Final Report

Effects and Feasibility of a Computer-Based Intervention on Truck Drivers' Sleep

5R21OH00 9965

9/1/2011 – 1/31/2014

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Title: Effects and Feasibility of a Computer-Based Intervention on Truck Drivers' Sleep
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Start & End Dates: 9/1/2011 – 1/31/2014
Program Area: Transportation

Final Report Abstract

Truck drivers are at high risk for sleep disruption due to the highly irregular and erratic natures of their schedules and to demands from customers who ship and manufacture products using a "just in time" inventory system. Another important issue that may impact truck drivers' sleep is the way in which they are paid for their work-generally a specified number of cents per mile or a percentage of the payment their companies receive per load. In either case, the truck driver's incentive is to drive in order to maximize his pay-even when he may be too tired to safely do so. Driving while sleep impaired has similar cognitive effects as driving under the influence of alcohol. The most recent available reports indicate that just over five percent of single vehicle large truck crashes were attributed to fatigue; but this number is likely significantly under estimated because of the difficulty of actually determining this as a causal factor. In spite of these facts, there are no requirements for truck driver training programs to include information on sleep and fatigue management in their curricula. We know that internet connectivity among this population is burgeoning. In order to fill this important educational gap and promote healthier sleep behaviors, we proposed the aims: 1) determine the feasibility of delivering an internet based sleep education intervention; and 2) determine the effects of the educational intervention on sleep quantity and quality, subjective sleepiness, and fatigue in long-haul truck drivers.

During the 28 month funding period, we translated an existing sleep and fatigue management program designed for truck drivers into an internet accessible, modular program. While the original intent was to recruit participants from trucking industry trade shows; we learned that a multifaceted approach to reaching this vulnerable, highly mobile, and remote population was necessary. Therefore, we used snowball sampling, outreach to trusted contacts of the truck drivers (safety directors, state trucking association safety personnel), web and print messaging, along with trade show recruitment efforts. We determined that, not only were our weekly calls to participants necessary to capture data, they also facilitated troubleshooting and retention of participants on the study protocol. Participants provided us with important information regarding the acceptability and usefulness of the information presented in the intervention, and suggestions for future revisions. We were also able to collect very important data about how truck drivers access the internet, how they use the internet, and specifically, how they used this particular internet-based health education program. Participants also provided us with three detailed activity, medication, and driving condition logs that will be extremely important as we explore factors that impacted their sleep and fatigue while on duty. Finally, we were able to learn lessons from them about intervention fidelity and influencing factors in a remote, highly mobile, and vulnerable population.

The knowledge gained from this work will inform future intervention research to promote healthy sleep and other behaviors among truck drivers and other remote, highly mobile, and vulnerable workers.

Section 1

Significant (Key) Findings

Study aims were unchanged from those originally proposed. The key findings are based on preliminary descriptive analyses conducted up to this point, and are presented by specific aim. We project that ongoing analyses will continue through at least Summer of 2014.

AIM 1: Determine the feasibility of the E-MAMF education intervention for use in long-haul truck drivers.

We were able to recruit and enroll 106 truck drivers into the study. During weekly followup calls with the participants, we found that the majority of them found the information in the educational program useful, and easy to access. Many of them made suggestions about how the program could be improved to be more palatable. Some of the participants stated that while they had heard some of the information in the program in previous classes, orientations, etc., that they still felt it was an excellent review that all drivers could benefit from. An unexpected finding came from drivers who viewed the program with their spouses or important others. The spouse or important other reinforced the teaching and would ask their family member about sleep behavior during on duty conversations-thus providing additional cues to adhere to the recommendations of the program. Fidelity to the protocol and design are being evaluated by determining when logs were completed and returned to research team.

AIM 2: Determine the effects of the pilot E-MAMF educational intervention on sleep quantity and quality, subjective sleepiness, and fatigue in long-haul truck drivers.

This aim was achieved by the use of baseline subjective measures and three weekly sleep, medication/substance, activity, and driving conditions logs administered at weeks 1, 6, and 11. Participants provided extensive data that we are in the process of evaluating in detail. However, we have some preliminary findings to indicate that, although these participants did not rate themselves as having daytime sleepiness, they did not achieve the target goal for daily sleep (7 – 8 hours) and consistently reported poor quality sleep throughout the protocol.

Translation of Findings

We have learned some important lessons from this study that can inform future programs to promote healthy sleep and optimum cognitive performance among truck drivers and other remote workers. First, workers who are socially isolated as are the truckers, appreciate the human contact of a telephone call. While a health behavior message may be delivered via text, Twitter, or email, the human contact was very important to this group. They identified with the research staff, and looked forward to the weekly calls. This should be included as one method of communication with a group of isolated workers. Another potentially important finding was the incidental finding related to the benefits of having the spouse or important other also view the educational program. This is consistent with the Theoretical Framework for the study: The Theory of Planned Behavior. From this theoretical approach, targeting the social norm (spouse, peers, important others) is an important method to influence intention to change behavior, and subsequent behavior change. Including the spouse/important other in interventions with truck drivers may be an important future strategy.

In this group of highly experienced truck drivers (*m* = 18.31 yrs., *SD* = 12.97 yrs.), the intervention did not affect sleep quantity, quality, or propensity. However, perhaps this is because of the nature of the participants themselves. With so many years of driving experience accumulated, it is likely that they have established habits related to sleep and rest that may be

more difficult to influence in a three month protocol compared to a new entrant truck driver, or a student finishing a truck driver training program. It may be that placement of this important educational material would be best suited and would have the most impact during the training of new truck drivers before on duty sleep habits have been developed that do not promote optimum sleep quantity and cognitive functioning needed for safe driving

Outcomes/Impact

This study addressed an important issue: How best to educate truck drivers on sleep and fatigue management. The study established that it is feasible to use an internet-accessible educational program with truck drivers to influence sleep (and potentially other) health behaviors. Therefore, there are potential outcomes that may be realized from application of the study findings. Future health promotion efforts may be designed for use with truck drivers that employ devices allowing for internet accessibility such as smartphones, tablets, or laptop computers. Use of this technology could not only influence sleep behaviors, but also many other health and safety concerns; and might prove useful in monitoring and managing chronic health conditions among this group of workers-such as diabetes mellitus or hypertension.

The study can also inform important future research related to influencing sleep and other health behaviors in this remote, mobile, and vulnerable group. First, because the information presented in the sleep education program was viewed as important by the participants; it may be that the use of it with experienced drivers was the reason why no significant change in sleep quantity, quality, or propensity occurred over the course of the protocol. Given that there is no consistent sleep and fatigue management education provided to truck driver trainees, a study comparing sleep and driving outcomes of trainees exposed to the program compared to trainees who do not receive the program could be very beneficial. Conducting a study that includes spouses and important others as targets for the intervention may would also be a theory-based exploration in influencing health behavior change comparing sleep and driving outcomes of drivers whose spouses or important others participated in the study vs. drivers who do not have a spouse or important other, or whose spouses or important others did not participate.

Section 2

AIM 1: Determine the feasibility of the E-MAMF education intervention for use in long-haul truck drivers.

AIM 2: Determine the effects of the pilot E-MAMF educational intervention on sleep quantity and quality, subjective sleepiness, and fatigue in long-haul truck drivers.

Background and Significance

The sleep of truck drivers is an important occupational and public health issue. Long-haul truck drivers comprise a significant number of American workers. U.S. Bureau of Labor Statistics (BLS) data reported 1.67 million long-haul truck drivers in 2008 [1]. Further, a thirteen-percent job growth in this occupation is expected by 2018. These drivers transport various commodities between "distant" areas-including all states, Canada, and Mexico [5]. Seven-eight hours of sleep is the generally accepted daily minimum amount considered adequate to maintain safe driving performance. Sleep loss causes cognitive impairments similar to those caused by alcohol intake.[6]. Long haul truck drivers are at risk for sleep restriction due to the erratic and unpredictable nature of their work schedules[7-8] and night-time driving [9]. Studies of truck drivers indicate they obtain an average of 4.8-5.4 hours of sleep per night, well under the optimum minimum safe driving sleep time of seven hours [10-11]. Data from the 2007 Census of Fatal Injuries confirmed that tractor- trailer drivers experienced the highest number of fatalities related to highway incidents among all occupations (*n* = 578). The number of fatalities in these drivers represents just over 10% of total occupational fatalities for the same time period (*N* = 5,657) [12]. Although single-vehicle truck driver fatalities in 2007 were attributed to drowsy driving in only 6.2% of crashes, another 34% were attributed to characteristics most often associated with drowsy driving crashes: failure to maintain lane position and overcorrection [13]. In multiple-vehicle crashes involving tractor-trailers and passenger vehicles, drivers of the passenger vehicles sustained the majority of fatal and nonfatal injuries [13]. Based on these and other findings, sleep deprived truck drivers pose hazards to themselves and other drivers with whom they share the roads.

The proposed project will make important contributions to the scientific knowledge of computer-based health information intervention feasibility and effects in truck drivers. It will also represent a significant improvement in the approach to sleep health education in this group of at-risk workers. There is no mandated requirement for training of truck drivers in sleep and fatigue management [14-15], therefore, truck driver training programs do not consistently include sleep and fatigue management in their curricula. However, the Federal Motor Carrier Safety Administration (FMCSA) [16] developed, as part of a study of fatigue management technologies, a specific training module addressing these issues. All study participants (*n* = 38) received a three hour training session entitled, *Mastering Alertness and Managing Driver Fatigue,* before data collection began. The training session addressed key components related to sleep and fatigue such as: influences on motor vehicle crash risk; recognition of sleepiness and fatigue; general health issues related to performance; medication use; and potentially useful countermeasures. The investigators did not examine the effect of the training program on the specific sleep and driving performance outcomes of interest. However, study participants rated the training session as good on three of four questions related to: content, knowledge gained, and to what extent the material would help in their jobs [16]. A recent preliminary report of a collaborative effort between Canadian and U.S. researchers outlined the effects of a fatigue management program on sleep quantity and quality of truck drivers (n = 77). The program consisted of four education modules, quizzes and newsletters delivered to drivers, dispatchers, and corporate personnel in three trucking companies. Findings from the study indicated that subjects' sleep quantity and quality improved during on-duty days

after exposure to the fatigue management program [17]. Although both of these studies represent efforts to use education as an intervention to improve sleep and fatigue; they were both "live" lecture offerings. The proposed project will test a computer-based intervention (E-MAMF) based on FMCSA's *Mastering Alertness and Managing Driver Fatigue* program so that it would be readily accessible at any time to truck drivers with computer access. If the proposed aims are achieved, the computer-based delivery of sleep, alertness, and fatigue management information could be used in standard training of truck drivers, shift workers and other workers in safety-sensitive operations such as the rail, air, and marine transportation industries.

Achievement of the aims may lead to improved access to health information on sleep for truck drivers. Both poor health outcomes and limited access to healthcare have been described in long-haul truck drivers [18-19]. Increased access to laptop computer and wireless internet access are important opportunities for delivery of health information/interventions. Although accurate estimates of computer use prevalence by truckers are not known, growing numbers of truck drivers travel with laptop computers and use them routinely to access freight, check traffic and road conditions, and communicate with employers and customers [20]. Four of the largest U.S. national truckstop chains: Flying J, Petro, Pilot, and TA, all provide drivers with wireless internet availability [21]. Truckers use computers and readily access the Internet. Previous studies of computer-based health education interventions targeting workers have been effective in improving workers' respirator [22] and hearing [23] protection use, and fruit and vegetable [24] intake. Recently, Olson and colleagues reported that computer-based intervention is feasible for use with truck drivers. In their study, use of a computer-based weight reduction and safety program (SHIFT) along with health coaching, program website, and incentives for weight loss and safe driving, were associated with weight reduction and improvements in both dietary choices and driving safety. The study was limited in that the research design was pre-post-test with no control group [25].

Methodology

Design. A two-group repeated measures experimental design was used to address the specific aims of the proposed project.

Sample. The sample consisted of long-haul truck drivers who drive without a driving partner or passenger (solo). Participants were recruited at trucking industry trade shows, by word of mouth (Snowball sampling), printed and web messaging, and via company and state trucking association safety directors. The target population consists of male and female long-haul truck drivers. Inclusion criteria for the study are: (a) male and female long-haul truck driver; (b) current U.S. Department of Transportation (USDOT) medical certificate; (c) age 21 or older because 21 is the minimum age eligible for a Commercial Driver's License (CDL) in the U.S.; (d) speaks, reads, and writes English; (e) travels with and uses a computer with internet access and a cell phone. Exclusion criteria for the study are: (a) diagnosis of sleep apnea or pregnancy; (b) use of alcohol, street drugs, or stimulant, sedating, or hypnotic medications while on-duty; (c) unwilling or unable to comply with study protocol.

The USBLS reports truck drivers' gender, race, and ethnicity combined with driver/sales workers. In this category, there are a total of 3.38 million workers. Of that group, fewer than 5% are women; 14% are black or African American; and 17% are Hispanic or Latino. Less than 2% of this group of workers is Asian [40]. Recruitment efforts targeting women will be implemented due to the smaller numbers of female truck drivers. We will attempt to recruit a 32% minority sample to reflect the racial and ethnic composition of the overall population of U.S. truck drivers.

A sample of 66 participants is required to provide approximately 80% power to detect a one hour difference in mean sleep quantity between two groups (33 participants per group) at a traditional significance level of $p = .05$, assuming a standard deviation for the number of hours devoted to sleep per night of 1.42 hours. The one hour difference was derived from the literature of sleep and driving performance. The most recent study of long-haul truck drivers identified

mean sleep times of approximately 6 hours [41]. Seven hours of sleep per day has been established as the threshold of sleep time associated with safe driving performance [6]. Therefore, the difference used in the sample size calculation was that between optimum sleep time for safe driving and the reported mean sleep time of truck drivers. A 20% attrition rate is anticipated because of the repeated measures design over a 12 week study protocol. For this reason an additional 14 participants will be recruited and enrolled in the study for a total projected sample size of 80.

E-MAMF. The primary goal of E-MAMF was to educate long-haul trucker drivers to change sleep behavior, resulting in increased sleep quantity and quality. Because the Theory of Planned Behavior served as the study's theoretical framework, this goal will be accomplished by addressing the three critical constructs of TPB that boost intention to change behavior and subsequent behavior change: perceived behavioral control, attitude toward the behavior, and subjective norm [27].

Procedures. Research staff for this study consisted of the Principal Investigator (PI), Co-Investigator (Co-I), Research Assistant (RA), and Consultant. The PI, Co-I, and RA had the primary responsibility for subject recruitment, instruction, and data collection. The PI instructed staff on study-specific techniques concerning the use of sleep logs, and other data collection instruments.

Participant recruitment. **Participants will be recruited using rented booth space at trucking industry trade shows as well as via the other means listed.** This recruitment strategy has been successful with truck drivers in previous studies [42-43]. Because the numbers of truck drivers who attend trade shows number in the thousands, we expect to be able to achieve our recruitment goal of 80 participants using this and the other recruitment strategies.

Participant enrollment. Research staff discussed study criteria with interested potential participants to determine participant eligibility using the inclusion/exclusion criteria. Participants who agreed to participate provided written informed consent before completing all baseline anthropometric and written measures. Any potential participant who had abnormal findings that might be associated with a pathologic condition such as uncontrolled hypertension or obstructive sleep apnea were given written documentation of the findings and referred to their primary care provider for further evaluation. These participants were excluded from the remainder of the study protocol. Participants with normal baseline findings were given verbal, written, and demonstrated instructions on the study procedures. Specifically, instructions on the use of sleep logs, instruments booklets, and accessing e-MAMF online was reviewed with each participant. Contact information for research staff was also be provided in writing to all participants.

E-MAMF intervention protocol and components. Participants were randomly assigned to E-MAMF or Wait Control groups (n = 40) using a random table of numbers after collection of baseline data was complete. For the first week of the protocol, all participants completed daily sleep logs and measures of subjective sleepiness, fatigue, and road/driving conditions to establish baseline sleep quantity, sleepiness, and fatigue. Beginning at Week Two, participants in the E-MAMF group received access to Modules 1-4 of E-MAMF delivered weekly online for four weeks (Figure 1). These participants also received weekly telephone followup calls for the duration of the study protocol to reinforce module information. Participants in the Wait Control group received weekly telephone attention control calls from the research team for the first six weeks of the protocol. At Week Six, both groups received one week of sleep and activity log monitoring and completed all of the same measures completed for the baseline monitoring session. Beginning on Week Seven, the Wait Control group received access to Modules 1-4 of E-MAMF delivered weekly online for four weeks along with weekly telephone followup to reinforce module information. During Week 12 of the protocol, all participants receive a third period of sleep and activity log monitoring using the same measures completed for the

previous sessions. Using Attention Control during the first half of the study allowed the research team to foster ongoing engagement of the wait control group in the research process while allowing for control for the effect that added attention from researchers might have had on study outcome measures. Implementing this protocol allowed for both between and within group comparisons; and gave all participants the benefit of receiving the E-MAMF intervention.

Data collection. **There was a 12 week study protocol.** At baseline, all participants completed written instrument packets that assessed demographics, medical and sleep history, sleep quality and propensity, fatigue, and anthropometrics. Measures of sleep time were recorded on all participants continuously during Weeks One, Six, and Twelve of the protocol. Repeated measures of sleep quality and fatigue will be conducted at Weeks Six and Twelve. Participants in both groups received weekly telephone followup while receiving the E-MAMF intervention. During the telephone calls, qualitative data was collected from participants to determine aspects of intervention feasibility such as accessibility, usability, acceptability, and any problems or concerns they may have experienced. After initial contact with the participants, study materials were shipped from the PI to the subjects and back to the PI via pre-paid express mail. Data were entered into computer data files by the research staff as soon as materials were received.

Subject incentives. Participants were given a total of $200.00 in cash as an incentive for their participation in the study. $25.00 was paid after the completion of baseline measures, $75.00 was paid at the completion of mid-point measures, and the remaining $100.00 was paid after the completion of final measures and return of all materials.

Intervention fidelity. Several strategies were used to maintain fidelity of the research team and participants to the intervention in the proposed study [44-46]. Research team members received specific training from the PI in the background, design and use of the intervention. Written study and intervention policy and procedure manuals were distributed to and reviewed with all research team members. E-MAMF was standardized. All participants received the same material over the same time frame. At various points in the program, interactive assessment “checkpoints” were included. The use of followup telephone calls with the groups served to maintain engagement of participants in the research process and the intervention. We anticipated that these contacts and opportunities for questions/clarification would go a long way to keep participants true to intervention protocol. Intervention fidelity will be included as part of the data analysis plan- operationalizing dose as the percentage of individual E-MAMF module components and total intervention engagement per participant. Finally, during each research team meeting, the intervention was be included as an agenda item for discussion.

Measures. All participants completed measures at baseline, Week Six, and Week 11. Paper and pencil measures will take approximately 30 minutes of participants’ time to complete.

Results

Demographics

The sample consisted of predominately white, married males who were experienced truck drivers who ranged in age from 38 – 58 years old. Most participants were employees of a trucking company (n = 61); but another third (n = 34) were owner operators leased to a company as independent contractors. The majority of participants were solo drivers-driving without a partner-whose average trips consisted of driving a little more than 2,200 miles.

AIM 1: Determine the feasibility of the E-MAMF education intervention for use in long-haul truck drivers.

- We achieved this aim by collecting data to reflect participant enrollment and attrition rates. Currently we are analyzing these data to not only calculate rates; but to determine characteristics of participants who did not complete the protocol.
- This aim was also addressed by the collection of qualitative data during the weekly telephone calls with the participants to determine the acceptability and usefulness of the educational program. As presented in the Section 1, we have preliminary findings indicating that many of the participants did find the material acceptable and useful. However, in depth qualitative analysis of these data will be ongoing through at least Summer-Fall of 2014.
- We expect to be able to determine if the design and protocol fidelity was maintained-although theses analyses have not yet been conducted.

AIM 2: Determine the effects of the pilot E-MAMF educational intervention on sleep quantity and quality, subjective sleepiness, and fatigue in long-haul truck drivers.

- This aim was achieved via the collection of subjective sleep logs and instruments measuring sleepiness, sleep quality, sleep propensity, and fatigue.
- Preliminary findings indicate that completing the intervention did not have a significant effect on sleep quantity, sleepiness, or sleep quality.
- In spite of these findings, it is important to note that participants only received a mean sleep time of 5 hours-considered insufficient for safe driving, and that they consistently reported poor quality sleep.
- We believe that participant characteristics-experienced with established sleep hygiene habits-may have influenced these particular findings.
- Additional analyses regarding fatigue and influencing factors are planned for later this year (2014).

Discussion/Conclusion

The proposed aims of the study were achieved. Throughout the conduct of the study, the team learned many lessons about recruitment, retention, and communication with this very difficult to access, remote, mobile, and vulnerable group. The use of the internet to deliver health promotion messaging to truck drivers is a feasible strategy. As we analyze our data, we anticipate that we will learn more specific information about timing, content, and delivery of the message. The incidental finding related to augmentation of the intervention by the spouse/important other is one that we believe has significant implications for future research with this population. We also believe that consistent messaging and education regarding sleep hygiene and safety must occur from the outset of the drivers' career; and hope to devote future research efforts to evaluate the effectiveness of earlier intervention with this program targeting new entrant truck drivers as they complete their training programs.

Publications/Presentations

Heaton, K., Griffin, R., Franklin, C. (2013). The Sleep Experience of Truck Drivers: A Descriptive Study. American Association of Occupational Health Nurses Annual Meeting. Las Vegas, NV

Heaton, K. & Franklin, C. (2012). 3, 2, 1, Countdown to a successfully funded project launch. UAB School of Nursing Center for Nursing Research, Birmingham, AL

Program Director/Principal Investigator (Last, First, Middle): Heaton, Karen L.

Inclusion Enrollment Report

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

Study Title: Effects and Feasibility of a Computer-Based Intervention on Truck Drivers' Sleep

Total Enrollment: 105 **Protocol Number:**

Grant Number: 5R21OH00 9965 -02

PART A. TOTAL ENROLLMENT REPORT: Number of Subjects Enrolled to Date (Cumulative) by Ethnicity and Race				
Ethnic Category	**Females**	**Males**	**Sex/Gender Unknown or Not Reported**	**Total**
Hispanic or Latino	0	0	0	0 **
Not Hispanic or Latino	19	86	0	105
Unknown (individuals not reporting ethnicity)	0	0	0	0
Ethnic Category: Total of All Subjects*	19	86	0	105 *
Racial Categories				
American Indian/Alaska Native	0	3	0	3
Asian	0	0	0	0
Native Hawaiian or Other Pacific Islander	0	0	0	0
Black or African American	0	14	0	14
White	19	67	0	86
More Than One Race	0	0	0	0
Unknown or Not Reported	0	2	**0**	2
Racial Categories: Total of All Subjects*	19	86	0	105 *

PART B. HISPANIC ENROLLMENT REPORT: Number of Hispanics or Latinos Enrolled to Date (Cumulative)				
Racial Categories	**Females**	**Males**	**Sex/Gender Unknown or Not Reported**	**Total**
American Indian or Alaska Native				
Asian				
Native Hawaiian or Other Pacific Islander				
Black or African American				
White				
More Than One Race				
Unknown or Not Reported				
Racial Categories: Total of Hispanics or Latinos**	0	0	0	0 **

* These totals must agree.
** These totals must agree.

Form Approved Through 08/31/2015
OMB No. 0925-0002

Department of Health and Human Services

Final Invention Statement and Certification

(For Grant or Award)

DHHS Grant or ~~Award No.~~ R21OH009965

A. We hereby certify that, to the best of our knowledge and belief, all inventions are listed below which were conceived and/or first actually reduced to practice during the course of work under the above-referenced DHHS grant or award for the period

9/1/2011 *original effective date* through 1/31/2014 *date of termination*.

B. Inventions (Note: If no inventions have been made under the grant or award, insert the word *"NONE"* under Title below.)

NAME OF INVENTOR	TITLE OF INVENTION	DATE REPORTED TO DHHS
	NONE	
(Use continuation sheet if necessary)		

C. Signature — This block ***must*** be signed by an official authorized to sign on behalf of the institution.

Title	Name and Mailing Address of Institution
Typed Name	
Signature / Date	

Karen Heaton, Principal Investigator

FEDERAL FINANCIAL REPORT

(Follow form instructions) ROH009965A

1. Federal Agency and Organizational Element to Which Report is Submitted	2. Federal Grant or Other Identifying Number Assigned by Federal Agency (To report multiple grants, use FFR Attachment)	Page	of
NIH - National Institute for Occupational Safety and Health	5R21OH009965-02	1	1 pages

3. Recipient Organization (Name and complete address including Zip code)

The University of Alabama at Birmingham - Grants & Contracts Accounting
University Station, AB 990
Birmingham, AL 35294-0109

4a. DUNS Number	4b. EIN	5. Recipient Account Number or Identifying Number (To report multiple grants, use FFR Attachment)	6. Report Type	7. Basis of Accounting
063690705-0001	636005396	2009852, 2010955	☐ Quarterly ☐ Semi-Annual ☐ Annual X Final	X Cash ☐ Accrual

8. Project/Grant Period From: (Month, Day, Year)	To: (Month, Day, Year)	9. Reporting Period End Date (Month, Day, Year)
9/16/2011	1/31/2014	1/31/2014

10. Transactions	Cumulative
(Use lines a-c for single or multiple grant reporting)	
Federal Cash (To report multiple grants, also use FFR Attachment):	
a. Cash Receipts	$0.00
b. Cash Disbursements	$0.00
c. Cash on Hand (line a minus b)	$0.00
(Use lines d-o for single grant reporting)	
Federal Expenditures and Unobligated Balance:	
d. Total Federal funds authorized	$380,750.00
e. Federal share of expenditures	$379,265.89
f. Federal share of unliquidated obligations	$0.00
g. Total Federal share (sum of lines e and f)	$379,265.89
h. Unobligated balance of Federal funds (line d minus g)	$1,484.11
Recipient Share:	
i. Total recipient share required	$0.00
j. Recipient share of expenditures	$0.00
k. Remaining recipient share to be provided (line i minus j)	$0.00
Program Income:	
l. Total Federal program income earned	$0.00
m. Program income expended in accordance with the deduction alternative	$0.00
n. Program income expended in accordance with the addition alternative	$0.00
o. Unexpended program income (line l minus line m or line n)	$0.00

	a. Type	b. Rate	c. Period From	Period To	d. Base	e. Amount Charged	f. Federal Share
11. Indirect Expense	Predetermined	46.50%	9/1/2011	8/31/2013	$256,661.23	$118,882.47	$118,882.47
	Predetermined					$0.00	$0.00
				g. Totals:	$256,661.23	118,882.47	$118,882.47

12. *Remarks: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation:*

13. **Certification: By signing this report, I certify that it is true, complete, and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent information may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

a. Typed or Printed Name and Title of Authorized Certifying Official	c. Telephone (Area code, number and extension)
Tina Ealy, Manager	205-996-2467
	d. Email address: pae0001@uab.edu
b. Signature of Authorized Certifying Official	e. Date Report Submitted (Month, Day, Year): 4/23/2014
	14. Agency use only:

	Carry-forward IS automatic
	Carry-forward IS NOT automatic
X	Carry-forward requires GMO prior approval

Standard Form 425
OMB Approval Number: 0348-0061
Expiration Date: 10/31/2011

Paperwork Burden Statement
According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is 0348-0061. Public reporting burden for this collection of information is estimated to average 1.5 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0061), Washington, DC 20503.

4/24/14

CDC Procurement & Grants Office - Branch V
Equipment Inventory Listing

Report Date:	02/25/2014	Grant Number:	R521OH009965-02
Project Title:	Effects and Feasibility of a Computer-Based Intervention on Truck Drivers' Sleep	Project Period:	09/1/2011 – 01/31/2014
Grantee Name:	University of Alabama at Birmingham	Project Officer:	Viji Potula
Grants Management Officer:	Timothy Parker	Grants Specialist:	Peter Grandillo

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]
NA	NA	NA	0	NA	NA	0	NA

[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