SUMMARY STATEMENT

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Release Date: 06/23/2015

Application Number: 1 R21 TW010160-01

Principal Investigator
FITZPATRICK, ANNETTE L PHD

Applicant Organization: UNIVERSITY OF WASHINGTON

Review Group: ZRG1 IMST-K (50)
Center for Scientific Review Special Emphasis Panel
Mobile Health: Technology and Outcomes in Low and Middle Income Countries

Meeting Date: 06/11/2015
Council: AUG 2015
Requested Start: 09/01/2015

RFA/PA: PAR14-028
PCC: MHEALTH

Dual IC(s): CA, EB, HD, MH

Project Title: Integrating Mobile E-Health into Hypertension and Diabetes Management in Cambodia

SRG Action: Impact Score: 25

Next Steps: Visit http://grants.nih.gov/grants/next_steps.htm

Human Subjects: 30-Human subjects involved - Certified, no SRG concerns
Animal Subjects: 10-No live vertebrate animals involved for competing appl.

Gender: 1A-Both genders, scientifically acceptable
Minority: 5A-Only foreign subjects, scientifically acceptable
Children: 3A-No children included, scientifically acceptable

Clinical Research - not NIH-defined Phase III Trial

| Project Year | Direct Costs Requested | Estimated Total Cost |
|--------------|------------------------|----------------------|
| 1            | 125,000                | 191,054              |
| 2            | 125,000                | 191,054              |
| TOTAL        | 250,000                | 382,107              |

ADMINISTRATIVE BUDGET NOTE: The budget shown is the requested budget and has not been adjusted to reflect any recommendations made by reviewers. If an award is planned, the costs will be calculated by Institute grants management staff based on the recommendations outlined below in the COMMITTEE BUDGET RECOMMENDATIONS section.
RESUME AND SUMMARY OF DISCUSSION: This Exploratory/Developmental Research application from the University of Washington and the MoPoTsyo Patient Information Centre Phnom Penh seeks to implement an enhanced set of features of an existing mHealth communications application for the self-management of hypertension and diabetes, and to pilot test the new system with end-users for acceptability and ease of use. Based on the results of this activity, a randomized controlled clinical intervention study will be run to assess the effectiveness of the application in reducing negative outcomes in diabetes and hypertension patients. The primary reviewers noted that if successful, the ability to reduce mortality from hypertension and diabetes would potentially have a significant impact on public health costs and disease management in Cambodia. Reviewers expressed a moderately high level of enthusiasm for this application with agreement that an outstanding investigative team was seeking to address an important emerging topic in healthcare within Cambodia. Additionally, it was noted that the efforts were well integrated into existing capacity such as pharmacy records and community education programs. However reviewers also expressed concern that there was a lack of Cambodian investigators, that the capacity building within the country was weak, that there too few details describing the randomized comparison, and that the project appeared to be overly ambitious. At the conclusion of the discussion however, enthusiasm for the need to address this emerging health problem, the well-qualified investigative team, and the use of a chronic care model that has been successful in several settings was only somewhat dampened by the weaknesses cited for the design of the randomized trial and the lack of research development within Cambodia. As a consequence, the final potential overall impact of the application was noted to be outstanding.

DESCRIPTION (provided by applicant): The population of Cambodia is rapidly aging. Life expectancy at birth has increased from 58 years in 1995 to 71 years in 2012 driving the rate of previously unknown non-communicable diseases (NCDs) skyward. Ischemic heart disease and stroke are now the top two causes of mortality in this low income country and rates of cardiovascular risk factors including hypertension and diabetes are dramatically increasing. While the Cambodian government has done little to address the growing burden of NCDs afflicting its people, a non-governmental organization (NGO), MoPoTsyo Patient Information Center, has stepped in. Using a model of community-based patient-led Peer Educator Networks, MoPoTsyo is currently delivering self-management training and medications to over 21,000 hypertensive and diabetic patients in Cambodia. In spite of the considerable success this model has demonstrated, control of these conditions – particularly hypertension among non-diabetics - remains a challenge. The primary aim of this application, in response to PAR-14-028, Mobile Health: Technology and Outcomes in Low and Middle Income Countries (R21), is to enhance the communication network between the MoPoTsyo patient database, Peer Educators, pharmacies, and patients, using mobile eHealth tools to activate better compliance with treatment guidelines. Specifically, we plan to 1) Finalize enhanced features of the mHealth communications application for self-management of hypertension and diabetes, and pilot test it with end-users for acceptability and ease of use; 2) Implement a randomized controlled clinical intervention to assess the mHealth communications application in rural and urban-poverty communities for reducing study outcomes related to diabetes and hypertension; and 3) Share results with the Cambodian Ministry of Health and development partners in order to inform health policy makers of study findings and to develop strategies for improving control of hypertension and diabetes throughout Cambodia. This e-health communication system using mobile phone technology will include (a) voice messaging in Khmer allowing illiterate users to participate; (b) interactive tailored reminders and messages to patients for improving support for treatment adherence and goal achievement; (c) integration of messages received and responses from users into the health care database to trigger new messages; (d) access to pharmacy data to monitor individual adherence to medication; (e) access of health care information to Peer Educators to improve monitoring of patients over time; and (f) use of the system to integrate data into the MoPoTsyo database for reports and surveillance of patients. Fifty
Peer Educators representing over 6000 rural, sub-urban, and urban patients will be randomized to the intervention or control. Process outcomes and health indicators including control of blood pressure and glucose, medication adherence, and lifestyle factors such as smoking, body mass index, diet and exercise, will be evaluated. Results will be used to help develop national health policies addressing the great need for NCD control in Cambodia and serve as a model of other countries in SE Asia.

PUBLIC HEALTH RELEVANCE: This project addresses the critical need for improving hypertension and diabetes control in low income countries where dramatic increases in age and changing economics are driving the onset of these cardiovascular risk factors. We propose to develop and test an eHealth communication system designed to provide interactive voice messages tailored to patients based on recent medical history and treatment adherence to motivate improved self-management. We will evaluate the mobile eHealth system using the Peer Educator Network developed and managed by the non-governmental organization MoPoTsyo in Takeo province and a slum of Phnom Penh to compare approximately 3000 patients receiving the intervention to 3000 receiving usual counseling and care.

CRITIQUE 1:

Significance: 3
Investigator(s): 2
Innovation: 3
Approach: 3
Environment: 2

Overall Impact: This application addresses the important problem of the management of hypertension and diabetes in the Kmer region of Cambodia. The reduction in mortality due to end of the Cambodian civil war and other causes of violent death in the region has increased life-span and a consequent rise in mortality and morbidity from chronic, non-communicative diseases. Progress in improving two important causes (hypertension and diabetes) of this mortality will substantially improve health outcomes in this region of the world, and likely be an important part of economic development. As life expectancy has increased from approximately 58 to 71 years between 1995 and 2012, the prevalence of hypertension has increased to approximately 11% of and will likely continue to increase because of the high-prevalence of pre-hypertension and current under diagnosis.

Diabetes and hypertension are increasingly serious problems in the developing world and in Cambodia in particular. The successful use of WHO guidelines and treatment algorithms in the developed world have substantially reduced the mortality and morbidity of both diseases. Adequate early detection of diabetes allows the use of effective and inexpensive medications for early stage disease (e.g., metformin), delaying the need for more expensive insulin support. Peer educators have the potential for immediate and sustained improvement in patient understanding of the disease and of the value of treatment. Because of the infrastructure present in the MoPoTsyo Patient Information Centre and the relatively straightforward technology being used, this project is likely to have large impact.

1. Significance:

Strengths

- This application addresses the important problem of the management of hypertension and diabetes in the Kmer region of Cambodia.
The project accounts for the varying literacy of the population, by using voice messaging to remind participants of medication and upcoming visits.

The system seems well integrated into the best of the existing capacity in Cambodia, including the project link with pharmacy records and a set of Peer educators.

The system to be implemented is modeled on a chronic care model (CCM) that has been successful in several settings and has been studied by WHO.

The project will partner with MoPoTsyo Patient Information Center, a Cambodian non-governmental organization (NGO) for people with chronic disease in Cambodia.

The roll-out consists of a well-conceived set of steps to calibrate the system with both the needs of the participants and cultural context. Aim 1 will use focus groups of patients (or potential patients) to help gauge usability of the messaging and Peer educator systems.

Aim 1 also includes pre-testing of the technology by peer educators, hopefully avoiding the problem of dropping developed country technology into a very different environment.

Aim 2 includes an important randomized study comparing outcomes of the mHealth system with individuals receiving only peer counseling.

Aim 3 cites intent to share results with the Cambodian Ministry of Health to attempt to maximize the impact of the study on health policy in the region.

Generally, the investigators seem to have made a careful study of the reasons similar initiatives have not worked in the past, and have outlined steps to reduce the chance of failure, including 1) use of an established Peer Educator Network; 2) accessing patient data to tailor electronic messages to patients; 3) adding an interactive component for tracking and recording responses; 4) capability to send messages to contacts of patient non-responders; 5) the use of using tablet-based; 6) maintaining sustainability of the hypertension/diabetes management program by increasing patient volume at pharmacies. (summarized from the grant)

Weaknesses

Perhaps the most substantial weakness is the lack of detail about the randomized comparison. Without clear evidence of either the superiority of the mHealth initiative or its lack of a differential effect, the decision of whether to expand the initiative in a resource poor environment will be a difficult one. The trial will use a cluster randomized design, with 25 peer educators in the mHealth group and 25 using the usual approach. It is unclear from the proposal whether the primary analysis will be based on mean outcomes for each peer, or on patient level analysis. If the analysis is based on a patient level analysis (as the section on data analysis implies), there are many important details missing from the power calculation, including assumptions about the intra-cluster correlation for patients with the same peer counselor. The description in the proposal does not discuss the possibility of cross cluster contamination when patients who may live or work near each other are randomized to different groups. These missing details make it difficult for this reviewer to evaluate the potential success of the trial. This reviewer is aware of and sensitive to the constraints of the length allowed for R21 proposals, but with some judicious editing of redundant discussions more detail could have been squeezed in to the proposal.

If successful, the randomized trial will provide information about the differential effect of the mHealth initiative compared to usual peer educator approach, but it will not provide information about the generalizability of the results unless the participant population is reasonably representative of the population at large. I did not find much information about how the participants will be chosen, except that they will be limited to the Takeo region.

2. Investigator(s):
Strengths

- This is a strong team that is well-qualified to conduct the research. The PI (A. Fitzpatrick) is a research professor at the University of Washington, with appointments in family medicine, epidemiology and global health. She has a particular research interest in cardiovascular disease and has extensive experience LIMCS, having led previous projects in Nepal.

- The co-investigators (Thompson and LoGerfo) are eminently well-qualified to participate in the research.

- The collaborating investigators from Cambodia all seem well-qualified, although except for van Pelt, their role seems limited to consultant with funding to cover only 7 days a year for each.

Weaknesses

- The important role of data quality control seems to be in the hands of a student assistant. With the right student, that may well work out, but in my experience, this very important aspect of a large and complex study should be carried out by a professional with the skills for both electronic checking of data records and the experience to recognize when components of a data collection system might not be functioning properly.

- The collaborating statistical group is well qualified for the work, but it is not clear how involved they were in the preparation of the proposal.

3. Innovation:

Strengths

- This is an innovative project in several respects: (1) it integrates several approaches to insure success, including learning from both patients and peer counselors how this technology might be adapted in Cambodia; (2) it builds on the strength of the NGO MoPoTsy in patient level interaction; (3) it uses current and widely available mobile phone technology; and (4) includes the potential of evaluation through a randomized comparison. While the particular technology used in the project may not be leading edge, its integration with other aspects of the project is impressive.

Weaknesses

- None Noted

4. Approach:

Strengths

- The approach to the research is well-thought out. The use of focus groups to measure perceptions and usability of self-help methods and key informant interviews with the peer educators will provide key information in the overall design.

- The randomized trial estimating the effectiveness of the mHealth initiative is a strong component of the approach, though some details on sample size and power need clarification.

Weaknesses

- None Noted

5. Environment:

Strengths
The University of Washington is well-suited to support this work, and the MoPoTsyo Patient Information Centre is ideally suited for an in-country site. UW has a strong program in preventive health, and the MoPoTsyo Center has a well-established cohort of peer educators.

Weaknesses

None Noted

Research Capacity Building:

Strengths

- If successful, the project will increase the in-country capacity for patient self-management of disease and for data collection about hypertension and diabetes in Cambodia. Long term, this may well lead to increased understanding of the prevalence of pre-diabetes and hypertension, allowing policy questions to be examined in a more evidence-based setting.

Weaknesses

- The computing and other equipment will remain in Cambodia after the project ends, and the peer educators will be better equipped to use this equipment, it is less clear from the application that staff in country will participate in the intellectual components of the research.

Protections for Human Subjects: Acceptable Risks and/or Adequate Protections

- Adequate, except for monitoring plan. See details in the review

Data and Safety Monitoring Plan (Applicable for Clinical Trials Only):

Unacceptable

- The project will include a randomized trial of mHealth vs usual peer counseling. Strictly speaking, this is not a randomized treatment trial, but monitoring in this setting still seems prudent, if only to insure interpretability of data and to be sure that the design goals are being met.

Inclusion of Women, Minorities and Children:

- Sex/Gender: Distribution justified scientifically
- Race/Ethnicity: Distribution justified scientifically
- Inclusion/Exclusion of Children under 21: Excluding ages < 21 justified scientifically

Vertebrate Animals: Not Applicable (No Vertebrate Animals)

Biohazards: Not Applicable (No Biohazards)

Resource Sharing Plans: Acceptable

Budget and Period of Support: Recommend as Requested
CRITIQUE 2:

Significance: 3
Investigator(s): 6
Innovation: 4
Approach: 3
Environment: 4

Overall Impact: This purpose of this study is to enhance the communication network between the patient database maintained by an NGO (MoPoTsyo), Peer Educators, pharmacies, and patients, using mobile eHealth tools to activate better compliance with treatment guidelines. The investigators plan to 1) Finalize enhanced features of the mHealth communications application for self-management of hypertension and diabetes, and pilot test it with end-users for acceptability and ease of use; and 2) Implement a randomized controlled clinical intervention to assess the mHealth communications application in rural and urban communities for reducing study outcomes related to diabetes and hypertension. Diabetes and hypertension is a growing public health problem in Cambodia and developing a mHealth tool to combat the burden associated with these diseases is important.

This proposal has the potential to be incorporated within the national policy of Cambodia, if found to be effective, and will contribute to the control of diabetes and hypertension. Methods described to develop and evaluate the mHealth application are well described and feasible.

1. Significance:
   **Strengths**
   - The study is significant as this will utilize the existing healthcare delivery system, provided by an NGO, to facilitate service delivery for hypertension and diabetes.
   - The existence of peer educators (PEs) and the use of PEs to reinforce the use of mHealth tools to manage chronic diseases could play a key role in the self-management of hypertension and diabetes.
   - The investigators reviewed and demonstrated the effectiveness of mobile phone based intervention to address chronic disease epidemic and highlighted the need for an mHealth based program in Cambodia. If successful, such program will reduce the system related and personal barriers to promote the control of hypertension and diabetes.

   **Weaknesses**
   - None Noted

2. Investigator(s):
   **Strengths**
   - The PI has assembled a team of researchers with expertise in clinical NCD care, IT engineering and system design, epidemiology, health economics, and community involvement to assure timely completion of the project.
   - The PI is experienced in the field and had conducted several NIH-funded studies including one in SE Asia (i.e. in Vietnam).

   **Weaknesses**
Only one foreign site investigator is included who himself is non-local, highlighting the lack of engagement of developing country partner in the study.

3. Innovation:

Strengths
- The use of patient data on health metrics and medication adherence to tailor electronic messages to individual patients; and adding an interactive voice component for response to messages that can be tracked and incorporated into the parent database, is innovative.

Weaknesses
- mHealth tool have been used in many developing countries to manage chronic diseases, but it may be new for the Cambodian health systems.

4. Approach:

Strengths
- The proposed approach, to collaborate with MoPoTsyo Patient Information Center in Cambodia to enhance their Peer Educator Network model addressing hypertension and diabetes management through application of mHealth tailored phone messaging and improved eHealth communication throughout the system, is appropriate.
- The use of interactive voice messaging system is useful to reach those illiterate users and would be useful for many rural settings.
- Inclusion of an advisory committee, including members from multiple stakeholders, is useful to monitor the progress of the study.

Weaknesses
- The gender imbalance in the reach of subjects through PEs is not discussed. Of the total 6070 subjects, only 2000 are male. Is there a reason for such discrepancies?
- The accomplishment of the aims as stated within the 24 month period may be a too tight.

5. Environment:

Strengths
- University of Washington has adequate facilities to carry out the proposed study.

Weaknesses
- However, it is not very clear whether the institutional environment of MoPoTsyo Patient Information Centre Phnom Penh will be supportive to carry out the proposed work.

Research Capacity Building:

Strengths
- There is potential to build capacity of the foreign investigators, however, given the fact that only one investigator is named in the application the impact may be minimal.

Weaknesses
- It is not clear how the collaboration between the HIC and LMIC will be sustained.
Protections for Human Subjects: Acceptable Risks and/or Adequate Protections

Data and Safety Monitoring Plan (Applicable for Clinical Trials Only):
Not Applicable (No Clinical Trials)

Inclusion of Women, Minorities and Children:
- Sex/Gender: Distribution justified scientifically
- Race/Ethnicity: Distribution justified scientifically
- Inclusion/Exclusion of Children under 21: Excluding ages < 21 justified scientifically

Vertebrate Animals: Not Applicable (No Vertebrate Animals)

Biohazards: Not Applicable (No Biohazards)

Resource Sharing Plans: Not Applicable (No Relevant Resources)

Budget and Period of Support: Recommend as Requested

CRITIQUE 3:

Significance: 2
Investigator(s): 1
Innovation: 2
Approach: 2
Environment: 1

Overall Impact: Heart disease and stroke are leading causes of mortality in Cambodia. MoPoTyso (NGO) has ongoing program for delivering self-management and training for hypertensive and diabetic patients in Cambodia. This proposal seeks to provide an mHealth tool to enhance and customize this self-management and training program to patients for improved efficacy and to capture key data for surveillance and reporting. Objective health outcomes blood pressure and glucose control, medication adherence, and lifestyle factors will be compared across a a randomized study of 3000 patients receiving standard counseling versus the mHealth initiative. Data and results are shared with the Ministry of Health to adapt national policy. If effective, this model system may be applied to other disease care and across the region.

1. Significance:
Strengths
- Addresses major public health problem in Cambodia
- Electronic data capture will increase ability to monitoring patients, health outcomes, and creating reports of outcomes and impact.
- Incorporate peer educators to increase acceptability of program design and implementation
- Tests if tailored messaging to patients if improve medication adherence

**Weaknesses**
- None

2. **Investigator(s):**

**Strengths**
- Senior research faculty in collaboration with extensive field research experience, funding, and publications.
- Collaboration has long history with prior joint research and publications
- Clear administrative structure and support for study team at MoPoTyso.
- Consulting faculty with National Institute for Public Health support research activities

**Weaknesses**
- None

3. **Innovation:**

**Strengths**
- New technical ability will permit electronic data capture for monitoring patients, health outcomes, and creating reports of outcomes and impact.
- New technology permits tailored messaging to patients to improve medication adherence

**Weaknesses**
- None

4. **Approach:**

**Strengths**
- Formation of advisory committee beneficial to this complex and large collaboration
- Clear data management and analysis plan
- Focus group design and analysis appropriate
- Randomized trial powered to detect at least a 40% change in blood pressure
- Multiple outcomes of interest can be evaluated.

**Weaknesses**
- Scientific justification for minimum 40% change in primary outcome not addressed.

5. **Environment:**

**Strengths**
• Excellent facilities listed at both University of Washington and MoPoTyso collaboration.

**Weaknesses**
• None

**Research Capacity Building:**

**Strengths**
• Equipment and software technology will transfer to MoPoTyso local NGO
• Program planned to continue after grant period
• Designed as model program for region
• Builds upon a strong existing collaboration

**Weaknesses**
• None

**Protections for Human Subjects:** Acceptable Risks and/or Adequate Protections

Data and Safety Monitoring Plan (Applicable for Clinical Trials Only):
• Not Applicable (No Clinical Trials)

**Inclusion of Women, Minorities and Children:**
• Sex/Gender: Distribution justified scientifically
• Race/Ethnicity: Distribution justified scientifically
• Inclusion/Exclusion of Children under 21: Excluding ages < 21 justified scientifically
• disease topic not applicable to children

**Vertebrate Animals:** Not Applicable (No Vertebrate Animals)

**Biohazards:** Not Applicable (No Biohazards)

**Resource Sharing Plans:** Acceptable

**Budget and Period of Support:** Recommend as Requested

**CRITIQUE 4:**

Significance: 3
Investigator(s): 3
Innovation: 2
**Overall Impact:** This project is significant because it addresses the growing burden of chronic disease in LMICs. It has the potential to impact national health policies toward NCD management in Cambodia. The co-morbidity of hypertension and diabetes is common and this approach acknowledges more than one ‘disease’ to be addressed, but ‘diseases’ that share many components of NCD management. The proposal builds on a successful program of diabetes and hypertension peer education conducted by MoPoTsyo center. The effectiveness of mobile phones to improve health outcomes will be measured qualitatively as well as conducting a randomized controlled trial to test the acceptability of using mobile phones. The innovation of this project is the multiple dimensions of an ehealth communications system (a-f in the abstract). The proposal presents a very detailed explanation of the mobile technology and approaches the application of ehealth as an integrated and comprehensive health information system for managing chronic conditions. The project has gathered well-equipped team of experts with the PI having extensive research experience relevant to the project goals, and the CO-I from Cambodia has a long history of collaborative research and clinical innovations in diabetes care.

1. **Significance:**

   **Strengths**
   - The project addresses the growing burden of chronic conditions in LMICs.
   - Peer education model will be evaluated to assess effectiveness for providing a broader scope of supportive care for people with the common comorbidity of diabetes and hypertension, and will have a significant impact in a region with a serious shortage of healthcare providers.

   **Weaknesses**
   - None Noted

2. **Investigator(s):**

   **Strengths**
   - The PI has extensive experience in LMIC working on cardiovascular health and mobile ehealth communications.
   - Co-investigator from Cambodia has a long and successful record of providing peer support for diabetes management and conducting collaborative research with international partners.

   **Weaknesses**
   - None Noted

3. **Innovation:**

   **Strengths**
   - The strategy of using peers for NCD management addresses the reality of a severe shortage of qualified healthcare workers and evidence is growing on the effectiveness of this model of chronic care management.
   - The Aim 3 plan to specifically share results directly with policy makers and the ministry of health improves the likelihood that effective strategies will be sustainable.

   **Weaknesses**
4. Approach:

Strengths
- Phase 1 will consist of qualitative data obtained from patients and peer educators and Phase 2 will be an RCT to compare the effectiveness of mhealth phone messaging and regular peer education counseling.

Weaknesses
- Outcomes are more intermediate outcomes of BP and diabetes control as well as health behaviors, and not health outcomes of reduced morbidity or mortality, although these would require longer term intervention to assess

5. Environment:

Strengths
- MoPo Tsyo center has a long history of success in improving control of persons with diabetes through a peer educator program

Weaknesses
- None Noted

Research Capacity Building:

Strengths
- None Noted

Weaknesses
- None Noted

Protections for Human Subjects: Acceptable Risks and/or Adequate Protections
- Human subject protections assured

Data and Safety Monitoring Plan (Applicable for Clinical Trials Only):
- Acceptable
  - data security and sharing plans are clearly articulated

Inclusion of Women, Minorities and Children:
- Sex/Gender: Distribution justified scientifically
- Race/Ethnicity: Distribution justified scientifically
- Inclusion/Exclusion of Children under 21: Excluding ages < 21 justified scientifically
- I did not see a specific inclusion criterion for age, other than the statement that 60 adults will be recruited and that the prevalence of diabetes and hypertension increases with age.

Vertebrate Animals: Not Applicable (No Vertebrate Animals)
Biohazards: Not Applicable (No Biohazards)

Resource Sharing Plans: Acceptable
  • Described in the proposal

Budget and Period of Support: Recommend as Requested

THE FOLLOWING SECTIONS WERE PREPARED BY THE SCIENTIFIC REVIEW OFFICER TO SUMMARIZE THE OUTCOME OF DISCUSSIONS OF THE REVIEW COMMITTEE, OR REVIEWERS' WRITTEN CRITIQUES, ON THE FOLLOWING ISSUES:

PROTECTION OF HUMAN SUBJECTS (Resume): ACCEPTABLE
The four issues concerning protections of human subjects were adequately addressed and risks were noted to be minimal. Samples and data to be used will be de-identified and there were no concerns.

INCLUSION OF WOMEN PLAN (Resume): ACCEPTABLE
The application stated that both genders will be adequately recruited; this was justified and therefore noted to be scientifically acceptable.

INCLUSION OF MINORITIES PLAN (Resume): ACCEPTABLE
The application stated that only foreign subjects will be recruited; this was justified and therefore noted to be scientifically acceptable.

INCLUSION OF CHILDREN PLAN (Resume): ACCEPTABLE
The application stated that children will not be recruited for this study; this was justified and therefore noted to be scientifically acceptable.

COMMITTEE BUDGET RECOMMENDATIONS: The budget was recommended as requested.

NIH has modified its policy regarding the receipt of resubmissions (amended applications). See Guide Notice NOT-OD-14-074 at http://grants.nih.gov/grants/guide/notice-files/NOT-OD-14-074.html. The impact/priority score is calculated after discussion of an application by averaging the overall scores (1-9) given by all voting reviewers on the committee and multiplying by 10. The criterion scores are submitted prior to the meeting by the individual reviewers assigned to an application, and are not discussed specifically at the review meeting or calculated into the overall impact score. Some applications also receive a percentile
ranking. For details on the review process, see http://grants.nih.gov/grants/peer_review_process.htm#scoring.
# MEETING ROSTER

## Center for Scientific Review Special Emphasis Panel

**CENTER FOR SCIENTIFIC REVIEW**  
**Mobile Health: Technology and Outcomes in Low and Middle Income Countries**  
**ZRG1 IMST-K (50) R**  
**June 11, 2015 - June 12, 2015**

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