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TITLE: Diabetes ROADMAP: An intervention to address health disparities through personalized diagnosis communication

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CONTRACTING ORGANIZATION: Uniformed Services University of the Health Sciences

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14. ABSTRACT Our overall goal is to translate health communication theory into clinical practice by testing a patient-centered intervention in a clinical setting to produce sustained behavior change. The proposed study focuses on primary care physicians' delivery of the pre-diabetes/type 2 diabetes diagnosis and initial diabetes education and their effects on patient empowerment, activation, and self-management. The goal is to develop a patient-centered model of presenting the diabetes diagnosis and initiating diabetes care that activates patients thus optimizing patient participation and self-management.					
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1. **INTRODUCTION:** Our overall goal is to translate health communication theory into clinical practice by testing a patient-centered intervention in a clinical setting to produce sustained behavior change. The proposed study focuses on primary care physicians' delivery of the pre-diabetes/type 2 diabetes diagnosis and initial diabetes education and their effects on patient empowerment, activation, and self-management. The goal is to develop a patient-centered model of presenting the diabetes diagnosis and initiating diabetes care that activates patients thus optimizing patient participation and self-management.

2. **KEYWORDS:** diabetes, health disparities, cultural competence, health communication, patient-provider communication, patient activation, self-management, chronic disease

3. **ACCOMPLISHMENTS**

- **What were the major goals of the project?**

Aim 1. Explore patient personal models of the pre-diabetes and type 2 diabetes diagnoses and compare those mental models across cultural differences.

Major Task 1: Administrative coordination and regulatory approvals

Major Task 2: Coordinate Study Staff for formative phases

Major Task 3: Survey data collection and analysis

Major Task 4: Interview data collection and analysis

Aim 2. Implement and evaluate a patient-centered diabetes diagnosis intervention that will teach clinicians specific cognitive and affective skills related to discussing a pre-diabetes/type 2 diabetes diagnosis within a cultural framework.

Major Task 1: Intervention refinement based on formative findings

Major Task 2: Conduct provider-level intervention

Major Task 3: Process-level evaluation

Aim 3. Applying a cluster-randomized controlled design, assess the impact of the intervention on 1) patients' perception of diabetes diagnosis communication and 2) patients' self-management behaviors.

- **What was accomplished under these goals?**

Aim 1

We have accomplished Aim 1, Major tasks 1, 2, and 3. Our first publication out of the survey data was reported in the 2019 annual report (*Journal of Primary Care and Community Health*). A second manuscript from the survey data describing how patients think about prediabetes was published in *Patient Education and Counseling*. Main findings from that paper are:

Among 757 respondents, multivariate tests demonstrate that patients living with type 2 diabetes have an overall different personal model of disease than patients living with prediabetes. Patients living with preDM indicate less understanding of the “disease” and perceive it to be less “chronic,” which may result from unclear clinician communication about preDM. When clinicians talk to patients about prediabetes, they should present the risk factor within the spectrum of glucose tolerance. Although labeled a risk factor, clinicians should emphasize that prediabetes remains a serious concern that will not lessen without intervention.

For Major Task 4, analysis is ongoing. We have published one manuscript in *Psychology & Health* describing perceptions of disease.

Severity fell into two groups: high and low severity. Several factors contributed to patients’ beliefs, including what they were told about the disease, observations from experiences within their own social network, and information from formal diabetes classes and their own research. Beliefs about severity are influenced by patients’ fears, interactions with clinicians, and experiences within their social networks. *Clinicians should elicit patient perceptions of disease severity so they may then tailor the discussion to address these perceptions and help patients grasp the severity of these conditions.*

Two additional qualitative manuscripts have been accepted at *Journal of the American Board of Family Medicine* and *Diabetes Research and Clinical Practice*. Two manuscripts are under review currently, and two additional manuscripts are planned for this data set.

Aim 2

We accomplished Major Tasks 1, 2, and 3. We delivered the teaching intervention at a community hospital setting in March 2019. Following process evaluation, we revised the curriculum. That curriculum was submitted for publication to *MedEd Portal*, where it was not only accepted for publication but awarded the Editor’s Choice award. Through this publication, the full curriculum will be freely available to medical educators, hospital systems, and the public.

Aim 3

We closed out evaluation at Dwight D Eisenhower Army Medical Center in January 2019, after following 10 patients there for six months. In the community hospital setting, we continue to enroll patients into the study and data collection is ongoing. We have enrolled 45 patients to date.

- **What opportunities for training and professional development has the project provided?**

With this intervention, we've now trained 70 primary care providers in the Military Health System. We continue to disseminate the curriculum for implementation throughout the MHS. Through *MedEd Portal*, the full curriculum will be freely available to medical educators, hospital systems, and the public.

- **How were the results disseminated to communities of interest?**

We continue to present at regional, national, and international conferences, along with a full manuscript plan. Below is the study bibliography to date is in 6.

- **What do you plan to do during the next reporting period to accomplish the goals?**

Under Aim 1, we anticipate completing data analysis and continuing dissemination.

Under Aim 3, we anticipate completing patient recruitment, data collection, data analysis, and dissemination.

4. IMPACT

- **What was the impact on the development of the principal discipline(s) of the project?**

Initial evaluation shows that trained primary care providers learned new medical knowledge and skills from the teaching intervention. We also continue to contribute significant findings from our formative work to the evidence based, extending the literature on diagnosis communication and self-management.

- **What was the impact on other disciplines?**

Findings reach beyond the principal discipline (Family Medicine) to other medical disciplines (internal medicine and endocrine subspecialties) as well as the social sciences.

- **What was the impact on technology transfer?**

Nothing to Report

- **What was the impact on society beyond science and technology?**

Nothing to Report

5. CHANGES/PROBLEMS

- **Changes in approach and reasons for change**

Nothing to report

- **Actual or anticipated problems or delays and actions or plans to resolve them**

After expanding inclusion criteria, recruitment rates have increased. We currently have completed consent for 54% of the target sample. We plan to conduct preliminary data analysis in March 2020 to test for the sample recruited to date.

- **Changes that had a significant impact on expenditures**

Nothing to Report

- **Significant changes in use or care of human subjects**

We filed and received continuing approval for all IRB processes.

6. PRODUCTS: Publications, conference papers, and presentations

- **Journal publications.**

1. Ledford, C.J.W., Seehusen, D.A., & Crawford, P.F. (revising for submission to *Diabetes Care*) Toward a model of shared meaningful diagnosis.
2. Fisher, C.L., Ledford, C.J.W., Wollney, E., & Crawford, P.F. (under review). Transitioning from active duty to military retirement: factors impacting type 2 diabetes and pre-diabetes self-management. *Research on Aging*.
3. Fisher, C.L., Mullis, M.D., Lee, D., & Ledford, C.J.W. (under review). Family communication central to mothers' type 2 diabetes self-management. *Families, Systems, & Health*.
4. Ledford, C.J.W., Fisher, C.L., Cafferty, L.A., Jackson, J.T., Crawford, P.F., & Seehusen, D.A. (accepted for publication). How patients make sense of a diabetes diagnosis: An application of Weick's model of organizing. *Diabetes Research and Clinical Practice*.
5. Ledford, C.J.W., Seehusen, D.A., Cafferty, L.A., Rider, H.A., Rogers, T., Fulleborn, S., Clauson, E., Ledford, C.C., Trigg, S., Jackson, J.T., & Crawford, P.F. (accepted for

publication). Diabetes ROADMAP: Teaching guideline use, communication, and documentation when delivering the diagnosis of diabetes. *MedEd Portal*. *Editor's Choice Award

6. Ledford, C.J.W., Fisher, C.L., Cafferty, L.A., Jackson, J.T., Seehusen, D.A., & Crawford, P.F. (in press). Turning points as opportunities to partner with the patient: A qualitative study of patients living with type 2 diabetes or prediabetes. *Journal of the American Board of Family Medicine*.
7. Seehusen, D.A., Fisher, C.L., Rider, H.A., Seehusen, A.B., Womack, J.J., Jackson, J.T., Crawford, P.F., & Ledford, C.J.W. (2019). Exploring patient perspectives of prediabetes and diabetes severity: A qualitative study. *Psychology & Health*, 34 (11), 1314 - 1327. doi: 10.1080/08870446.2019.1604955
8. Ledford, C.J.W., Seehusen, D.A., & Crawford, P.F. (2019). The relationship between patient perceptions of diabetes and glycemic control: A study of patients living with prediabetes or type 2 diabetes. *Patient Education and Counseling*, 102 (11), 2097 - 2101. doi: 10.1016/j.pec.2019.05.023
9. Ledford, C.J.W., Seehusen, D.A., & Crawford, P.F. (2019). Geographic and race/ethnicity differences in patient perceptions of diabetes. *Journal of Primary Care and Community Health*, 10, 1 - 5. doi: 10.1177/2150132719845819
10. Ledford, C.J.W., Seehusen, D.A., & Crawford, P.F. (2018). A need to conceptualize "newly diagnosed." {eLetter}. *Annals of Family Medicine*. http://www.annfammed.org/content/16/1/37.short/reply#annalsfm_el_30554

- **Books or other non-periodical, one-time publications.**

Nothing to Report

- **Other publications, conference papers, and presentations.**

Presentations

11. Ledford, C.J.W., Seehusen, D.A., & Crawford, P.F. (2019, October). *The model of shared meaningful diagnosis*. Paper presented at the International Conference on Communication in Healthcare, San Diego, Calif.
12. Ledford, C.J.W., Seehusen, D.A., Crawford, P.F., & Fisher, C.L. (2019, April). *Exploring patient perspectives of disease severity: Lessons for talking to patients about prediabetes and diabetes*. Paper presented at the Society of Teachers of Family Medicine Annual Spring Conference, Toronto, Ontario, Canada.
13. Ledford, C.J.W., Seehusen, D.A., & Crawford, P.F. (2018, November). *The relationship between personal models of diabetes and glycemic control: A study of patients diagnosed with prediabetes or type 2 diabetes*. Paper presented at the North American Primary Care Research Group Annual Meeting, Chicago, Ill.

Posters

14. Ledford, C.J.W., Fisher, C.L., Cafferty, L.A., Jackson, J.T., Seehusen, D.A., & Crawford, P.F. (2019, October). *Turning points as opportunities to partner with the patient: A qualitative study of patients living with type 2 diabetes or prediabetes*. Poster presented at the International Conference on Communication in Healthcare, San Diego, Calif.
15. Womack, J.J., Fisher, C.L., & Ledford, C.J.W. (2018, June). The role of race/ethnicity in the communicative identity of patients diagnosed with type 2 diabetes. Poster presented at the North American Primary Care Research Group Practice-Based Research Networks Conference, Bethesda, Md.
16. Ledford, C.J.W., Seehusen, D.A., Crawford, P. (2017, October). *How patients' disease stage and genetic predisposition influences their personal model of diabetes*. Poster presented at the International Conference on Communication in Healthcare, Baltimore, Md.
17. Ledford, C.J.W., Seehusen, D.A., Crawford, P., & Fisher, C. (2016, November). *A mixed-methods approach to understanding the cultural model of diabetes*. Poster presented at the North American Primary Care Research Group Annual Meeting, Colorado Springs, Colo.

- **Website(s) or other Internet site(s)**

Nothing to report

- **Technologies or techniques**

Nothing to report

- **Inventions, patent applications, and/or licenses**

Nothing to report

- **Other Products**

Nothing to report

7. **PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS**

- **What individuals have worked on the project?**

Christy Ledford, PI, no change

Paul Crawford, Mentor, no change

Dean Seehusen, co-I, no change

Christopher Ledford, AI, added at community site – Eglin Hospital, Eglin AFB, FL

Cara Olsen, other significant contributor, no change

Name:	<i>Lauren Cafferty</i>
Project Role:	<i>Clinical Research Coordinator</i>
Nearest person month worked:	3
Contribution to Project:	<i>Cafferty coordinated the data management, analysis, and intervention planning across sites. She also participated in the design and implementation of the teaching intervention. Ms Cafferty joined the project in June 2018.</i>
Funding Support:	<i>Cafferty is jointly funded by a CDMRP infrastructure award to USUHS/HJF.</i>

Name:	<i>Heather Rider</i>
Project Role:	<i>Research Associate</i>
Nearest person month worked:	6
Contribution to Project:	<i>Rider directed patient recruitment for all phases and conducted interviews in the qualitative phase. She also participated in the design and implementation of the teaching intervention. She continues to work on interview analysis.</i>

- **Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?**

Nothing to report

- **What other organizations were involved as partners?**

Organization Name: Dwight D Eisenhower Army Medical Center

Location of Organization: *Fort Gordon, Georgia*

Partner's contribution to the project *Data collection site*

Financial support *none*

In-kind support *computer*

Facilities *office space*

Collaboration *co-I clinical location*

Personnel exchanges *none*

Organization Name: Mike O'Callaghan Federal Medical Center

Location of Organization: *Nellis Air Force Base, Nevada*

Partner's contribution to the project *Data collection site*

Financial support *none*

In-kind support *computer*

Facilities *office space*

Collaboration *Mentor clinical location*

Personnel exchanges *none*

Organization Name: Eglin Hospital

Location of Organization: *Eglin Air Force Base, FL*

Partner's contribution to the project *Intervention site and Data collection site*

Financial support *none*

In-kind support *computer*

Facilities *office space*

Collaboration *Associate investigator site*

Personnel exchanges *none*

8. **SPECIAL REPORTING REQUIREMENTS**

- **QUAD CHART attached**