 2 (*moderately*), 3 (*very*), 4 (*extremely*). Additionally, they were asked to rate the helpfulness of the application in developing skills to manage symptoms and decreasing stigma towards PTSD, as well as seeking mental health treatment.

## Procedure

During the six weeks of the study, the participants were encouraged to use PTSD Coach whenever they perceived the need to decrease stress. They could select modules such as deep breathing, mindfulness listening, muscle relaxation, and thought stopping. Every three days during this period, participants received a reminder email to use the app. Every seven days after baseline, participants received a survey link to assess psychological symptoms during that week. Assessments included questions regarding types of calls received and the PCL-5, AUDIT, DAR-5, GAD-7, and PHQ-9. These data were collected weekly for 6 weeks (including baseline) to determine changes in emotions and behavior while using the app. In addition to the weekly measures of symptoms, at the sixth (last) week of the study, participants completed questions regarding the application's helpfulness in managing stress symptoms.

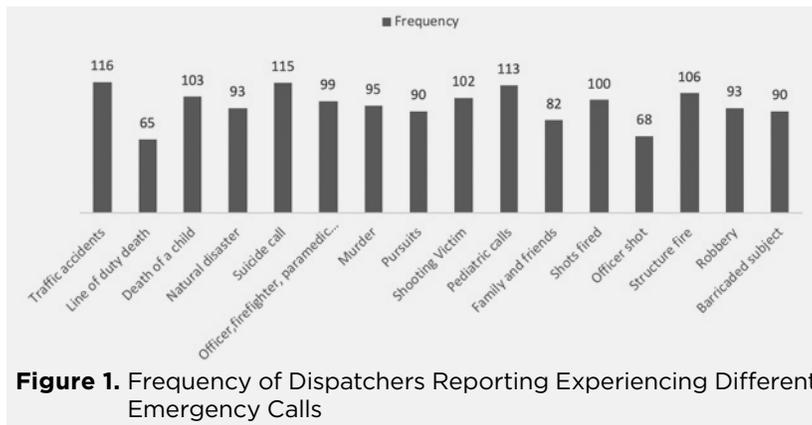
## Data analysis

Descriptive analysis (means, frequencies, standard deviation, and percentages) examined the utility of PTSD Coach for emergency dispatchers. For efficacy data, the Kolmogorov-Smirnov test was utilized to determine the normality distributions of the self-report measures, which indicated the samples were not normally distributed. Thus, two-tailed Wilcoxon test was used to evaluate the treatment efficacy for the PCL-5, AUDIT, DAR-5, GAD-7, and PHQ-9 to again account for the non-normality.

**RESULTS**

A comparison of individuals who completed the study (n = 50) and non-completers (n = 67) showed no significant group differences on demographic variables age, gender, marital status, and education. Similarly, individuals who completed the study and non-completers showed no significant difference on baseline psychological variables (PCL-5, PHQ-9, AUDIT, DAR-5, and GAD-7).

The dispatchers endorsed exposure to a mean of 12.09 various types of distressing calls (SD = 3.17), with 3 being the lowest number of potentially distress calls to 15 being the highest number of exposures to potential calls. Figure 1 shows the frequency of endorsed calls by the dispatchers. Chi-square comparison between the completer and the non-completer group suggests no significant difference in the frequency of types of calls experienced. Between-group t-test suggested no significant differences between the severity of the distress between those who completed the study and did not complete the study except for one type of call, shots fired. The significant difference found in the severity scores between the 100 individuals who endorsed experiencing a “shots fired” call, 44 completer (M = 4.20, SD = 1.50) and 56 non-completer (M = 3.34, SD = 1.58) groups;  $t(98) = 2.78, p = 0.01$ . However, given the number of statistical comparisons conducted, the application of the *Bonferroni* correction makes this comparison no longer statistically significant.

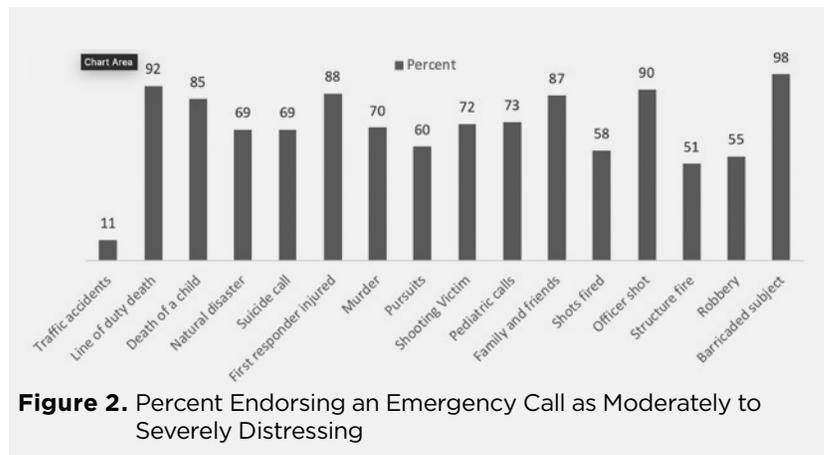


**Figure 1.** Frequency of Dispatchers Reporting Experiencing Different Emergency Calls

Dispatchers endorsed traffic accidents (96.7%) as the most common type of call experienced on the job. Second most common were suicide calls (95.8%) with pediatric calls following third (94.2%). Eighty-five percent (85.8%) of dispatchers endorsed dealing with calls that involved a death of a child; 88.3% endorsed taking calls involving structural fire damage; 85% stated they experienced a call in a situation where an individual was shot; 83.3% experienced calls where someone fired a weapon; 82.5% noted taking calls where a first responder (firefighter, police officer, EMT) was injured; 79.2% endorses calls that involved a murder; 78.5% experienced calls that involved an officer death in the line of duty; 77.5% stated

they responded to natural disaster calls; 77.5% responded to calls that involved a robbery; 75% endorsed situations where a subject was barricaded; 68.3% endorsed taking calls that involved a family member; 68.7% endorsed calls where a police officer was shot. These data are consistent with national samples<sup>4</sup> suggesting that individuals participating at the conference were representative of emergency dispatchers.

While dispatchers may have experienced certain types of calls more often than others, their rating of distress from calls showed an interesting pattern (see Figure 2). Whereas traffic accidents are commonly experienced, only 11.2 percent of the dispatchers endorsed it as causing moderate to severe distress. In contrast, 97.8% dispatchers reported barricaded subjects as the most distressing call and in second with 92.3% a death of an officer in the line of duty.



**Figure 2.** Percent Endorsing an Emergency Call as Moderately to Severely Distressing

For the completers, there was a statistically significant reduction in PTSD symptoms as assessed by the PCL-5. Wilcoxon Signed-ranks test indicated a significant decrease from baseline (Mdn = 18.00) to post-intervention (Mdn = 5.5),  $Z = 4.69, p < 0.001$ . Similarly, there was a significant decrease in PHQ-9 scores) from baseline (Mdn = 6.0) to post-intervention (Mdn = 3.0)  $Z = 2.3, p = 0.001$ . Significant decreases were also evident for the GAD-7 from baseline (Mdn = 5.00) to post-intervention (Mdn = 3.0)  $Z = 3.36, p = 0.001$ , on the DAR-5 between baseline (Mdn = 8.0) to post-intervention (Mdn = 6.0)  $Z = 3.1, p = 0.002$ , and on the AUDIT from baseline (Mdn = 2.0) to post-intervention (Mdn = 1.0)  $Z = 2.7, p = 0.007$ .

**Feasibility, acceptability, and preliminary outcomes for PTSD Coach**

**Helpfulness**

Results were broadly positive for the helpfulness ratings. The majority of the participants (53%) felt that the app helped them overcome the stigma of seeking mental health services. Eighty percent also reported overall satisfaction with PTSD Coach. Dispatchers provided feedback such as information regarding effects of stress due to “pain related to carpal tunnel,” “how to talk to your supervisor about PTSD

symptoms,” “more audio files on how to fall asleep,” and “anonymous chat feature to connect to other dispatchers for support” to improve the helpfulness of PTSD Coach.

**Efficacy**

Table 2 present the means and standard deviation for all participants for PTSD symptoms and other indicators of emotional distress at baseline and across each week of assessment for study completers. A chi-square analysis showed no significant differences between non-completer and the completer group on any of these assessment measures or for the number of people who endorsed significant distress and met the criteria for PTSD (n = 27), anxiety (n = 30), depressive (n = 17) and anger symptoms (n = 25). Dispatchers endorsed PTSD symptoms such as feeling upset when something reminded them of the stressful experience, trouble avoiding memories, experiencing strong negative feelings (i.e., fear, horror, anger, guilt, shame), and difficulties concentrating, and falling or staying asleep.

Measure	Time					
	Baseline	Week 2	Week 3	Week 4	Week 5	Post Intervention
	n = 50 M (SD)	n = 43 M (SD)	n = 42 M (SD)	n = 46 M (SD)	n = 45 M (SD)	n = 50 M (SD)
PCL-5	19.9 (15.1)	14.3 (12.4)	12.3 (11.6)	11.1 (11.0)	10.5 (12.0)	10.1 (11.1)
PHQ-9	6.7 (4.9)	5.1 (4.2)	5.0 (4.18)	4.7 (4.2)	4.4 (4.3)	4.1 (4.4)
AUDIT	3.3 (3.7)	2.8 (3.5)	2.4 (2.9)	2.9 (3.4)	2.6 (3.0)	2.5 (2.9)
DAR-5	8.8 (3.1)	8.1 (3.1)	7.7 (3.1)	8.0 (3.2)	7.4 (3.3)	7.4 (2.9)
GAD-7	6.1 (5.1)	5.5 (4.2)	5.2 (4.4)	4.7 (4.0)	4.4 (4.7)	4.0 (4.1)

*PCL-5 = PTSD Checklist 5; PHQ-9 = Patient Health Questionnaire- Depression Subscale; AUDIT = Alcohol Use Disorders Identification Test; DAR-5 = Dimensions of Anger Reactions; GAD-7 = Generalized Anxiety Disorder Scale.*

**Table 2.** Psychological Symptom Measures of Completers from all time points

**DISCUSSION**

When discussing the secondary traumas experienced by first responders, emergency dispatchers are a group who are often understudied.<sup>1</sup> However, as indicated in this investigation, dispatchers who participated in the study experienced a variety of emergency calls ranging from a traffic accident to murders. The most common call was a traffic accident (96.7%) but only 11.2 % of the sample endorsed a traffic accident call that was moderately to severely distressful. The second most commonly experienced call was a suicide (95.8%) with more than two-thirds of the sample (68.8%) endorsing them as moderately to severe distress. With respect to frequency, the findings from this investigation are similar to other studies<sup>1,4</sup> where 75% of the sample endorsed experiencing calls related to traffic accidents, structural fire, natural disasters, and armed robbery. In contrast, there are fewer data available on the level of distress and severity elicited by various types of emergency calls. With the exception of the call rated as most distressing (barricaded situation), the majority of distressing calls entailed a degree of familiarity with the victim (death of an officer in the line of duty [92%], officer involved in a shooting [89.7%], first

responder injured [87.9%], and friends and family involved in a call [86.6%]). We examined the frequency and severity of calls in this sample for two reasons. First, to address any concerns that this sample, recruited from a national conference, might be different from other methods of study recruitment. These data suggest that this is not the case. Second, to call attention to the fact that it is not simply the frequency of calls or totality of calls experienced across years of service that may lead to the development of psychological disorders such as PTSD. Special attention needs to be paid when telecommunicators are working calls that involve the death or injury of loved ones, friends, and co-workers. At those times, supervisors may need to signal understanding that, in the aftermath of such calls, time to decompress or deal with emotions may be needed.

To our knowledge, this is the first study to evaluate the use of a mobile application to alleviate psychological mood symptoms among emergency dispatchers. Although originally developed for the veteran community, there was a decrease in

overall psychological symptoms. Thus, although not developed specifically for this population, it appeared to be sufficiently relevant to produce positive feedback and acceptance by a different population.

The psychological symptoms for this population ranged from mild and moderate. The estimated prevalence for PTSD in emergency personnel ranges from 9 to 30 percent.<sup>11,12,30</sup>

Consistently, 23 percent of our study completers scored above the cut off score for PTSD. When interpreting our findings, it is important to note that the overall sample’s average endorsement of psychological symptoms, one might think of this group as subclinical; a group that nonetheless has been noted to exhibit functional impairment even when not meeting all of the diagnostic criteria.

With respect to efficacy, the results support our primary hypothesis. There was a statically significant decrease in psychological symptomatology for PTSD, depression, anxiety, anger, and alcohol use. Results demonstrated a gradual decrease in symptoms across the weekly time points, indicating efficacy with this population. In contrast, there was no significant effect for interpersonal difficulties. However, participants reported only mild symptoms at baseline, which may not have provided any room for change (i.e., a floor effect). A second consideration is that the social resources within the mobile app are geared for Veterans. While there is a customizable section to include personal phone numbers, the majority of the contact information and service resources are for Veterans. The inclusion of contact information for mental health providers for civilians and emergency dispatchers may help improve this section for this particular population. Finally, the application does not provide tools to improve interpersonal communication or interactions, something that might be included in an application update.

The results of this investigation are consistent with studies examining PTSD Coach with veterans. Similar to veteran samples, the telecommunicators found PTSD Coach to be acceptable, feasible and helpful.<sup>29</sup> However, this study expands the potential use of the PTSD Coach in two ways. First, rather than an adjunctive aid, this study examined its use as a standalone aid over a brief (one month) period. Second, we examined its efficacy in a subclinical civilian population. Because of the brevity of the treatment, it is not clear whether they will continue to use the app in order to maintain or further improve over a longer period of time.

### Limitations

While the results are encouraging, the study has some limitations. First, the participants were all attendees of the 2018 NAVIGATOR conference, and the psychological symptom severity may not fully reflect the dispatcher population. To more fully assess the feasibility and efficacy of PTSD coach for this group, nationwide recruitment is needed. Second, owning a smartphone was a requirement to participate in the study. We were unable to examine the reactions of dispatchers who do not own a smartphone. Third, the duration of PTSD Coach use was truncated to five weeks and may not mirror real-world use. An extended period may have provided more time to use and evaluate all of the features and functionality of the application. Fourth, the founders of PTSD Coach created the mobile application for the Veteran population. This is the first time the application was used with a civilian population. The data revealed that the application was useful but its utility could be enhanced to address the specific job requirements of this group. Finally, this study did not utilize a control group. However, given the novel use of the PTSD Coach for this investigation, a pilot study was deemed to be the best use of time and resources. Having now demonstrated initial success, larger scale investigations with appropriate control groups are warranted.

### CONCLUSION

The data from this investigation contribute to the scant research on the use of technology-aided interventions for emergency dispatchers. These results have implications for how psychological symptoms in emergency dispatchers might be addressed on a large scale. Mobile application such as PTSD Coach offer accessible and often free psychoeducational and self-management tools to those who may shy away from conventional mental health treatment. The tools provided in the PTSD Coach allowed the dispatchers to practice manage their mood discretely. However, there were a few modules and exercises that were not appropriate for the dispatchers. Modules such as the Resources containing contact information for Veterans and lack of brief one-minute relaxation exercises to use between calls are examples. Therefore, further research of PTSD Coach is needed for the civilian population, specifically for emergency telecommunicators. An application such as a modified PTSD Coach is a potential option to not only bring down barriers to care but improve dissemination of preventative and effective skills for improving mental health care.

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### References

1. Troxell RM. Indirect exposure to the trauma of others: *The experiences of 9-1-1 telecommunicators*. US: ProQuest Information & Learning; 2009 (Dissertation).
2. Kirby R, Shakespeare-Finch J, Palk G. Adaptive and maladaptive coping strategies predict posttrauma outcomes in ambulance personnel. *Traumatology*. 2011;17(4):25-34.
3. Benedek DM, Fullerton C, Ursano RJ. First Responders: Mental Health Consequences of Natural and Human-Made Disasters for Public Health and Public Safety Workers. *Annu. Rev. Public Health*. 2007;28:55-68.
4. Pierce H, Lilly MM. Duty-related trauma exposure in 911 telecommunicators: Considering the risk for posttraumatic stress. *J Trauma Stress*. 2012;25(2):211-5.
5. Fullerton CS, Ursano RJ, Wang L. Acute stress disorder, posttraumatic stress disorder, and depression in disaster or rescue workers. *Am J Psychiatry*. 2004 Aug; 161(8):1370-6.
6. Benedek DM, Ursano RJ, Fullerton CS, Vineburgh NT, Gifford RK. Responding to Workplace Terrorism. *J Workplace Behav. Health*. 2006 Dec;21(3):21-33.
7. Jones S. Describing the Mental Health Profile of First Responders: A Systematic Review. *J Am Psychiatr Nurses Assoc*. 2017 May;23(3):200-214.
8. McLaughlin R, Nielsen L, Waller M. An Evaluation of the Effect of Military Service on Mortality: Quantifying the Healthy Soldier Effect. *Ann. Epidemiol*. 2008 Nov;18(12):928-36.
9. Cukor J, Wyka K, Jayasinghe N, Difede J. The nature and course of subthreshold PTSD. *J Anxiety Disord*. 2010 Dec;24(8):918-23
10. Smid GE, Mooren TT, van der Mast RC, Gersons BP, Kleber RJ. Delayed posttraumatic stress disorder: systematic review, meta-analysis, and meta-regression analysis of prospective studies. *J Clin Psychiatry*. 2009 Nov;70(11):1572-82.
11. Dicks R-LH. *Prevalence of PTSD Symptoms in Canadian 911 Operators*. University of the Fraser Valley; 2014.
12. Lilly MM, Allen CE. Psychological Inflexibility and Psychopathology in 9-1-1 Telecommunicators. *J Trauma Stress*. 2015 Jun;28(3):262-6.
13. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005 Jun;62(6):593-602.
14. Royle L, Keenan P, Farrell D. Issues of stigma for first responders accessing support for post traumatic stress. *Int J Emerg Ment Health*. 2009;11(2):79-85.
15. Houdmont J, Leka S, Sinclair RR. *Contemporary Occupational Health Psychology: Global Perspectives on Research and Practice*. John Wiley & Sons; 2012:285.
16. Henderson, S. N., Van Hasselt, V. B., LeDuc, T. J., & Couwels, J. (2016). Firefighter suicide: Understanding cultural challenges for mental health professionals. *Professional Psychology: Research and Practice*, 47(3), 224-230.
17. Steinhubl SR, Muse ED, Topol EJ. Can Mobile Health Technologies Transform Health Care? *JAMA*. 2013 Dec 11;310(22):2395-6.
18. Kuhn E, Kanuri N, Hoffman JE, Garvert DW, Ruzek JI, Barr C. A randomized controlled trial of a smartphone app for posttraumatic stress disorder symptoms *Journal of Consulting and Clinical Psychology*, 85(3), 267-273.
19. Owen JE, Jaworski BK, Kuhn E, Makin-Byrd KN, Ramsey KM, Hoffman JE. mHealth in the Wild: Using Novel Data to Examine the Reach, Use, and Impact of PTSD Coach. *JMIR Mental Health*. 2015 Mar 25;2(1):e7.
20. Weathers FW, Litz BT, Keane TM, Palmieri PA, Marx BP, Schnurr PP. *The ptsd checklist for dsm-5 (pcl-5)*. Scale available from the National Center for PTSD at [www.ptsd.va.gov](http://www.ptsd.va.gov). Accessed 2019.

21. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. American Psychiatric Pub; 2013.
22. Hodge DR, Lietz CA. Using Spiritually Modified Cognitive-Behavioral Therapy in Substance Dependence Treatment: Therapists' and Clients' Perceptions of the Presumed Benefits and Limitations. *Health Soc Work*. 2014 Nov 1;39(4):200-10.
23. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9. *Journal of General Internal Medicine*. 2001 Sep 1;16:606-13.
24. American Psychiatric Association, American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-IV-TR. Washington, DC: *American Psychiatric Association*. 2000;4.
25. Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG, World Health Organization. AUDIT: The alcohol use disorders identification test: Guidelines for use in primary health care. 2001;
26. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Arch Intern Med*. 2006 May 22;166(10):1092-7.
27. Forbes D, Lloyd D, Nixon RDV, Elliott P, Varker T, Perry D, et al. A multisite randomized controlled effectiveness trial of cognitive processing therapy for military-related posttraumatic stress disorder. *Journal of Anxiety Disorders*. 2012 Apr;26(3):442-52.
28. Forbes D, Alkemade N, Mitchell D, Elhai JD, McHugh T, Bates G, et al. Utility of the Dimensions of Anger Reactions-5 (DAR-5) scale as a brief anger measure. *Depression and anxiety*. 2014;31:166-73.
29. Miner A, Kuhn E, Hoffman JE, Owen JE, Ruzek JI, Barr C. Feasibility, acceptability, and potential efficacy of the PTSD Coach app: A pilot randomized controlled trial with community trauma survivors. *Psychological Trauma: Theory, Research, Practice, and Policy*. 2016;8:384-92.
30. Clawson JJ, Sinclair R. The emotional content and cooperation score in emergency medical dispatching. *Prehospital Emergency Care*. 2001 Jan;5(1):29-35.

# Measuring the Impact of Training on Emergency Medical Dispatcher Management of General Mental Crisis Calls and Suicide Calls

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## Keywords

Emergency Mental Health Dispatch, EMHD, Training, Handling Mental Crisis Call, Handling Suicidal Calls, Suicide Calls, Mental Crisis Calls, EMD, Mental Health Crisis, Emergency Medical Dispatch

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## ABSTRACT

**Introduction:** Historically, 911 professionals have not received specialized training in dispatch and call management related to mental crises and suicidality. This lack of training may contribute to lack of confidence and elevated anxiety in successfully handling these call types. A new model of training, Emergency Mental Health Dispatching™ (EMHD), which aims to equip 911 professionals to manage these calls has been developed to address this need.

**Objective:** The objective of this case study was to measure the impact of EMHD via two specific aims. The first aim was to determine if EMHD training changed dispatcher self-reported levels of confidence or anxiety related to these call types. The second aim was to assess post-EMHD changes in self-reported effectiveness in handling suicide calls.

**Methods:** Our case study used a retrospective email-based survey design with data collected from calltakers who had recently been certified in EMHD and trained on use of the extended protocol LifeBridges FlexProtocol™. Self-reported Likert scales were utilized to assess calltaker confidence, anxiety, and effectiveness metrics. Changes in these metrics were explored via Mann-Whitney-Wilcoxon tests ( $\alpha = 0.05$ ).

**Results:** In total, 26 participants completed the survey (response rate: 66.7%). Comparing pre-training and post-training, average confidence in handling general mental crises increased from 2.54 to 3.92 ( $p < 0.001$ ). Average confidence in handling suicide calls increased from 2.12 to 3.89 ( $p < 0.001$ ). Average level of anxiety in handling calls from those struggling with general mental crises decreases from 2.89 to 2.46 ( $p = 0.2005$ ). Anxiety in handling suicide calls decreased from 3.15 to 2.31 ( $p = 0.0064$ ). All measures of effectiveness increased in a statistically significant manner ( $p < 0.001$ ).

**Conclusion:** This study provides strong preliminary evidence that focused formal clinically-informed training can improve confidence and effectiveness of Emergency Medical Dispatchers handling mental crises and suicide calls.

## INTRODUCTION

911 dispatchers face an extraordinary challenge responding to calls involving mental illness and suicide risk. Callers in peril expect that calling 911 will result in immediate assessment and care planning, a task that begins with the dispatcher. When workers at crisis phone hotlines or text lines determine that callers are at imminent risk of suicide, they refer these high-risk individuals to 911 (or share the call) to enable provision of emergency care on scene and transportation to psychiatric facilities for assessment and intervention. Other resources such as the National Drug Helpline state on their website, at the top of their homepage in bold and italicized text, "If you are experiencing a crisis or emergency, call 911. Our hotline is NOT a crisis hotline or suicide hotline. Call 911 immediately".<sup>1</sup> Yet, the degree of specialized training most 911 professionals have received to manage and dispatch such calls is particularly limited and/or not well reported on within the existing literature.<sup>2</sup>

This lack of training may predispose dispatchers to a lack of confidence and elevated anxiety relating to these call types. Both these psychological factors could potentially contribute to underdeveloped or impaired alliance with callers, more errors, less positive call outcomes, and increased risk for stress-related conditions among emergency dispatchers. By contrast, equipping 911 professionals for greater

call mastery as they face repeated exposure to this potentially traumatizing call type could contribute to positive changes in their immediate psychophysiology, thereby protecting and boosting resilience,<sup>3-4</sup> call performance, job satisfaction and retention, and longer-term health and well-being.

This leads us to suppose that callers struggling with mental illness and suicide risk may not receive a quality of emergency response comparable to that provided to callers with other medical emergencies. Such callers pose a unique challenge to 911 since their cognitive-affective state can be dominated by confusion, despair, and fear fueling impaired and ambivalent cooperation with emergency response efforts.<sup>5</sup> The 911 professional often serves as the very first responder to such callers and as the first vital link in the care continuum. Accordingly, to achieve the best possible outcomes, dispatchers must be prepared with knowledge about mental illness and suicidality, and be equipped for resilient and systematic, yet strategically flexible, response.

A new approach, Emergency Mental Health Dispatching™ (EMHD), is designed to provide 911 telecommunicators with this preparation through a three-day training experience.<sup>6-7</sup> EMHD includes a specialized protocol fostering optimal response to suicide risk when used in coordination with EMHD training. The EMHD model was developed by the 911 Training Institute, which is led by a licensed mental health professional. Additionally, the EMHD training involves equipping dispatchers for real-time use of empirically supported resilience skills to optimize their psychophysiological stress response during stressful interactions with callers at risk. The study herein aims to assess the impact of this new approach.

**OBJECTIVE**

The objective of this case study was to measure two possible impacts of EMHD in a 911 center where training has been implemented:

1. The extent to which EMHD training changed dispatcher self-reported levels of confidence or anxiety relating to these call types
2. The extent to which EMHD training changed dispatcher self-reported effectiveness in four tasks related to handling suicide calls

**METHODS**

Our case study used a retrospective email-based survey design with data collected from dispatchers who had recently been certified in EMHD and trained to use the LifeBridges FlexProtocol®, a comprehensive tool for assessing and intervening with callers at risk.<sup>6</sup> Data was collected from participants approximately three to six months after completing their EMHD training. The training courses occurred between October 2018 and January 2019. Self-reported Likert type scales were utilized for scores. Participants' protocol compliance was not assessed since standards for use of the LifeBridges FlexProtocol have not been integrated into

existing systems such as ProQA® Dispatch Software (Priority Dispatch Corp., Salt Lake City, UT, USA).

The email survey was generated using Survey Monkey™ and was sent out to those who completed the course by their agency's communications manager. Participants were recruited with an initial email and a reminder was sent roughly one week later.

**Data analysis**

Descriptive statistics described self-reported dispatcher metrics. Changes in these metrics were explored via Mann-Whitney-Wilcoxon tests ( $\alpha = 0.05$ ) as normality of sample distributions could not be assumed and sample size was relatively small due to being a case study.

**RESULTS**

In total, 26 participants completed the survey (response rate: 66.7%). A majority of respondents were Frontline Dispatchers (65.4%). Remaining participants were Dispatchers and Supervisors (11.5%) or Dispatchers and Trainers (23.1%). Years of service was well represented across ranges of 1-3 years (26.9%), 4-10 years (26.9%), 11-20 years (23.1%), and 21 years or more (23.1%). Table 1 summarizes the sample participants. The majority of dispatchers (61.5%) in the study had managed more than ten calls involving suicide risk prior to the EMHD training. All except three participants (11.5%) also managed this call types after the training (Table 1). It is important to note that this measure, pre-training, indicates lifetime suicide calls taken and therefore it should not be surprising to see such lower numbers during the shorter post-training period.

Categorical Metric	n	%
Years of Service		
1-3 Years	7	26.92%
4-10 Years	7	26.92%
11-20 Years	6	23.08%
21 or more Years	6	23.08%
Position		
Frontline Dispatcher	17	65.38%
Dispatcher and Supervisor	3	11.54%
Dispatcher and Trainer	6	23.08%
Number of Suicide Calls Pre-training		
None	0	0.00%
1-5 Calls	4	15.38%
6-10 Calls	6	23.08%
10+	16	61.54%
Number of Suicide Calls Post-Training		
None	3	11.54%
1-5 Calls	18	69.23%
6-10 Calls	1	3.85%
10+	4	15.38%

**Table 1.** Demographic Information

Figure 1 compares confidence and anxiety via pre-test and post-test scores. Comparing pre-training and post-training, average confidence in handling general mental crises increased from 2.54 to 3.92 on the Likert type scale ( $p < 0.001$ ). Average confidence in handling suicide calls increased from 2.12 to 3.89 ( $p < 0.001$ ). The average level of anxiety in handling calls from those struggling with general mental crises decreased from 2.89 to 2.46 ( $p = 0.2005$ ). Anxiety in handling suicide calls decreased from 3.15 to 2.31 ( $p = 0.0064$ ).

All measures of self-reported effectiveness increased in a statistically significant manner (Fig. 2). Effectiveness in establishing a meaningful human connection with the caller increased an average of 1.46 Likert points ( $p < 0.001$ ). Effectiveness in assessing the caller to gather vital information about their suicide risk increased an average of 1.74 Likert points ( $p < 0.001$ ). Effectiveness in actively helping the caller lessen their suicide risk through meaningful conversation about their struggle increased by 1.97 Likert points ( $p$

$< 0.001$ ). And effectiveness in actively helping the caller lessen their suicide risk by joining with them in strategic planning increased by 1.92 Likert points ( $p < 0.001$ ).

**DISCUSSION**

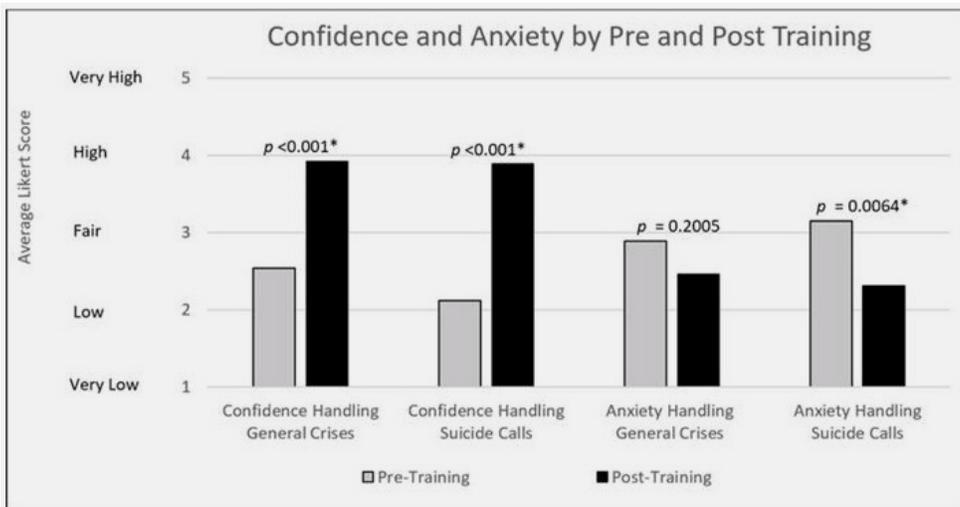
Our study results show that EMHD training increased overall confidence in handling general mental health calls, increased confidence in specifically handling suicide calls, decreased anxiety levels in specifically handling suicide calls, and decreased anxiety around handling general mental health calls—although this decrease in anxiety regarding general mental health calls was not statistically significant or as drastic a change as other scores. Our results also showed a significantly increased self-reported effectiveness in core elements of call management: establishing a connection with the caller, assessing caller risk, lessening suicide risk through conversation (i.e. active engagement), and lessening risk via strategic planning (i.e. active rescue).

**Limitations**

The limitations of this initial case study include its retrospective design and its vulnerability to recall biases. Additionally, this study utilized self-report data and may be subject to participants having a more positive view of their own metrics than performance measures might indicate.

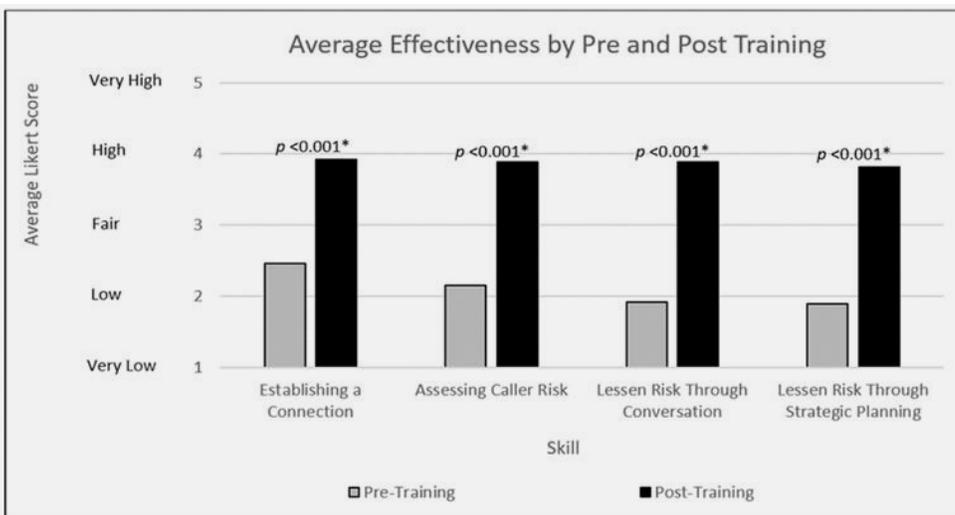
While this study reports trends in self-reported metrics, it is important to note how influential perceived effectiveness can be on a workers’ performance. In general, a positive relationship is often observed between confidence in performing a behavior and success. For instance, individuals with greater confidence generally invest more resources, such as working more hours or giving more effort, and have higher average performance than those with lower confidence.<sup>8-9</sup>

Past research indicates that when a stressor is perceived as less threatening, the human reaction shifts from the basic “fight or flight, freeze or faint” responses (most energy draining with less integrated brain functioning in comparison) to the “challenge response”. The challenge response involves release of a more optimal combination and ratio of stress hormones which



\*Indicates statistical significance at the 0.05 level

**Figure 1.** Confidence and Anxiety by Pre and Post Training



\*Indicates statistical significance at the 0.05 level

**Figure 2.** Average Effectiveness by Pre and Post Training

supports higher order thinking under pressure<sup>4</sup>. EMHD training is designed to equip dispatchers with the ability to produce this challenge response<sup>4</sup>, gain greater insight, compassion, and skill relating to callers in mental crisis; and to use a specialized protocol for management of suicide risk. Such preparation may contribute to the cited improvements in all four measures of self-reported effectiveness within this study as well as the observed changes in confidence and anxiety. Such improvements may have positive immediate and long-term implications for both individual and group performance as well as morale in the 911 center. Further study of dispatcher psychophysiology related to these possible trends and their implications is indicated.

Follow-up studies of other 911 centers implementing the EMHD model are needed to draw comprehensive conclusions on the trends reported herein; specifically, to determine if improvements in self-reported metrics and the suspected health and performance implications proposed here are observed in long-term outcomes for both the dispatchers and the center. Accordingly, future studies should explore possible connections between these improved confidence/call mastery metrics *and* dispatchers' personal resilience, morale, and rates of 911 employee retention and turn-over. Further, this study did not seek to distinguish if the reported effects were due to the general EMHD training or specifically the LifeBridges FlexProtocol (one component of many within the EMHD training). Future study of EMHD should seek to determine the relative value of these EMHD components individually versus collectively.

## CONCLUSION

Overall, anxiety levels decreased while confidence and self-reported effectiveness both increased after EMHD training. Anxiety levels may be less impacted than confidence. However, while dispatcher anxiety relating to general crises calls reduced only modestly; dispatcher anxiety relating to suicide calls decreased significantly. And it should be noted that average anxiety scores decreased for all measures to some extent. This case study provides strong preliminary evidence that focused clinically guided training can improve confidence and effectiveness of 911 dispatchers handling calls involving mental crises and suicide risk.

## CONFLICTS OF INTEREST

The authors would like to disclose that our lead author developed and conducted the EMHD training that was assessed in this study and currently serves as an EMHD instructor.

## References

1. National Drug Helpline. Drughelpline.org. [drughelpline.org](http://drughelpline.org). Accessed July 15, 2019.
2. Marshall, J. *The Resilient 911 Professional: A Comprehensive Guide to Surviving and Thriving Together in the 911 Center*. Kindle ed. Petoskey, MI, USA: South of Heaven; 2018.
3. McCraty, R. *Science of the Heart: Exploring the Role of the Heart in Human Performance*. Jacksonville, FL, USA: Movement Publishing; 2015.
4. McGonigal K. *The Upside of Stress: why stress is good for you, and how to get good at it*. New York, NY, USA: Avery; 2015.
5. Joiner, T. *Why people die by suicide*. Kindle ed. Cambridge, MA, USA: Harvard University Press; 2007.
6. 911 Training Institute. 911Training.net. [911training.net](http://911training.net). Accessed July 18, 2019.
7. Emergency Mental Health Dispatching + LifeBridges!TM. 911TrainingInstitute.net. [docs.wixstatic.com/ugd/6dd9a1\\_5b9d23631d3546748a80ceb591e1a8cc.pdf](https://docs.wixstatic.com/ugd/6dd9a1_5b9d23631d3546748a80ceb591e1a8cc.pdf). Accessed July 24, 2019.
8. Judge TA, Jackson CL, Shaw JC, Scott BA, Rich BL. Self-efficacy and work-related performance: The integral role of individual difference. *J Applied Psychology*. 2007;92(1):107-127.
9. Stajkovic AD, Luthans F. Self-efficacy and work related performance. A meta-analysis. *Psychol Bul*. 1998;124(2):240-261.

# Response to First Reported U.S. COVID-19 Case Enhances Protocols and Alerts

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## Keywords

COVID-19, Coronavirus Emergency Medical Dispatch, EIDS Tool, Protocol 36, Pandemic, Emerging Infectious Disease Surveillance, Real-time Alerts, Alert Triggers, FirstWatch, Protocol 36, Chemical Biological Radiological Nuclear Committee, CBRN Committee, IAED Council of Standards

## INTRODUCTION

On January 19, 2020, relaxing in his Snohomish County living room and watching the early news reports about Coronavirus Disease 2019 (COVID-19) in Wuhan City, Hubei Province, China—the city he'd just returned from—the patient became concerned. He had not been feeling well and decided to go to his primary care physician. Shortly after arriving at the physician's office, his doctor contacted the Health District Officer. They drew a blood sample and overnighted it to the Centers for Disease Control and Prevention (CDC) lab in Atlanta. The patient went home to await the results of the test.

The next morning, the CDC contacted Snohomish Health District to alert them that the patient's blood had tested positive for COVID-19. The Health District called their local fire department; in turn, the fire department's medical director called the medical services officer (MSO) for Snohomish County Fire District 7's, the emergency medical services (EMS) in the patient's community. As part of their response plan, District 7 contacted South County and Rescue for permission to use their hazardous isolation ambulance, constructed to care for Ebola patients.

## MANAGEMENT AND OUTCOME

Local EMS responders and author Dr. Eric Cooper arrived at the patient's house on the same evening the Health District had been alerted of the positive test for COVID-19. He had flu-like symptoms but was clinically stable. The responders provided no care during transport in the isolation ambulance. To respect the patient's privacy, no 911 calls were made nor dispatched over the radio. In fact, the patient would have been perfectly able to drive himself to the hospital, but out of an abundance of caution, an ambulance was used. Since little was known about COVID-19 in the early stages of the outbreak, transportation via ambulance mitigated the risk of the patient's health worsening on the way to the hospital.

Two days later, author Kurt Mills, his Snohomish County 911 dispatch team, Dr. Cooper, and employees of Snohomish County Fire District 7 convened to debrief the situation. During the debrief, they discussed that the Medical Priority Dispatch System™ (MPDS) (version 13.0, Priority Dispatch Corp., ©2015, Salt Lake City, Utah, USA) contains *Pandemic/Epidemic/Outbreak (Surveillance or Triage)*, Protocol 36, and the Emerging Infectious Disease Surveillance (EIDS) tool, instruments suited for cases like this one.

Coincidentally, the International Academies of Emergency Dispatch™ (IAED) Chemical, Biological, Radiological, Nuclear (CBRN) Fast Track Committee of the Council of Standards was meeting on the same day. Dr. Cooper and Mills and his 911 team reviewed information available from the World Health Organization (WHO) and CDC websites and consulted with Greg Scott, Chair of the CBRN Committee, to devise screening questions that were subsequently approved by Dr. Cooper for use in the Snohomish County 911 Center. These questions were meant to be used for certain Sick Person Chief Complaint (Protocol 26) determinants and for cases in which patients had difficulty breathing. It was decided to leave use of the screening questions to the discretion of the Emergency Medical Dispatcher (EMD) if the patient had flu-like symptoms. Those questions and guidance included:

- Does the patient have a fever, cough, or difficulty breathing?
- Has the patient traveled to Wuhan City, China<sup>1</sup> in the last 14 days?
- Has the patient had contact with an officially confirmed or suspected case of Coronavirus?
- Please inform the fire department of your response to these questions.
- Please keep the patient where they are.

Rather than directly stating an elevated risk for COVID-19, Snohomish County 911 advised responders to use appropriate personal protective equipment (PPE). By 5pm, Snohomish County 911 had added instructions in the EIDS tool already functioning in the system.

Mills contacted FirstWatch\* medical director, Silvia Verdugo, MD, MPH, in order to automate alerts and conduct quality assurance to verify that the questions were asked when appropriate. FirstWatch rapidly set up a trigger that same evening. The FirstWatch trigger allowed for implementation of a real-time quality assurance system to evaluate the new approach by examining whether EMDs were asking the right questions of the right callers. They created a test case to verify it was working and shared the ability with Dr. Cooper and Snohomish Health District. They also used the FirstWatch trigger to track compliance and provide near real-time feedback to staff. Initially, adherence to using the EIDS tool was 33%, but in the coming weeks and with the current launch of Protocol 36 compliance using the tool rose to just over 90%. This significant change in compliance illustrates the importance of having effective quality assurance practices for tools or processes that are not used during normal operations.

To further assist Snohomish County 911 supervisors, FirstWatch created a separate alert for the trigger that gives prompt reminders to staff. Since it is easy to forget to launch the EIDS tool on the select determinants, the alert helps to improve screening through automation and timely feedback.

## DISCUSSION

As of this writing, there's been one patient who tested positively on the assessment questions; however, it turned out she consumed two bottles of champagne and did not have the flu or Coronavirus.

Additionally, a three-day nursing strike shut down two hospitals that normally take 25% of the Snohomish County 911 call volume. The combination of the strike and planning around COVID-19 was difficult to manage in a short period. But the collaboration that occurred between Snohomish County's 26 fire agencies, medical director, private EMS, hospitals, and Health District has been tremendous. Mills and his team have been utilizing capabilities that had not been used before and the coordination and partnership has put them on a good path to effective, safe call handling and response early on. As of this writing, the outbreak had elevated to a pandemic, continued planning and monitoring has occurred, and Snohomish County 911 has implemented Protocol 36 Pandemic/Epidemic/Outbreak (Surveillance or Triage).

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## References

1. As the outbreak expanded, we changed this from Wuhan City to China, then from China to Asia.

## Research Spotlight: Jenna Streeter

Audrey Fraizer



### Jenna Streeter

Jenna Streeter, MPA, ENP is currently the Emergency Communications Manager at Madison County Fire Department Communications (Huntsville, AL, USA). She has a degree in environmental biology and completed her Master in Public Administration (MPA) in 2015. Through her career, she has demonstrated her ability to connect broad issues with real-life problem solving, making sound practical decisions based in theory. She has a great appreciation for data analysis and human resource development. She combines these into data-driven metrics to improve individual and organizational performance and positively impact organizational culture.

### Research Spotlight

Research Spotlight highlights a study that might be of interest to our readers. An interview with one or more of the study's authors also provides a more personal, behind-the-scenes understanding of how and why research is done. In this issue, we're highlighting a study done by Jenna Streeter which examines the relationship between priority levels at the point of dispatch and on-scene outcomes for motor vehicle accidents.

### Q AND A WITH AUTHOR JENNA STREETER

#### Q1. Where do you work?

Madison County Fire Department Communications, Huntsville, AL, USA. As manager, I oversee operations for 14 full-time employees; handle all policy development, training program development, and quality assurance/quality improvement program oversight; and am a liaison with 16 volunteer fire chiefs and other public safety officials.

#### Q2. What are the parts of your job that connect with research?

I regularly analyze data in decision-making in all fields identified above. My recent research project published in AEDR sparked my interest because we frequently discuss motor vehicle accident (MVA) coding and field response. There are lots of opinions about call processing and how it drives field response, but not a lot of data to back the veracity of what we do in dispatch and its relation to field findings.

#### Q3. What is your study about?

This study looks at call processing and its relationship with actual on-scene findings. I was interested in answering the question, "Is what we (in the communication center) hear, what they (in the field) actually find?" For instance, with MVAs you often get 3rd party callers or 2nd party callers in one car reporting on possible patients in another car (that they haven't spoken to). Sometimes we are told the occupants aren't out of the car, but does this mean they're trapped? How often does the information we gather match the on-scene impression? It helps develop trust in the system, both in the communication center and in relationships with the responding agencies.

#### Q4. What brought you into the emergency dispatch profession?

I needed a job in 2007!! A friend (and HR manager) told me she thought I might be a good dispatcher, so I gave it a shot. It fits me well and my needs in a profession (I don't like boring and routine).

#### Q5. What prompted your interest in research?

I have a background in environmental biology and have always enjoyed the research process and testing theories.

#### Q6. What drives your continued interest?

As mentioned, I think data is vital in all aspects of work. It's the difference between what we may THINK and what we can KNOW.

#### Q7. What are your recommendations for people interested in research but lacking the confidence to get started or not knowing where to begin?

The International Academies of Emergency Dispatch\* (IAED™) has a great research team that provides tons of support. Connecting with someone who has done research and can mentor you through the process is always a good idea. If you've ever questioned "why" or "what if," you can develop that question into research (operationalizing the question) and test your ideas!

### Find Out More

For more information, read the entire paper: [aedrjournal.org/correlation-of-emergency-medical-dispatch-traffic-transportation-incidents-to-on-scene-outcomes](http://aedrjournal.org/correlation-of-emergency-medical-dispatch-traffic-transportation-incidents-to-on-scene-outcomes)



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