Title Page

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Grant Number: 5R21OH009909-02

Grant Title: A Web-Based Program to Prevent Mental Health Risks in Medical Examiners

Project Dates: 9/1/2010 – 1/31/2013

Final Report Date: 5/10/2013

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Final Financial Status Report (FSR) – submitted via eRA Commons and hard-copy enclosed

Final Invention Statement and Certification - We did not include any paperwork regarding the development of a product or intervention because we are currently modifying the program we developed for this grant. Please advise if this paperwork is required, even if the program is in an interim phase of development.

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Terms and Abbreviations: *All abbreviations are explained within the narrative*

Abstract (500 words or less – 499 words)

First responder and related occupational groups encounter traumatic events during their work lives. Low intensity, web-based interventions have shown some success in reducing posttraumatic stress symptoms in civilian and clinical populations. To date, there have been very few web-based interventions designed to reduce risk for posttraumatic stress in high risk employee groups.

The specific aims of this proposal were to develop a web-based intervention to decrease mental health risks in medical examiner personnel and to provide preliminary data on the acceptability and preliminary efficacy of this intervention. Medical examiner employees are responsible for determining the cause and manner of death and for victim identification. Our basic research indicated that medical examiner personnel were at risk for the development of posttraumatic stress and secondary traumatic stress as a function of exposure to highly disturbing cases and contact with distressed relatives of the deceased, among other events. The treatment we developed addressed these risk factors using a wide range of empirically supported interventions adapted for this specific employee group.

Over the course of this project, we fully developed, edited, and implemented a 16-class version of the web-based program (www.workstresshealth.com – login information is available upon request at brondole@stjohns.edu). The classes included videos with didactic instruction and case examples, as well as quizzes and on line exercises. We implemented the program in 9 ME offices in 6 states. We consented and obtained baseline screening surveys from 68.4% (n=257) of the employees in the offices. Of those who consented, 46.29% (n=121) participated in the course to some degree with 29.2% (n = 75) completing 7 or more classes and 26.4% (n = 63) completing all classes. Based on regular participant feedback (in the form of consumer satisfaction surveys at the end of each class, focus groups and individual interviews with participants), we received detailed feedback that allowed us to modify the program throughout the study.

Consumer satisfaction ratings were very high among those who completed any of the classes; 95% of participants agreed (51% agreed, and 49% strongly agreed) that the program provided useful information; 95% agreed (51% strongly agreed) that the information was presented clearly; 94% agreed (46% strongly agreed) that the workplace examples and exercises were appropriate and useful. Data collected during the course of the project confirmed the results of our preliminary studies and permitted us to develop a more effective model of mental health risks for medical examiner employees. We have identified links between specific workplace exposures and different types of negative cognitions. These negative cognitions may serve as risk factors for the development or maintenance of post-traumatic stress symptoms, and the intervention program was designed to modify these cognitions. We are currently analyzing the final round of data to determine if the program was efficacious in reducing mental health symptoms and improving workplace social support. We are developing a R01 application to conduct a randomized controlled trial of the improved intervention in a broader sample of medical examiner employees and those in other death-related fields.

Section 1 of the Final Progress Report (2-page limit): Significant (Key) Findings.

The specific aims of this proposal were to 1) develop a web-based intervention to decrease mental health risks in medical examiner personnel and 2) provide preliminary data on the acceptability and preliminary efficacy of this intervention. We have made good progress achieving all program goals. We fully developed, edited, and implemented a 16-class version of the web-based program. The classes included videos with didactic instruction and case examples, as well as quizzes and on line exercises. The program was delivered through a web-based learning management system. We have implemented the program in 6 states including 9 offices. Based on regular participant feedback, we modified the program. Specifically, we have made changes to the web interface (developed specifically for this program) to make it more user-friendly. We have developed procedures for obtaining and responding to technical difficulties. We added three new video segments reflecting examples of high stress workplace situations.

We consented and obtained baseline screening surveys from 68.4% (n=257) of the employees in the offices in the 6 states. Of those who consented, 46.29% (n=121) participated in the course to some degree with 29.2% (n = 75) completing 7 or more classes and 26.4% (n = 63) completing all classes. The rates of any class participation ranged from 20% in one site to 100% in another (and the rates of full class completion ranged from 4.8% to 69.23%). We developed a series of strategies, including weekly emails and reminders to encourage participation. We were able to obtain permission for personnel to have specific time set aside in their workday to complete the course. Although management at all sites was highly supportive of the program, we found that class completion rates among employees were much higher in smaller versus larger offices (i.e., 68.5%, 53.3%, 42.4%, 36.3% vs. 7.5% and 4.08%). We are continuing to identify predictors of participation rates.

Consumer satisfaction ratings were very high among those who completed the program; 95% of completers agreed (51% agreed, and 49% strongly agreed) that the program provided useful information; 95% agreed (51% strongly agreed) that the information was presented clearly; 94% agreed (46% strongly agreed) that the workplace examples and exercises were appropriate and useful. We are currently analyzing the final round of data to determine if the program was efficacious in reducing mental health symptoms and improving workplace communication and social support for those who completed the program. We have had no adverse events, suggesting that web-based worksite interventions are feasible for these employees.

We are continuing to refine the program based on analyses of data collected during the screening surveys. These data have permitted us to develop a more effective model of mental health risks for medical examiner employees and possibly other employees in death-related fields. This improved model will permit us to target the intervention more specifically to employee needs and to shorten the overall length of the course.

Specifically, our research suggests that individuals working in medical examiner offices are at risk of feeling stigmatized because of the work they do. For medical examiner personnel, this self-stigmatization takes the form of perceptions of themselves as psychologically damaged by the job and alienated from others because of the work they do. Our research indicates that the

volume of cases, and in particular, the volume of infant accidental death cases increases the perception of being stigmatized. Perceptions of being stigmatized mediate the relationship between infant accidental death exposures and depressive and post-traumatic stress symptoms. In a longitudinal analysis, we found that increases in perceptions of stigmatization over a 2-year period predicted increases in depressive symptoms. These negative cognitions provide a clear target for intervention, and we have developed course modules to address these concerns. Further work evaluating the effect of the program on negative cognitions and symptoms is underway.

Translation of Findings.

Basic research emerging from this project has permitted us to further refine our understanding of the occupational risk factors associated with employment in medical examiner offices and moderators of these risk factors. We have identified differences among employee groups in the prevalence of mental health symptoms and risk factors for these symptoms. For example, investigators have higher rates of symptoms than do medical examiners/pathologists.

In addition, we have identified some of the psychosocial pathways through which occupational exposures may lead to mental health symptoms. Specifically, we have documented that for some employee groups, high levels of exposure to disturbing cases or human remains are associated with greater perceptions of stigmatization and alienation (i.e., being different from others or being changed in some way because of the work). In turn, these perceptions of stigmatization are associated with increased symptoms of depression and stress.

The basic research we conducted both prior to and during this project informed the content and revisions to the content of the web-based psychological intervention. The program has received very high consumer satisfaction ratings. We are currently evaluating its effects on mental health symptoms. These low cost interventions can be deployed across geographically dispersed employee groups.

The project has provided us with a framework for developing an efficient program for moving from basic research to translational research (i.e., web-based intervention development). We have developed strategies to conduct basic research on the needs of specific employee samples and to use this basic research to permit the development of targeted video and web-based interventions. We are currently using this translational approach to expand our program to individuals in other death-related professions, including coroners and funeral service employees.

Outcomes. This project has had three important outcomes thus far. This is a pilot study, with potential outcomes emerging from the basic research and program development.

1. Knowledge about the relative risks associated with different employment groups can help managers to better target additional training and support.
2. Knowledge about the types of organizational risks factors for posttraumatic stress symptoms provides direction for intervention.
3. We developed a high quality video-based web-based intervention that can be used, with modification, as a training tool for medical examiner and coroner personnel.
4. Protocols and strategies we have developed for using basic research to drive targeted web-based interventions will improve the efficiency of efforts to develop interventions for other occupational groups.

Section 2 of the Final Progress Report: Scientific Report.

Background: There is a growing recognition of the importance of developing interventions for emergency response providers whose occupations require exposure to potentially traumatic events to decrease the risk for work-related post-traumatic distress (PTD: operationalized as symptoms of depression, anxiety and posttraumatic stress disorder (PTSD)). Although the mental health needs of other types of emergency responders (i.e., fire, police, emergency medical services) have been well identified and acknowledged in federal emergency planning efforts and as part of the National Occupational Research Agenda Public Safety subsector planning, the identification and treatment of at-risk medical examiner (ME) personnel lags behind that of other emergency responders (ERs). ME personnel are critical to public health preparedness and criminal justice, and their job, (i.e., death investigation) involves risk for exposure to traumatic events.

Personnel employed in ME offices are involved in the identification of the deceased, the determination of the cause and manner of death, and the communication of this information to relevant parties, including the families of the victims. ME offices house a range of employees, including custodial workers, laboratory (toxicology, DNA, histology) technicians, mortuary technicians and assistants, photographers, communications personnel, administrative personnel, investigators, and pathologists. ME work involves exposure to victim remains, heinous crimes, and highly distressed families of victims, which are all noted stressors for ERs. Research on body handlers working in military, police or other capacities has found relatively high rates of PTD. However, prior to our needs assessment study (described below), there were almost no mental health data collected from ME personnel. Importantly, employees with varied educational backgrounds potentially face these stressors as part of their workday at an ME office. Most have not received training to facilitate effective and safe approaches to these specific workplace hazards.

We conducted basic research to understand both the estimated prevalence of posttraumatic stress symptoms and the risk factors for symptoms development among medical examiner employees. We found that ME personnel reported elevated rates of PTSD, depression, anxiety, and sleep disruptions. Variations in training and levels of pre-existing risk factors may leave unrecognized pockets of vulnerability in certain personnel groups, affecting the functioning of the organization as a whole. The specific and interrelated stressors that emerged as the most important concerns of ME personnel included: managing distressed families, exposure to cases involving the deaths of children, and managing the emotional demands of disturbing cases. Exposure to these stressors increased perceived stigmatization. It is important to note that when participants generated items that captured their worries about stigmatization, these included concerns about permanent damage and alienation from others. These are the precise types of negative cognitions that increase the risk for PTSD in rape victims and assault survivors.

There are no consistent standards to guide employees in their work with victims' families, and there is almost no empirically-based training offered for interacting with families. Specifically, MEs do not receive systematic instruction in organizing and responding to their

observations of the families' or into regulating their own psychological reactions to interactions with highly distressed or angry families. This type of training is widely regarded as necessary to mitigate the risk for vicarious traumatization.

We developed a preventive intervention that has the potential to reduce occupational hazards and decrease mental health risk in MEs and related personnel. The intervention provided services through web-based instruction. The development and evaluation of this program is consistent with the goals of NIOSH to develop research and prevention programs that contribute to "practical solutions to complex problems that cause occupational diseases, injuries, and fatalities among response and recovery workers".

The program provided empirically-based treatments adapted to the specific needs of medical examiner employees. Interventions included exposure therapy, relaxation training, cognitive restructuring, psychoeducation, schema-based cognitive therapy, and other cognitive behavioral interventions. Each intervention was embedded into specific exercises and lessons modified for the specific demands of the medical examiner personnel and the specific risk factors they face. We developed case examples to indicate how specific workplace events could elicit stress and demonstrated ways of managing those specific stressors.

We developed 16 classes (15 didactic classes and a separate class for relaxation training). We developed all scripts and pilot tested them with our advisory board and members of the first medical examiner site. We hired and trained actors to act out the scripts, performing as employees or family members. We edited and uploaded all videos. We developed quizzes and exercises to reinforce the learning. We developed a specific web-based learning management system to facilitate the deployment of the project throughout offices with different computer capabilities. We modified the scripts and developed new videos and text depending on feedback as we visited each site. We visited with one local site more often to permit more extensive feedback and modification. As a result of this feedback, we made changes to the web interface to make it more user-friendly. We have developed procedures for obtaining and responding to technical difficulties. We added three new video segments reflecting examples of workplace situations that were disturbing to people.

We found it was possible to deliver high quality training to a dispersed workforce. We have implemented the program in 6 states. In one state, all four offices participated, yielding a total of 9 offices participating. We traveled three times to each office to consent the participants, initiate the course, and obtain feedback. We originally planned to work in 5 states. However, attrition due to state budget cuts indicated that we might not make our projected enrollment. Therefore, we were fortunate to be able to add an additional state.

We had high levels of support for the program and good compliance with our initial consenting and screening procedures (i.e., 68.4% of employees agreed to participate and completed initial surveys). However, the rates of participation in the classes were lower than we expected, although they were higher than other types worksite health promotion programs. Of those who consented, 46% initiated the course, 29% completed more than 7 lessons, and 26.4% (n=63) completed the full course. The rates of class completion ranged from 20% to 100%.

We developed a series of strategies, including weekly emails and reminders to encourage participation. We were able to obtain permission for personnel to have specific time set aside in their workday to complete the course. Although management at all sites was highly supportive of the program, we found that participation rates among employees were much higher in smaller versus larger sites. The larger sites also served larger jurisdictions and the employees were busier. We are currently investigating other factors that impacted participation rates.

The second aim of this project was to provide preliminary evaluation data on the program. Consumer satisfaction ratings were very high among those who completed the program; 95% of completers agreed (51% agreed, and 49% strongly agreed) that the program provided useful information; 95% agreed (51% strongly agreed) that the information was presented clearly; 94% agreed (46% strongly agreed) that the workplace examples and exercises were appropriate and useful. We have had no adverse events, suggesting that web-based worksite interventions are feasible for these employees.

Our data collection process was slowed due to the need to add an additional state (with four offices). We have just finished the final round of data collection. In this round, we added one additional survey to collect data from all sites at one time to determine if there were any changes over the two year period of the study. Therefore we are now analyzing the data to determine if the program was effective in reducing mental health symptoms and improving workplace communication and social support.

We have analyzed portions of the data collected to build our model of the individual and organizational predictors of posttraumatic stress symptoms in medical examiner personnel in more detail. We were able to evaluate the initial baseline screening survey and use those data for cross sectional analyses. We have also tracked changes over time among the subset of individuals who participated in the original basic research and the new intervention pilot study. These data were used to test the model in prospective designs.

Prior research on the development of PTSD and depression following traumatic events has found that negative cognitions predict the development of depressive symptoms and poorer recovery. Our data support the importance of negative cognitions, but highlight the need to study the specific contexts in which they develop. Specifically, our research suggests that individuals working in medical examiner offices are at risk of feeling stigmatized because of the work they do. For medical examiner personnel, this self-stigmatization takes the form of perceptions of themselves as psychologically damaged by the job and alienated from others because of the work they do. Our research indicates that the volume of cases, and in particular, the volume of infant accidental death cases increases the perception of being stigmatized. Perceptions of being stigmatized mediate the relationship between infant accidental death exposures and depressive symptoms. In a longitudinal analysis, we found that increases in perceptions of stigmatization over a 2-year period predicted increases in depressive symptoms. Our data support the importance of negative cognitions, but highlight the need to study the specific contexts in which they develop. Components of the training may have applicability to other employees involved in emergency response or death-related occupations. Based on suggestions from medical examiner personnel and our work with coroners, we are currently expanding our research to assess negative cognitions and other risk factors for PTSD and depression in funeral service employees.

These employees experience many of the same challenges as do medical examiner personnel, and are also an understudied group. We have modified our assessment packet and are establishing data collection procedures. We are currently developing an R34 proposal to refine our current intervention for use across death investigation and funeral service employees. We are also developinf an R01 application to conduct a randomized control trial of a refined version of this intervention across medical examiner and coroner offices.

Papers:

Brondolo, E., Wellington, R. Brondolo, E.M., Brondolo, T., Delahanty, D. (2012). Work-related predictors of psychological distress among medical examiner and coroner personnel, *Academic Forensic Pathology, 2(1).* 80-91.

Conference Presentations:

We have presented portions of these data at national conferences and to regional professional groups:

Brondolo, E., (2012, Oct.) Update on the Work Stress and Health project. Paper presentation at the National Association of Medical Examiner's meetings. Baltimore, MD.

Brondolo, E., (2012, July). The Medical Examiner Work Stress & Health Study: From understanding mechanisms to developing interventions. Paper presentation at the NYS Association of County Coroners and Medical Examiners. (Saratoga Springs, NY.).

Brondolo, E., (2011, August). Preliminary results of the Medical Examiner Work Stress and Health Project. Annual Meetings of the National Association of Medical Examiners, Alaska.

Brondolo, E., Wellington, R., & Delahanty, D. (2010, March) Work stress, depression and post-traumatic stress symptoms in medical examiners and coroners. Poster presentations at the Annual Meetings of the American Psychosomatic Society. Portland, Oregon.

Three submissions (1 paper and 2 posters) have been accepted for presentation in May at the APA-NIOSH conference Work Stress and Health 2013. The manuscripts for these papers are almost completed.

Brondolo, E., Brondolo, E.M., Libretti, M., & Delahant, D., (2013, May). Prospective analyses of changes in negative self appraisals and depression in medical examiner personnel. Poster to be presented at the Work, Stress and Health 2013 meetings sponsored by APA and NIOSH.

Murani, K., Eftekharzadeh, P., Delahanty, D., & Brondolo, E., (2013, May). Frequency and type of exposure to secondary trauma and incidence of posttraumatic stress in medical

examiner personnel. Paper to be presented at the Work, Stress and Health 2013 meetings sponsored by APA and NIOSH.

Brondolo, E., Leiser, H., Jean-Pierre, K.L., & Delahanty, D., (2013, May). Stigmatization mediates the relationship of secondary trauma exposure to depression in medical examiner personnel. Poster to be presented at the Work, Stress and Health 2013 meetings sponsored by APA and NIOSH.

The enrollment table is attached.

INCLUSIONS: No children were included as all participants were employees of medical examiner offices.

Note: We did not include any paperwork regarding the development of a product or intervention because we are currently modifying the program we developed for this grant. Please advise if this paperwork is required, even if the program is in an interim phase of development.

Program Director/Principal Investigator (Last, First, Middle): Brondolo, Elizabeth

Targeted/Planned Enrollment Table

This report format should NOT be used for data collection from study participants.

Study Title: A Web-Based Program to Prevent Mental Health Risks in Medical Examiners

Total Planned Enrollment: 245

TARGETED/PLANNED ENROLLMENT: Number of Subjects			
Ethnic Category	**Females**	**Males**	**Total**
Hispanic or Latino	30	15	45
Not Hispanic or Latino	126	74	200
Ethnic Category: Total of All Subjects *	156	89	245
Racial Categories			
American Indian/Alaska Native	5	3	8
Asian	4	2	6
Native Hawaiian or Other Pacific Islander	3	1	4
Black or African American	19	9	28
White	125	74	199
Racial Categories: Total of All Subjects *	156	89	245

* The “Ethnic Category: Total of All Subjects” must be equal to the “Racial Categories: Total of All Subjects.”

CDC Procurement & Grants Office - Branch V
Equipment Inventory Listing

Report Date:	5/1/2013	Grant Number:	5R21OH009909-02
Project Title:	A Web-Based Program to Prevent Mental Health Risks in Medical Examiners	Project Period:	9/1/2010 – 1/31/2013
Grantee Name:	St. John's University	Project Officer:	Peter E. Grandillo Jr
Grants Management Officer:		Grants Specialist:	

Description of Item: i.e. pH Meter	Mfr.[1] i.e. Fischer	Serial Number	Quantity	Condition[2]	Location[3]	Purchase Cost	Date Received [mm/dd/yyyy]
N/A no equipment was requested for							
this grant.							

[1]Mfr. (Manufacturer)
[2]Condition: (Excellent) (Good) (Fair) (Poor) (Inoperable)
[3]Location: complete physical address

For Government Use Only, not to be completed by the Grantee
Property Administrator & PO Disposition Recommendation and Instructions:

Description of Item	Disposition[1]	Address[2]
[Copy from above]	_____Transfer Title _____Retain and Compensate Awarding Agency _____ Return to Program Office _____Other (explain)	Attn: [Project Officer] CDC / NIOSH 1600 Clifton Road, NE MS E-74 Atlanta, GA 30329-4018
[Copy from above]	_____Transfer Title _____Retain and Compensate Awarding Agency _____ Return to Program Office _____Other (explain)	

[1]Check the appropriate disposition
[2]CDC Warehouse is the central receiving point for delivery of all non-hazardous and non-perishable supplies and equipment, CDC –AM–2004-03, update 2010