Principal Investigator's Name: Judith Long, MD
Full Protocol Title: Evaluating Individual and Patient-Selected Family/Friend/or Reciprocal Peer Notifications to Improve Statin Medication Adherence among Patients with Coronary Artery Disease

OMB 2900-XXXX

A. JUSTIFICATION

1. Explain the circumstances that make the collection of information necessary. Identify legal or administrative requirements that necessitate the collection of information.

Legal authority for this data collection is found under 38 USC, Part I, Chapter 5, Section 527 that authorizes the collection of data that will allow measurement and evaluation of the Department of Veterans Affairs (VA) Programs, the goal of which is improved health care for veterans.

Background and Significance: Improving patient medication adherence remains a major challenge in chronic disease management. In the United States, 33 to 69 percent of medication related hospital admissions are due to poor medication adherence – at a cost in excess of $100 billion a year. In fact, one year after hospitalization for an acute coronary syndrome, nearly half of patients prescribed statins stop taking them. Despite the importance of medication adherence, we have few effective tools to help patients improve taking their medications.

One strategy to improve medication adherence is using newer technology to make engagement with patients significantly easier and more immediate. Devices such as Bluetooth enabled pill bottle caps can remind patients with daily alarms, monitor adherence, and create feedback reports on how well patients are doing in adherence to medications. Another strategy to engage patients is to recruit family, friends, and peers to create a social support networks that activate a patient to taking their medications. However, especially in veteran populations, there are few empirical studies evaluating how best to use these technologies and engage different support providers (family/friends/or peers) to improve medication adherence.

2. Indicate how, by whom, and for what purposes the information is to be used; indicate actual use the agency has made of the information received from current collection.

The objective of this study was to test the impact of an electronic pill bottle used to monitor medication adherence, deliver a daily alarm reminder, and provide weekly feedback reports of statin medication adherence. The study population was veterans age 30-75 with a diagnosis of Coronary Artery Disease (CAD) who were receiving care at the Corporal Michael J. Crescenz VA Medical Center (CMCVAMC), prescribed a statin medication, and were presumed to have some difficulty taking their medication regularly as measured by a medication possession ratio (MPR) of less than or equal to 80%. This was a randomized clinical trial with 3 arms:

Arm 1. a control group (36) that received a pill monitoring device with no alarms or feedback;
Arm 2. an individual feedback (36) group that received a daily alarm and a weekly medication adherence feedback report; and
Arm 3. a partner feedback group (54) that received an alarm and a weekly feedback report that was shared with a selected partner (a friend, family member, or a peer).

The intervention continued for 3 months; and participants were followed for an additional 3 months after the intervention was stopped.

The five hypotheses are listed below. The main outcome of interest was medication adherence (daily opening of pill bottle) during the intervention period (months 1-3). Adherence was calculated as the number of days the GlowCap bottle was opened during the period divided by 91 (number of days in each time period). We hypothesized that participants in both feedback groups would have greater adherence rates than participants in the control arm (H1 and H2). Our secondary outcomes included change in the PAM and MSPSS (from baseline to month 3) (H3 and H4). Our exploratory aims included exploring the difference in medication adherence between the two intervention arms (H5) and the persistence of the effects of the intervention as measured by adherence during the 3-month post-intervention period (months 4-6) (H6). See Justification Part A Section 16 and Justification Part B Section 2 for more information about the analysis.

Primary Aim:

Aim 1: To evaluate the impact of alarming pill bottles along with adherence feedback on medication adherence.

H1: Those who have alarming pill bottles and are receiving individual feedback alone (Arm 2) will have better medication adherence at 3 months compared to usual care (Arm 1).

H2: Those who have alarming pill bottles and are receiving individual plus patient-selected family/friend/or reciprocal peer feedback (Arm 3) will have better patient medication adherence at 3 months compared to usual care (Arm 1).

Secondary Aims:

Aim 2: To evaluate the impact of alarming pill bottles and adherence feedback on patient activation/engagement.

H3: At 3 months, those receiving individual feedback (Arm 2) and patient-selected family/friend/or reciprocal peer feedback (Arm 3) will have increased patient activation to a greater extent than usual care (Arm 1).

Aim 3: To evaluate the effect of patient-selected family/friend/or reciprocal peer feedback on improving patient perception of social support.

H4: At 3 months, those receiving family/friend/ or reciprocal peer feedback (Arm 3) will improve patient perceived social support to a greater extent than usual care or individual notifications alone (Arm 2).

Exploratory Aims:

Aim 4: To compare different feedback methods and persistent of effects.

H5: Those who receive individual with family/friend or individual plus reciprocal peer feedback will have better patient medication adherence compared to individual notifications alone.

H6: At 6 months, those randomized to the feedback intervention arms will have will have better patient medication adherence compared to usual care.

VA staff or administrators may use results from this study to justify offering electronic pill bottles and alerts to veterans to help them improve medication adherence. Data collection for the Statin Medication Adherence Study is ongoing. At this time, the agency has not yet received or used any information from this project.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g. permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden.

The Satin Medication Adherence Study uses electronic web-based platforms to facilitate data collection. Data collection from the electronic pill bottles will be automatically uploaded to the web via Bluetooth technology, and automatically synced with our study database. Electronic versions of the study questionnaires were pre-coded and imported into the study database. Study staff will complete electronic data entry as they administer the survey and qualitative interview questions to the study participants. This use of information technology facilitates efficient data entry, reduces the burden of cleaning data, and ensures participants have the opportunity to ask clarifying questions.

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item 2 above.

Before designing the Statin Medication Adherence Study, we conducted a literature review to explore the use of technological devices and peer support to enhance medication adherence in an effort to identify duplication. Specifically in veteran populations, there are few empirical studies evaluating how best to use these technologies and engage different support providers (family/friends/or peers) to improve medication adherence.

5. If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.

Since these are applications for individual benefits, no small businesses or other small entities are impacted by the information collection.

6. Describe the consequences to Federal program or policy activities if the collection is not conducted or is conducted less frequently as well as any technical or legal obstacles to reducing burden.

VA would not be responsive to the needs of the patient and to the legal requirement to release of information if information were collected less frequently. The VA is making a significant investment in improving its primary care model through the Patient Aligned Care Team (PACT) initiative. This project is a clinical innovation study funded through the VISN 4 PACT Demonstration Lab. Not conducting or conducting data collection less frequently will result in a lack of information on the effectiveness of interventions designed to improve primary care for veterans. As a consequence, the VA would not be able to make evidence based decisions about further improvements to primary care and medication management.

7. Explain any special circumstances that would cause an information collection to be conducted more often than quarterly or require respondents to prepare written responses to a collection of information in fewer than 30 days after receipt of it; submit more than an original and two copies of any document; retain records, other than health, medical, government contract, grant-in-aid, or tax records for more than three years; in connection with a statistical survey that is not designed to produce valid and reliable results that can be generalized to the universe of study and require the use of a statistical data classification that has not been reviewed and approved by OMB.

There are no such special circumstances.

8. a. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the sponsor's notice, required by 5 CFR 1320.8(d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the sponsor in responses to these comments. Specifically address comments received on cost and hour burden.

The notice of Proposed Information Collection Activity was published in the Federal Register on 12/05/2014: Federal Register Citation: 79 FR 72248. VA received no public comments on this ICR.

b. Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, clarity of instructions and recordkeeping, disclosure or reporting format, and on the data elements to be recorded, disclosed or reported. Explain any circumstances which preclude consultation every three years with representatives of those from whom information is to be obtained.

Outside consultation is conducted with the public through the 60- and 30-day Federal Register notices.

9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

There are three incentives, including the $50 CVS gift card for each of the two in-person study visits (at baseline and 6 months), and an additional $25 CVS gift card for the 3 month phone call.

Research has consistently shown that monetary incentives are more effective in increasing survey response than nonmonetary incentives and may minimize non-response bias to surveys without compromising the quality of the data (Singer and Kulka 2002; Singer et al. 1999; Singer and Ye 2013). (See list of references at the end of this document.)

We offer the $125 gift cards to ensure that we collect complete and accurate data over the time points of the project; participants are asked to enroll for six months and use a specialized pill bottle. The burden to the participant of the length of time in the project and compliance in using a new medication device (pill bottle), and having an intrusive procedure (one phlebotomy event) is expected to be minimized by the use of an incentive as well as ensure compliance with the project procedures. In addition to the expected improvement in participant compliance, the use of these incentives may positively affect participant recruitment and retention for this population of patients who have a chronic illness that requires medication compliance over time.

10. Describe any assurance of privacy, to the extent permitted by law, provided to respondents and the basis for the assurance in statute, regulation, or agency policy.

Any electronic information collected as a part of this project will be stored separately from the medical record in a password-protected database on a secure server. Paper records will be kept in a locked cabinet behind a locked door. Information on these forms will become part of a system of records which complies with the Privacy Act of 1974. This system is identified as "Veteran, Patient, Employee and Volunteer Research and Development Project Records-VA (34VA11)" as set forth in the Compilation of Privacy Act Issuances via online GPO access at *http://www.gpoaccess.gov/privacyact/index.html.*

11. Provide additional justification for any questions of a sensitive nature (Information that, with a reasonable degree of medical certainty, is likely to have a serious adverse effect on an individual's mental or physical health if revealed to him or her), such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private; include specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.

There are no questions of a sensitive nature.

12. Estimate of the hour burden of the collection of information:

a. The number of respondents, frequency of responses, annual hour burden, and explanation for each form is reported as follows:

VA Form 10-10139	**No. of respondents**	**x No. of responses**	**x No. of minutes**	***÷ 60 mins/ hr***	**No. of Hours**
The Morisky 4-Item Self-Report Measure of Medication-taking Behavior (MMAS-4)	**224**	**1**	**5 mins**		**19 hours**
Self-Administered Comorbidity Measure (SCQ)	**224**	**1**	**10 mins**		**37 hours**
Multidimensional Scale of	**224**	**3**	**10 mins**		**112**

Perceived Social Support (MSPSS)					**hours**
Patient Activation Measure (PAM)	**224**	**3**	**10 mins**		**112 hours**
Study-Specific Qualitative Questions (Month 3)	**160** *(arms 2 and 3 only)*	**1**	**15 mins**		**40 hours**
Study-Specific Qualitative Questions (Month 6)	**96** *(arm 3 only)*	**1**	**10 mins**		**16 hours**
			100 mins	**TOTAL**	**334**

Please note, in addition to the time spent on these survey responses, participants will also spend time on the consent process, the lab blood draws, reviewing the education materials, and learning how to use the electronic pill bottle. We estimate each study participant will spend approximately **3.5 hours** in the study, for a total hour burden of **784 hours.** In addition to the time spent in the study-related visits and phone calls, participants are expected to spend their own time using the electronic pill bottle for the duration of the study (6 months).

b. If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens in Item 13 of OMB 83-I.

Arm 1:

VA Form 10-10139	**No. of respondents**	**x No. of responses**	**x No. of minutes**	***÷ 60 mins/ hr***	**No. of Hours**
The Morisky 4-Item Self-Report Measure of Medication-taking Behavior (MMAS-4)	**224**	**1**	**5 mins**		**19 hours**
Self-Administered Comorbidity Measure (SCQ)	**224**	**1**	**10 mins**		**37 hours**
Multidimensional Scale of Perceived Social Support (MSPSS)	**224**	**1**	**10 mins**		**37 hours**
Patient Activation Measure (PAM)	**224**	**1**	**10 mins**		**37 hours**
			35 mins	**TOTAL**	**130**

Arm 2:

VA Form 10-10139a	**No. of respondents**	**x No. of responses**	**x No. of minutes**	***÷ 60 mins/ hr***	**No. of Hours**
Multidimensional Scale of Perceived Social Support (MSPSS)	**224**	**1**	**10 mins**		**37 hours**

Patient Activation Measure (PAM)	**224**	**1**	**10 mins**		**37 hours**
Study-Specific Qualitative Questions (Month 3)	**160** *(arms 2 and 3 only)*	**1**	**15 mins**		**40 hours**
			35 min	**TOTAL**	**114**

Arm 3:

VA Form 10-10139b	**No. of respondents**	**x No. of responses**	**x No. of minutes**	***÷ 60 mins/ hr***	**No. of Hours**
Multidimensional Scale of Perceived Social Support (MSPSS)	**224**	**1**	**10 mins**		**37 hours**
Patient Activation Measure (PAM)	**224**	**1**	**10 mins**		**37 hours**
Study-Specific Qualitative Questions (Month 6)	**96** *(arm 3 only)*	**1**	**10 mins**		**16 hours**
			30 mins	**TOTAL**	**90**

c. Provide estimates of annual cost to respondents for the hour burdens for collections of information. The cost of contracting out or paying outside parties for information collection activities should not be included here. Instead, this cost should be included in Item 14.

VA does not require any additional recordkeeping. The cost to the respondents for completing these forms and other study-related activities is $19,600.00 ($25 per hour x 784 burden hours (Bureau of Labor & Statistics)).

Source: All Occupations Wage Code 00-0000 mean hourly wage, http://www.bls.gov/oes/current/oes_nat.htm

13. Provide an estimate of the total annual cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden shown in Items 12 and 14).

There is no anticipated recordkeeping burden.

14. Provide estimates of annual cost to the Federal Government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operation expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information. Agencies also may aggregate cost estimates from Items 12, 13, and 14 in a single table.

All costs for this data collection are included in grant funds already approved by VHA Patient Care Services for the PACT Demonstration Laboratory. There are no additional costs to the government for this activity.

15. Explain the reason for any burden hour changes or adjustments reported in items 13 or 14 of the OMB form 83-1.

This is a new collection and all burden hours are considered a program increase.

16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.

Timeline for Project:

We began enrollment in April 2014. We are planning to complete enrollment by March 2015. Patients will be enrolled for six months.

Based on study recruitment, enrollment, and completion of the study we plan to begin our analysis described in further details below starting in September 2015. We hope to complete our analysis of both qualitative and quantitative data within 2 months. We anticipate that a manuscript will be completed in the following 3 months.

Because this is a pilot study, our sample size was designed to test if the intervention could detect an improved adherence of 5% between the groups.

We will test the primary hypotheses using unadjusted intent-to-treat analyses. Initial descriptive analysis of demographic and baseline clinical characteristics for all study patients will be conducted, including gender, age, race/ethnicity, income, education, type of statin medication, and initial measures of social support. For specific aim 1 (H1, H2), we will model using a one-way ANOVA model to test for differences the continuous outcome of percent of total medications taken at 3 months with study arm as the main independent predictor of interest. We will adjust for covariates not balanced at baseline. . For specific aim 2 and specific aim 3 (H3,H4), we will model using a one-way ANOVA model to test for differences the continuous outcome of change in patient activation and social support score with study arm as the main independent predictor of interest. We will adjust for covariates not balanced at baseline. If there is ceiling or floor effects with the patient activation and social support scores we will also adjust for baseline score. For H5 we will repeat the analysis for aim 1 including an interaction term to test difference between arms. For H6 we will repeat the analysis for aim 1 with the main independent variable being adherence at 6 months instead of 3 months. All analyses will compare each intervention arm to the control arm and use p=.025 as a critical value.

Qualitative survey data collected will be read and coded for cultural themes by program specialist, PI and co-investigator Gala True. Using these domains, we will conduct a descriptive analysis of Veterans attitudes toward GlowCaps, feedback reports, and feedback partners to improve medication adherence. This study will use a modified Grounded Theory approach and the constant comparative method for analyzing responses of veterans to the qualitative questions. Three members of the research team (PI, co-PI -Gala True, and program specialist) will read a random sample of 10 veteran responses to identify and name concepts in the data, and to categorize data according to these concepts. Through consensus, a list of coding categories and their definitions will be developed; these codes will then be applied to all qualitative data by the program specialist, with regular meetings of the research team to discuss and resolve questions about codes and the application of codes to text. Once all responses have been coded to one or more coding categories, selective coding will be used to identify the core concept in the data and to

relate the other concepts to this central concept. A theory will then be developed describing the relationship between concepts.

17. If seeking approval to omit the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

VA does not seek to omit expiration date.

18. Explain each exception to the certification statement identified in Item 19, "Certification for Paperwork Reduction Act Submissions," of OMB 83-I.

There are no exceptions.

References

Graham, J.D. "Guidance on Agency Survey and Statistical Information Collections." Washington, DC: Office of Management and Budget, January 20, 2006. Available at: http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/pmc_survey_guidance_2006.pdf. Accessed April 2016.

Singer, E., R.M. Groves, and A.D. Corning. "Differential Incentives: Beliefs About Practices, Perceptions of Equity, and Effects on Survey Participation." *Public Opinion Quarterly*, 1999, vol. 63, pp. 251–260.

Singer, E., and R.A. Kulka. "Paying Respondents for Survey Participation." In *Studies of Welfare Populations: Data Collection and Research Issues. Panel on Data and Methods for Measuring the Effects of Changes in Social Welfare Programs*, edited by Michele Ver Ploeg, Robert A. Moffitt, and Constance F. Citro. Committee on National Statistics, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press, 2002, pp. 105–128.

Singer, E., and C. Ye. "The Use and Effects of Incentives in Surveys." *The Annals of the American Academy of Political and Social Science*, 2013, vol. 645, no. 112.