

**Submission #:** 25454021

**Applicant:** Jasmine Davis

**Institution:** Bryn Mawr College

**Highest Degree:** Master of Science in Marriage & Family Therapy

**Year Highest Degree Awarded:** 2017

**Current Position:** Student

**Are you Enrolled in a degree/fellowship program?** Yes

**If so, where?** University of Denver

**Mentor Name and Title:** Rodger Kessler PhD; Associate Clinical Professor

**Mentor Institution:** Dept of Family Medicine University of Colorado

**Title of Proposed Project:** Identifying and Intervening with Highest-Risk Primary Care Patients

**Description of Proposed Project:**

It is challenging for low-resourced primary care clinics to identify patients at the highest risk for poor medical and behavioral outcomes. Many patients are likely to have comorbid medical and behavioral disorders and social determinants of health that act as barriers to receiving adequate care and decreasing adherence to treatment plans. The ongoing global pandemic has highlighted the medical systems' lack of resources for identifying patients that are the most vulnerable for decreased care engagement, worse symptoms, and the highest risk for morbidity and mortality. In 2020, we generated a collaborative research and clinical team from the University of Colorado Anschutz Medical Campus Department of Family Medicine and MidValley Family Practice located in Basalt, Colorado. We are currently collecting patient-reported Quality of Life (QoL) data (Ware, 2019; Ware et al., 2016) and a limited set of Electronic Health Record (EHR) data that will be scored using a validated vulnerability index. The QoL measure and the Vulnerability Index (VI) will generate a pool of the top highest risk patients, defined as 20% of patients identified as most vulnerable as determined by the VI (DeCaprio et al., 2020) and 20% of patients with the lowest scores on the Q-Gen (Ware, 2019) the highest 20% of patients on Vulnerability Index. This data collection method was previously piloted in Dr. Kessler's work at Arizona State University. The Vulnerability Index (VI) and the Generic and Disease-Specific Quality of Life (Q-DIS) (Ware et al., 2016) are both validated, patient-reported measures (DeCaprio et al., 2020). We are in the process of correlating patient's vulnerability scores with their QoL score. Research supports those patients with poor QoL have worse medical outcomes than the general primary care population. Specifically, low QoL is associated with lower response to treatment (Bernstein et al., 2002), worse future health (Lupon et al., 2017), and higher rates of mortality (Chamberlain et al., 2013). Furthermore, poor QoL is also

associated with increased health care costs (Fleishman et al., 2006). The VI has been demonstrated to identify those patients at the highest risk of poor COVID outcomes. We recognize that systematic collection of patient-reported measures is challenging for some under-resourced practices; therefore, it is important to compare results from different data sources to assess whether the VI can act as a stand-alone measure for risk stratification in many practices that do not have the resources or organization to collect and use data from patients. Identifying patients at risk enables earlier opportunities for intervention before potential crises, thus improving clinical outcomes. Furthermore, it could address service-related concerns, such as greater efficiency and coordination of care, reducing hospitalization and emergency room (ER) use, and reducing care costs. To date, there is not a system to efficiently identify these patients and provide guidance on how to improve their care systematically. This proposal outlines a novel, practical, and clinically beneficial technology to monitor these patients through electronic health record technology at a low cost to the practice. Furthermore, this project will identify the categories of presenting concerns that put these patients at risk and provide clinical pathways for improving these patients' medical and behavioral outcomes, thus increasing their wellbeing and quality of life. Thus far, the team has collected most of the QoL data from the targeted 250 adult patients and extracted the limited data set from the EHR. We will complete the data set within a small number of weeks. This year-long project's innovation will then use the data to identify sub-populations of highest-risk patients and identify clinical pathways for each sub-population, driven by the data. We hope to automate the process in subsequent NIH-supported work, initiating real-time care pathways when the data is collected and scored. Furthermore, it will include proposed workflows for different categories of presenting concerns that these patients endorse. By identifying and intervening with the highest risk primary care patients, practices will improve their delivery of care and related medical and behavioral outcomes.

### **Specific Aims:**

1. Use collected data to identify clinical subpopulations and develop clinical pathways for intervening with subpopulations
2. Implement clinical pathways within practice workflows
3. Identify factors that facilitate or limit implementation

### **Design:**

The overall design of the entire study has two phases; the first, collecting the QoL and VI data has occurred over the last year. The second and focus of this project is a pilot implementation case study to evaluate the implementation and effectiveness of this practice redesign. It is a prospective study using data from a convenience sample of

250 adult primary care patients and their primary care practice. Though it is a pilot, the design most resembles a Type 3 implementation effectiveness design (Landes et al., 2020). The research question guiding this proposal is: Can an EHR-based vulnerability index tool be leveraged to create clinical pathways to improve patient's medical care and quality of life?

### **Setting:**

MidValley Family Practice (MVFP) is a primary-care clinic in Basalt, Colorado, led by a family physician, Dr. Glenn Kotz. MVFP was deemed a Patient-Centered Medical Home (PCMH) in February of 2013. In addition to its Director, Dr. Kotz M.D., there is a one physician's assistant, one family nurse practitioner, one clinical social worker, a part-time addiction counselor, one dental hygienist, one part-time registered nurse, one licensed practical nurse, one part-time medical assistant, two part-time front desk staff, one office manager, and one practice manager. The practice also serves as a rural resident training site, including behavioral health and pharmacy students. The practice currently serves approximately 3576 active patients, consisting of 70% white, 29% Latinx, and 1% identified as other racial/ethnic identities. These patients' ages range from younger than 18 to older than 65, with 9% under 18, 74% 18-64, and 17% as older than 65 years old. 74% 46% of the patients have commercial insurance, 27% have Medicare, 22% have Medicaid, 3% are self-pay, 2% workers' compensation.

### **Participants:**

Two hundred fifty adult patients were selected using a convenience sample at the practice. No patients were excluded. Relevant demographic information will be reported. All measures were available in English and Spanish.

### **Summary of Research Procedures:**

1. The collected and analyzed data from the 250 patients are currently being prepared for distribution to the practice and the research team.
2. Create a subset of the top 20% of at-risk patients as determined from a review of the data set
3. The team will meet on a biweekly basis to review the data
4. The first task is to identify clinical subpopulations within the list of at-risk patients
5. The clinical team will identify core elements of a clinical pathway for each subpopulation
6. The research/clinical team will generate workflows within the process to implement the clinical pathways.

### **Analysis/Evaluation Plan:**

We will use the RE-AIM model (Ware, 2019) to evaluate this project. It is an appropriate framework for an implementation pilot evaluation, and within the CU Department of Family Medicine, there is strong expertise in its use. The model has five dimensions: Reach, Effectiveness, Adoption, Implementation, and Maintenance. Each dimension will serve as a pillar to guide this research project, as outlined below. The first dimension is "Reach," defined as "the absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative, intervention, or program, and reasons why or why not." (p.39). We have already demonstrated the ability to capture the 250-patient sample. We will now evaluate the representativeness of the sample to the clinic patient panel and compare the sample to the clinic's greater population on gender, age, race, ethnicity, and medical/behavioral diagnoses. If the sample is not representative of the practice, we will consult the MVFP's established Patient and Family Advisory Council to generate strategies for representativeness going forward. The second dimension, "Effectiveness," pertains to the impact on outcomes, including the generalizability of the results. Over the year of the project, we will determine and implement the clinical pathways. It will be beyond the scope to evaluate patient-level change over time. Such evaluation will occur in subsequent phases of grant-funded projects. We will be able to assess the proportion of patients offered the new pathway and their agreement to participate in the enhanced clinical processes. Adoption evaluates the feasibility and likelihood of this specific intervention implementation in new settings. We will assess whether the intervention was implemented and if so, implemented as designed. Since every practice is different, we will identify adaptations made by the practice as they implement the intervention. Implementation will be evaluated at the individual setting level, and across different types of providers and staff including front desk staff. We will conduct interviews to evaluate fit in practice, ability to engage in the components, and the ability for the intervention to successfully become part of a workflow. In addition, interviews will assess practice members perceptions of the utility of the procedures in increasing effective care delivery. The final dimension for evaluation is "Maintenance," which investigates if individuals and settings continue to implement the intervention routinely across time. We will assess whether and how the intervention is being continued at the project conclusion and identify components that are and are not maintained.

### **Timeline to Completion:**

One year, July 2022

### **How will you know you have achieved your project's goals?**

1. Successful implementation of the components of the project
2. The clinical pathways are implemented in regular care
3. The data becomes pilot data for a larger-funded research trial

### **How do you plan to use the information you gather in this project?**

1. To establish workflows within the practice to implement data-driven clinical pathways
2. To use the pilot data to expand the project beyond a single practice for a multiple-practice trial

### **How does this project advance the field of collaborative care?**

There is consensus that patient-reported measurement is a core element of effective clinical assessment and care delivery. Identifying relevant measures and systematically collecting and using the data is frequently not done. To the degree that such measures are collected in integrated care, they have focused on single disorder measures such as the PHQ-9 (Kroenke et al., 2001), limiting the scope of assessment and often results in minimal case findings. There is an emerging consensus that the most critical outcome to patients and the best predictor of long-term outcomes are quality of life (Ware et al., 2016). In addition, the technology exists to use EHR data to impact clinical care. This project will advance the field and demonstrate the ability to implement and use the data in both clinical care and in ongoing clinical research.

### **How does this project advance you professionally?**

I am passionate about clinical behavioral health care in integrated healthcare systems. This project enables me to receive training and further my experience in primary care research and implementation. I believe the most effective and impactful psychologists are those with a scientist-practitioner approach to their work. To advance in my professional career, I need mentorship in producing research focused on improving primary care patients' ability to receive quality care focused on enhancing their overall wellbeing.