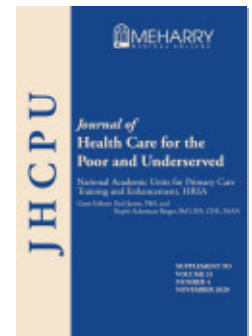




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## Microresearch: Promoting Scholarly Activity That Addresses Health Disparities in Rural Health Professional Education Programs

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*Abstract:* Microresearch is an innovative, mentored research experience, originally developed in Africa and adapted for U.S. health professional trainees preparing for rural primary care practice. This report describes program elements (funding, mentorship, and peer support) that others may replicate to develop research and leadership skills through community engagement to address health disparities.

*Key words:* Rural populations, mentoring, program development, rural health, health equity, medical schools, primary health care, research.

**R**ecruitment of rural primary care providers is critical to reducing health inequities disfavoring rural Americans.<sup>1</sup> Research experiences in rural settings can expose interested health professional trainees to rural health care while preparing them as future leaders for improvement in rural health outcomes. However, research experiences within rural communities and outside home institutions are rare. The costs and time commitment associated with research in less traditional settings may pose a barrier to exposure to rural health research. Since 2018, the Collaborative for Rural Primary care Research, Education, and Practice (Rural PREP) has sponsored “microresearch,” an innovative mentored research experience for primary care trainees. Funded by the U.S. Health Resources and Services Administration, Rural PREP is a collaborative project

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of the University of Washington School of Medicine, Ohio University Heritage College of Osteopathic Medicine, and the University of North Dakota School of Medicine and Health Sciences. Rural PREP's mission is to improve and sustain rural health through community engagement and research in rural primary care health professions education.

Rural PREP's microresearch program was inspired by and adapted from a model of mentored community health research of the same name in Africa, built on the principles of microfinance.<sup>2</sup> Rural PREP microresearch consists of small research awards for trainees supported through local mentorship and a virtual learning community. The program also provides a faculty development opportunity for rural clinician educators with a passion for mentoring who may have less research experience.

This report describes the microresearch program's development and experiences of the first three cohorts of microresearchers. We hope this information can help others replicate this innovation in their own contexts to promote scholarly activity and community engagement among future health professionals aimed at addressing health inequities. We also highlight the challenges and rewards of trainee-led research on rural and underserved populations.

## **Microresearch Program Development and Implementation**

Rural PREP's microresearch program is one of several initiatives that addresses the projects' core aims in rural primary care: (1) conducting health professional education research, (2) growing a community of practice in rural primary care health professions education, and (3) expediting the dissemination of evidence into educational practice. Students in advanced practice registered nursing (APRN), physician assistant (PA), and medical schools, as well as resident physicians are eligible. Trainees from other disciplines may also form teams with eligible applicants to propose a project. Rural PREP distributes its call for applications annually each spring through Rural PREP's website and via an email list of stakeholders and participants in other activities.

Three Rural PREP faculty members review applications to determine which projects are feasible with potential to contribute to rural community health. Applicants submitting the most promising projects are requested to make revisions, and selected awardees are notified at the beginning of the summer. Up to \$4,000 per project is available for approximately eight program participants annually. A total of 25 APRN students, medical students, and resident physicians preparing for rural primary care practice in 14 states have participated individually or in small teams in 22 projects to date. The average project award amount is \$3,157. The number of applications and fundable projects has fluctuated with each cohort, with a total of 31 proposals submitted for the fourth cohort, the most ever. Box 1 displays funded microresearch projects by cohort, including information on awardee health profession and location. Projects have employed both qualitative and quantitative methods in geographically diverse rural communities.

To support project development and execution, each program participant is expected to meet regularly with a mentor, whether identified by trainees from their own institutions or provided by Rural PREP. Rural PREP also hosts a quarterly learning community session via videoconference. A Rural PREP faculty member facilitates these sessions

**Box 1.****RURAL PREP<sup>a</sup> MICRORESEARCH PROJECTS FUNDED  
2018–2020**

<b>Project Title</b>	<b>Awardee Field and Level</b>	<b>State</b>
<i><b>Cohort One</b></i>		
How Are Rural Communities Affected by the Loss of a Physician?	Medical student (DO)	Virginia
Impact of State Healthcare Budget Cuts on Rural Communities	Doctor of Nursing Practice, Certified Nurse Midwifery student	New York
Effect of Point of Care Lead Level Testing on Compliance and Outcomes	Medical resident (DO)	Ohio
Health Beliefs and Cancer Screening among Anabaptists of Central Pennsylvania	Medical student (MD)	Pennsylvania
Shared Medical Appointments to Address Chronic Pain and Opioid Dependency	Medical student (DO)	Washington
Effectiveness of Condom Distribution in Rural Oregon	Medical student (MD)	Oregon
Exploring Engagement in Preventive Health Services Among Rural Working Adults with Type 2 Diabetes	Doctor of Nursing Practice student	Missouri
Community Health Worker Intervention Targeting Vulnerable Seniors in Dillon, Montana	Medical student (MD)	Montana
<i><b>Cohort Two</b></i>		
Assessing the Feasibility of Rural Primary Care Residency Training for Licensed Naturopathic Medicine Physicians in the Northwest	Doctor of Naturopathy student	Washington/ Oregon
A Qualitative Study Examining Healthcare Experiences of Transgender Persons in Rural North Dakota	Medical resident (MD)	North Dakota
The impact of a Syringe Exchange Program on Risk-Taking Behaviors in Injection Users in Michigan's Upper Peninsula	Medical resident (MD)	Michigan
Immunization Health Beliefs and Education in Northern Nevada	Medical resident (MD)	Nevada

*(continued on p. 4)*

**Box 1. (continued)**

Project Title	Awardee Field and Level	State
<i>Cohort Two</i>		
Homeless to Housed, How Does Stable Housing Affect Healthcare Utilization and Perceptions in Residents of the Forget-Me-Not Manor, a Housing First Program in Juneau, Alaska	Medical student (MD)	Alaska
Assessing the Prevalence of Chronic Kidney Disease in the Yakima Community Through Health Outreach Screenings	Medical student (DO)	Washington
Hydrogen Sulfide and the Rural North Dakota Workforce: A Qualitative Study on the Perceptions, Attitudes, and Habits Regarding Exposure at the Workplace	Medical resident (MD)	North Dakota
Identifying Barriers and Opportunities to Transform Rural Health Care for Gender Minorities	Medical student (DO)	Ohio
Primary Care Providers' Views on Oral Health at Rural Indian Health Service Sites	Medical student (MD)	Massachusetts
<i>Cohort Three</i>		
Social Determinants of High Drug-Related Mortality in Des Moines County, Iowa	Medical student (DO)	Iowa
Oral Health Viewpoints of Physician Primary Care Team Members at a Rural Indian Health Service Site	Medical student (MD)	Massachusetts
Needs Assessment and Uses of Technology-based Remote Learning Modalities	Medical student (MD)	Washington
The Effects of Non-Contact Boxing on Motor and Non-Motor Functions of Parkinson's Disease	Medical student (MD)	Missouri
Rural Surgery Workforce Assessment: A National Survey	Medical student (MD)	Illinois

*Note:*  
aCollaborative for Rural Primary care Research, Education, and Practice.  
For individual project descriptions, see <https://ruralprep.org/research-scholarship/microresearch/projects/>.

with program participants and mentors to discuss individual project updates, experiences, challenges, and solutions.

Rural PREP uses a simplified mechanism for distributing federal funding to multiple awardees nationally, lowering the transaction costs and administrative burden of traditional grants management systems. Rather than receiving grant funds up front, participants incur approved expenses and submit receipts for rapid reimbursement as a registered vendor through a university e-procurement and payment system. Participants submit progress reports quarterly, with an expectation to finish the research within one year and disseminate via presentation or publication within two years.

To evaluate participant perceptions and program outcomes, an external evaluation was undertaken in fall 2019, based upon semi-structured interviews with five participants and five mentors from the first two cohorts and review of all progress reports (V. Smith, personal communication). Major themes identified from the evaluation included the impact of participant experiences on career goals as well as relationships with mentors and each other. Evaluation findings below describe program strengths and areas for improvement with illustrative quotations from participants.

## **Reaching Underserved Rural Populations and Addressing Health Disparities**

*“Physically spending some time with members of the community and talking to them . . . was a very unique experience that not all researchers get to do. And that was one of the more memorable parts of the entire process.”*

Travel funding allowed program participants from both rural and urban areas the opportunity to directly engage with rural communities. Several program participants focused their research on specific vulnerable rural populations, including LGBTQ rural residents, people experiencing homelessness, Native American people, and people with substance use disorder.

*“This award has encouraged me to continue my passion and pursue research focusing on health in rural communities.”*

The overwhelming majority of program participants indicated that their experience encouraged them to pursue research in the future and facilitated personal and community connections grounded in rural health. Trainees received mentorship and support in the research process, dedicated time to rural health during their training, and gained exposure to rural health care practice. Participants learned key research skills including grant writing, navigating the human subjects review process, and data analysis. They further developed time management and organizational skills amidst competing priorities of their educational programs. Research funding gave participants the freedom and independence to, “actually do what I wanted to do,” providing a sense of accomplishment.

Participants have developed professionally by sharing research findings, and giving poster or podium presentations at state, regional, and national meetings; which has been supported, in part, with supplemental dissemination funding from Rural PREP.

One study was recently published<sup>3</sup> and several others will be submitted for publication in peer-reviewed journals. Participants have gained recognition for their projects from their educational programs and governmental institutions.

*“For me, research is ultimately about relationships.”*

Participants cited as a program strength the diversity of backgrounds and perspectives on research within each cohort. Learning community meetings facilitated a sense of community and support surrounding microresearch and rural health. Participants learned from shared challenges and others’ successes. The learning communities also allowed for relationship-building with future health professionals, researchers, and clinicians outside participants’ home institutions.

*“I was surprised how open they [rural health institutions] were to making times in their schedules to talk to us.”*

*“I think for places like the community we worked in, having the recognition that people notice, and care, is important.”*

Participants reported that microresearch experiences helped them learn collaboration, problem-solving, flexibility, delegation, communication, resourcefulness, persistence, and negotiation skills. Learning to collaborate “took time, strategy, and great effort.” Some participants were able to engage with community and state-level policymakers, government officials, and other stakeholders about rural health issues. Examples of outcomes included changes to clinic workflows to facilitate dental referrals, presentations of recommendations to inform state rural health policy, and development of recommendations for patient-centered transgender health care.

## Challenges and Lessons Learned

*“I think the communication and collaboration with other microresearch participants helped us to realize we had common and unique problems to all of our projects.”*

**Research process.** Despite their overall positive view of the program, participants reported challenges in successfully completing rural research. They desired more overall guidance about steps in the research process, from human subjects review through data collection, analysis, and dissemination, especially publication. Most reported that the human subjects review process was especially difficult and time-consuming, including institutional processing delays or the need for review by multiple institutional review boards. Subject recruitment also frequently presented challenges. For example, the logistics of recruitment can be complicated for participants conducting research in rural communities remotely from home. In response to feedback, Rural PREP hosted a webinar focusing on successful navigation of human subjects review processes<sup>4</sup> and will provide more early guidance to future cohorts.

**Resource acquisition.** Other participants encountered barriers in acquiring needed equipment, supplies, or services for their research (e.g., data resources or interview transcription). With little prior experience, several participants wanted more advice

and a list of resources to help inform purchasing decisions. Some learning community sessions were devoted to particular needs such as access to data sets. The funding model generally worked well, but some participants encountered difficulties, for example, when certain kinds of needed supplies had to be purchased by an organization rather than the trainee, complicating reimbursement. These experiences underscore the importance of helping prospective applicants understand how the funding mechanism works so that they can assess whether acquisition of necessary resources is feasible.

**Stakeholder engagement.** In some cases, engaging with the community, local health care providers, or local stakeholders was challenging. At times, initial interest and support from stakeholders was later superseded by other priorities. Helping microresearchers establish and maintain rapport with local stakeholders was recommended for future cohorts.

**Mentorship.** Mentor-participant matches were not always optimal. Participants sometimes indicated a tension between working either with mentors who were committed rural practitioners but who had limited research experience or with faculty research mentors who lacked time for mentorship or lacked relationships within rural communities. One suggestion to augment mentor support was to provide access to researchers with specialized expertise, for example, in qualitative research. This feedback prompted two Rural PREP webinars, consultations with topical experts, and assignment of each participant to a Rural PREP faculty member to consult as needed for expertise. Mentors also indicated that more guidance from Rural PREP about their roles would be helpful. The next cohort will have separate orientations for participants and mentors.

**Time.** Most participants noted significant time constraints. Given the competing priorities of health professional trainees, reminders from Rural PREP in advance of deadlines and streamlined reporting requirements were helpful for monitoring and maintaining progress. Research by nature rarely proceeds exactly as planned, and microresearch projects taught participants how to be diligent and delegate tasks to overcome challenges.

## Conclusion

*“The financial support empowered him at an early stage in his career [and] . . . gave him an early win in starting a research career and is most likely going to be the thing that encourages him to apply for funding again in the future.”*

Microresearch participants described Rural PREP resources as “exemplary,” “researcher-friendly,” and “supportive.” The program empowers students to be diligent in the research process and prepares these future clinicians with critical thinking and leadership skills needed to improve the health of rural patients and communities. The program also allows trainees to work alongside rural communities, health organizations, and peers, contributing to a broader understanding of health system functioning and their future roles as community health practitioners and researchers. Lastly, the dissemination of their research contributes to rural health knowledge and provides an opportunity to strengthen the credentials of future rural health leaders.

Microresearch in Africa has improved clinical practice and public health for rural



communities as well as local health research capacity.<sup>2</sup> Because Rural PREP's micro-research program is only in its third year, we cannot yet draw conclusions about its ultimate impact on the future rural health care workforce and health outcomes. However, several participants indicated that exposure to rural practice through the microresearch program was formative in developing their future health professional career goals.

Microresearch is a novel, relatively low-cost initiative to foster trainee research experiences in support of rural and underserved communities. Mentorship and peer sharing within the learning community, accompanied by financial support, have allowed trainees to successfully complete research projects and develop meaningful community relationships. Recognizing these benefits, the University of North Dakota School of Medicine and Health Sciences is replicating microresearch to promote both student and faculty development. Plans are under way for this work to be supported financially after HRSA funding ends by The RTT Collaborative, a nationwide non-profit cooperative of rural programs in health professions education and training anchored at the Ohio University Heritage College of Osteopathic Medicine. The successful implementation of this approach in Africa and now the U.S. demonstrates the feasibility of microresearch for institutions and organizations seeking to develop a workforce equipped with the tools of systematic inquiry to improve health equity.

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