SUMMARY STATEMENT

PROGRAM CONTACT:
Dave Kaufman
301 594-6907
dave.kaufman@nih.gov

(Privileged Communication)

Release Date: **03/09/2018**
Revised Date:

Application Number: **1 R21 HG009958-01A1**

Principal Investigator

KORNGIEBEL, DIANE

Applicant Organization: UNIVERSITY OF WASHINGTON

Review Group: **ZRG1 SEIR-B (80)**
Center for Scientific Review Special Emphasis Panel
Societal and Ethical Issues in Research

Meeting Date: **02/22/2018**
Council: **MAY 2018**
Requested Start: **07/01/2018**

RFA/PA: **PA17-446**
PCC: **X5DK**
Dual PCC: **J0EF**
Dual IC(s): **CA**

Project Title: **Using Ethics and User-Centered Design to Create Templates for EHR-Mediated Return of Genetic Test Results**

SRG Action: Priority Score **Percentile** Percentile

Next Steps: **Visit https://grants.nih.gov/grants/next_steps.htm**

Human Subjects:
Animal Subjects:
Gender:
Minority:
Children:
Evaluative Info

Clinical Research - not NIH-defined Phase III Trial

Project Year	Direct Costs Requested	Estimated Total Cost
1	125,000	Estimated Costs
2	150,000	
TOTAL	275,000	

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.

1R21HG009958-01A1 Korngiebel, Diane

RESUME AND SUMMARY OF DISCUSSION: This project will evaluate patients' experience with receiving genetic test results via the electronic health records. Little is known about how patients react to receiving genetic results via patient portals and this project will evaluate in two prototypes how to best structure the content and presentation of information. The investigator is outstanding and has gathered a strong research team and the project builds on the investigator's current work. Other strengths of the projects include the sound scientific premise, the responsiveness to the previous review, the user-centered design approach and the rigorous qualitative methods. The reviewers noted some minor weaknesses including that the project does not obtain input from key stakeholders such as health care providers and the application needs greater detail on the development of the two prototypes. The reviewers agreed that the strengths outweigh any minor weaknesses in this exploratory project that will have a high impact on the field of using the patient portal for providing genetic test results.

DESCRIPTION (provided by applicant): Patient engagement is critical for implementation of the genomic component of precision medicine—with care taken to include the perspectives and needs of patients. Yet many patients may experience significant barriers to understanding genetic information and/or using the electronic patient portals that many health systems are using to meet the terms of meaningful use related to the return of laboratory and test results. Although the return of genetic results and patient portal use have each received considerable attention, there have been few studies concerning the return of genetic test results via patient portals—even as more test results are made available to patients electronically. The success of precision medicine relies not only on algorithms behind clinical decision support and "Big Data" analytics but also on the activated patient: the patient who receives health-related information and is motivated and supported to act upon it. Prospective attention to practical and ethical concerns will help to ensure that patient perspectives are taken into account as developing technology is prepared for clinical deployment. The goal of the project is to define patient and key stakeholder needs, including those of patients from underrepresented populations, concerning the acceptability of receiving genetic test results electronically via a patient portal. The study will take place in the University of Washington Medicine (UW Medicine) system, which provides care for a diverse patient population in western Washington State through its network of hospital- and neighborhood-based clinics and uses Epic software's Electronic Health Record patient portal module. Specifically, the proposed investigation will: (1) explore with patients who have received genetic test results and non-genetic test results electronically their experience receiving those results and their views on their electronic return and how genetic results return differs, or does not differ, from non-genetic results; (2) expand the understanding of return of results thresholds by exploring with patient portal users who have received genetic test results how electronic return affects return thresholds and the nuances and challenges of presenting information for positive and negative results; and (3) following User-Centered Design principles, conduct cognitive interviews with portal users and non-users about the acceptability and ease of use of electronic return of results prototypes created using data from (1) and (2) with template options supporting use within and without the UW Medicine system. The proposed R21 exploratory research will provide preliminary data on patient perspectives across diverse populations on the use of patient portals to return genetic results electronically, including important work around thresholds for determining results that are appropriate for electronic delivery and developing report templates whose content is readily comprehensible and supports patient empowerment and enhances their engagement in their own health.

PUBLIC HEALTH RELEVANCE: The proposed research would provide preliminary, much-needed, timely data on patient perspectives across diverse populations on the use of patient portals to return genetic test results, including thresholds for determining results that are appropriate for electronic delivery and the content and presentation elements that diverse patients may require in order to benefit from genetic information delivered electronically. Research on patient values, needs, and preferences

must be represented early—while issues are being explored and potential solutions identified—to ensure that the deployment of genomic medicine supports patient empowerment, enhances engagement, and does not contribute to healthcare delivery inequities.

CRITIQUE 1

Significance: 4
Investigator(s): 3
Innovation: 2
Approach: 3
Environment: 1

Overall Impact: This revised proposal will evaluate the experience of patients who have received genetic testing results via a patient portal in the electronic health record (EHR), as well as preferences for receiving such information among users and non-users of such portals. Prototypes for delivering test results and supporting information will be developed and tested. The proposal has been responsive to many of the prior critiques and the qualitative methodology is described in adequate rigor. The proposal is very well-written and the study team is very accomplished. The lack of involvement of important stakeholders such as clinicians, those who make policy and decisions regarding the transmission of information via patient portals, and EHR developers detracts from the significance of this proposal. Limited detail was provided regarding the creation and content of the proposed prototypes for testing in aim 3.

1.Significance:

Strengths

- The proposed study will evaluate patients' experiences with receiving genetic and non-genetic test results via patient portals in electronic health records (EHR). The study will leverage patients' actual experiences with receiving genetic test results via the EHR, rather than relying on hypothetical contexts for return of results. Given that the delivery of genetic test results through patient portals is being implemented, having data on how patients react should be highly informative. There is limited knowledge on providing genetic test results via patient portals, thus the scientific premise for the proposed study is strong.
- The evaluation of prototype materials for delivery of genetic test results through portals could yield important insights regarding how best to structure content and presentation of information for optimal comprehension and engagement.

Weaknesses

- Since some genetic test results are presently being delivered through patient portals, deliberation about what type of results are most appropriate for this type of delivery may have modest impact on practice. Nonetheless, it would be important to assess patients' views on what results are most appropriate- or are inappropriate- for transmission through portals.
- Stakeholders that appear to be missing from this study are health care providers. Their input would be very informative regarding what would be meaningful to provide in regard to the electronic delivery of genetic test results. It's not clear if that input has already been provided through the prior CSER or K01 studies. However, having providers review and offer feedback on the prototypes would be very informative and complementary to the patients' review.
- Other stakeholders whose input would be valuable include policymakers or decision-makers who determine what information to release and when through patient portals. Exploring patients'

views about what results should be released and when (Aims 1,2) without an understanding of how those decisions are made detracts from the significance of the study.

- Additional stakeholders whose views and input are valuable at the design stages include representatives from EHR companies and/or those responsible for implementing changes in local EHRs. If the desire for prototype features are not in balance with what might be feasible to implement, the relevance of the study findings may be limited.

2. Investigator(s):

Strengths

- Dr. Korngiebel is a new investigator with training and experience in ELSI research and qualitative methods. The proposed work will build upon her K01 research as well as collaborative research in an ongoing CSER project. Her additional training in user-centered design is an asset to the proposed project. She is qualified to lead the proposed study.
- Drs. Robins and Fullerton are experienced investigators who will provide expertise in bioethics and qualitative research for the proposed project.
- The project advisers represent diverse disciplines and experience, and will provide valuable input.

Weaknesses

- Would strengthen the project if policymakers or decision-makers who determine what information should be included in patient portals were included as advisors.
- Not clear who will do the design of prototypes and who on the team has design expertise and experience.

3. Innovation:

Strengths

- User-centered design approaches have not been utilized to develop prototypes for delivering genetic testing results through patient portals.

Weaknesses

- The user-centered design approach is not necessarily innovative; it has been used fairly widely in IT product development, and also in mobile/e-health intervention research

4. Approach:

Strengths

- The study sample appropriately represents biological variable of gender as well as age and race/ethnicity distribution. Sample for aims 1 and 2 will include those who have and have not received genetic test results via portal to include a diverse range of experiences.
- The qualitative methodology is well-described, both in regard to data collection and analysis. Reflects appropriate rigor and reproducibility.

Weaknesses

- Unclear if Aim 3 will include persons who have received genetic test results via portal; their perspective on the prototypes would be informative given past experience.
- Would be helpful to have data on the available denominator of patients who meet the recruitment criteria to support the feasibility of recruiting the proposed sample.

- It was not clear whether or not any of the patients who are selected because they had received their results via the patient portal had first received those results from a provider. If so, this could introduce a possible confounder.
- Development and expected content of prototype is described in limited detail. Unclear who will develop the prototype.

5. Environment:

Strengths

- Excellent.

Weaknesses

- None noted.

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
- For NIH-Defined Phase III trials, Plans for valid design and analysis: Scientifically acceptable
- Inclusion/Exclusion of Children under 18: Excluding ages <18; justified scientifically

Vertebrate Animals:

Not Applicable (No Vertebrate Animals)

Biohazards:

Not Applicable (No Biohazards)

Applications from Foreign Organizations:

Not Applicable (No Foreign Organizations)

Select Agents:

Not Applicable (No Select Agents)

Resource Sharing Plans:

Not Applicable (No Relevant Resources)

Authentication of Key Biological and/or Chemical Resources:

Not Applicable (No Relevant Resources)

Budget and Period of Support:

Recommend as Requested

CRITIQUE 2

Significance: 3
Investigator(s): 2
Innovation: 4
Approach: 4
Environment: 2

Overall Impact: This revision application focuses on EHR-mediated return of genetic test results. The approach is qualitative, with three aims: (1) using a sample of 40 individuals who have received both genetic and non-genetic test results via EHR, use qualitative interviews to gather a better understanding of views of perceptions of receiving genetic results by EHR, and what makes those results different from non-genetic results; (2) using a sample of 40 patients who have received genetic results via EHR, conduct interviews to characterize their experience and views on electronic return of results; and (3) conduct 84 cognitive interviews with 42 EHR users and 42 non-users to determine acceptability and ease of use of preliminary prototypes of patent portal materials returning genetic results. The application is responsive to many of the prior critiques. The team is strong and the proposal is clearly written. A framework of ethical considerations forms a strong basis for the proposal and the investigative team is solid. The proposal would have been strengthened by further focus on Aim 3 – the rationale for the two prototypes is not clear and the characteristics that would differentiate them are inadequately described – and by a more compelling description of what this project might lead to next in terms of research.

1. Significance:

Strengths

- The proposal addresses a timely issue, whether genetic results should be returned via electronic health record, and patient perceptions of factors associated with desirability of this model.
- The project will develop and test a prototype that could maximize the acceptability of electronic return of genetic results.

Weaknesses

- The proposal would be strengthened by a more compelling description of what this project might lead to next in terms of research.

2. Investigator(s):

Strengths

- A strong and experienced investigative team.

Weaknesses

- None noted.

3. Innovation:

Strengths

- The project is modestly innovative. The first two aims are standard ethnographic methods using carefully selected samples. The third aim incorporates user-centered design, a well-known methodology but one that has not been systematically incorporated into contexts such as this.

Weaknesses

- None noted.

4. Approach:

Strengths

- The team has access to a valuable set of patients and has been intentional about carefully selecting the sample informants.

Weaknesses

- The rationale for the two prototypes in Aim 3 is not clear;
- The characteristics that would differentiate the two prototypes are inadequately described and it is unclear whether two fundamentally different approaches will be compared or what the salient differentiating variables might be. This is a major activity and outcome for the project but inadequately described.

5. Environment

Strengths

- Great access to relevant patient population.

Weaknesses

- None noted.

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
- For NIH-Defined Phase III trials, Plans for valid design and analysis: Not applicable
- Inclusion/Exclusion of Children under 18: Excluding ages <18; justified scientifically

Vertebrate Animals:

Not Applicable (No Vertebrate Animals)

Biohazards:

Not Applicable (No Biohazards)

Applications from Foreign Organizations:

Not Applicable (No Foreign Organizations)

Select Agents:

Not Applicable (No Select Agents)

Resource Sharing Plans:

Not Applicable (No Relevant Resources)

Authentication of Key Biological and/or Chemical Resources:

Not Applicable (No Relevant Resources)

Budget and Period of Support:

Recommend as Requested

CRITIQUE 3

Significance: 2
Investigator(s): 2
Innovation: 3
Approach: 4
Environment: 1

Overall Impact: This application proposes to assess in-depth the experiences of patients receiving genetic test results via a patient portal, comparing those to non-genetic test result receivers and then cognitively testing some prototypes of result reporting templates with patients who are and are not familiar with their electronic medical record platform. This is an outgrowth of their existing work on Dr. K's current work with clinician stakeholders on the implementation of genomic medicine.

The overall impact score reflects this reviewer's enthusiasm for the proposed science which is further refined and improved in this resubmission. Their approach is sound because they start from the perspective of those who have and have not had tests under a variety of a priori important conditions and work toward design elements that are respectful; their team is reasonable/skilled with expertise in ethics, qualitative methods and user centered design. The scientific premise presented in the Significance section is sound. The scientific rigor solid and more generalizable than the original application; the design and methods proposed should achieve robust & trustworthy results. Sex as a biological variable was addressed in in the inclusion of women and minority section. Overall, this study, addresses a significant problem in the field of clinical implementation of PMI that would make possible important public health changes in the clinical return of genetic testing results in a prevalent electronic health record platform.

1. Significance:

Strengths

- Project addresses intersection of two contemporary trends in healthcare
- Scientific premise -- that returning results of genomic tests to diverse patient populations may raise important ethical issues when done so without the guidance of a healthcare provider -- is strong.
- This will be a common practice in the near future in multiple health systems

Weaknesses

- None noted.

2. Investigator(s):

Strengths

- PI has strong background from K award
- Team is comprised of experts in ethics, anthropology, informatics, and genetics qualified to do this work

Weaknesses

- None noted.

3. Innovation:

Strengths

- Approach links robust qualitative research with intervention design

Weaknesses

- None noted.

4. Approach:

Strengths

- Approach is highly rigorous and appropriate because they start from the perspective of those who have and have not had tests under a variety of a priori important conditions and work toward design elements that are respectful. This approach is justified scientifically.
- Double coding of transcript data will insure robust and trustworthy findings
- Relevant biological variables, i.e. sex/gender are adequately addressed in the women and minority inclusion section.
- Justification for Aim 3 sample size is strong

Weaknesses

- Ethics framework not well integrated into the overall proposal

5. Environment:

Strengths

- Institution has strong resources and collaborative links with this kind of research.

Weaknesses

- None noted.

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
- For NIH-Defined Phase III trials, Plans for valid design and analysis: Not applicable
- Inclusion/Exclusion of Children under 18: Excluding ages <18; justified scientifically
- Trying to study risk disclosure for genomic tests in an <18 population at this phase in the science would be logistically insurmountable and not necessary

Vertebrate Animals:

Not Applicable (No Vertebrate Animals)

Biohazards:

Not Applicable (No Biohazards)

Resubmission:

- Introduction outlines modifications that are overall responsive to earlier critiques

Applications from Foreign Organizations:

Not Applicable (No Foreign Organizations)

Select Agents:

Not Applicable (No Select Agents)

Resource Sharing Plans:

Not Applicable (No Relevant Resources)

Authentication of Key Biological and/or Chemical Resources:

Not Applicable (No Relevant Resources)

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: ACCEPTABLE

INCLUSION OF WOMEN PLAN: ACCEPTABLE

INCLUSION OF MINORITIES PLAN: ACCEPTABLE

INCLUSION OF CHILDREN PLAN: ACCEPTABLE

COMMITTEE BUDGET RECOMMENDATIONS: The budget was recommended as requested.

Footnotes for 1 R21 HG009958-01A1; PI Name: Korngiebel, Diane

Ad hoc or special section application percentiled against "Total CSR" base.

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.