METROPOLITAN Universities

An International Forum June 2022 Volume 33 Number 3

Community Engagement at Academic Health Centers

TABLE OF CONTENTS

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Community Engagement at Academic Health Centers: An Introduction to this Special Issue

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Cite as: Allen. J. A, Yack, M., & Hart, S.E. (2022). Community engagement at academic health centers: An introduction to this special issue. *Metropolitan Universities*, 33(3), 3-9. DOI: 10.18060/26312

Guest Editors: Joseph A. Allen, Ph.D., Sara Hart, Ph.D., and Melissa Yack, Ph.D. **Editor:** Valerie L. Holton, Ph.D.

Abstract

Academic health centers are essential in many communities, providing health professions education and patient-focused services. These institutions often serve as anchor institutions for community-engaged efforts to serve underserved populations. During the COVID-19 pandemic, the central nature of academic health centers, and the well-being of communities, were on full display. This special issue aims to contribute to and expand our understanding and inform empirically the evidence-based programming, interventions, and policies that strengthen community engagement at academic health centers.

Keywords: community engagement, academic health centers, anchor institutions

Introduction

Academic health centers, including hospitals, have become anchor institutions for community-engaged work (Birch et al, 2013). For example, health professions students (e.g., nursing, medicine, pharmacy, OT/PT, dentistry, etc.) often engage with and support communities, state and local health departments, and nonprofits on mutually beneficial projects that help develop knowledge and skills essential for professional practice while supporting the community partner's mission. In general, academic health centers tend to include all universities' health-oriented components. This includes educating the healthcare workforce, providing patient care, serving many underserved populations, and engaging in research (Association of Academic Health Centers, 2022). Academic health centers also have significant influence as anchor institutions geographically set in local and nearby communities. As anchors, they influence economies and communities through hiring, purchasing, sponsorships, and partnerships. Academic health centers also play pivotal roles in addressing health equity and access, social determinants of health, and injustices (as seen in the last three articles of this volume). Additionally, academic health centers are positioned to extend their reach through telementoring services (e.g., Project ECHO discussed in this volume) and telehealth. Academic health centers engage with communities in various ways ranging from patient education provided by clinicians and staff to community-based participatory research conducted by students and faculty, and everything in between. Finally, academic health centers are continually changing with financing and care models that address community benefits and social risk factors.

There are 120 academic health centers in the United States, and the vast majority of them are located in urban and metropolitan communities (Advisory Board, 2015). In the last couple of years, these academic health centers have responded to unprecedented conditions precipitated by the COVID-19 pandemic (DeVoe et al., 2020; Kishore & Hayden, 2020). However, before, during, and after COVID-19, these centers have continued their community engagement efforts in various ways.

These community-engaged efforts may be led by single health professions (e.g. nurses) as well as by interprofessional groups. For example, nurses engage in various community-engaged practices as part of their professional development and training. Whether they are helping in rural communities, dealing with issues surrounding substance use disorders, or assisting with managing large scale disasters, nurses are often at the forefront of the interface with community members and leaders (Kulig et al., 2018; Schoch-Spana et al., 2007; Maina et al., 2017). But other healthcare professions, such as physicians and pharmacists, also engage in community-partnered activities (Shalowitz et al., 2009). Further advancing these efforts, academic-community partnerships also occur in interprofessional education when health professions students learn with and about each other while gaining skills necessary for effective teams and collaborative practice (Meurer et al., 2011). These forms of health professions education can contribute to professional growth while enhancing community capacity to improve outcomes. Although these and many other initiatives continue to occur within and around academic health centers, minimal research and dissemination efforts make it difficult to know the best approaches to academic-community partnerships and community engagement in these settings.

This special issue aims to contribute to and expand our understanding and knowledge base, informing empirically the evidence-based programming, interventions, and policies that strengthen community engagement at academic health centers. The contributions contained in this volume help define and operationalize community-engaged efforts in many areas of healthcare. This issue provides a better understanding of the potential for healthcare institutions to serve as anchor institutions. Further, some articles identify services offered before, during, and after COVID-19 that use academic-community partnership models for community engagement. We are pleased to provide this issue with several compelling cases and studies that embrace the challenges of the COVID-19 pandemic and share new insights into a variety of healthcare to community partnerships.

Articles in this Volume

The current special issue addresses a wide range of community-engaged efforts initiated between academic health care groups and their communities. The first two articles explore how partnerships between academic health centers and their communities maintained collaboration and engagement during the COVID-19 pandemic. Chin and co-authors explore learning from their partners not only within the partnership but also during the pandemic, as many people with intellectual and developmental disabilities saw increased social isolation and inequities. The article outlines processes and approaches taken with partners to move in-person meetings and activities to virtual platforms. Meanwhile, Line, Kohlmeier, and Mount focused on how community engagement was essential to the success or failure of contact tracing during the COVID-19 pandemic. Their comprehensive review of the efforts made to initiate and maintain contact tracing by working closely with community partners in a true community-engaged manner provides a template for similar efforts in the future.

The next set of articles in this volume discuss the potential of academic health centers to be anchor institutions by initiating and supporting education and research that is of immediate interest to communities. For example, Castro and colleagues highlight the effort of an academic health center-based National Institutes for Occupational Safety and Health (NIOSH) Education and Research Centers (ERC) to increase worker safety and well-being through community engagement. They demonstrate that the community engagement continuum is a meaningful framework to identify what an academic health center is doing as well as where their efforts may be lacking. Kuttner and colleagues then take a comprehensive look at the case of the Community Research Collaborative and their efforts to establish and publish guidelines for community-based research. They found that storytelling is essential for identifying challenges in the community that need attention, and the work of this Community Research Collaborative can serve as a mechanism for beginning to address those challenges.

The last three articles in this special issue focus on the issues of health inequities and how community-engaged efforts between academic health centers and their communities are one important way to address these inequities. For example, Vetrovec and fellow authors reflect on the racist practices of academic health centers and the impact these practices have had on marginalized communities and health inequities. They then highlight how they address their own institution's past through equity, diversity, and inclusion work. Larson and Medved discuss one method for increasing equitable access and outcomes through a telementoring program. This program offers providers, ranging geographically from rural health settings to urban safety-net clinics, an interactive, real-time experience to problem-solve, innovate, and learn about interventions, treatments, and processes that support patients in their local communities. In other words, mentoring bridges the gaps between what providers know and what they need to know to work with and eliminate health inequities in rural and urban communities.

An area of significant inequity that emerged during COVID-19 was vaccinations. Garmong and colleagues share the story of activating community-academic partnership and interprofessional education to address vaccine equity. By working closely with the local health department, the academic health center could use a local church to provide vaccines and health screenings to traditionally marginalized members of their community. In other words, the community-engaged effort between the institution and the local community provided an immediate impact on health inequities that emerged during the pandemic. The volume offers a meaningful identification of how academic health centers, as anchor institutions, can serve as a hub for engagement with communities to address health inequity and improve educational opportunities in urban and metropolitan areas and beyond.

The Future of Community Engagement in Academic Health Centers

The various manuscripts in this special issue illustrate a meaningful point; there's much to be learned from the engagement efforts and partnerships between academic health centers and communities. Further, we discovered that much is happening across the board, but little is known about the success or failure of these efforts. For community engagement between communities and academic health centers to improve, more reporting on current efforts is needed, as are well-designed scientific studies of these efforts. In other words, more needs to be done. What we share here are just a few ideas for consideration.

First, many higher education institutions with a healthcare component, large or small, are probably already working with their communities. These efforts may be as simple as practicum projects for students in various educational programs or as complex as a full-on partnership between a network of nonprofit organizations and the entire healthcare system. So, the first future direction is to dig into these initiatives and report on them—activate rigorous measurement and assessment practices to paint a picture of the successes and challenges of doing these activities and share them with the broader academic community. In general, we cannot expand these efforts effectively without knowing more about what's happening, what works, and what does not.

Second, we know academic healthcare centers are anchored in communities. There is growing research on how academic health centers can affect social determinants of health, health equity, access, and injustices. Additionally, more academic health centers are embedding equity, diversity, and inclusion work within curricula, staff training, patient care, and hiring and career pathways. As anchors, these institutions should embrace and expand opportunities for impacting community concerns while addressing determinants and equity both in local communities and with partners further afield through telementoring, telehealth, and other expansive partnerships.

Third, academic health centers have unique opportunities to magnify current and future benefits of community engagement through models of interprofessional education. Pedagogical, curricular, and co-curricular practices designed to advance the involvement of health professions students in community engagement may benefit from the use of interprofessional frameworks. When academic-community partnerships include interprofessional education and health professions, students learn with and about each other. Still, they also learn valuable skills for cross-sector collaboration and coordination of care for both health and social needs. A final future direction is to seek models and evidence for effective interprofessional academic health centers partnering with communities and multi-sector stakeholders to address social determinants of health. This might include partnerships that aim to integrate an assessment of social needs (housing, transportation, etc.) into healthcare services or ways in which partnerships have produced upstream projects to address social needs led by or supported by the academic health sciences institutions.

Given all these opportunities and future directions, it's important to reflect on one truism of academic healthcare and community partnerships. The community enables the academic health center. They provide the students and the patients. In many cases, they also provide the tax dollar appropriations to subsidize the workforce. These academic health centers should also enable the community to be healthier and safer. And doing these things together appears to be the most mutually effective option.

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Original Research

Community Engagement and Learning at an Academic Medical Center: Maintaining Community-Academic Partnerships During the COVID-19 Pandemic

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Cite as: Chin, M., DiBello, J., Schmalfuss. H., Dockrey, R. Gao, A., Eshleman, M., Indresano, S., Shahrour, N., Bullock, K., & Fowler, C. (2022). Community Engagement and Learning at an Academic Medical Center: Maintaining Community-Academic Partnerships During the COVID-19 Pandemic. *Metropolitan Universities*, 33(3), 10-22. DOI: 10.18060/25696

Guest Editors: Joseph A. Allen, Ph.D., Sara Hart, Ph.D., and Melissa Yack, Ph.D. **Editor:** Valerie L. Holton, Ph.D.

Abstract

In light of the ongoing COVID-19 pandemic, the health disparities plaguing our communities are highlighted more than ever. Community-based learning (CBL) and community-based participatory research (CBPR) provide a highly relevant framework in addressing health problems, especially those related to the Social Determinants of Health (AHRQ, 2020). Throughout the COVID-19 pandemic, the team at the Community Health Division (CHD) within the Family Medicine Department of Georgetown University School of Medicine (GUSOM) maintained and deepened relationships with community partners through engagement activities, which not only actively addressed community needs but also acted as an educational tool for a growing number of interdisciplinary students. This paper explores the effectiveness of CBL and CBPR as a framework, even when presented with challenges of the COVID-19 pandemic. It further underscores how students at Georgetown University have become more intimately involved in community health engagement during the pandemic. This serves as an encouraging model for establishing a student-based research learning community.

Keywords: community-based participatory research, community-based learning, health disparities, health literacy, health promotion, intellectual and developmental disabilities

Introduction

Community engagement and awareness as part of investigative theory through community-based learning (CBL) and subsequent community-based participatory research (CBPR) have become critical to learning and research within healthcare. The faculty at Georgetown University School of Medicine (GUSOM) exposed students to the importance of community through service-learning. As a result, they evolved into an intentional pedagogy, including reciprocal community-campus engagement or community-based learning. Traditionally, CBL directly utilizes community engagement as a teaching and learning strategy for students at all levels of education, often partnering with local non-profit and advocacy organizations to facilitate community interaction and applied learning (Beckman & Long, 2016). CBL relies on the principle that impact and "profound learning often comes from experience supported by guidance, context-providing, foundational knowledge, and intellectual analysis" (Marshall University, 2021). This pedagogical approach allows students and educators to apply theoretical and conceptual classroom models to the community directly. Theoretical and didactic grounding provides a dialogical tool for student reflection as they engage with community participants. Ideally, participation in CBL also addresses a community-identified need leading to transformative change. Other positive outcomes include increasing community agency through knowledge sharing, academic community understanding, and recognition of community assets through consistent interactions. Students acquire the necessary skills to address real-life problems or formulate a relevant research question on community partnerships.

The CBL course, delivered as a required experience for all first-year medical students at GUSOM, directs students to partner with communities in the District of Columbia (D.C.), often acting as a lever for multi-year engagement on a specific topic area or within a particular service setting. Community partnerships are carefully selected based on their values and how they serve the D.C. community, allowing medical students to enhance established programs and create new relationships as welcomed by community members. These efforts can range from teaching school-based health education to innovative nutrition programs that encourage family strengthening for families with children with disabilities. By working directly with communities, students build upon their cultural competencies, understanding inequity and social justice, and community relationships, setting the foundation necessary for effective CBPR.

In its current model, CBL at the medical school is nested within the Georgetown Family Medicine Community Health Division (CHD), which fosters community engagement and undertakes advocacy and policy efforts. In working within the community, the collaboration is targeted as a mutual gain for the partner, the population they serve, and the medical students. Engagement through respect creates a foundation for discovery, idea formulation, and project development. This process becomes a bridge to research deliberations that are democratic with shared investigatory interests. From this curricular experience, students at Georgetown developed a desire to further engage with and learn from their communities, especially as the COVID-19 pandemic highlights existing health disparities and calls for racial justice to permeate our culture. The relationships fostered through this course have segued into diverse forms of community engagement and CBPR partnerships within the CHD, serving as a necessary crux for improving health equity within D.C.

Novel Community-Based Learning Education During the Pandemic

In light of the COVID-19 pandemic, Dr. Kim Bullock and her team at the CHD sought to expand health-centered community engagement beyond the confines of medical school. In the summer of 2020, a five-week pilot course entitled *Addressing the Health Status and Health Inequities Among Individuals with Intellectual and Developmental Disabilities Across the Life Span* was offered for undergraduate and graduate students in all disciplines through Georgetown University's Disability Studies program in collaboration with GUSOM. The course incorporated CBL principles in an all-virtual learning environment and introduced students to tenants of CBPR. Consequently, students connected with experts in the field of Intellectual and Developmental Disabilities (IDD), including clinicians, service coordinators, and individuals with lived experience of IDD (also known as self-advocates). Meetings with self-advocates focused on exploring their life experiences, learning about their advocacy efforts, and identifying the effects of the COVID-19 pandemic on their wellbeing and access to healthcare. These conversations contributed to students' understanding of IDD as an identity, serving as a core foundation of future CBPR undertakings. Virtual classes allowed for increased accessibility for all parties and connected students with community members that otherwise would not have been able to meet in person, offering a more varied and enriching experience. Experiencing CBL carried out virtually allowed students to rethink how to increase the accessibility of CBPR through virtual platforms. Candid, semester-long conversations bolstered trust amongst constituents, allowing for collaborative efforts and mutual empowerment in future CBPR efforts. By connecting directly with community members, students identified community needs and saw how those might differ from what experts and policymakers assumed, establishing a starting point for subsequent CBPR.

Beyond the classroom, students were invited to join D.C. community group meetings, including Project ACTION!, a DC-based advocacy organization, and a DMV Disability/Senior Community online gathering. Students were also encouraged to join weekly executive and community meetings sponsored by D.C.'s Department on Disability Services (DDS). These extracurricular opportunities allowed students to further engage in the course material and see first-hand how disability-focused community stakeholders build community, promote resilience, and advocate for themselves. Students submitted weekly reflections to demonstrate their learning, process new material, and create connections between different guest speakers. Additionally, the course culminated in a group concept paper identifying key research areas, such as social support and primary care, needed to better support D.C.'s IDD community based on interviews the students had with community partners throughout the course. This collective paper served as a foundation for the central CBPR activities that have defined the success of the CHD during the COVID-19 pandemic.

Seeing and appreciating the value of undergraduate and graduate students as contributors to perspectives within the CHD led to the recruitment of the Division's first Junior Research Coordinator as well as several research assistants to bolster the CHD's CBPR efforts. With a wide variety of community and academic partnerships within and outside the District of Columbia, the CHD student research group comprises approximately 15 undergraduate and graduate interdisciplinary students and medical students.

Community-Based Participatory Research as Pedagogy

CBL serves as a key vehicle for learning about and conducting CBPR at Georgetown. CBPR is a "strength-based approach to research that involves collective, reflective and systematic inquiry in which researchers and community stakeholders engage as equal partners in all steps of the research process with the goals of educating, improving practice or bringing about social change" (Tremblay, 2018, p. 2). CBPR finds pedagogical grounding by teaching students the value of community knowledge and the importance of building synergy in addressing methodological and goal-directed concerns in both qualitative and quantitative research. Researchers and community members develop longitudinal relationships that ensure research findings lead to instant community benefits and build capacity amongst partners. This includes immediate dissemination of results and conclusions and cogent, actionable items that researchers and community partners can pursue collectively. Benefits of CBPR include but are not limited to establishing a learning community and utilizing research questions relevant to both researchers and communities. Areas of inquiry include identifying culturally appropriate study instruments, a deeper understanding of each community's unique challenges, the growth of reflective observation and empathy, with real-life knowledge for engaged researchers/students. An important area of interest involves community health literacy leading to action and trust in the health care system for underrepresented populations (AHRQ, 2020). CBPR faces challenges and limitations, often related to a limited number of funding sources and concerns regarding research quality and the extent to which all community members benefit from a project's outputs and action steps (AHRQ, 2020).

As a research and educational tool, CBPR shows a large potential for reaching groups and communities that have been marginalized and historically ignored. A recent study by Rink et al. (2020, p. 5) evaluated the implementation of randomized clinical trials (RCTs) in American Indian (A.I.) communities and determined that long-term CBPR "can mitigate the epistemological, methodologic and analytic complexities of conducting RCTs with A.I.

communities." These researchers found three main factors: "long-standing community-researcher relationships, establishing context-based validity and overcoming the limit of social desirability through improving participant recruitment and retention"—that allowed for successful RCT implementation while also "decolonizing" research techniques (Rink et al., 2020, p. 4). Inherent in CBPR is an intentionality to give at least equal weight to the lived experience and voices of study subjects as to the acquired expertise of academia. As such, biases and assumed power differentials that may infiltrate the academic community is called into question by interjecting the perspective of community members. Through this process, university-community connectivity and legitimacy can lead to informed action and authentic, lasting social change.

Community Health Division Engagement in CBPR

After recognizing the interest and dedication of students engaged with the piloted CBL course, educators in the Family Medicine Department developed multiple student-directed CBPR and advocacy groups within the CHD to create collaborative, long-term partnerships that improve health equity and the wellbeing of respective local communities. These topic-focused groups are paired with specific community sites and are supervised by the Division's director, Dr. Kim Bullock. Utilizing community partnerships developed through academic and professional networks and the CBL course, the groups at the CHD, engage in bidirectional educational and research experiences that address the social determinants of health and promote positive health behaviors in medically underserved communities. Research findings are shared and discussed with community members and stakeholders to accomplish recognized goals or system change.

Unique to the CHD is the interdisciplinary diversity of students engaged in the work. The CHD expanded its on-campus partnerships and student recruitment through Georgetown community groups, including GUSOM's Office of Diversity, Equity, and Inclusion, a pilot Disability Studies course, the CBL course at the GUSOM, and the Georgetown Disability Alliance. Each student brings a unique viewpoint to the work based on their backgrounds and experiences. Students studying medicine, public health, neuroscience, health policy, economics, and government are currently involved in developing and executing community projects.

Members of the CHD meet weekly to discuss the implementation of community projects, explore new areas for collaboration, and promote further scholarship. Working groups for community partnerships discuss current engagement, meet with community partners, evaluate current projects, and plan upcoming events. Each month, students develop "mini-lectures" on topics relevant to research, public health, and current events in the IDD community to present to their peers. These lectures are recorded and saved as future onboarding materials for incoming students to learn more about the communities they will be engaging with. A student-led grant writing workshop provides opportunities and resources for students to apply for their funding for individual and collaborative research. On average, students spend approximately five to ten hours per week on CHD projects and have completed research fellowships with our group as part of their coursework.

The CHD has a longstanding history of working with marginalized communities and vulnerable populations. Partnership building is critical to mutually beneficial inquiry and research, especially regarding educating students about CBPR. Implicit bias, privilege, power, and oppression, both dyadic and group, are foundational learning topics. Students engaging in community research must recognize and grapple with institutional power and privilege systems. They must be ready to actively listen and learn from those voices often ignored and missing from the research discussion. Historically, the community's unequal relationship dynamics and the institution have led to faulty research questions and analysis. To develop methodologies that reflect mutual community/campus input, one must identify and acknowledge structural bias and actively create a safe space where community participants can be valued. Researchers must listen reflectively and recognize the interconnectivity that drives every aspect of the research process. A core tenant of the Division is the commitment to positively impacting local communities by translating scholarship to action. Most notably, students actively participate in CBL and CBPR with two partner organizations in the IDD community: Project ACTION! and the National Children's Center. These projects seek to address health at the intersection of social determinants of health, health education, disability studies, and advocacy, acting as a resource for members of the IDD community in promoting both individual and systemic change.

Community Engagement in Action: CHD Academic-Community Partnerships

Project ACTION!

Since its creation, the CHD has been passionately focused on cultivating community partnerships within the District of Columbia IDD population. One such partnership developed over the past decade is with Project ACTION!, a regional coalition of self-advocates in the Metro D.C. area. These self-advocates are people with disabilities passionate about Advocacy, Change, Training, Information, Organizing, and Networking (ACTION). They organize around their collective experiences and concerns related to health care, transportation, housing, safety, and other issues. Through sharing these lived experiences, members have created a community in which they learn about local issues in the DMV area, how to exercise their civil rights, and discuss ways to spread disability awareness in the local community. As one of the most influential IDD advocacy groups in the Washington, D.C. area, the self-advocates have a strong grasp on justice issues in the disability community and have honed ways in which they can affect change.

A community-academic partnership between lay advocates of Project ACTION! and GUSOM was a natural progression from the relationship between Dr. Kim Bullock and the D.C. IDD community. As expressed by self-advocates, individuals with IDD face undue barriers to healthcare in communication, transportation, and equitable treatment. Future healthcare professionals must learn about the diverse patient populations they will serve, and the IDD community is one that many medical school curricula overlook. Iezzoni et al. (2021) determined that only 40.7% of physicians surveyed felt confident in providing competent care to patients with an IDD, and 58.6% of physicians actively welcomed patients with IDD into their practice. When receiving healthcare services, much of the patient experience is rooted in the physician's actions, and there are many subtle yet impactful ways to alter care for the individual. For students, the strength of community-based partnerships at the professional training level lies in hearing the lived experiences from community members themselves. Self-advocates from Project ACTION! participate in several activities with medical students throughout the school year to educate on best practices in providing equitable care. Such activities include community listening sessions, focus groups, informative videos relating to the COVID-19 vaccine, and inclusion in the CBL course as panelists.

Throughout the pandemic, the partnership between Project ACTION! and the Georgetown University CHD took shape primarily through community listening sessions and the subsequent development of a mixed-methods research study. This partnership mutually benefited the contributing individuals within the IDD community as well as students of the CHD. Listening sessions began in August of 2020 and have continued during the progression of the pandemic. Each session ranged from one to two hours, with anywhere from 10 to 40 self-advocate participants. During these listening sessions, students from the CHD asked self-advocates about their relationships, experiences, and access to healthcare throughout the pandemic, gaining valuable insight into the shortcomings of the medical system and how the pandemic disproportionately affects the IDD community. For those within the IDD community, these listening sessions offered an opportunity to voice concerns and frustrations that many felt would otherwise go unheard. These sessions were also an opportunity for those within the IDD community to receive answers to questions and concerns they have had throughout the pandemic from the CHD director, a trusted medical professional.

Many self-advocates voiced concerns about the safety of the COVID-19 vaccine, how to interact with others throughout the pandemic safely, and the timeline of vaccine eligibility in Washington, D.C. Also expressed during listening sessions were the widespread feelings of isolation due to the restrictions imposed during the pandemic. IDD self-advocates and students would connect in breakout rooms and share ideas and stories in a more intimate setting. The virtual listening sessions fostered a sense of community that many had not experienced in over a year. These listening sessions became increasingly valuable due to COVID-19 data provided by Washington, D.C. DDS. Throughout the early months of the pandemic, individuals within the IDD community were contracting COVID-19 and facing serious health complications due to the virus at significantly higher rates than the general public. Through these listening sessions and subsequent study, the CHD hopes to provide information to this disproportionately affected population regarding preventative public health measures and gain insight into the failings of the healthcare system that put this population at increased risk of contracting COVID-19.

From the valuable information shared during the listening sessions, the CHD has worked to develop an IRB-approved research study centered around the experiences of individuals within the IDD community during the pandemic in relation to the healthcare field. Citing listening sessions as preliminary data, this research study was proposed based on i) determining the barriers to healthcare faced by individuals within the IDD community throughout the COVID-19 pandemic and ii) identifying interventions that may be utilized in future public health crises to better care for this marginalized community. This study uses a mixed-methods methodology, capitalizing on long-term partnerships with community-based organizations, the health care community, and self-advocacy groups to query experiences related to the COVID-19 pandemic. Self-advocates are asked to complete an online survey detailing their lived experience during the COVID-19 pandemic. Facilitated interviews with lay advocates highlight their unique strengths and resiliencies along with the community assets that facilitate needed support. All survey instruments and recruitment documents that target self-advocates are administered in plain language to ensure accessibility.

Self-advocates were integral members of study development and were consulted frequently during the design process. Areas of concern during the pandemic highlighted by advocates during the listening sessions acted as a basis for qualitative and quantitative data collection. These topics include: feeling left out of the decision-making process, increased barriers to healthcare access, utilization of technology, adherence to public health guidance, and maintaining relationships. When presented with these topics as areas of study focus, advocates agreed they were representative of challenges faced during the pandemic. Data collection instruments were assessed through meetings with self-advocates to ensure clarity and proper plain language usage. This active study hopes to accomplish these goals by analyzing quantitative data obtained through surveys and qualitative data obtained through facilitated interviews.

National Children's Center

While the partnership with Project ACTION! focuses mainly on adults with IDD; it is also important to recognize that it is not just individuals with IDD that may experience undue hardship but also family members and loved ones. Family members of adults and children with IDD face unique challenges such as increased time demands, disruption of family routines, and increased financial burden while reporting higher levels of stress (Luijkx et al., 2017). Identifying this need for greater levels of support, the CHD partnered with the National Children's Center's (NCC) Early Learning and Early Intervention Center. This multidisciplinary program focuses on childhood education for children with and without disabilities in the birth to five-year period. The Early Learning and Early Intervention Center is part of a lifespan of services provided by NCC and tailored to those with intellectual and developmental disabilities in Washington, D.C. This partnership has developed into meaningful community engagement through increasing community agency, educational, and outreach efforts.

Over the past several years, one particular area of focus for the Center has been increasing access to healthful, fresh foods for children and families of the local community. In 2020, Washington D.C.'s overall projected food insecurity rate was 16%, with the greatest rates occurring in Wards 7 and 8 (D.C. Office of Planning, 2020). Food insecurity is strongly related to economic and social factors that contribute to systems of oppression, including unemployment, poverty, disability, and race and ethnicity (Odoms-Young & Bruce, 2018). Children with disabilities, such as those NCC serves, are also more likely to experience low or very low food security than children without disabilities (Karpur et al., 2021). With the partnership of staff and community members at NCC, our team developed the Health and Nutrition Initiative to educate families of young children about the link between nutrition and health, featuring increased attention on IDD in an inclusive setting. Thus, this partnership between NCC and the Georgetown CHD represents an empowerment strategy for families of children with IDD and the local community to develop the skills and resources necessary to maintain healthy eating habits in an accessible manner. Using this program as a model, students at the Georgetown CHD aim to recognize and challenge the inequities across the District while directly supporting those affected by these food access challenges.

Development of the Curriculum

The Health and Nutrition Initiative was developed in January of 2021 in partnership with NCC's family engagement and culinary staff. A pre-survey was virtually administered to families receiving services from NCC to understand the participating families' backgrounds, current behaviors, and interests. Families identified areas of interest in the intersections between nutrition and body systems and provided valuable information relating to their current health and eating behaviors. Based on these interests, students developed an organic curriculum focusing on how nutrition plays a role in the development and functioning of specific body systems.

Each month, the Health and Nutrition Initiative holds two sessions. The first session covers background information about a given body system or topic, such as the gut, brain, or living with allergies. Students give a general overview of the system, how the system develops throughout childhood, and how nutrition can affect the functioning of that system. The second session provides specific nutrition advice and features a 30-minute video of a recipe demonstration from the Center's chef that families can replicate at home. Created recipes feature key ingredients discussed from that month's theme and incorporate flavors representing the community's preferences. Many of the fresh fruits, vegetables, and herbs used are grown and harvested from NCC's urban garden, an outdoor learning site for the young children of the families in attendance. Sessions are interactive and conducted virtually over Zoom. Students help facilitate avenues for family engagement, including wellness check-ins, strategies for maintaining healthy eating habits, and, most importantly, encouragement from families to share their experiences and build community.

Students drive the implementation of this project by developing and presenting session content, assisting in recipe demonstration led by NCC's chefs, and incorporating input from the family engagement team in relation to parent needs and requests. Each month a student lead is identified and acts as a liaison between the staff members at NCC and the CHD for communication regarding planning and implementation of the sessions. The students also direct the content of the sessions by meeting with and interviewing healthcare experts as well as facilitating regular planning meetings with their peers.

As the sessions progressed, the CHD and NCC's family engagement team solicited feedback from parents about the appropriateness of content and encouraged parents to participate in presenting by sharing their personal best practices and experiences. A unique aspect of the curriculum is that the sessions are flexible in nature, with content adjusted between sessions based on the community's questions and feedback. This allows families to tailor their learning and have an active role in curriculum development. For instance, in a session about gastrointestinal health and the microbiome, parents shared that their children were "picky eaters" and that it was often a struggle to create nutritious meals that they would eat. NCC's chef & culinary staff took this information and created recipes to share with families to help disguise fruits and vegetables in familiar child-friendly foods to promote microbiome health and digestion.

Additionally, to further promote community engagement, a family member representative was identified to assist in developing the nutrition curriculum. Drawing on their personal experiences caring for a child with IDD, family members provide invaluable feedback on session materials, ensuring that content is relevant for parents and family members attending the sessions. Each session is attended by the CHD director and board-certified family medicine physician to assist students in answering questions related to children's health and nutritional needs, increasing engagement and ensuring educational relevancy.

Future plans include creating a Facebook page, where students and family members can actively come together to share content related to the sessions and post ideas for future content while fostering a continuous sense of virtual community.

Partnerships in Action: Adapting to COVID-19

The COVID-19 pandemic disrupted academic institutions' programming, including didactic and experiential learning, along with many other systems. Seeing as community-based research and learning is grounded in direct contact with the community, our partnerships had to be creative in how they adapted to this challenging environment. Before the pandemic, students worked closely with community members in-person, attending meetings and events at their community partner site. Given the nature of the partnerships with Project ACTION! and the National Children's Center, our research team had to make significant adjustments to how we engaged with community members.

As of the Spring of 2020, all Community Health Division programming moved to an online format from weekly student meetings to community partnerships. Students communicated with the leadership teams of community partners to develop a new workflow utilizing online platforms while maintaining the richness of in-person interactions. Members of Project ACTION! moved their meetings online, and began contributing to virtual discussions with medical, graduate, and undergraduate students at the CHD. Transitioning programming at NCC proved more challenging as much of the material relied on in-person activities, such as access to the on-site garden and kitchen. Together with NCC staff members, our group devised a virtual health and nutrition curriculum that would allow didactic and experiential learning for families. Families would first attend a didactic videoconferencing session led by students that explores the relationship between the body and nutrition. This session would then be followed by a modified experiential learning session where the Center's chef would provide a virtual cooking demonstration based on previously highlighted ingredients.

These changes to content distribution brought challenges in implementation. Integrating an experiential learning component into an online format required flexibility from all parties. The cooking demonstrations needed to be accessible to families, providing a simple, nutritious meal that could be made in under 20 minutes. Initially, the cooking sessions were done live, with families watching and interacting with the chef in real-time over video conferencing. This provided an interactive component that allowed families to learn directly from the experts and have their questions and comments addressed immediately. However, over the course of several sessions, it came to our attention that the feasibility of the live sessions was not always realistic. Sessions were scheduled in the evenings, typically after many NCC employees finished their work for the day, limiting kitchen access. If a technological issue arose, families would be unable to view the demonstration in its entirety.

Additionally, many self-advocates at Project ACTION! and NCC family members did not always have reliable access to the technology required to conduct online meetings. Those who could access appropriate technology had difficulty navigating the videoconferencing software needed for meetings. Some members of the IDD community relied on family members or support staff to assist with getting onto the virtual platform, and utilizing functions such as camera and microphone proved difficult. Family members would often attend nutrition sessions on their phones, with limited access to software features such as polling and chat.

Despite the challenges of transitioning to a virtual environment, IDD self-advocates and families demonstrated resilience in how they have adapted to these changes and were committed to regular participation. With the support of community members, the self-advocates were flexible and adapted quickly to the new realities of online interactions—as the frequency of virtual meetings increased, so did the technical savviness of the advocates. Self-advocates could speak with CHD members from the comfort of their own homes, allowing for increased outreach. While the virtual nature of meetings imposed communication challenges, it also allowed self-advocates to meet with us with greater frequency, as there were no concerns about transportation or accessibility of meeting spaces.

For the Health and Nutrition Initiative, we found that video conferencing software has effectively delivered a health literacy program. The accessibility of an online session has reduced the burden on families to participate and allows multiple family members to attend sessions and learn together. Parents can attend sessions wherever they are and learn without the obligation to travel to and from NCC. Many parents work until later in the evening or do not have childcare available during session times and have expressed gratitude for the increased flexibility. Given the nature of virtual conferencing, sessions were recorded, increasing content reach to family members who may not have been able to join the meeting. Additionally, the online setting has allowed multiple students and members of the CHD to attend conveniently. Students spanning different institutions and time zones have been able to participate simultaneously, adding value to the sessions while also enriching their learning.

Conclusion

Our experiences deepening academic-community partnerships during the COVID-19 pandemic demonstrate the practicality and utility of community-based engagement and participatory research, even if mostly conducted virtually. Throughout the COVID-19 pandemic, communities - including those at Project ACTION! And the National Children's Center - have suffered under the social isolation of lockdowns and restrictions, as well as worries about health decision-making. The work of the CHD helped to address such concerns, enrich their lives, and strengthen agency. Even during times of crisis, community members are eager and willing to take the initiative and act as agents of change in their communities. Partnerships with academic institutions allow members of underrepresented communities to educate future leaders on the healthcare disparities they experience, problem-solve, and develop networks and resources to enact change. The evidence-based publications that will follow from our research will impact community change at organizational and policy levels. We continue to learn from our community partners about the best way to engage in novel in-person and virtual engagement. Our community connections at Project ACTION! And the National Children's Center continue to be a source of mutual learning and service between Georgetown University affiliates and communities experiencing vulnerability. We will continue in this meaningful work because of the authentic partnerships that have been built. These have been modeled from principles of CBPR to promote human flourishing in our local communities.

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Original Research

Community Engagement through Contact Tracing Training

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Cite as: Line, D., Kohlmeier, P.S., & Mount, S. (2022). Community engagement through contact tracing training. *Metropolitan Universities*, 33(3), 23-38. DOI: 10.18060/25661

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Abstract

The COVID-19 pandemic has brought many physical, mental, and economic challenges and has provided an opportunity for academia to participate in community engagement to help support public health. Through a partnership between a university and a local health district, a contact tracing training program was developed and implemented in the late spring of 2020. That training program increased the health district's capacity to respond to the pandemic and provided an experiential learning experience for public health students. Through this community engagement endeavor, university faculty and students helped support a local health district's COVID-19 response efforts and, in so doing, also helped to support public health in the early stages of a global health crisis. The products of this endeavor, including contract tracers, case investigation, and trained instructors, continue to support public health contact tracing efforts in the community.

Keywords: community engagement, contact tracing, higher education, covid-19, experiential learning

Introduction

The SARS-CoV-2 COVID-19 pandemic brought multiple multifaceted challenges with 107,631 deaths in the United States attributed to COVID-19 between March 1, 2020, to June 1, 2020 (Centers for Disease Control and Prevention [CDC], n.d.). Additionally, the Centers for Disease Control (CDC) reported 1,850,372 cumulative cases in the same timeframe with a total case rate of 565 per 100,000 (CDC, n.d.). The state of Washington reported 21,995 total cases of COVID-19 for a case rate of 285 per 100,000 with 1,118 total COVID-19 deaths (Washington State Department of Health [WSDOH], n.d.). Locally, Spokane County reported 594 total COVID-19 cases for a case rate of 110 per 100,000 and 34 deaths in 2020 between March 1 to June 1 (Spokane Regional Health District [SRHD], n.d.). Additionally, rates of COVID-19 induced health issues, such as depression, have been on the rise. In the United States, since the onset of COVID-19, 27.8% of Americans reported elevated symptoms of depression in 2020, which increased to 32.8% in 2021 (Ettman et al., 2021). Further, the pandemic harshly impacted the U.S. economy, with estimates showing the "median global gross domestic product dropped by 3.9% from 2019 to 2020, making it the worst economic downturn since the Great Depression" (Oum et al., 2022, p. 2). While April 2020 projections suggested a slight decline of cases in the summer of 2020, that was quickly overshadowed by a 75% chance COVID-19 would have a resurgent "second wave" by fall 2020 (American Medical Association [AMA], 2020).

Effective mitigation tools from March 2020 to June 2020 included social distancing, mask-wearing, case isolation/close contact quarantine, and contact tracing (Khanna et al., 2020; Kalyanaraman & Fraser, 2020; Taylor et al., 2021). Both symptomatic and asymptomatic cases were being identified, adding to the complexity of mitigation efforts and highlighting an increased need for case detection, contact tracing, and subsequent quarantine/isolation (Khanna et al., 2020; Taylor et al., 2021). Due to the novelty of COVID-19, mitigation strategies were constantly evolving to adapt to new information. Continued implementation and application of these mitigation strategies were essential to protect individuals and communities while also providing an opportunity for healthcare systems to prepare themselves for an expected surge (Khanna et al., 2020).

While the COVID-19 pandemic brought many issues and challenges, the responses provided new ways for academic institutions to engage to benefit their communities. Such engagement included a contact tracing training program partnership between a public university and a local health district. This partnership was developed by faculty from the Eastern Washington University (EWU) public health programs and the Spokane Regional Health District (SRHD) to increase the district's capacity to respond to the pandemic while providing an experiential learning experience for public health students.

The partnership focused on expanding contact tracing efforts to help control the spread of COVID-19. During the pandemic, contact tracing involved “the use of clear protocols to notify, interview, and advise close contacts to patients with confirmed or probable COVID-19” (CDC, 2022b). Before the availability of vaccinations or the possibility of herd immunity, contact tracing was considered one of the “most important measures for reducing infection spread,” particularly at the community level (Khanna et al., 2020; Taylor et al., 2021, p. 704). While demand for a trained and available workforce of contact tracers quickly became apparent, overwhelmed health departments had little capacity to develop, let alone implement, competent contact tracing programs. It also became evident that regional institutions of higher education may be charged with doing their contact tracing, a task they were initially ill-prepared to do. This tasking and ill-preparedness rang true for SRHD and higher education institutions in the Inland Northwest. Appreciating the need for a contact tracing program, SRHD and EWU faculty engaged in community collaboration.

The CDC defines community engagement as “the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people” (CDC/ATSDR Committee on Community Engagement, 1997, p. 9). The EWU-SRHD contact tracing training program (Contact Tracing Training) worked collaboratively to benefit a local community through comprehensive instruction in traditional contact tracing and case investigation. The Partnership made valuable contributions in contact tracing and case investigations, strengthening community-wide COVID-19 mitigation efforts. While similar to contact tracing, case investigation focused on working with an individual who was confirmed or suspected to be COVID-19 positive to “help them recall everyone with whom they have had close contact during the timeframe while they may have been infectious” (CDC, 2022a).

The collaboration between SRHD and EWU was successful because it benefited all stakeholders and fulfilled the three fundamental components of community engagement which include: (1) collaboration between the faculty and community, (2) a mutually beneficial exchange of knowledge and resources, and (3) a partnership with reciprocity (Public Purpose Institute, 2021). Community engagement involves a continuum of community involvement (McCloskey et al., 2011). The community engagement continuum is a continuum over five areas of collaboration: Outreach, Consult, Involve, Collaborate, and Shared Leadership (McCloskey et al., 2011). Each of these areas is fundamental for successful progression throughout the continuum. Via response to community need, utilization of stakeholder input, and bidirectional communication, the collaboration between SRHD and EWU falls within the “Shared Leadership” area of the continuum. The purpose of this publication is to share the methods of the EWU-SRHD collaboration while illustrating how the tenets of community engagement were demonstrated during a global health crisis.

Collaboration Between Faculty and Community

Community engagement by academia utilizes collaboration between faculty and community and can originate from various fields such as public health, political science, and social work. In May of 2020, public health faculty from EWU collaborated with SRHD to develop a contact tracing training program to support public health. This collaboration between higher education institutions and a public health district blended the assets of both to create a mutually beneficial program. Similar organizational structures can be found in contact tracing programs created during the COVID-19 pandemic, such as those at Illinois State University and Penn State College of Medicine (Koetter et al., 2020; Jarvill & Neubrander, 2021). The contact tracing training utilized real-life experiences to support student learning while addressing a community need. The outcome of this collaboration provided community and academic health departments with trained contact tracers for their COVID-19 response efforts and provided students with applied practice experiences. Through these experiences, students honed skills, including investigatory epidemiology, community engagement, and effective communication.

Mutually Beneficial Exchange of Knowledge and Resources

The EWU-SRHD collaboration occurred when EWU public health faculty and students wanted to help their community's response to COVID-19, and SRHD was eager to accept that help. The contact tracing training was a collaboration in response to a crisis. Important community engagement strategies such as collaboration and communication were utilized by EWU, SRHD, and community partners to create the program. Utilization of this experience for future emergency preparedness plans, including another pandemic, will benefit the community. Increasing evidence suggests that crises that are prepared for or responded to with community-engaged solutions have been found to "augment officials' abilities to govern in a crisis, improve the application of communally held resources in a disaster or epidemic, and mitigate community-wide losses" (Schoch-Spana et al., 2007 (page 10); Lal et al., 2020; Wolf-Fordham, 2020). The contact tracing training utilized the strengths of each stakeholder and provided community engagement during a public health crisis, which served to benefit public health leaders by applying community resources and mitigating losses.

Community engagement between academic partners and the community requires a mutually beneficial exchange of knowledge and resources (Public Purpose Institute, 2021). An essential component of the community-engaged approach is an open dialogue (National Environmental Justice Advisory Council, 1996; Hatcher et al., 2011). An open dialogue was practiced throughout the collaborative process between EWU and SRHD. Generally, academic partners can provide insight, education, and practical application on issues, and community organizations can gain knowledge, new resources, exposure in the community, new relationships with other community members, and the potential to increase the capacity of their organization (Public Purpose Institute, 2021). SRHD provided background experience and expertise in disease tracking and contact tracing, whereas EWU provided knowledge in the areas of training and education. By utilizing these complementary specialties, SRHD and EWU established a bidirectional relationship that led to the creative process of establishing the Contact Tracing Training. While EWU was the primary academic partner, additional regional higher education institutions, including Washington State University, Gonzaga University, and Whitworth University, provided expertise and feedback as community resources. Collaboration between academic partners, such as EWU's public health faculty and community organizations like SRHD, creates a mutually beneficial relationship while also benefitting the community.

As the COVID-19 pandemic impacted EWU's local community, an opportunity for community engagement commenced. At the time, Spokane, Washington, like much of the nation, faced closures of businesses and considerable concerns over the spread of COVID-19 in the Inland Northwest and Eastern Washington region. SRHD epidemiologists and program managers were recovering from the first wave of the COVID-19 pandemic with an eye on future increases in cases. In this climate, a conversation between EWU public health faculty and SRHD program managers commenced on how academia could support local public health efforts.

The result of the discussion between SRHD and EWU was the rapid development and delivery of a contact tracing training program by EWU for SRHD. The primary goal per SRHD was to train 50 contact tracers within six weeks. EWU public health faculty had secondary goals of bringing their experience in teaching and program development to benefit SRHD and the community and providing students an applied practice experience opportunity.

The Training Program and Teaching Methods

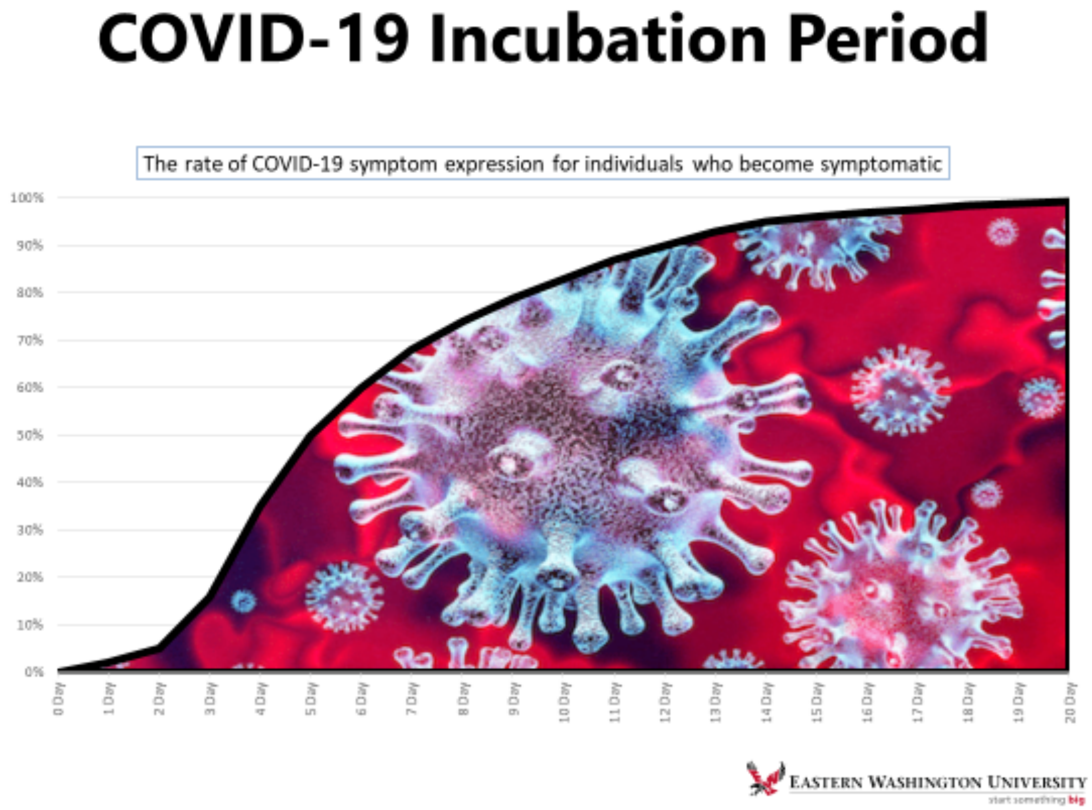
The program needed to be developed and delivered in a virtual format to keep faculty and students safe during this early phase of the pandemic. Fortunately, the EWU public health faculty's experience in delivering online course materials would expedite developing the program and ensure quality in content delivery. The EWU public health faculty's pertinent experience in delivering online content included subject areas such as emergency response, case investigation, contact tracing, health law, and professionalism in public health. SRHD and EWU agreed that the primary content of the training program would be based on best practices put forth by the CDC and the Washington State Department of Health, in addition to the epidemiologists with expertise in contact tracing from SRHD.

The training program was then rapidly developed, implemented, and completed. The andragogy for the training included a slide presentation, small group discussion, and an experiential component. The trainings were designed to be done with a student-to-teacher ratio of one to three, with an average of 6 and no more than 12 students per training. The target populations to train were students in public health, nursing, and medicine; volunteers from the health district; and volunteers from health care fields from the Inland Northwest. The training program was pilot tested the last week of May 2020 and became fully operational on June 1, 2020, with 20 contact tracers trained by June 15 and over 50 contact tracers trained before July 1.

The contact tracers were trained to interface with SRHD personnel who were doing and would continue to retain case investigation reports of COVID-19. These case investigations focused on special populations such as minors, school-based outbreaks, and outbreaks within health care facilities. While SRHD epidemiologists would continue to follow those special populations, the contact tracers trained through the contact tracing training would focus on community and workplace outbreaks. Additionally, regional institutions of higher education would utilize instructors from the train-the-trainer component of the program to develop their contact tracing teams to trace the spread of COVID-19 at their institutions. Faculty and student engagement in the program, including the train-the-trainer component, helped increase the visibility of the EWU public health programs within regional institutions of higher education and the local community while fulfilling the primary and secondary goals of the program.

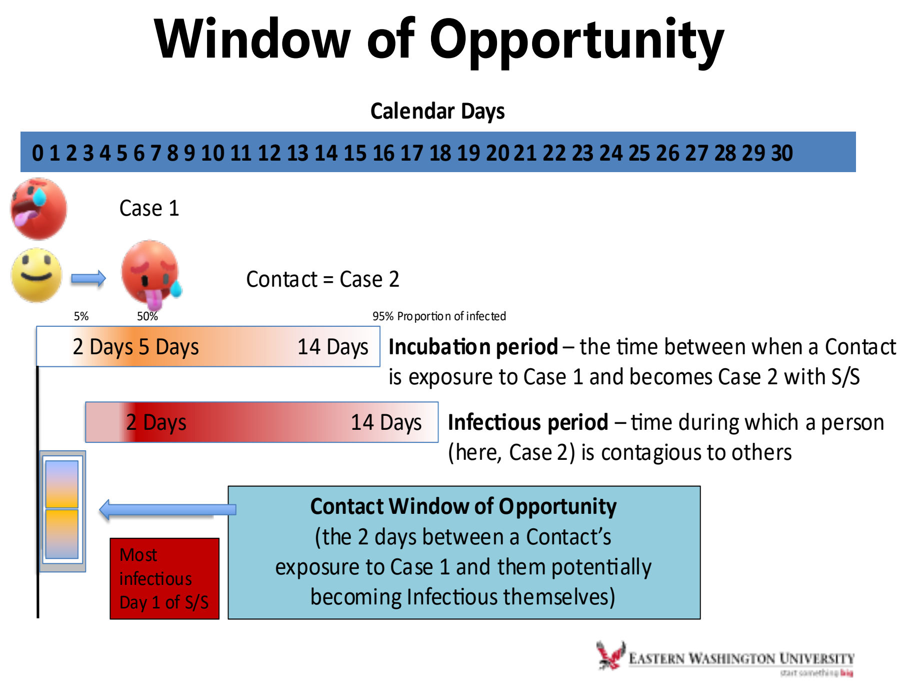
The program trainings were offered over Zoom and were intended to be completed in one sitting, with morning, afternoon, and evening time slots available. The training length was four hours, with an additional 1-hour SRHD online ethics training prerequisite. The 1-hour ethics prerequisite educated students on Health Insurance Portability and Affordability Act (HIPAA) and expectations regarding confidentiality as defined by SRHD. The four hour contact tracing training included a discussion on pertinent community services, SRHD's data entry system, the contact tracing process, COVID-19 isolation/quarantine, prevention best practices, and interviewing skills. Specific COVID-19 topics covered in the training included the incubation period, signs and symptoms, and transmission methods. These materials were revised as new knowledge came forth. Examples of slides that helped students understand the incubation and infectious periods of COVID-19 are provided herein.

FIGURE 1. Slide from presentation



COVID-19 Incubation Period

FIGURE 2. Slide from presentation



Window of Opportunity

Calendar Days

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Case 1

Contact = Case 2

5% 50% 95% Proportion of infected

2 Days 5 Days 14 Days

Incubation period – the time between when a Contact is exposure to Case 1 and becomes Case 2 with S/S

2 Days 14 Days

Infectious period – time during which a person (here, Case 2) is contagious to others

Most infectious Day 1 of S/S

Contact Window of Opportunity
(the 2 days between a Contact's exposure to Case 1 and them potentially becoming Infectious themselves)

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Beyond understanding the window of opportunity of transmission of COVID-19, the trainings incorporated a wellness component for contact tracers. This area focused on personal preservation, which reviewed how to manage confrontations and maintain wellness before, during, and after a contact tracing shift. This wellness aspect also highlighted the benefits of contact tracing for the community. An example of a personal preservation slide is contained herein.

FIGURE 3. Personal preservation slide

Personal Preservation

Before you call, be in a good place and resolve to stay in a good place

- This is a bad day for the Contact
- Do not let it ruin your day

Remember

- This is tough
- You did not cause the situation
- They will remember the call for a long time
- It is a privilege to make an important impact

The contact tracing training ended with small group mock contact tracing calls, which allowed each student to be a contact tracer, a COVID-19 contact, and an observer of the process, using scenarios that helped students gain confidence in their roles as contact tracers. The scenarios were built on content previously covered within the training program. There were six different scenarios, so each student practiced with a different mock case, including contact demographics and social arrangements.

To conduct the mock scenarios, students were split into three groups with one instructor per group. In each small group, students received materials based on their positions of contact tracer, a COVID-19 contact, and an observer of the process. Each small group went through three rotations, affording each student the opportunity to rotate through each position. For each rotation, students were given materials to support their roles. Each student was given materials to utilize during the mock interviews. The mock contact tracer received an interview script, the contact's information, and the data collection methods. The contact tracer's script followed the *8-Steps to Contact Tracing* incorporated into the training. Also, the script included prompts, a checklist to guide them in handling contact information, and a data collection form, which resembled what would be expected in the field. The checklist was designed to help keep the flow of conversation on point and to reorient the contact tracer should a conversation go sideways.

Alternatively, students who were portraying contacts received contact information so that they could respond to questions and make the role-playing more realistic. Additionally, the student observer was given the opportunity to watch an active contact tracing role-play and provide constructive feedback to the participants during a debriefing, which helped solidify learning.

Each mock training scenario ended with a debriefing guided by an instructor and included feedback by both the instructor and the observing student. The instructor and observing student gave constructive feedback based on scenario-specific teaching points during the debriefing. Through role-playing and debriefing, students could give and receive feedback in a safe environment while building confidence in their roles as contact tracers.

After completing the Contact Tracing Training, students received a certification issued from EWU and endorsed by SRHD. Many students who thrived during the program were invited to enter the train-the-trainer portion of the program to help train contact tracers.

The train-the-trainer portion of the program was developed to expand the reach of the contact tracing training. It allowed other partners, including higher education institutions, to utilize the training resources better to prepare the region for the spread of COVID-19. The train-the-trainer trainings went over evaluation, set-up, and course management methods. It then reviewed highlights of the contact tracing training materials by focusing on the purpose of specific slides and how to deliver the material. Once this 3-hour train-the-trainer training was completed, prospective instructors were invited to co-teach a contact tracing training with one of the original trainers. This helped the new instructors gain a better understanding of the material while also practicing their delivery and receiving feedback. An associated checklist went over pre-training, training, and post-training expectations, which helped ensure the fulfillment of training requirements. The train-the-trainer materials provided instructional resources on content that included an overview of the contact tracing training, including logistical and evaluation resources, andragogical suggestions, and tips on how to conduct mock training, which included a mock training demonstration and debriefing session.

Discussion

The training provided students and faculty with an avenue to support the community and gain a sense of involvement during the pandemic. Through mock interviews, students were able to practice conversational dynamics while supporting those afflicted by COVID-19. Students conversed with individuals who were portrayed as being isolated and needing a friendly voice on the other end of the phone, as well as individuals who felt the pandemic was a farce and contact tracers were an invasion of their privacy. Such conversations led to opportunities for building social and outreach skills, as well as opportunities for critical thinking and creativity. In addition, the training created an opportunity for students to expand on their cultural competency because effective community engagement generally begins with an understanding of culture.

In training, students guided individuals through ethical decisions which addressed individual liberties while promoting quarantining after significant exposure to COVID-19 to protect the public's health. The program was developed with a strong awareness of the increased impact of COVID-19 on minorities and communities of color. The death of George Floyd and the expansion of the Black Lives Matter movement occurred just days before the initial training was offered, which exacerbated already tense perceptions of racial inequities. This increased our focus on scenarios that provided teachable moments for contact tracing in diverse communities. Further, part of the training included identifying solutions and resources available to aid lower-income communities. Thus, when students asked questions of equity, instructors were prepared to answer. Teaching moments provided by the scenarios included multi-generational residences, limited opportunities to isolate or quarantine, the need to go to work even after being identified as being exposed, and the appreciation of contacts being concerned about divulging circumstances and relationships with others who may have been exposed to COVID-19. The trainings incorporated these complexities into the materials and scenarios and addressed ways for contact tracers to protect their own needs.

Similarly, due to a tense national political climate, as the potential for threats and hostility towards contact tracers increased, the importance of self-preservation and ways to protect the contact tracers from abuse was highlighted. Examples of self-preservation content included in the interviewing skills section of the training highlighted that the contact tracers did not create the situation, the call would likely have a foreseeable impact on those contacted. While it was a bad day for those contacted, this should not ruin the contact tracer's day. A repeated message for the training was that the resolution of the call was going to either be what the contact tracer intended or a referral to a supervisor.

To accomplish the above, tips on effective communication were presented and discussed. Communications skills like building rapport, being assertive, actively listening, and demonstrating compassion are central to a successful career in public health. However, these skills may be difficult to capture through standard coursework in a didactic setting where the focus is on rubrics and course learning objectives. Thus, the development of communication skills was a central component of the training.

Program Effectiveness

The contact tracing training exceeded its primary goal, met its secondary goals, and benefitted the local health department, community, local institutions of higher education, and students. SRHD's primary goal of training 50 contact tracers by July 15 was exceeded by training 53 contact tracers by June 24. Similarly, the train-the-trainer component trained twelve instructors from five institutions of higher education which further surpassed SRHD's training goals. EWU's secondary goals were met to provide applied practice experiences for students and benefit the community by protecting public health.

In accomplishing the program's goals, effective community engagement occurred. The faculty and students increased engagement between all regional higher education institutions. SRHD was better able to keep up with the contact tracing needs of the local community. The EWU public health programs received a few inquiries from potential students regarding the opportunity to pursue a Master of Public Health degree. Students were able to expand on their traditional education and serve their community during the COVID-19 crisis.
Additionally, many students quickly moved from volunteer status to employment opportunities as funding became available and the demand for contact tracers increased. Further, higher education institutions received contact tracers allowing them to open their campuses in the fall of 2020 with better response capabilities. To promote utilization of the training by academic institutions in the region, institutions were encouraged to brand the training with their logos and to use scenarios likely to be encountered by their contact tracers. This allowed the training to be shaped to meet the needs of each user while allowing each university to take ownership of its delivery. Official feedback has not been gathered from participating stakeholders, however, continued requests for contact tracers by SRHD, Panhandle Health District in Northern Idaho, and regional institutions of higher education suggest that the program continues to be beneficial.

Through the development and utilization of the Contact Tracing Training, with the associated train-the-trainer component, all the fundamental aspects of community engagement were met. This led to a stronger community COVID-19 response with stakeholder involvement, highlighting the benefits of experiential education.

Future Directions

Hopefully, another pandemic will not occur in any of our lifetimes but should a sudden, and substantial need for contact tracing recur, for whatever reason, there is one improvement that likely should be made to the contact tracing training. While the current contact tracing training quickly trained over 50 contact tracers within 6-weeks during the pandemic, these individuals had difficulty scheduling a mandatory meeting with an SRHD epidemiologist to become SRHD contract tracing volunteers. This additional one-on-one training sought to ensure each student understood the process and the paperwork at SRHD. While this was well-intentioned, it was not practical during a pandemic. In fact, it created a bottleneck. The epidemiologists were extremely busy, making it difficult to complete this final step in the volunteer training process. Due to the bottleneck of this step, trained contact tracers were not becoming SRHD contact tracing volunteers as quickly as the community needed them.

To negate the bottleneck, adding a 30-minute training video by SRHD epidemiologists could remove the need for one-on-one meetings. This training video could highlight whatever the epidemiologists consider noteworthy regarding the contact tracing process, troubleshooting, and paperwork. This video addition would likely help ensure that students are competent and comfortable with the contact tracing process and paperwork and that the SRHD epidemiologists have efficiently conveyed their insights on contact tracing at the health district.

Thus, the addition of a training video by SRHD epidemiologists in the future would negate the need for individual meetings, which would promote efficiency in helping to get contact tracers actively volunteering in the community sooner.

Conclusion

The COVID-19 pandemic, with its many challenges, provided an opportunity for a university to partner with a local health district to train contact tracers in the community. Through community engagement, academicians helped support the local health district's efforts to contain COVID-19 and promote public health. The contact tracers, trained through the Contact Tracing Training, benefitted by gaining experience through applied practice experiences. In so doing, they developed their communication skills and helped to support their local health district and the community, including their campus communities. These efforts served to benefit the public's health through community engagement.

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Original Research

How Dynamic Academic Medical Centers Improve Communities: The Case of the Rocky Mountain Center for Occupational and Environmental Health

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Cite as: Castro, K., Jacobs, T., Eden, E., Thiese, M. S., Hegmann, K.T., and Allen, J.A. (2022). How dynamic academic medical centers improve communities: The case of the rocky mountain center for occupational and environmental health. *Metropolitan Universities*, 33(3), 39-51. DOI: 10.18060/25798

Guest Editors: Joseph A. Allen, Ph.D., Sara Hart, Ph.D., and Melissa Yack, Ph.D. **Editor:** Valerie L. Holton, Ph.D.

Abstract

Academic Medical Centers (AMC) are unique healthcare resources that offer services to their local communities. As societal priorities shift, AMCs are identifying approaches to practice community engagement. Although many examples of AMCs exist in the literature, few have targeted resources for specific health topics like occupational health. This case study identifies examples of community engagement from AMCs around the U.S. It also offers a unique perspective of community engagement from the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH), housed within the Department of Family and Preventative Medicine at the University of Utah. This center is one of eighteen National Institutes for Occupational Safety and Health (NIOSH) Education and Research Centers (ERC). We use the Community Engagement Continuum to consider community engagement across various degrees of relationship between the public and AMCs, including outreach, consulting, involvement, collaboration, and shared leadership. Continuing education, course work connecting students with the community, and multiorganization research projects are approaches RMCOEH uses to engage with communities. Although there are many ways for AMCs like RMCOEH to serve the community, there are opportunities for AMCs to improve community engagement efforts through cultural shifts and community participation in projects. We explore such opportunities specifically for RMCOEH.

Keywords: community engagement, academic medical center, occupational health

Introduction

As societal priorities have shifted, academic medical centers (AMC) identify approaches to collaborate with communities to understand better and address multilevel health issues. Within the last decade, academic medical centers have moved away from community outreach to develop strategies to identify and mediate health disparities through community engagement (Wilkins & Alberti, 2019). Community engagement in this context refers to the AMC applying institutional resources to address and solve challenges facing communities through collaboration with community members (Gelmon et al., 2005). Community engagement establishes a mutually beneficial relationship between the community and the AMC. The community gains resources not otherwise available while the AMC obtains support and can apply for funding from external agencies to benefit the community-AMC partnership. This relationship between AMC and stakeholders can unearth new challenges that need addressing and provide organizational and community growth opportunities.

Previous literature describes initiatives taken by AMCs to conduct community engagement through broad activities, specific projects, and collaborations with other universities. A case study at the University of Kansas identified a wide range of activities to promote community engagement, including continuing education, health/wellness screenings, and efforts to reduce disparities among vulnerable populations (Cook et al., 2013). In 2008, a case study at Duke University identified community engagement through patient engagement by providing care management, clinical services, health promotion programs, and disease prevention programs (Michener et al., 2008). A case study of the University of California Los Angeles's School of Medicine identified four domains (research, education, clinical services, health promotion, and wellness) in which they engage with the community. The first domain, research, included a community-based participatory research project called the healthy community neighborhood initiative. The education domain included education for students and tutoring services for low-income students in the community. The third domain was clinical service, and it included mobile clinics and free clinics available for unhoused and low-income individuals. The final domain, health promotion and wellness, included youth fitness programs and mindfulness programs for adolescents (Chung et al., 2016).

Partnerships between AMCs are emerging as well. Northwestern University, the University of Illinois at Chicago, and Northeastern Illinois University are all involved in a community engagement core to minimize cancer disparities through screenings, research symposiums, education, and the creation and distribution of culturally competent health resources (Shalowitz et al., 2009). National collaboration across universities is represented by a project to improve child health equity which includes the following five universities: Northshore University,

University of North Carolina, University of California, Los Angeles, Georgetown University, and John Hopkins University (Giachello et al., 2019).

These cases described here and the partnerships emerging between AMCs provide a foundation for current and future community-engaged efforts on the part of AMCs. Further, the U.S. Department of Health and Human Services (USDHHS) Healthy People 2030 lists "community and workplace" as national priorities needing attention within the broader category of "settings and systems." These goals aim to promote health and safety in a community setting and the workplace (USDHHS, n.d. a; USDHHS, n.d. b). Therefore, in this paper, we delve deeper into how an AMC, The University of Utah, engage with the community to address occupational and environmental health through the Rocky Mountain Center for Occupational and Environmental health (RMCOEH) using the Community Engagement Continuum (Centers for Disease Control and Prevention [CDC], 2011). Through the review of this case, we discuss how community-engaged efforts emerged and areas where the RMCOEH can expand, grow, and develop further as they work directly with the community.

Department Background

In starting our review and case study, we begin with some background on the RMCOEH and its establishment. To meet the occupational and environmental health needs in the western United States, RMCOEH was established in 1977. In 1978 RMCOEH was chosen to be 1 of 12 National Institute for Occupational Safety and Health (NIOSH) sponsored Education and Research Centers (ERC). RMCOEH reports to the University of Utah's Senior Vice President for Health Sciences and has a footing in the Department of Mechanical Engineering (College of Engineering), Department of Economics (College of Social and Behavioral Sciences), Departments of Family and Preventive Medicine, Internal Medicine and Physical Medicine and Rehabilitation (School of Medicine), the School of Business, and College of Mines. Due to the center's successes and legislative desires for broader community engagement, these ties have recently expanded via statutory involvement to require co-management of the center by Weber State University. These connections allow for multidisciplinary work and support the mission of RMCOEH, which is to "protect workers and the environment through interdisciplinary education, research, and service." With small and large organizations located in the Salt Lake community, the state of Utah, Health and Human Services (HHS) Region 8, nationally, and internationally, RMCOEH sees the need to provide services that will benefit workers at all levels of the community (University of Utah Health, 2021).

The RMCOEH has four goals:

1. Advance superior occupational health and safety (OSH) academic programs.
2. Conduct meaningful OSH research.
3. Provide exceptional continuing education, service, and outreach.
4. Engineer OSH solutions.

Method and Results

To review and describe the efforts of the RMCOEH over the years since its inception, we apply the Community Engagement Continuum (CDC, 2011). Specifically, the Community Engagement Continuum considers community engagement across five levels of community involvement, including outreach, consulting, involvement, collaboration, and shared leadership. Traditionally AMCs offer services and resources to community members in a unidirectional relationship (CDC, 2011). In the Community Engagement Continuum, this would be represented in the first level, outreach. By discussing the community engagement initiatives at RMCOEH with this model, we identify strengths and opportunities for improvements.

Outreach

The first level of the Community Engagement Continuum is outreach, characterized by a single direction of communication. Community outreach connects services and topic expertise to those who may not otherwise have access to those services (CDC, 2011). The RMCOEH does community engagement at the outreach level in various ways.

First and foremost, the RMCOEH identifies Continuing Education (C.E.) and training needs, then offers these courses to workers and the public. A wide range of courses is offered through RMCOEH, including emergency response courses, self-paced courses, hazard training, Occupational Health and Safety Administration (OSHA) courses, and more. The RMCOEH offers some courses for a small fee, often covered by organizations requiring their employees to take these courses. However, as the COVID-19 pandemic emerged, the RMCOEH saw the need to disseminate current and accurate information related to the virus and established free courses for public education.

Beginning in 2020, participating community members can learn from health and safety experts about ways to better plan for an emergency. Whether in-person or virtual, Neighborhood Emergency Response Planning (NERP) offers RMCOEH faculty members a chance to serve many community members, regardless of their financial situation. With the slogan, "Disasters can be costly, Being Prepared is free," NERP offers six dynamic modules to prepare community members for a multitude of emergencies. Containing modules including "Earthquakes," "Home and Wildland Fires," "Floods," etc., community members in Region 8 are receiving training for probable emergency events (University of Utah Health, 2020).

The Neighborhood Emergency Response Planning course consists of 4 principles:

1. Emergency preparedness
2. Emergency recovery
3. Coordinated response in communities
4. Disaster response actions

Though NERP's content is based on the Federal Emergency Management Agency (FEMA) guide, "Are you Ready: A Citizen's Guide," participants in NERP are asked to give feedback on the effectiveness of the principles being applied to a real disaster. The faculty and instructors at RMCOEH understand that there is no "one size fits all" for emergency preparedness for different geographical locations. As received feedback makes NERP more effective, community engagement and involvement are attained when people in different states collaborate to help one another (University of Utah Health, 2020). C.E. courses are provided by the RMCOEH to "reduce human and financial costs by providing excellent short-course training in occupational safety and health that is marked by continuous improvement and response to needs, setting the highest standards for both internal and external service" (University of Utah Health, n.d.b).

There are four main areas of the continuing education programs at the RMCOEH:

1. Correspondence Courses
2. Distance Courses
3. NIEHS HAZWOPER Training
4. OSHA Courses

Correspondence Courses are a self-paced online education option. From "Understanding Human Error" to "Understanding and Managing Legal Issues" and much more, Correspondent Courses allow busy community members to receive a quality education at their own pace (University of Utah Health, n.d.b). The topics covered by the Correspondence Courses were selected based on ongoing feedback from Region 8 participants and their safety professional community members.

The RMCOEH also partners with external groups to provide accurate and reliable training for community members. A partnership with the University of Texas School of Public Health's Southwest Center for Occupational and Environmental Health created the Prevention, Preparedness, and Response Academy for Hazardous Waste Worker Training (P2R). This collaboration provided effective Hazardous Waste Operations and Emergency Response (HAZWOPER) training to workers who perform waste cleanup and emergency response.

RMCOEH also works with OSHA to provide training through the Mountain West OSHA Education Center (MWOEC). This center offers training to all states in Region 8. Topics included in these trainings are targeted towards construction, oil & gas, maritime, public sector, and general industry (University of Utah Health, n.d.c).

As part of Distance Courses, the RMCOEH offers "Business Safety and Success during the COVID-19 pandemic." The goal of the course is to educate students on science-based best practices for promoting worker safety and health during the COVID-19 pandemic. This course discusses ideas for restructuring business operations to mitigate challenges due to the COVID-19 pandemic. Along those same lines, RMCOEH offers another course called "Novel Corona Virus COVID-19." This course is free and educates students on up-to-date information about COVID-19. RMCOEH offers courses like these to provide community members with expert opinions from multiple qualified sources.

Second, the RMCOEH works with external agencies to provide opportunities for local communities. Engagement with national organizations aids in establishing credibility with community partners. As the world shifted after the emergence of COVID-19, a national priority to protect frontline workers came to light. Hearing the call, RMCOEH quickly mobilized resources with the help of the Centers for Disease Control and Prevention (CDC) to collect and report data on COVID-19 cases among local frontline workers. To evaluate this crucial group of community members, the CDC selected the RMCOEH to recruit 720 healthcare, first responders, and frontline workers in Utah; this study is known as Researching COVID to Enhance Recovery (RECOVER). RECOVER's purpose is to perform "research on the epidemiology of COVD-19 in essential response personnel" (University of Utah Health, n.d.a). The study began enrollment in October 2020, and the anticipated end date is March 2022.

The research questions driving this study surround the need to understand various aspects of COVID-19 in the frontline worker population within the state of Utah. The research questions intend to uncover how many people get sick with COVID-19, what symptoms are common if they have COVID-19, how long does it take to recover from COVID-19, how many people become infected with COVID-19 but do not become sick, how well people are protected from getting COVID-19 again after having it once, and how effective are the vaccines and how well do they protect people from infection.

As the world entered the second year of the COVID-19 pandemic, a collaboration between RMCOEH and the CDC grew into more of an established partnership as the RECOVER project got extended and an additional project reflecting priorities surrounding youth and COVID-19 emerged. Current national priorities have shifted to understanding COVID-19 responses in those under 18-years-old. To meet this national need, RMCOEH has continued its partnership with the CDC to study the effect of COVID-19 on the youth. The purpose of Pediatric Research

Observing Trends and Exposures in COVID-19 Timelines (PROTECT) is to increase understanding of COVID-19 infection rates and vaccine efficacy among our youth population and share findings with the country to protect our youth better.

Third, the RMCOEH provides funding to research projects through the Pilot & Small Projects Grant Program, which aims to assess and improve community health. Supported by NIOSH and RMCOEH, this program is a way for university students to work with community members to study and enhance occupational safety and health to receive funding. This award offers $5,000 - $10,000 for one year (University of Utah Health, n.d.b). An example of this funding helping the community is a current study aimed at the ergonomic risk for ski instructors. Without special equipment, ski instructors experience strain while holding positions not meant for the gear used. This project aims to assess the risk of the instructors and report back to the community studied.

Fourth, the RMCOEH participates in local, national, and international outreach by sharing research with academic and industry communities through attendance at various conferences. Work produced by faculty and students has been presented at various occupational health conferences, including American Occupational Health Conference (AOHC), Society for Industrial and Organizational Psychology (SIOP), American Psychological Association's Work, Stress, and Health Conference (WSH), Interdisciplinary Network for Group Research (INGRoup), American Industrial Hygiene Conference (AIHC), etc.

Consult

The consult level of the Community Engagement Continuum offers a little more trust and communication between the community and the AMC. Typically, a partnership is formed between the community organization and the AMC in this instance. The community organization will have a need, and the AMC will work to provide information, identify problems, solve problems, and/or produce recommendations (CDC, 2011).

Engagement with local communities is essential for academic entities. It can foster trust and mutual growth and help improve both the community and the academic institution. Communication with local leaders and organizations aid in the understanding of what is needed within the community and where academic institutions can collaboratively help. Engagement between these parties is important for making connections and job sustainability that the university will produce professionals that may work within these communities.

First, the RMCOEH offers and requires all its students to enroll and engage with the community through a course titled "Occupational Health and Safety Solutions." Required of all master's and Ph.D. program students, this course offers students an invaluable opportunity for community engagement and involvement by allowing the students to take on the role of consultants. This interdisciplinary course incorporates ergonomics, industrial hygiene, occupational medicine, occupational injury prevention, and safety. This course allows students to bring what they have learned and put it into practice to benefit the Utah community. Local and state organizations identify problems, and then interdisciplinary teams of RMCOEH students, under faculty guidance, work to produce practical solutions for the organization. Students work collaboratively with the local and state organization partners to provide solutions by performing sampling and testing in facilities, completing quality data analyses, and then delivering a final report to the company. This course is a sustainable way to keep RMCOEH an active community-engaged partner. Products of this course are often presented at National Occupational Research Agenda (NORA) Young/New Investigators Symposium. Presenting this research allows for connections to be made with other research institutions and demonstrates practical research to community members.

From this course, a multitude of consulting and research projects have been done to benefit community partners. In 2020 students were able to conduct a hazard analysis of a copper mine and found vibration, noise, and lead exposure hazards. This student group was able to identify cost-effective, short and long-term solutions to these hazards through engineering and administrative controls. In 2019, students were able to assess the ergonomic risk for health care employees at a pharmacy warehouse and sterile compounding facility. The student team visited multiple facilities and captured data on which tasks put the workers in the most harm. From their findings, the team was able to recommend sustainable changes, including altering the safety climate of the organization to put more emphasis on ergonomic training and safety as well as engineering controls aimed at lighting the physical load for the employees.

Second, the RMCOEH faculty help conduct needs assessments for communities. An example of this includes a needs and exposure assessment of communities exposed to toxic chemicals that had been released. According to the Environmental Protection Agency (EPA) data, 273 million pounds of toxic chemicals were released in Utah in 2016, ranking the 3rd highest among U.S. states. With many toxic chemicals in the air, RMCOEH sought to assess community members' exposure in the area affected by this disaster. Research conducted by faculty members of RMCOEH performed in 2012 educated many community members about unknown toxic chemical exposures. This information helped community members by providing evidence and justification for action.

Third, RMCOEH engages with the community through consulting with the Center for Meeting Effectiveness (CME). This group works to improve worker well-being and safety through improving meetings. Meeting satisfaction has been linked to job satisfaction. As the most common type of communication in the office, it is essential that employees have positive meeting experiences. This team provides information on effective meetings to local, national, and international community partners. CME can provide an assessment of meetings, identify areas of improvement, and recommend best practices to community partners (University of Utah Health, n.d.e). This group provides coaching for community partners on how to conduct a good meeting. Currently, CME is working to assess safety meetings among construction workers as well as fire departments. This group is also working with an international organization to measure and compare meeting behaviors between two different virtual meeting software.

Involvement

Involvement presumes a little more trust between community partners and AMCs. This level of the Community Engagement Continuum identifies a clear partnership between the AMC and the community partner. Communication and participation circulate between the partners and cooperation is present (CDC, 2011).

The RMCOEH demonstrates this level of engagement through its work and research with truck drivers. Working with small and large private trucking companies and state and national trucking associations, the RMCOEH integrates research and injury prevention through multiple avenues. Not only was research done with local truck drivers, but findings and empirical evidence are also shared as written publications in monthly newsletters sent out to all members of the trucking association. The RMCOEH also works with private trucking companies and the state trucking association to provide informational presentations to members and truck drivers. Walkthroughs, coordinated by trucking agencies, provide a space for RMCOEH to assess challenges and discuss safety measures with these agencies. As the COVID-19 pandemic progressed, the RMCOEH produced PowerPoints and resources for trucking companies to provide drivers. The ongoing partnership with these local and national trucking companies and associations strengthens the trust between RMCOEH and these agencies, allowing for productive communication and further opportunities for involvement.

Collaboration

Collaboration is characterized by bidirectional communication where both partners are involved at each step of the process. This level of community engagement strengthens partnerships and trust between communities and the AMC (CDC, 2011).

The RMCOEH has a close relationship with the Utah bar and court system. When the concern of depression emerged as a priority for Utah lawyers, RMCOEH began work to address this industry-identified concern. RMCOEH built a collaborative relationship with the state bar and court system through research with Utah lawyers. The RMCOEH works with these entities to conduct research, provide and discuss results, and plan interventions that firms can implement. What initially began as a task force evolved into a standing committee on lawyer well-being. This committee includes state bar representation, a state supreme court justice, mental health experts, small law firms, large law firms, diversity, equity, and inclusion representation, and RMCOEH representation. This interdisciplinary team works together to develop education seminars to share at national conferences. This team also works to improve policy surrounding lawyers to promote healthy behaviors, such as incentivizing certain aspects of well-being for continuing education credits.

This relationship steps into shared leadership as RMCOEH works with local firms, helping educate and empower the firms to improve their safety and well-being by providing data, resources, and support.

Shared Leadership

The final level of the Community Engagement Continuum is shared leadership. This is characterized by a strong bidirectional relationship between the community partner and the AMC. This level includes community-based participatory research (CBPR), which puts value on the lived experience of community members to provide insight and make decisions. Shared leadership offers the strongest level of trust between partnering organizations and can contribute to sustainable positive health outcomes (CDC, 2011).

The RMCOEH itself is an example of shared leadership with the community. The advisory board guides decision-making for the center and is made up of community members and leaders. Although this is shared leadership, what is needed is more shared leadership in the community-based participatory research domain. Engaging in CBPR will encourage and empower communities to improve safety and well-being by engaging in research as an equal partner. Faculty are working on submitting project proposals for funding that will propel RMCOEH into the shared leadership space.

Discussion

RMCOEH is a unique example of a center that attempts to build community-engaged efforts to better occupational health outcomes at multiple levels. By sorting projects and initiatives into the Community Engagement Continuum, we can identify areas of strength and opportunity for RMCOEH. By utilizing this framework, AMCs like RMCOEH can better recognize what is done well and what needs improvement. Much of the community engagement initiatives are within the outreach, consult, and involve levels of the Community Engagement Continuum. This means RMCOEH offers many services to various communities to improve worker health. Areas for opportunities lie at the other end of the continuum within the collaboration and shared leadership levels.

First, the more dynamic AMC is with its NIOSH Education and Research Center, the more likely it is to reach every level of the community. Although many of the initiatives mentioned provide critical services to communities and are improving communities at these various levels, most are not quite a community engagement in the sense that the community and RMCOEH are collaboratively working through projects together, i.e., community-based participatory research (CBPR). This is a major opportunity on which AMCs may capitalize. We recommend changing language (e.g., vision, mission, goals) in the department to help alter the culture and emphasize the importance of community engagement. A study on community engagement within U.S. and Canadian medical schools showed that most language in the vision and mission statements did not reflect a desire to improve community engagement (Goldstein & Bearman, 2011). If community engagement is a priority, it needs to be reflected in the organization's culture, starting with the language.

Second, another opportunity that AMCs could utilize with ERCs would be to conduct needs assessments at local, state, or regional levels. A needs assessment can help identify occupational and environmental challenges as well as community partners at the various levels. Utilizing techniques, such as the Delphi method, can help ensure the community leaders are at the table and the issues discussed are relevant to the communities. These challenges can then be matched with researchers at the AMCs for collaboration on research and finding solutions.

Conclusion

AMCs are a useful tool for universities to serve various communities and improve health. AMCs with ERCs allow for the focus on health and well-being to be on workers and occupational health, providing a unique opportunity that only 18 universities in the U.S. could have. The Community Engagement Continuum is a practical framework to arrange initiatives to see opportunities better. More importantly, there are opportunities for AMCs with ERCs to improve community engagement efforts through culture shifts and community participation in projects. It will be important to involve community partners as AMCs with ERCs grow and continue to increase their research efforts. Though the relationship between AMCs and communities can sometimes be strained, community engagement is possible, as the RMCOEH has demonstrated through years of dynamic research. We hope that partnerships between AMCs and communities continue to grow with community engagement at the forefront.

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Establishing Principles for Community-Based Research: Story & Power in the Community Research Collaborative

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Cite as: Kuttner, P., Antunes, A., Cachelin, A., Fitesemanu, L., Folau, M., Hart, S., & Salcedo, A. (2022). Establishing principles for community-based research: Story & power in the community research collaborative. *Metropolitan Universities*, 33(3), 52-68. DOI: 10.18060/25819

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Abstract

Academic health centers and their universities are increasingly encouraged to engage in more community-based and participatory approaches to research. Yet, traditional ethics guidelines and regulations are inadequate for addressing the dynamics of community-campus research partnerships. In this article, the authors share stories from the Community Research Collaborative (CRC), a collective of community leaders and faculty that published guidelines for community-based research (CBR). The CRC offers a case study in how a collaborative process of developing CBR guidelines can create space for partners to wrestle with the historical and present-day harms carried out in indigenous and minoritized communities in the name of science and to imagine alternative ways of working together collectively. This case study highlights the complex power dynamics inherent in community-campus partnerships and how storytelling can play a role in unearthing and addressing them. It positions the work of the CRC as incomplete and evolving while offering a foundation on which other institutions could carry out similar processes in their localities.

Keywords: community-based research, counterstories, research ethics, campus-community partnerships, community engagement

Introduction

In July 2020, the early days of the COVID-19 pandemic, the Community Research Collaborative (CRC) gathered on Zoom for its first meeting. Over the course of the next nine months, this Salt Lake-based group developed a set of guiding principles for building equitable community-based research (CBR) partnerships. In this article, we use community-based research as an umbrella term for a large family of research methodologies that share some key characteristics: they are focused not only on understanding or exploring an issue but also on implementing solutions; they focus on questions meaningful to a community and engage both professional researchers and community members as experts; and they involve partners sharing power and collaborating to develop and carry out the research together. The CBR principles — along with stories, advice, and tools — were shared in a report titled, *In It Together: Community-Based Research Guidelines for Communities and Higher Education* (CRC, 2021). The report is now being used as the foundation for developing training, online resources, grants, a community-based review board, and other projects as well as being shared around the country.

Academic health centers and their universities have been increasingly pushed toward more community-based and participatory approaches to research. Some of the forces leading this shift include funding agencies, federal regulations, community pressure to demonstrate value, and paradigm shifts toward focusing on social determinants of health (Teufel-Shone, 2011; Vitale et al., 2018; Wilkins & Alberti, 2019). However, the path toward implementing CBR in a sustained, ethical, and cross-institutional manner is neither clear-cut nor easy. Traditional ethics guidelines and regulations have little to say about the dynamics of equitable research partnerships, which require we ask fundamental questions like: Who decides what research questions are important? Who benefits from research, and who defines those benefits? What kinds of expertise are valued in research operations, and what kinds are marginalized? Who are researchers ultimately accountable to? Questions like these cannot be answered by academic institutions alone.

This article presents the CRC as a case study of how a collaborative process of developing CBR guidelines can create space for academic researchers and community leaders to wrestle with these questions together. The need for the guidelines arose from conversations among university staff, faculty, and community leaders connected to University Neighborhood Partners (UNP), a department of the University of Utah that has been carrying out place-based (Hodges & Dubb, 2012) or hyperlocal (Dostilio, 2019) engagement in Salt Lake City's west side neighborhoods since 2002. Community residents related their frustrations with university-based research and the uncertainties of collaborating with new faculty partners. Faculty and staff, meanwhile, noted that many researchers were interested in partnering with community but often did not have a background in CBR methods.

We, the authors of this paper, do not represent everyone who took part in the project, but we bring a range of perspectives and positionalities. We are gratified by the guidelines and their development and hope that the report can be helpful to other academic health science centers, universities, and community-based practitioners. However, as with CBR more broadly, the process was as important as the product. As we explore in the sections below, implementing a thoughtful, collaborative, and locally relevant process offered benefits to members and served as a springboard for individual and collective action. Along the way, our process provided insights into the complex challenges of power in community-campus partnerships and the role that storytelling can play in unearthing and addressing them.

About the Collaborative

The Community Research Collaborative was convened and facilitated by a group of four, which included two community engagement professionals and two faculty members. We spent several months identifying and inviting members to join the Collaborative. We knew that the group could not be too big if we were to conduct meaningful dialogue and relationship building. We also knew that to be seen as legitimate at the university and in local communities, it had to be inclusive of as many perspectives and positionalities as possible and include leaders who could champion the work in a different community and university spaces.

Including the facilitators, the group had 22 participants. About half of the group comprised people who had leadership roles in local communities through networks, nonprofits, institutions, and community-based organizations. They worked in health and health care, mental health, education, youth work, community organizing, and mutual aid. They were rooted in local Pacific Islander, African/African American, Latinx/Hispanic, and Native communities. These members all had some experience conducting research or collaborating with academics, and all worked in communities that have long faced extractive and colonizing practices within academic research (Smith, 1999). We had a very small budget for this project but offered gift cards to community leaders to honor the fact that they were volunteering time outside of work hours.

The other group members were faculty representing the university and academic health science center schools. They came from academic units such as health, education, architecture and planning, nursing, social and behavioral sciences, social work, and cultural and social transformation. They included tenure-track and non-tenure-track faculty at different points in their careers, all with significant community engagement experience. We invited two deans, two directors of community engagement centers, and the Vice President for Research as ex officio members who lent their institutional support to the effort and offered feedback. These administrators helped disseminate the report in areas of the university that are less familiar with community-based research and highlighted the importance of extending community engagement beyond the departments and colleges already doing this work. To bring in a broader array of perspectives, we also asked CRC members to share a draft of the guidelines with a few people in their communities and elicit feedback — we honored these individuals as reviewers in the final report.

This assemblage was the second incarnation of the CRC. The first was convened by University Neighborhood Partners (UNP) in 2007. The original CRC published the report *Guidelines for Community-Based Research* (CRC, 2007), which laid out three core principles for mutually beneficial research partnerships, a description of UNP's role in CBR, guiding questions, and challenges and opportunities for the future of CBR in the area. The report guided UNP's work to facilitate research partnerships and advance CBR at the university level. For example, the report was used to launch an internal CBR seed grant. However, over time the document fell out of heavy use, some parts became out of date, such as the list of publication outlets, and research partnerships began to grow beyond this earlier stage of CBR at the university.

By relaunching the CRC and generating a new set of guidelines, we had hoped to bring the guidelines up to date and make them more broadly applicable at a time when equity and justice issues were gaining ground in higher education. Specifically, we wanted to a) integrate new knowledge generated locally and in the broader field of CBR since 2007; b) broaden beyond UNP and put out a report that spoke to groups across the campus and the state; c) build new momentum behind CBR efforts with particular attention to questions of equity and ethics. While UNP was still a major driver of the project, this work was carried out in partnership with the Lowell Bennion Service-Learning Center and other hubs of community-engaged scholarship around campus.

We held six full-group meetings facilitated by Ana Antunes, Adrienne Cachelin, Paul Kuttner, and our colleague Andi Witczak over nine months, along with a series of one-on-one meetings with all members and opportunities for online engagement. In broad strokes, the process began and ended with storytelling. We began by sharing individual stories of our experiences with research; stories that often challenged the dominant narrative of research as an unalloyed good and academic institutions as the main holders of expertise (Dutta et al., 2021). We ended with a collective narrative of what research can be when university-based and community-based researchers build equitable, power-sharing partnerships — when they are truly in it together. Along the way, we grappled with a dynamic and sometimes messy process of eliciting and combining diverse perspectives, uncovering and challenging assumptions, and learning from one another.

Reflecting on the CRC Process

In the following sections, we describe key steps in our process. In each section, co-authors share stories and perspectives that shed light on different facets of the work. We offer this collage of short pieces of writing as an authentic reflection of the multivocality and diversity of experience within our group and as a way to reveal insights embedded in the guideline development process.

Starting Out: Relationships, History, and Trust

We launched our first meeting with a land recognition and song from an indigenous member of the collaborative. We saw this as a way to situate our work within the long history of peoples in Utah building and sharing knowledge about the world — a history that began millennia before any college or university was built — and in the kinds of indigenous knowledge bases that have been simultaneously marginalized and extracted by western researchers (Smith, 1999).

Many members did not know one another, so understanding and trust had to be built. This was particularly important with virtual meetings, which do not make space for informal relationship building over food or before and after meetings. So, we ran a one-on-one relationship-building activity near the beginning of each meeting. We had the participants split into pairs to spend a few minutes answering a question that elicited discussions of identity, culture, and life history, including prompts like “What is your name and what does it mean?” and “If you could only eat one food for the rest of your life, what would it be and why?”

As we began to work during our first meeting, we had people split up into small break-out groups, a technique we often used to create spaces in which everyone had a chance to engage. We asked people to share what they thought of when they heard the words research and community and to share stories of positive and negative experiences with research. One theme that emerged from these discussions was the history of harm carried out in the name of research and the legitimate distrust many communities have of scientists and experts. Melsihna Folau, for example, shared how the history of atomic bomb testing near her first home in Micronesia has permanently shaped her attitude toward those she calls “important white men.” Below, she expands on the story she shared.

Melsihna Folau, United Micronesian Women

“This is one child’s story: one of thousands, too small and invisible to the naked ear to be heard. I live in Rose Park, Utah. It is a desert land dissimilar to my childhood home of Pingelap Atoll, one of thousands of islands/atolls that dot the massive Pacific Ocean. Yet, in a visceral, sad way, these two places are similar. Pingelapese and Southern Utahns are atomic bomb ‘downwinders.’ They have experienced similar cruel negligence and insensitivity of ‘important white men’ and their actions.

“For what? For the good of mankind, it has been argued. Southern Utahns are still suffering from atomic testing fallouts from the late 1950s. So are the Pingelapese, as downwinders from sixtyseven bombs that were detonated from 1946–1958 on the nearby Enewetak Atoll and Bikini Atoll (Hezel, 1995). The magnitude of those bombs equates to 1.6 Hiroshima bombs every day for 12 years. The massive effects are still creating unexplained health problems among the natives of the Marshall Islands, the downwinders like us Pingelapese, and others that eat from the Pacific Ocean, generations later.

"My Dad/Pahpa died from colon, thyroid, and brain cancers at the age of 55. I was barely 13. My Grandpa Ramon passed away from similar cancers four years prior, after years of suffering. (I still remember the wailing and weeping, even from his dogs, that day.) Similar cancers killed Grandma, three of my four paternal uncles, and one of two aunts. Numerous cousins from Enewetak Atoll never made it to their 50's, nor 40's, nor their teens. Some never made it out of the womb, known as "jelly babies."

"As a young child, I learned that there had been so much trust put into the 'important white men' and their words. These "admirals" promised a lot. As a college student in the early 1980's, some 25+ years after the last detonation, all I could find on the "Enewetak and Bikini Atolls Atomic Testing" was empirical data: location selection processes, chemical compositions, half-lives of the elements, etc. Also, I learned that the piece of cloth called "bikini" was named from the intense flashing of the atomic bombs on Bikini Atoll. Yet, I didn't find the devastating human stories behind the vaporizing destruction. I remembered going down from Brigham Young University-Hawaii to University of Hawaii-Manoa Library to do more research. Hours of microfilms and microfiches later, I still couldn't find clear human faces of the natives nor their stories. I asked the librarian if there was more information, and I remembered her saying I needed to pay $50 to do a computer search. That was a lot for a college student.

"It has been some time since that college experience. Yet, today, as a Pingelapese girl/woman, I, similar to some residents of Southern Utah, lost my whole paternal family from the devastating effects of the atomic testing and fallouts. Unlike my elders, I and the younger generation and the survivors of the downwinders, don't trust the "important white men's" words, like Henry Kissinger, who was reported to have said, "There are only 90,000 people out there. Who gives a damn?" (PBS Hawaii, 2017). It is this arrogant mentality that has created a mistrust that still exists today amongst the downwinders like this Pingelapese girl towards "important white men" and their words."

By sharing her story with the Collaborative, Melsihna offered us a gift. This powerful counterstory undermines the dominant depiction of research as an objective process that inherently leads to human progress. By "centering and attending to situated knowledge that is anchored in lived experiences" (Dutta et al., 2021, p. 4), this counterstory names political and racial dynamics that shape who benefits and who is harmed by scientific experimentation. As Melsihna explains, stories like hers are often erased within the framework of epistemic violence

(Dotson, 2011) that silences the knowledge of marginalized groups while privileging Western research practices — the empirical data that Melsihna found in the library.

Bringing this knowledge into the Collaborative's discussions was an important step in building trust. Community-campus research partnerships, particularly when carried out across racialized lines, require what Vakil, de Royston, Nasir, and Kirshner (2016) call "politicized trust." They argue:

> Neither trust nor solidarity is gained (nor should it be) by the assertion of good intentions, nor is it accomplished merely once and then set aside. Instead, politicized trust calls for ongoing building and cultivation of mutual trust and racial solidarity. It is thus a trust that actively acknowledges the racialized tensions and power dynamics (p. 199).

The stories of Melsihna and others in the Collaborative helped us begin acknowledging these power dynamics and the long history of racist and colonial practices in research, a context with which our work had to contend.

Learning from the Field & Engaging Students

Since 2007, when the original CRC guidelines were published, many more scholars and organizations have developed core principles or guidelines for different kinds of CBR. Rather than starting from scratch, we wanted to learn from these diverse efforts. So, we brought on Anahy Salcedo, an undergraduate kinesiology student and local grassroots organizer, to conduct a review. Anahy read and analyzed 22 different sets of guidelines and presented her findings to the group. We then discussed how the personal stories in the first CRC meeting related to common themes in other guidelines. These themes and our responses to them became the foundation of our own set of principles.

Anahy has since graduated. However, she remains a part of the CRC team in her role on the grassroots organizing team with the local United Way. Below, she reflects on her experience as a health sciences student taking part in the Collaborative.

Anahy Salcedo, United Way of Salt Lake

"I was still pretty new to CBR when I joined the CRC. I was in charge of doing the literature review, and, wow, I learned a lot! There are people doing this everywhere, and everyone is at a different phase of learning how to best do it.

"It was not easy to gather folks to attend another Zoom call during COVID-19, but because it was something the folks cared about and was being led by great folks, people showed up to meetings and had meaningful conversations. I was impressed by the somewhat large community of people who care about CBR. As a student and a newbie, I was scared I would not be able to connect, but we all cared about working with community members and researchers to redefine and recreate what CBR can look like. Folks were incredibly open and welcoming to new folks (like me) to ask questions and share our current experience, and to share theirs about how they came to be engaged into CBR. I loved hearing the stories folks had about their work and what challenges or successes they had. Everyone wanted to collaborate and be transparent with the process, which I don't think is as common as it should be in research.

"Why does no one talk about community-based research to undergraduates? It is so versatile and can be done in so many fields. I was a student in Kinesiology at the College of Health, and they only really pushed a traditional kind of lab-based research. I did research in a lab for six months, and I hated it, which made me think I wasn't fit to do research. Then, I was introduced to CBR through a fellowship and got to know CRC co-founder Ana Antunes. She shared about her work with CBR and how it can look so different from traditional research, and I loved it.

"Finding a time that worked for everyone in the CRC was challenging and led to some folks not being able to attend. We met around once a month, and I wonder if we should have met more frequently or met in subgroups to get different parts of the guidelines done. I want us to continue to meet and discuss what we can do next!"

Anahy's reflection speaks to the value of engaging undergraduates in conversations about CBR. We may be losing future researchers like Anahy when we only present a narrow slice of what research can look like. The Collaborative has since built on this idea by launching a CBR course using the guidelines, which brings undergraduates together with community-based organizations to learn side-by-side and develop research projects together.

Anahy's story also speaks to how "traditional lab science" and other deductive, scientist-led approaches maintain dominance within much of academia, including the health sciences. Other approaches, such as CBR, are marginalized despite groups such as the National Institute of Health (NIH) and the Centers for Disease Control and Prevention (CDC) naming community-based research as "essential to deepening our scientific knowledge of health promotion and disease prevention and reducing racial and ethnic health disparities" (Teufel-Shone, 2011, p. 118). CBR is systematically devalued and discouraged among faculty through mentorship, publishing, promotion and tenure, and other processes (Teufel-Shone, 2011). For example, policies disregard the longer timeframe to develop community-based research and expect CBR scholars to publish at the same rate as scholars who are not accountable to community partners. This disregard materializes in the hiring and retention of faculty and trickles down to what opportunities are available to students.

Facilitating Equitable Dialogue

Those of us facilitating the process knew that it was not enough to simply bring together a diverse group of community-based and university-based individuals and expect equitable participation. In fact, we expected that structural power imbalances would inevitably emerge and needed to be explicitly addressed in our discussions and our methods of facilitation (Bang & Vossoughi, 2016). Therefore, we started our second meeting explicitly naming power dynamics related to race, gender, degrees, and other axes of stratification. We challenged ourselves as a group to, as we put it in our opening remarks, "shift power; to value multiple forms of knowledge and expertise rather than privileging degrees; to center the expertise of BIPOC communities and communities facing historic marginalization; to hold ourselves accountable." We also encouraged individuals to reach out one-on-one if things kept them from full participation. Then, together, we set shared norms for dialogue:

1. Honor all forms of experience, expertise, and knowledge around the table.
2. Speak your truth and make space for the truths of others.
3. When things get difficult, turn to wonder.
4. No one person has the whole answer. We are co-creating and learning together.
5. Center the task at hand.
6. We are in the sandbox together; have fun!

This gave us a foundation for equitable dialogue. However, making sure that everyone's perspective was fully shared and honored was an ongoing project, and we struggled with it throughout, as co-facilitator Ana Antunes describes below.

Ana Antunes, Gender Studies

"To say that I felt being a facilitator for the CRC was over my head is an understatement. As an immigrant woman of color and a career-line junior scholar, impostor syndrome was real. Despite my passion for community-engaged work, I felt like most of the other faculty involved in the CRC had more to contribute than me. On top of feelings of inadequacy, there was also the toll of the COVID-19 pandemic. In Salt Lake City and around the world, communities of color are still the most affected by COVID-19. Despite my position of privilege as a university faculty living in the United States, the meetings started at a time when my family abroad was severely affected by the pandemic. So, I entered my first CRC meeting feeling overwhelmed. At the same time, being in a (virtual) room with passionate people who could envision, through the despair of the current realities, building a better, collective future did inspire hope.

"I cannot say that the process was always easy. I think it is important that we recognize not only where we succeeded but also where we failed spectacularly. While the discussions and conversations around community-based work were pretty successful, our attempt to co-write the document brought up new challenges. Halfway through our process, it seemed logical that we would use some of the meeting time to write and edit together. Because we had spent time working together and building relationships, we naively ignored the fact that for some (especially for those of us whose native languages are not English) having to type live while a bunch of university professors watch is not the most comfortable situation. It was painful to see how a group that was having such lively conversations and important discussions quickly became silent.

"After the meeting, the co-facilitators met, and it became pretty evident to all of us that the way we had envisioned the process was not going to work. So, we regrouped. We decided to talk individually with each of the CRC members. First, we wanted to make sure that, in our attempt to be as collaborative as possible, we had not caused damage to relationships that had been flourishing. Second, we wanted to give people the opportunity to share their thoughts about the emerging principles and document in whatever way felt most appropriate to them. Some went methodically through each principle and offered thoughts and feedback. Some told stories about past experiences. Some focused on what they wanted this document to be used for in the future. Not only did this allow for rich, authentic feedback; it also provided counterstories and examples that we used in the final document.

"I hope that those who interact with the document learn as much from it as we did through the creation process. The process of creating the Guidelines reminded me that community work succeeds when differences are not erased or diminished but rather acknowledged and engaged within the open."

Ana's story speaks to how racial, linguistic, and other power imbalances play out between academics and community leaders, as well as within the academy itself. Research has shown that faculty of color are more likely to engage in community-based research and teaching approaches and otherwise connect their scholarship to social change (though recent data is hard to come by) (Antonio, 2002). They are often the ones pushing for academia to engage with communities outside the campus meaningfully, and are more likely to dedicate time to work that is not seen as scholarship but rather as service (Hirabayashi, 1995). Meanwhile, even as faculty diversity has increased, faculty of color are underrepresented in tenure-track positions and overrepresented in career-line positions like Ana's (Finkelstein et al., 2016). Thus, the issue of how CBR is (under)valued in an academic context is inextricably connected with questions of faculty diversity.

In addition, Ana points out how chosen communication and dissemination methods can amplify or limit participation from different partners. Writing and editing articles and reports in English is part and parcel of being an academic in the United States. Yet, this form of collaborative meaning-making can alienate those whose first language is not English, who are not steeped in academic writing, or whose sensemaking processes are not aligned with linear academic prose (Gordin, 2015). Community-based partners pushed us to think beyond a report and consider how stories, videos, and online engagement could reach a wider audience. We have since received funding to do this. That said, we acknowledge the value of written documents that can hold legitimacy in academic or policy settings, as well as their potential to alienate or subjugate other forms of communication. Therefore, finding multiple ways to give input and feedback on all products is critical (Community Alliance for Research and Engagement, 2013).

Community Groups Engaging Academics

Members of the collaborative argued that our guidelines needed to speak equally to university-based and community-based audiences. We worked hard to create something that would support faculty who want to do CBR while also putting CBR tools into the hands of the community groups who could hold researchers accountable to equitable power-sharing. Community-based and multilingual members of the Collaborative critiqued an early draft of the principles for their inaccessibility, like the use of excessively academic language and an overemphasis on the professional researcher audience. We made improvements toward this balance, and while we are not there yet, we hope we can do more to make the guidelines accessible and relevant through our web-based tools.

Laneta Fitisemanu was an avid advocate for making our work accessible to community groups. Below, she describes her experience and what she learned as a community-based member of the collaborative.

Laneta Fitisemanu, Utah Pacific Islander Health Coalition

“The CRC meetings were a unique space for community members and university faculty and staff to voice their concerns, experiences, and opinions regarding research. I haven’t experienced a space like that elsewhere. We are usually just approached by researchers to participate or recruit, not to discuss it in this capacity. The meetings were well facilitated, and small groups provided an opportunity for greater participation and discussion. There was a lot of great input and conversations that moved the work forward, especially given that participants were volunteering their time and effort.

“From a community perspective, working with university folks can be very intimidating. I wasn’t sure I had much to contribute. I worked for the university for several years, but I still struggle to fully grasp institutional jargon and processes and academic language and references. I sometimes felt like I needed to defer to faculty because they are actual researchers. It took me a while to feel comfortable fully sharing experiences, thoughts, and ideas while trying to not be so intimidated. Another challenge was facilitating such a large group of people over a long period of time. Sometimes it was difficult to move discussions forward when people had missed meetings. And I know that my contributions have their own limitations. I would have liked to have more voices from my community contributing.

“About half-way through the process, a separate research team reached out to me about a study they were doing with the Pacific Islander community. A few of our community members met with them because we had concerns and reservations about the study. We felt they didn’t really discuss the study with the community or pay attention to the several initiatives we were already running on the topic. We were told that someone from our community was already involved and would help them recruit and facilitate discussions. We voiced our concerns about the lack of representation and reliance on one person to recruit and facilitate for such a diverse population group. We gave them numerous recommendations on how to better outreach with our community and the need for greater support, especially for groups that need greater assistance for them to participate (like translators). They were supposed to follow up with us on the discussion questions they were going to ask participants, but they never followed up after the meeting.

“I really appreciated the conversations we were having in the CRC at this time. It reconfirmed the need for more authentic collaboration and care when conducting research with communities. The study was rushed[1] and not thoroughly representative. We helped advertise it because we didn’t want our community to miss out. I was able to share this perspective during the CRC meetings. Last month, I emailed the coordinators that we met with for a follow up on the progress of the study, asking when the results can be shared and what they plan to do with them. Our coalition has not received a response. I normally would just let this go, but after participating in the CRC, I felt emboldened to email and hold them accountable.”

This reflection speaks to the complexity of power relationships between researchers and researched, even within efforts to be collaborative. Laneta describes how her community’s concerns with a research project and ongoing work on the topic area were dismissed because of a limited approach to community representation. Defining the community in CBR is more difficult than rhetoric suggests, and we can fall into the trap of relying too heavily on individuals as representatives of communities that are highly diverse with multiple interests (Carty et al., 2008).

Laneta’s story shows that the CRC was not immune to these unequal power dynamics. We inevitably brought our ideas about expertise and our insecurities into the CRC, which shaped our

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[1] The author of this counterstory chose to not directly name or cite the study, as the purpose of the story is not to shame researchers but to draw attention to the issues from a community perspective.

interactions. Moreover, Laneta worried that her voice would be read as representative of her whole community, suggesting the need for broader inclusion. This counterstory highlights the importance of recognizing the multitude of experiences among individuals who share a similar identity marker. Although researchers rationally understand that one person cannot speak for their whole community, this knowledge does not often materialize in the research design. That said, Laneta's increased sense of being emboldened to hold researchers accountable suggests the potentially power-shifting impact of creating spaces that situate community partners and university researchers as equally valued members of a collaborative.

Fostering Institutional Change

When we carried out one-on-one meetings with all CRC members, some university-based members noted that the guidelines focused on what the partners in a research partnership could do but did not speak to the larger structures of academia. If we want to see more and better CBR at our university, they argued, we need to address the structural barriers that often marginalize, discourage, and even dismiss this kind of research (Teufel-Shone, 2011). Below, Sara Hart speaks about her experience as a faculty member in the health sciences and what it will take to shift the culture and structure of our academic health science centers and universities to support CBR better.

Sara Hart, College of Nursing

"The conversations we had, the stories we shared, and the guidelines we created within the CRC were unlike any I've experienced within academia. The goals and values established created a collaborative environment where shared learning and multiple forms of knowledge were embraced. The work of the CRC ultimately reflected the Six Principles for CBR as defined in the guidelines: shared goals and values, community strengths, equitable collaboration, collective benefit, trusting relationships, and shared results. It was a privilege and an opportunity for professional growth to explore, discuss, and challenge research processes with a diverse group of voices representing community partners and academia. I learned much more than I contributed.

"Our work around terminology, phrasing, and definitions often presented challenges but these conversations ultimately served to promote greater understanding among the participants. Learning how words and information are understood and experienced across diverse partners provided each participant with opportunities to deepen their partnership work. The bulk of this work occurred during the COVID-19 pandemic, with most in the group subjected to new professional and personal challenges. However, the use of virtual meetings likely increased regular participation and allowed for easy recording and sharing of information. The use of virtual meetings may have also reduced the active participation of some CRC members.

"The boundaries between academia and community are blurry when the product or outcome is health care. Although it shouldn't surprise me, I am still struck by how challenging it is to define community-based research in the health sciences. In addition to confusion generated by the varied terminology, institutional review boards may not be prepared for the complexity and ambiguity that often exists when our research is conducted in partnership with communities.

"My work with the CRC served to highlight the many layers and diverse perspectives that exist within communities and across academia. This experience also provided an opportunity to identify elements of academic health science centers that can support or trip up well-planned partnerships. For example, one faculty member's community-based research partner may be another department's clinical practice site. Community-based clinicians may serve as community partners while also being on faculty at the university. Administrators may see established community partnerships as opportunities for revenue generation in ways that change the dynamic between partners.

"It is my hope that our next steps can involve creating more structured support for learning and partnering for community-based research. This will increase the quality and volume of CBR in our state and help to achieve buy-in from diverse stakeholders. One of the stakeholder groups who has potential to accelerate this work is university leadership. This will require framing CBR to highlight the specific benefits and opportunities it provides to each subset of this population. For example, leadership in the health sciences would benefit from learning about CBR through a health equity lens with value for the health system highlighted. When leadership recognizes the benefits of CBR for the institution and for the broader community, this work will be more widely resourced and embraced."

Like Laneta and Ana, Sara points to language and power as central challenges in CBR. Sharing language and definitions across fields, disciplines, and communities is an ongoing process. Still, as Sara explains, it can be a springboard for valuable dialogue and help people explore how language choices privilege some perspectives over others. Sara also names university leadership and the Institutional Review Board as key areas where changes could lead to stronger support for CBR. This aligns with what engagement scholars call the institutionalization of community engagement, which is a process that builds on the work of faculty, students, and community partners with attention to how engagement fits into institutional culture; how campus leaders communicate the value of engagement; and how systemic factors such as hiring and tenure policy shape the capacity of an institution to engage (Welch, 2016). Institutionalization, at its best, is a system-wide commitment to fulfill institutional responsibilities of working toward a more just future.

Conclusion

The process of developing our CBR guidelines was valuable and gratifying. It was useful in informing higher education and community collaborations and the insights it offered into the nuanced functioning of power in campus-community partnerships and the possibilities for strengthening anti-racist and anti-colonial approaches to research. The process offered a platform for counterstorytelling and pushing back against the epistemic violence that silences the knowledge of marginalized communities. It highlighted the importance of engaging undergraduates in CBR and disrupting taken-for-granted approaches to science that often reinforce inequity and injustice. It reminded us that creating truly collaborative spaces takes ongoing attention to power dynamics and how they are intertwined with questions of language and communication. It challenged simplistic definitions of community and expertise and pointed out the dangers of defining these concepts too narrowly. And the process focused our attention on the idea that the burden of creating equitable partnerships should not fall on individual academics and community leaders alone, but also on the structures and policies of higher education, which can be redesigned to help institutions better fulfill their responsibilities to the creation of a just society both locally and globally. For instance, revising tenure and promotion policies to give equal weight to community-based research as traditional research or committing as many funds to community-based research as traditional research.

Dutta and colleagues (2021) remind us that "any counterstorytelling project is necessarily incomplete. Therefore, even as we envision possibilities, we recognize the situated nature, the fluidity, as well as the limits of the very counterstories we coproduce" (p. 10). Similarly, the CBR guidelines we developed are inherently incomplete and will continue to evolve as they are used and reflected in workshops, research projects, and other spaces. By creating a web-based version of the guidelines, we will be able to update regularly and expand upon the original ideas dynamically and collaboratively and create more diverse tools for communication. We encourage other communities and higher education institutions to take what we have created and adapt it to their contexts or, even better, to convene their local collaboratives in which to build relationships, establish shared language and values, and learn from the incredible expertise and insights that exist in all our communities.

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METROPOLITAN Universities OPEN ACCESS
Original Research

Reckoning with Our Racist Past: An Academic Health Center's Engagement with History and Health

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Cite as: Vetrovec, L., Massey, A., Santen, S.A., Edwards, C., Kane Kreutzer. K.O., and Harris, K. (2022). Reckoning with our racist past: An academic health center's engagement with history and health. *Metropolitan Universities*, 33(3), 69-88. DOI: 10.18060/25731

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Abstract

Academic health centers (AHC) both contribute to and are influenced by the communities they serve. As part of a central commitment to improving human health, there is a need for AHCs to acknowledge their history related to race and racism, the resulting impact on current health disparities, and the disparate treatment of racial and minoritized communities. As AHC's care for Black and Brown communities, they have a unique responsibility to redress their respective legacies of bias, discriminatory practices, and experimentation without consent. One way to achieve this is to provide learning opportunities for in-depth engagement with students, faculty, staff, health care providers, and community members in conversations regarding racial equity, which are essential to shaping and impacting change at an individual and institutional level. Virginia Commonwealth University in Richmond, Virginia, launched a new initiative, *History, and Health; Racial Equity*, designed to (a) increase awareness of our institution's history, impact, identity, and culture, and (b) support meaningful conversations around history, health equity, structural racism, and health sciences education. Urban and metropolitan universities may learn from and replicate this program and encourage such conversations in their communities.

Keywords: health inequities, diversity, equity and inclusion, racism, health sciences education, racial equity

Introduction: The Challenge

Structural Racism and Health Sciences

Race and racism influence healthcare and health sciences education. Structural racism, including historical, cultural, institutional, and interpersonal – routinely advantages whites while producing cumulative and chronic adverse outcomes for people of color. It is a key source of racial inequities and a driver of poor health outcomes for African Americans (The Aspen Institute, 2016). Dorothy Roberts (2011) positions race as a social and political construct to perpetuate the system of racism. The emerging body of research on the impact of racism on health inequities has fueled downstream efforts to reframe policies, practices, and education programs to better serve an increasingly diverse patient population. As such, education programs should convey shared definitions of race as a social construct and racism as the hierarchical system that advantages certain racial groups and disadvantages others (Haeny et al., 2021).

The discourse on race and racism is evolving in health education and healthcare policies. Some high-profile universities have initiated their respective reckoning with past discriminatory practices or activities. Brown University's formal acknowledgment in 2002 of its history of involvement in slavery is arguably the most notable institution; however, other institutions engaged in this process earlier and more have done so over time. Major medical associations representing clinicians and medical educators have adopted guidelines calling for action to address racist policies and practices in medicine and medical education. In June 2021, The American Medical Association (AMA) voted to adopt guidelines addressing systemic racism in medicine, recommending that health care organizations and systems establish institutional policies that promote positive cultural change and ensure a safe, discrimination-free work environment. The AMA has also publicly acknowledged its discriminatory practices concerning the treatment of African American physicians and vows to redress that period with organizational policies that foster inclusion and confront systemic racism (American Medical Association, 2021).

The Association of American Medical Colleges (AAMC), a prominent organization in medical education, released a framework for action in October 2020, designed to "guide and inspire the academic medicine community to begin addressing decades of structural racism within medicine" (Association of American Medical Colleges, 2020). In doing so, the AAMC is leveraging its national voice and position by strengthening policies and accreditation standards, equipping medical schools with tools to implement anti-racist practices, and integrating principles of health equity in route to achieving its goal of eliminating systemic racism in medical education (McKinney et al., 2021).

While these national organizations represent their stakeholders, Academic Health Centers (AHCs) are characterized by medical centers associated with health-related components of universities, which usually include a medical school, one or more health professions schools, and a health system. AHCs provide a wide range of medical services to the community, especially for the medically underserved.

Responsibilities of Academic Health Centers and Universities

AHCs include hospitals and clinics. They often serve as safety-net providers that are health care entities who deliver healthcare services to patients regardless of their ability to pay. Their missions cross clinical care, education, and research. Similarly, urban and metropolitan universities serve as anchor institutions, respond to community needs, and their missions integrate teaching, research, experiential learning, and public service. Metropolitan universities and AHCs both contribute to and are influenced by the communities they serve. This is even more impactful for the large number deeply embedded in Black and Brown communities. With the onset of the COVID-19 pandemic in March 2020, many in these communities were re-traumatized as pre-existing disparities in the type and quality of healthcare provided to racially and ethnically marginalized and minoritized groups became amplified (Sim et al., 2021).

Working amid the pandemic and racial justice movements, community engagement scholar-practitioners critically examined and are now advocating for an engagement of hope concept as an equity-centered theory of action that higher education institutions should utilize as a framework for community engagement. A foundational principle of an engagement of hope is challenging unjust structures, which “requires us to acknowledge institutional racism and inequity, to accept our role within the unjust systems in which we participate, and then to challenge them in practice, policy, and position.” (Green et al., 2021). Thus, higher education and healthcare advocate for their institutions to examine their histories and the disparate treatment of racial and minoritized communities to move forward in a more just and equitable way.

Evolution of Academic Health Centers

The traditional function of AHCs in their symbiotic relationships with communities is to provide a well-educated workforce, transformative research, and safe, high-quality clinical care. While laudable, the tripartite mission of AHCs must now expand to meet the clarion call from the communities they serve to step outside of their walls to address the social determinants impacting the health and well-being of members of those communities (Park et al., 2019).

The Institute of Medicine (IOM) seminal report, "Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care" (2003), provides a comprehensive treatise on the sources of inequities in healthcare occurring at the patient, clinical, and systems levels. An analysis of this report by Bentancourt and Maina (2004) identified specific areas that could inform the work of AHCs to increase awareness of inequities among racial and ethnic populations, recommending; (a) health sciences curriculum transformation, (b) strengthening linguistic support for patients, (c) workforce diversification, and (d) data collection and reporting.

Initiatives taken by individual AHCs to address institutionalized racism include (a) a re-examination and acknowledgment of institutional history, (b) initiating open, safe, and ongoing dialogues around inequity in medical care, education, and research, (c) training to recognize implicit bias, and (d) community partnerships to address social needs of marginalized patients (Karanja et al., 2020; Mateo & Williams, 2020; Morse & Loscalzo, 2020; Peek et al., 2020; Wilkins et al., 2021). Indigenous, African American, and Hispanic/Latino persons are less represented in the health care workforce not by chance but due to long-standing formal and informal discrimination. As part of recognizing its history and supporting institutional self-examination, Vanderbilt University Medical Center has begun to address institutional climate and barriers to upward mobility for all workers in the AHC (Wilkins et al., 2021). Likewise, Johns Hopkins Medicine, notorious for kidnapping black children for medical experiments and taking tissue cells from Henrietta Lacks without consent, is re-examining and acknowledging its past (Woodruff, 2016). This includes an educational initiative that examines Johns Hopkins' history of discrimination and reinforcement and another initiative that strengthens anti-racist and inclusion training and tools (Hub, 2020).

AHCs have a unique responsibility to redress their respective legacies of bias, discriminatory practices, and experimentation without consent. This racist history with respect to the disparate treatment of minority communities has effectively raised the ante and places AHCs at the tip of the spear of efforts to dismantle racism in healthcare (Adkins-Jackson et al., 2021). AHCs should wield their influence more broadly in advancing diversity (Nivet, 2015) and advance social justice and equality to heal humanity (Alberti et al., 2018). One way to achieve this is to provide learning opportunities with an open, safe, and ongoing dialogue regarding racial equity, which is essential to shaping and impacting change at an individual and institutional level.

History of VCU from the Lens of Race and Racism

As in other parts of the country, racist practices have played a role in Richmond and Virginia Commonwealth University (VCU) history. Like many organizations established in the mid-1800s, the Medical College of Virginia (MCV), which became part of VCU in 1968, exercised discriminatory clinical care, research, and education practices and procedures that disrespected marginalized citizens. In 1994, construction workers digging the foundation for the VCU Kontos Medical Research Building found human remains and other artifacts in what was later determined to be an abandoned well utilized to dispose of body parts used for educational and research purposes. Scientists at the Smithsonian National Museum of Natural History identified the human remains as having belonged to people primarily of African or African American ancestry. The well's contents are believed to have been discarded in the 1800s by MCV medical staff. The discovery of these human remains did not receive widespread public attention until almost 20 years later, when awareness of the well's history was included in Dr. Shawn Utsey's 2011 documentary film *Until the Well Runs Dry*, which examined the issue of grave robbing and use of illicitly-obtained black cadavers in medical education during the 19th century. Public awareness of these human remains led to a community-driven, multi-year process of identification, internment, and memorialization under the auspices of the East Marshall Street Well Project (EMSWP).

After the Civil War, few hospitals in Richmond provided medical treatment for Black Americans. MCV did provide services to this population in segregated facilities. In 1920, MCV opened St. Philip Hospital to serve Black citizens, and the hospital included a school of nursing for Black women. Overcrowding at St. Philip Hospital was common, and a 1959 MCV report concluded, "Hospital facilities for Negro patients are not yet adequate" (Dabney, 1987).

During the Jim Crow era of the mid-20th Century, Black citizens continued to experience differential medical treatment throughout the United States. In May 1968, VCU surgeons performed the first heart transplant in Virginia. The surgeons implanted the heart of a 53-year-old African American man, Bruce Tucker, into a 54-year-old white man, without obtaining consent from Tucker's family. The hospital violated state statute, as the concept of "brain death" had not yet been established. A subsequent legal proceeding found the hospital not guilty (Washington, 2020). Nevertheless, Mr. Tucker's fate aligned with stories circulated among

Richmond's African American communities for decades regarding MCV's (VCU) use of African American cadavers for research (Koste, 2012).

The history of slavery, segregation, and race-based discrimination has often been omitted from the popular history of medicine and health care. The story of how these two histories intersect to create the roots of structural racism in U.S. health care has been largely untold. VCU, an academic health center and an urban and metropolitan university, recognizes the need to address those intersections, the resulting unjust structures, and disparities and tell the story of our institution and our city through the *History and Health; Racial Equity* program.

The Intersection of History and Our Community

The murder of George Floyd amplified ongoing calls for racial justice during the spring and summer of 2020. During this period, VCU recommitted to its ideals of diversity, equity, and inclusion and expanded its infrastructure (both human capital and finances) to be more forthright in providing an inclusive work and learning environment for all. Concurrently, the university and health system were undergoing an internal reckoning as elements of its past revealed a history of racial discrimination that made it indistinguishable from the practices of many other organizations of that time. During this period of self-examination, leadership realized that many within the healthcare teams, students, and professionals were greatly impacted by the unrest in the community and the media; however, there was also a recognition that many were also not sufficiently aware of VCU's history of structural racism and the discrimination towards the Black community.

Through the confluence of these inflection points, the *History and Health; Racial Equity* program was born. *History and Health; Racial Equity* is an intentional approach to address substantial knowledge gaps in understanding the health system's history and facilitate an effective interface between the fortification of diversity, equity, and inclusion efforts and the burgeoning engagement of our past. In essence, the program provides a place to have the necessary conversations about the historical practices of the institution and reflect upon how that history has influenced and shaped us while being mindful to avoid having that same history define or confine us moving forward. Like VCU, Johns Hopkins University acknowledges this need and, as shared by its President, is developing initiatives to "more deeply understand and reconcile the university's history of discrimination, both overt and subtle, from its founding to the present day" (Hub, 2020).

Both AHCs recognize this critical need to understand and learn from history because it will inform what to do going forward. It will be important to shape policies, practices, and culture. The hope is that team members, students, faculty, staff, and community members will learn and become more sensitized to the fact that this history is influencing their experiences today and will motivate them to cultivate change in their own lives and the organization (Brogan, 2021).

Potential Impacts of the *History and Health Program*

AHCs, like urban and metropolitan universities, have a responsibility to trainees, team members, and the patients and communities they serve to understand and address the effects of racism. While the responsibility is an extension of AHC's central commitment to improving human health, it is more so grounded in the historical role AHCs have played in facilitating, if not fostering, racial inequities in healthcare and research involving African Americans and other historically disenfranchised communities.

The *History and Health; Racial Equity* program is intended to impact change in several ways. First, this program aims to build awareness of our institutional past, enabling us to understand how our organization's culture, climate, and identity came to be. Understanding our history also allows us to understand better how we have affected, and been affected by, our surrounding communities.

Second, *History and Health; Racial Equity* programming should build an understanding of our particular institutional past within the broader context of social justice. There is a focus on learning about healthcare's role and exploring how VCU students, faculty, staff, and team members can become more culturally sensitive healthcare providers, teammates, and community partners. Even though we might not fully appreciate the importance of our history, our patients do. We must take the time to listen, reflect on what we hear, and then incorporate those reflections to provide better care for our patients and community members (Brogan, 2021).

Third, the *History and Health; Racial Equity* program aims to inform future actions and provides a ready platform for identifying and processing the likely emergence of other historical facts that may shine an unfavorable light on VCU's past practices of outward discrimination and racism in the treatment of Black and Brown people. The goal is to utilize this program as VCU's framework for ensuring intentional progress toward achieving health equity and fostering a greater commitment toward racial equality.

Initiatives such as *History and Health; Racial Equity* are not without controversy and are influenced greatly by societal context. The January 6, 2021 insurrection in support of overturning the results of the 2020 election is a stark reminder of the divisions among Americans along racial and political lines. Violent crimes have risen in Minneapolis and other areas across the country in the year following the murder of George Floyd as cries of "wokism" and over liberalization, experience growing traction. Thus, it is prudent for AHCs to factor in an inevitable backlash toward any attempt to socialize deep and honest conversations regarding race and racism. To withstand potential headwinds to efforts that confront a racial past, institutions such as AHCs must ground the work in their existing organizational value system and equally embed the work within the organization's mission.

Methods

This section begins with an overview of strategies and innovations for approaching and executing the new initiative, including the objectives, events, and online learning modules. It concludes with measures, outcomes and lessons learned that could be replicated by other institutions that seek to create opportunities for learning, reflection, and engagement about difficult topics.

Developing a New Initiative

In August 2020, a planning team composed of a senior leader from the health system, a senior leader from the health sciences campus, and their two directors, began discussing the need for educational activities designed to utilize a diversity, equity, and inclusion (DEI) lens. As a result, a DEI educational framework was created to develop activities and events that could support learning and engagement opportunities. During this planning phase, the team decided to narrow the broad DEI focus to history and health by closely examining the racist history of our institution and our city and, ultimately, their impact on health outcomes.

To set this historical foundation, virtual sessions and companion online, learning modules provided overviews of the history of VCU and how the historical practices, laws, and culture in the South impacted the shaping of the medical school and health system. The planning team intentionally leveraged existing expertise at VCU to develop program content, drawing on subject matter experts like a Head Archivist with VCU Libraries. The planning team also wanted to align with the East Marshall Street Well Project (EMSWP), and their Family Representative Council, which encourages learning about the history of 19th-century human remains discovered in an abandoned well on campus.

The *History and Health; Racial Equity* planning approach can be translated to different settings and adapted to specific interests and needs. General steps in the program development process are noted in Figure 1.

Figure 1. Steps to program development

1. Elevate an idea that the team is excited about
2. Create a framework that gives an overview, outlines the objectives and proposed activities, and highlights what is new and different about this initiative
3. Vet the idea with senior leadership and key stakeholders
4. Modify (i.e., narrow the scope)
5. Convene an advisory committee of key stakeholders and subject matter experts
6. Involve the communications team and create an outreach strategy
7. Identify the implementation team and outline each person's roles and responsibilities
8. Develop an evaluation plan, including learning objectives and metrics
9. Advertise and launch!
10. Analyze the findings after each event, adjust

The overall learning objectives for the inaugural series aim to help participants learn, reflect, and enable change. For example, what part did VCU and its predecessor organizations play in a city with a history so intertwined with slavery, the Confederacy, and Jim Crow segregation? Why do predominantly Black residents of some census tracts in Richmond have adult life expectancies 20 years shorter than nearby, predominantly white census tracts? What role can and should VCU play to change the trajectory of this trend? Based on historical precedents, how can we learn and earn the trust of those in our community with legitimate skepticism?

There were three sessions (once a month, March-May, 2021) and three online learning modules launched. The two virtual sessions were held within the first 45 minutes of the presentation, followed by optional time (45 minutes) for processing (Let's Talk). The third session was a virtual panel discussion, followed by school-specific breakout sessions, which included the School of Dentistry, the School of Medicine, the School of Nursing, the School of Pharmacy, and the College of Health Professions.

The planning team understood that the topics could be difficult to hear and that some people might be learning this information for the first time, so including a way to foster an open dialogue and offer space for participants' reflections became integral to the planning process. To provide this opportunity for processing and peer support, the University Counseling Center was engaged to facilitate debriefing "Let's Talk" sessions immediately after the presentations.

Activities and Analysis

The three self-paced, asynchronous online learning modules, all available on a publicly accessible website, are designed to take about an hour to complete. Additional information about each session and module is found in Table 1. Each virtual event was recorded and posted on the *History and Health; Racial Equity* website. Quantitative and qualitative evaluation metrics were incorporated in the required reflection for the online modules and in surveys given at the end of each virtual session.

Table 1. Event specific learning objectives and evaluation metrics

Date	Event	Purpose	Learning Objectives and Evaluation Metrics
March	*The Roots of Institutional Racism* Presenter: Jodi Koste, Head Archivist at VCU Libraries	History of MCV (VCU) Health System reflecting on how the historical practices, laws, and culture in the South impacted the shaping of the medical school and health system	1. Attendees will report increased awareness of the impact of slavery and segregation on the early years of MCV (VCU).
March	*St. Philip Hospital and School of Nursing Online Module*	An online learning module and reflection space that orients learners to the history of St. Philip Hospital and School of Nursing	1. Learners will recognize the relevance and importance of the history of St. Philip Hospital and the School of Nursing for healthcare providers today. 2. Learners will report increased awareness of the ways in which structural racism has continued to harm people of color living in the City of Richmond.
April	*Housing, History & Health Online Module*	An online learning module and reflection space that orients learners to the connections between	1. Learners will report increased awareness of the role that housing segregation in Richmond has played on race-based health disparities.

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		housing, history and health outcomes.	2. Learners will report increased awareness of how structural racism has played a role in health disparities in Richmond.
April	*Amplifying Voices: Experiences in Health Sciences Education and Clinical Practice* Moderator: Dr. Carlos Smith, Director of Diversity, Equity, and Inclusion at the VCU School of Dentistry	Alumni panelists of diverse backgrounds share their stories and experiences as students and practitioners, reflecting on the strategies they have used to thrive as health care professionals despite racial inequities.	1. Attendees will report increased awareness of how racial inequities have impacted health professionals at VCU and VCU Health.
May	*Medical Dissection and the East Marshall Street Well Online Module*	An online learning module and reflection space that orients learners to the EMSWP, including the 2019 memorialization ceremony. The module also examines the role of illegal grave robbing and the use of black cadavers in medical education at MCV during the 19th century.	1. Learners will be able to recognize the history of grave robbing and the use of black cadavers in 19th-century medical education at MCV (VCU). 2. Learners will recognize the relevance and importance of VCU's East Marshall Street Well Project and VCU Health's understanding of structural racism. 3. Learners will report increased awareness of how structural racism has played a role in health disparities in Richmond.

May	*The East Marshall Street Well Project; A Story of Our Ancestral Remains* Presenter: Dr. Jen Early, project manager at VCU Health and Member of the Family Representative Council	History of human remains found in the East Marshall Street Well, exploring the practice of 19th-century grave robbing to procure cadavers for medical study and how this practice is only one contributor to institutional racism in health care.	1. Attendees will report increased awareness of the history of the East Marshall Street Well.

To address the question, "What's in it for me?" the program provides an opportunity for participants to earn a free, verifiable badge through the VCU Office of Continuing and Professional Education. The badge is a digital version of credentials representing achievement in foundational DEI awareness. Badge earners are encouraged to share this accomplishment on LinkedIn, Facebook, Twitter, and their personal website(s) and resume and thus be recognized in real-time for their expertise in DEI. To earn a badge, learners are required to attend a minimum of four events, choosing from a menu of the three 45-minute virtual events and the two 45-minute *Let's Talk* reflection sessions affiliated with those events. If attendance at four presentations was not possible, individuals could substitute an online learning module for an event. The estimated completion time for this badge is four to five hours. To date, nineteen individuals have earned a badge.

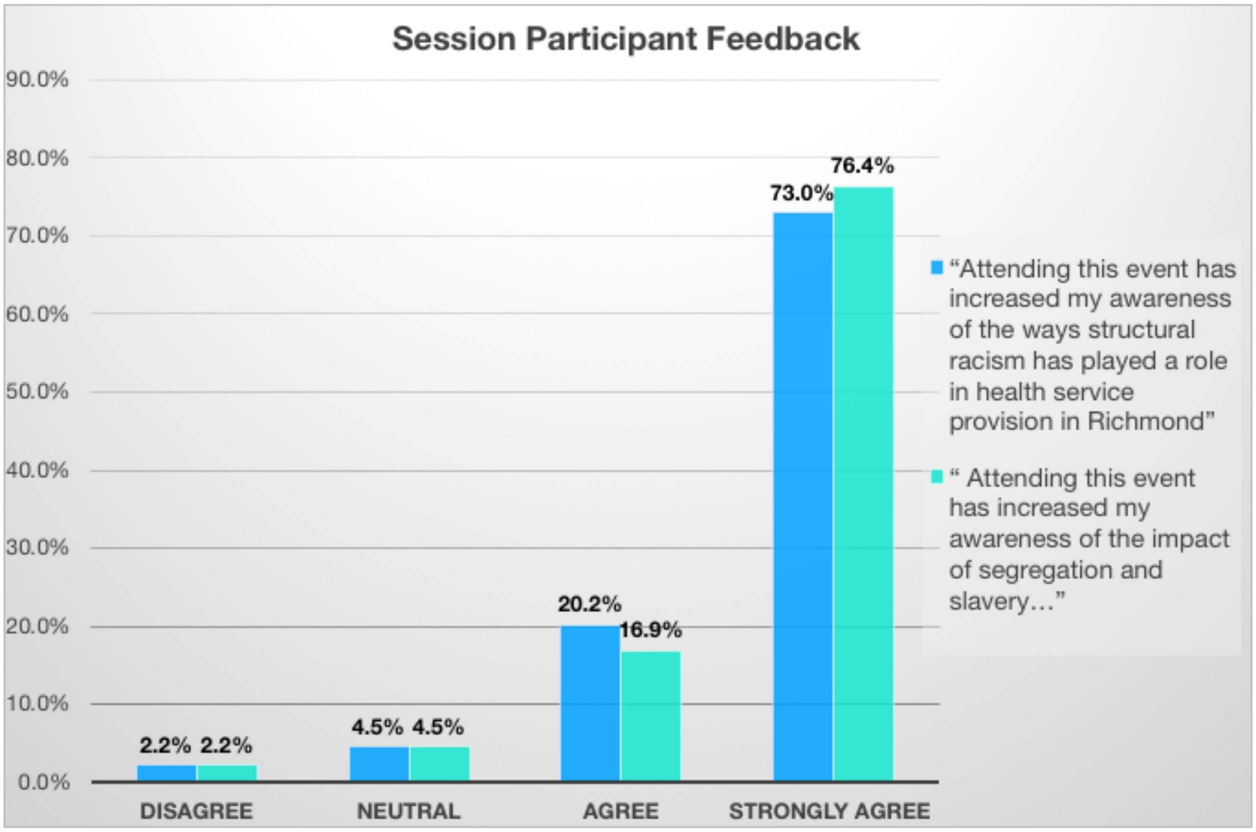
A communications strategy was also developed to raise awareness, educate, and provide details about the series. The VCU University Relations department created a communications plan that included draft emails to target audiences and a brand-new webpage as the information hub for audiences. The tone of all messaging was inclusive, informative, thought-provoking, and clear. The kickoff message was an email from the Senior Vice President for Health Sciences and CEO of VCU Health System. To reach both VCU and the health system constituents, the email was sent via VCU internal communications channels and VCU Health Intranet. Select community partner organizations and media outlets/community calendars were targeted to reach community members.

Measures and Outcomes

Evaluation of the program included mixed-methods analysis. Evaluations from three sessions were analyzed statistically with frequency analysis. A total of 395 participants attended across the three virtual programs, and 87 completed post-session surveys, representing a 22% response rate. The survey link for a six-question Google form, consisting of three closed and three open-ended questions, was dropped in the chatbox at the end of the virtual sessions and also sent in an email after the event. In the analysis, post-session responses were calculated for each of the three sessions to calculate attendee understanding and learning in two primary areas; (a) awareness of the role of structural racism in health service provision in Richmond and (b) increased awareness of the impact of slavery and segregation on the early years of MCV (VCU). The research team coded open-ended responses from the post-session evaluations to identify emerging themes in respondent responses. These comments were first coded through a stage of initial coding, then organized into focused codes to better identify thematic categories emerging from participant feedback.

Overall, the participants found the sessions to increase their awareness in these areas effectively. More specifically, 76.4% of respondents strongly agreed that participating in one of the three sessions increased their awareness of the impact of slavery and segregation on the early years of MCV (VCU). 72.2 % of respondents (see Figure 2) strongly agreed that their participation in the sessions increased their awareness of the impact of structural racism in health provision in Richmond. Additionally, this analysis suggests that attendees found the experience to be an effective learning tool regardless of their role in the VCU community. Table 2 outlines the roles of the respondents present at the training sessions.

Figure 2. Participants' Feedback



Note: Percentages are based on the total number of respondents to the post-session evaluations, n=87.

Table 2. Demographics of respondents by role

Self-reported Roles of Attendees	
Role	Percentage of Respondents (N)
Community Member	1% (1)
Faculty	17% (15)
Health	32% (28)
Staff/Administration	46% (40)
Student	2 % (2)
Other	1% (1)
Total	87

Note: Table reflects the roles of survey respondents n=87. The table does not reflect the roles of all session attendees.

Multiple themes discussed below emerged from three open-ended questions: (a) What inspired you to attend this event?; (b) Please describe one new thing you learned from this event?; and (c) How will you use the information you learned from this event moving forward?

What inspired you to attend this event?

An analysis of participant feedback across all three sessions illuminated five key categories addressing participant motivation for attending these sessions. Participants communicated their desires: (a) to support anti-racism efforts; (b) to engage in anti-racism initiatives; (c) to learn more about the history; (d) an interest in the topics discussed during the sessions; and (e) to address inequalities in the country as primary reasons for attending the sessions. The most prevalent of these categories were participants' desires to learn more about the history of VCU and the community. This was illustrated in the following statement made by one of the participants, "I'm interested in local history, and I think this session was very relevant to conversations we're having today." Building on this sentiment, another participant wrote, "need to learn history to understand the present and improve the future" as their inspiration for attending the sessions.

Please describe one new thing you learned from this event?

An analysis of participant feedback to this question illustrated that a majority of the participants learned historical facts about the VCU/Richmond health community. While this was the most prevalent category to emerge from the analysis, the historical facts listed in the responses highlighted various events that resonated with participants. More specifically, a range of historical events like the "urban renewal," "segregation of faculty," and "medical scandals generally at MCV" were noted as memorable facts learned from the sessions.

How will you use the information you learned from this event moving forward?

Four key themes emerged from the analysis of responses related to this question. Participants communicated that they would use the information gained from the sessions: (a) for self-application, (b) to help transition discussion to action, (c) as a teaching resource, and/or (d) to increase knowledge and empathy. The most common response from participants was that they intended to use what they learned in their own lives. For example, one participant stated, "This information adds to my knowledge fabric and helps me to learn and see this perspective of what the black community has suffered here in Richmond." Another participant made a similar statement in saying they would "continue my personal and professional work to learn and retell an accurate history of our city and true contributors to societal inequities that continue to exist and are beginning to be understood by many who had not previously." In addition, multiple respondents indicated that learning modules should be required for all incoming students and staff.

Lessons Learned and Future Directions

Academic health centers and universities that want to foster a sense of equity, justice, and inclusivity through confronting past racist practices should consider the following key learnings from the *History and Health; Racial Equity* program. Our findings are similar to those from Portland State University, which incorporated an equity lens into its strategic planning process (Zapata et al., 2018).

Guidance and Commitment

Support from senior leadership is paramount. Likewise, a steering committee composed of cross-campus experts and community members should provide guidance and inform the work. Our steering committee includes the EMSWP director, a Family Representative Council member, and the appointed or formally hired diversity, equity, and inclusion directors in the five health sciences schools, the health system, and Massey Cancer Center. Also represented are faculty experts in race theory, history of medicine, humanities, the Office of Institutional Equity, Effectiveness, and Success, and VCU Libraries. The steering committee meets monthly, offering feedback and identifying strategic, operational, and structural intersections between health sciences schools and the health system related to diversity, equity, and inclusion. To encourage community attendance, we are creating a listserv that includes all registrants across all programs, increasing community members as presenters in virtual events, and partnering with VCU Health public relations to publish History and Health stories shared outside the university.

Subject Matter Experts and Partnership

Program planning cannot occur in a vacuum. In May 2021, the *History and Health Summer Faculty Fellows* program was launched to outline an educational framework and create content for the continuation of *History and Health: Racial Equity*. Nine faculty members from across the university, representing new partnerships with the Humanities Research Center and the Committee on Racial Equity, created seven online learning modules, in addition to the three that were included in the inaugural series, for a total of ten modules. The faculty fellows emphasized the importance of increasing student and community engagement, recommending that future series move away from presentations in favor of moderated panels that include community members, subject matter experts, and healthcare providers. Each module that is created will have an accompanying panel presentation moderated by the author of the module. Each module will also be submitted for approval to receive continuing medical education credits, which should help to increase reach.

Student Voice

Students demand change and programs are created in response. We experienced low student engagement, so a student advisory committee (SAC), composed of undergraduate and graduate students, has been initiated. Their charge is to help pilot online modules, provide feedback, offer suggestions for future topics, pursue the digital badge opportunity, and help increase student participation in events. The SAC will be asked to help promote events and online modules within their schools and social networks.

Data Informs Decision-Making

A robust evaluation plan is needed for all programming. Although 395 participants attended the three virtual programs, only 87 completed evaluations after the presentations or Let’s Talk sessions. Additional strategies are needed to increase response rates. We will continue to investigate other methods for participant feedback, such as focus groups.

Similar to VCU, in 2020, students at Emory University sent a list of demands to address racial and social justice issues. Their efforts led to a 2021 symposium, “In the Wake of Slavery and Dispossession,” that focused on the legacy of racism and its enduring effects. In his opening remarks, the University President conveyed the opportunity to “explore Emory’s history, find answers to the pressing questions of our time and examine the ongoing impact of slavery and racism.” In reviewing Emory’s planning process, they also had support from senior leadership, a steering committee with subject matter experts and students, and a short survey (Smith, 2021).

The *History and Health; Racial Equity* program continues to receive key stakeholder support, and we have not encountered substantial opposition. Quantitative data suggests that we are meeting our goals of building awareness of our institutional past in the context of social justice, and qualitative data indicate that participants are inspired to make changes in their professional and personal lives. Our next steps will focus on aligning with the Clinical Learning Environment Review program for resident and fellow physicians, incorporating a focus on healthcare access and quality, and planning an annual symposium. Risks to others wishing to replicate such a program could include resentment and pushback from constituents, a lack of support from senior leadership, and low engagement from stakeholder groups.

Building upon the lessons learned will enable AHCs and universities to create a solid foundation to be prepared for the next stage of implementation- integrating program resources into curriculum, university and health system onboarding procedures, and faculty development initiatives. The *History and Health; Racial Equity* program utilized resources readily available to most institutions. The steps in the development of this project are generalizable, as all will have their unique history. The intended outcome is that all learners will develop an awareness of an institution’s history, impact, identity, and culture. Sharing institutional histories of racism and discriminatory acts assists the community, including students, in acquiring “specific knowledge, skills, and attitudes to have the ability to influence the worlds in which they live. They need knowledge of their social, political, and economic worlds, the skills to influence their environments, and humane values that will motivate them to participate in social change to help create a more just society and world.” (Banks, 1991, p.125).

Conclusion

The opportunity exists for academic health centers and universities to deepen their institutional commitment to serving all community members by critically examining the history of slavery, segregation, and race-based discrimination and the resulting impact on health disparities. These institutions must acknowledge the influence they yield and join with their communities in conversations to understand the current moment better and work towards a more just future. The diverse narratives and experiences of the voices of students, patients, and communities are fueling calls for substantive, systemic, and sustained change. VCU is a metropolitan university and an AHC located in an area that once served as the capital of the Confederacy. Effectively, we sit at the nexus of diversity, equity, and inclusion work. Through the *History and Health; Racial Equity* program, we examine our racism and use this as a teaching tool. If and when we successfully build upon this initiative, we will create a template that will strengthen us and inform the national discourse shaping policies and culture committed to furthering racial equality.

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Original Research

Selecting and Implementing a Telementoring Program: Case Studies of Project ECHO

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Cite as: Larson, R.S. & Medved, C. (2022). Selecting and implementing a telementoring program: Case studies of project ECHO. *Metropolitan Universities*, 33(3), 91-109. DOI: 10.18060/25689

Guest Editors: Joseph A. Allen, Ph.D., Sara Hart, Ph.D., and Melissa Yack, Ph.D. **Editor:** Valerie L. Holton, Ph.D.

Abstract

Extension for Community Healthcare Outcomes (Project ECHO) is a telementoring program for health professionals that uses adult learning techniques and interactive video technology to connect distal community providers with specialist and multidisciplinary teams in real-time collaborative sessions. We examine the adoption, implementation, and sustainability of ECHO programs at four academic medical centers through case studies based on structured interviews. The study and its analysis are informed by the Diffusion of Innovation theory and the Exploration, Preparation, Implementation, Sustainment (EPIS) framework. We found that early adopters became aware of ECHO by chance and were persuaded through observations to adopt ECHO. Finding a home for ECHO was an important initial adoption decision. Five context factors influence the implementation of ECHO: Funding, networks, staffing processes, leadership, and individual characteristics of staff. Sustainability requires ongoing funding, which itself may rely on evidence of outcomes. Findings from this study can inform the implementation of Project ECHO at other academic medical centers and extend to decisions to adopt, implement, and sustain similar telementoring programs designed to close the research-practice care gap between communities and academic medical centers.

Keywords: telementoring, project echo, implementation science, diffusion of innovations

Introduction

Dr. Sanjeev Arora, a Hepatitis C specialist at the University of New Mexico Health Sciences Center, walked into his clinic to find a 43-year-old woman with Hepatitis C seeking treatment for the first time after her initial diagnosis eight years earlier. When asked why she delayed treatment, she said she could not afford to take time off of work to make the five-hour trip to Albuquerque. She finally sought help when her abdominal pain began interfering with her ability to work. Now it was too late. The untreated Hepatitis C had caused advanced liver cancer that was not suited for surgery or liver transplantation. Guidelines and medicine to treat this patient's illness were available, but the doctor in her community did not have the expertise required to treat her disease. She died six months later (AJMCtv, 2018).

The knowledge-practice gap in medicine is often described as a twofold challenge: Clinicians are required to learn new knowledge and evidence-based practices and learn how to use those practices in their day-to-day work (Price, 2005). But the challenge is three-fold in academic medical centers seeking to fill this gap. Educational interventions are typically the means to address the knowledge-practice gap. Selecting and implementing an educational intervention is an additional challenge. How do staff at academic medical centers find educational interventions designed to close the research-practice gap in distal communities of care? What factors influence the implementation of these interventions? How are such interventions sustained? These are the research questions we explore in this paper by looking at four case studies of one telementoring intervention – Project ECHO.

This paper first describes Project ECHO, then discusses the conceptual framework that guided our work, and details how we conducted this study. Next, we present findings and conclude with a discussion of how these findings transfer to other academic medical centers seeking to implement Project ECHO and similar telementoring programs designed to close the research-practice care gap.

Project ECHO

Dr. Arora recognized that rural health care providers could help their patients with complex conditions if they had additional support from specialists such as himself. As a result, he created the telementoring program Extension for Community Healthcare Outcomes (Project ECHO). Project ECHO uses adult learning techniques and video technology (e.g., Zoom) to connect distal community health providers with medical specialists and multidisciplinary teams in real-time collaborative sessions. The ECHO idea is straightforward. The knowledge traditionally held by specialty care providers moves out to the community to uptrain generalist providers so they can maximize treatment before a patient needs to be referred to a specialist, if at all. ECHO allows patients to get the care they need from their local provider, who they regularly seek care from and who knows them, and the local context. As a result, care is more timely and more personal. It also frees up specialists' time to focus on more complex patients.

Each ECHO site has an operational hub from which virtual telementoring programs are created, advertised, managed, and evaluated. ECHO hubs can be situated in an academic medical center, like those we profile in this paper. Hubs also reside in health care systems, national associations, state agencies, and nonprofit organizations. A hub can be a free-standing unit that focuses only on ECHO programs. Hubs can also be embedded within a unit, such as a continuing education office, where ECHO is one of several "tools in the toolbox." Hubs can also comprise a loose collection of individuals who coordinate their resources to provide ECHO programs. A hub, then, consists of a team of people who offer ECHO programs to participants. The hub team may include one or several specialists or experts who are physicians, medical researchers, advanced care nurses, clinical pharmacists, or other persons with specialized knowledge. It also includes administrative staff who provide operational support for the program.

Those attending ECHO sessions are typically individual providers—family physicians, nurses, nurse practitioners, physician assistants, social workers, and others. Participants are seeking to learn more about a condition, treatment, process, or policy to better meet the needs of their patients in local communities. Participants are recruited through emails, hub websites, listservs, flyers, and professional networks. Participants may be grouped as cohorts and participate in the same sessions. Alternatively, participation may be open and fluid, with participants coming and going at will. Participants can often accrue free continuing education credits through participation.

ECHO programs focus on health conditions (e.g., chronic pain, Hepatitis C, HIV/AIDS) and healthcare (e.g., quality improvement, nursing homes, community health workers). Topics are selected to reflect the interests of the participants as identified through focus groups, literature, surveys, and personal knowledge. ECHO programs consist of telementoring sessions facilitated by hub experts or specialists. Sessions are designed to encourage "all teach, all learn" (Arora et al., 2017), where learning is the process of constructing new knowledge on the foundation of existing knowledge (Mukhalalati & Taylor, 2019). This is achieved through brief expert-led didactics and a case presented by a participant or an expert. Patients are commonly the subject of cases, but patients are not participants. Policies and procedures may also be subjects of cases. Cases may be submitted in advance or constructed through discussions. After a case is presented, the session facilitator first invites participants to comment or ask clarifying questions and then asks for recommendations and impressions. At the close of the discussion, the facilitator and other experts or specialists offer their impressions. The facilitator summarizes the discussion. ECHO refers to this learning design as “telementoring.”

The goal of Project ECHO is a “democratization of knowledge” so that patients anywhere can receive the best care from the doctor or health care practitioner they can easily access. Project ECHO moves knowledge, not people (Arora et al., 2017). By creating environments where “all teach, all learn,” participants learn about new evidence and recommended practices from specialists and peers who may have similar challenges. Specialists at academic medical centers learn about patients they may never see and local conditions that shape how, or if, care is delivered.

Project ECHO began in 2003 with a Hepatitis-C program at the University of New Mexico. Currently, there are more than 370 ECHO hubs and more than 2,600 programs offered in the United States and Canada. Worldwide, ECHO has spread to more than 650 hubs in 58 countries (Project ECHO, 2022). Several studies find that the ECHO approach enhances access to medical treatments by helping primary care providers in underserved areas (Dearing et al., 2019; Tran et al., 2021). Much of ECHO’s growth in the United States is due to its adoption and implementation in academic medical centers. Project ECHO is well suited to academic medical centers. Education is a primary mission of academic medical centers as they educate the next generation of physicians and provide continuing education for current providers. Physicians in these centers have expertise based on research and caring for complex patients. Academic medical centers are also deeply embedded in their communities and may serve as a safety-net provider.

As can happen with a fast-spreading innovation, the state of everyday practice may go undescribed. That is, what we confidently know about how the innovation is being implemented and sustained is delayed as science needs to catch up. Funded by the Robert Wood Johnson Foundation, we conducted interviews in late 2020 to study Project ECHO's adoption, implementation, and sustainment across multiple sites intending to fill this knowledge gap. Specifically, we explored factors that influence decision-making about ECHO. Findings from this study can inform the adoption of Project ECHO at other academic medical centers and extend to similar telementoring programs for community-based health care providers.

Conceptual Foundation

We frame the decision to adopt, implement, and sustain Project ECHO using Diffusion of Innovation theory and Implementation Science literature. *Diffusion* is how an innovation, such as ECHO, is communicated through certain channels over time among the members of a social system (Rogers, 2003). For an innovation perceived to be important, an individual's decision to adopt an innovation is not an instantaneous act; it is a process that occurs over time (Rogers, 2003). Typically, the adoption decision process begins when potential adopters become aware of the innovation; they gain knowledge through exposure to descriptive information about what problem the innovation addresses and how it functions. Knowledge may come from passive or accidental exposure or through an intentional effort to seek out a solution to a known problem. Potential adopters may seek information on using the innovation or the principles that underlie it. If the knowledge is perceived as relevant and adequate, adopters reach a persuasion stage where they seek evaluative information to reduce uncertainty about the consequences of the innovation. They want to understand better the advantages and disadvantages of the innovation and, often, who else has already adopted it. The next stage is the decision to adopt or reject the innovation. Potential adopters may try out the innovation during this phase or observe trial adoption by a peer (Rogers, 2003). If a decision is made to adopt, implementation begins as the innovation is used.

Failed implementation efforts are often the underlying reason that best or promising practices are ineffective in health and social care systems and organizations (Moullin et al., 2019) and educational settings (Nordstrum et al., 2017). Implementation Science is the study of methods to promote an understanding of and find solutions to the cause of variation in program outcomes to improve the quality and effectiveness of interventions (Eccles & Mittman, 2006). The goal of implementation science is not to establish the impact of an innovation but to identify the factors that affect its uptake into routine use (Bauer & Kirchner, 2020). Most research about the organizational implementation of this type has occurred in healthcare settings such as clinics and hospitals. Many implementation science frameworks have been proposed and tested, such as the Consolidated Framework for Implementation Research (CFIR) to identify and categorize independent variables that affect the implementation of evidence-based practices (Damschroder et al., 2009) and the Promoting Action on Research Implementation in Health Services (PARIHS) framework to predict why implementation will or will not be effective (Harvey & Kitson, 2016). We use the Exploration, Preparation, Implementation, Sustainment (EPIS) framework (Aarons et al., 2011) to guide our study. The EPIS framework was developed based on implementing innovations in public sector social and allied health services and has been applied in educational settings (Moullin et al., 2019; Movsisyan et al., 2019). The EPIS framework organizes factors that influence implementation into four constructs: Outer and inner context factors, bridging factors, and innovation factors. Outer context factors describe the environment external to the organization. In contrast, inner context factors refer to characteristics within an organization. Bridging factors cross between outer and inner contexts, and innovation factors focus on the characteristics of the innovation (Aarons et al., 2011). In this study, we were particularly interested in outer and inner context factors that influence implementation. We did not look for all EPIS inner and outer factors as some did not fit with this study (e.g., patient characteristics). We chose not to focus on innovation factors because the ECHO model is not prescriptive but based on principles and adaptation is anticipated as contexts are different. The factors we looked for in this study are defined in Table 1.

Table 1. Study definitions of epis outer and inner context factors

Context	EPIS Factor	Study Definition
Outer context	Funding	Fiscal support provided by the system in which ECHO occurs
	Inter-organizational environment and networks	Relationships through which knowledge of ECHO is shared and/or implementation goals are established
	Service environment	State and federal sociopolitical and economic contexts that influence the implementation of ECHO
Inner context	Organizational staffing processes	The processes or procedures related to the hiring, training, and retention of staff involved in ECHO implementation
	Leadership	Characteristics and behaviors of individuals involved in oversight and/or decision-making related to ECHO implementation within an organization
	Individual characteristics of staff	Characteristics of individuals that influence the process of ECHO implementation
	Quality and fidelity monitoring/support	Processes or procedures to ensure adherence to active delivery of the ECHO

	Organizational characteristics	Structures or processes in an organization that may influence the process of ECHO implementation

Note: This table is drawn from factors and definitions in Aarons et al., 2011 and Moullin et al., 2019.

Study Design and Analysis Procedures

We conducted case studies that describe the adoption, implementation, and sustainability of ECHO programs at four academic medical centers. Using a qualitative case study design (Stake, 1995), at each site, we interviewed 2-3 people associated with the ECHO hub and 2-4 people associated with two separate ECHO programs. Programs at each hub were selected based on how they were different. A most-different approach to selection maximizes structural differences and attends to similarities in observation despite the inherent differences across cases (Przeworski & Teune, 1970). As is typical of case study research, we primarily collected information about each case through an interview protocol (Brewer & Hunter, 1989). Interviews followed a structured protocol, and all respondents were asked the same open-ended questions designed to learn how the hub came to adopt Project ECHO and the contextual factors that shape program implementation and sustainability. Respondents included medical and administrative leaders who are part of the ECHO hub at each site. We also interviewed medical experts and administrative coordinators for each ECHO program. Interviews were conducted via Zoom, recorded, and transcribed.

Case studies were constructed through an iterative process of comparing and contrasting responses from each site based on guiding questions (Miles et al., 2014). Each case was reviewed by respondents who validated the content. Next, the authors conducted a cross-case comparison. According to Miles et al. (2014), one of the key reasons to conduct cross-case analysis is to “deepen understanding and explanation” (p. 101). Using Roger’s (2003) innovation decision-making model and EPIS factors (Aarons et al., 2011) as sensitizing concepts (Charmaz, 2003), authors individually compared and contrasted data across these four cases and then came together to discuss insights that emerged from the cross-case analysis. The sites we include in this study are as follows: ECHO Colorado, University of Colorado Anschutz Medical Campus; ECHO Utah, University of Utah Health; ECHO Nevada, University of Nevada, Reno School of Medicine; ECHO Chicago, University of Chicago Medicine.

Findings

ECHO Model Adoption-Decision Process

In this section, we discuss how adopters of the ECHO model gained knowledge of ECHO, what influenced their decision to adopt it, and where they implemented it in the organization.

In each of the four academic medical centers we studied, awareness of Project ECHO came from serendipitous exposure. Dr. Box at the University of Utah Health first learned of Project ECHO in 2010 from a colleague who had been informed about the development of ECHO by a pharmaceutical representative. Dr. Johnson, who was instrumental in bringing ECHO to the University of Chicago, learned about ECHO in 2009 from a colleague who had learned about ECHO through a friend who worked at the University of New Mexico. At the annual American Academy of Medical Colleges meeting in 2014, the President of the University of New Mexico asked the Chancellor of the University of Colorado, “Why don’t you have an ECHO?” In 2012, two physicians at the University of Nevada, Reno School of Medicine, read about ECHO in an article in the *New England Journal of Medicine* written by Dr. Arora. In each of these cases, the adopters were not specifically searching for a telementoring intervention to address a practice-care gap. This is not an uncommon occurrence. Needs may be developed after one becomes aware of an innovation (Rogers, 2003).

Upon learning about ECHO, leaders from each academic medical center independently visited the ECHO Institute at the University of New Mexico. There was limited training and support infrastructure during these early years of the Project ECHO movement, so much was learned directly from Dr. Arora and his team, including observing an ECHO session led by Dr. Arora. These site visits were highly impactful. One physician stated, “I saw what was going on, including the tele-clinic. I got the introduction to the philosophy and the platform and the full potential impact. I returned determined to recreate it.”

Leaders returned from visits to the ECHO Institute ready to implement Project ECHO. One of their first implementation decisions was where to locate ECHO within their respective academic medical center. Project ECHO presents a bit of a dilemma in terms of organizational fit. It is an educational intervention. It is a form of community engagement. It involves technology. It may involve a single specialty or engage a multidisciplinary team across departments or even colleges. It is not surprising then to find that ECHO programs did not share a common location with an academic medical center – or that these homes may change over time. Below we describe where ECHO fits within each case study site.

ECHO Nevada is housed within the Office of Statewide Initiatives at the University of Nevada, Reno School of Medicine. The Office of Statewide Initiatives is charged with improving access to quality health care for rural Nevada by providing collaborative leadership and resources to health care and community organizations. The fit, then, is with the mission of an office within the School of Medicine.

ECHO Chicago is situated within the University of Chicago's Biological Sciences Division in the Department of Pediatrics. Within this Department, the hub is part of the Academic Pediatrics Section, one of two sections led by Dr. Johnson – who brought ECHO to the University of Chicago and continues to provide leadership. ECHO Chicago also aligns with Dr. Johnson's work with an Urban Health Initiative focused on improving the delivery of care in urban, underserved communities. Fit coalesces around Dr. Johnson's expertise and interests.

In Colorado and Utah, the location of ECHO work has changed over time. At both sites, ECHO work initially aligned with the interests of the adopter. In Colorado ECHO, the initial physician leader had an appointment in the School of Public Health, and ECHO was initially located there. This leader retired, and the ECHO programs shifted to be more clinically focused, which enabled ECHO Colorado to diversify its funding. Eventually, the ECHO work merged with the campus eConsult program. This led to ECHO Colorado transitioning from the School of Public Health to the School of Medicine. This shift in location is pragmatic and, at least in part, based on funding opportunities.

At the University of Utah Health, ECHO Utah was initially supported by the Senior Vice President for Health Science and the Departments of Medicine and Surgery chairs. The initial framing of ECHO Utah was as an educational intervention and as a business growth opportunity. Dr. Box, who brought ECHO to Utah, defined ECHO as an educational program, and ECHO was aligned with his work in the transplant service line. Several years later, the ECHO portfolio of programs was moved to the Office of Network Development and Telehealth and placed within the Education Team. The shift in Utah is similar to Colorado in that it reflects a pragmatic need to find alignment not just with the mission or an individual's interests but also with funding.

Returning to the innovation-decision process model (Rogers, 2003), what we learn across these four cases is that initial awareness of ECHO was serendipitous and generated a perceived need to learn more about it. A critical incident at the stage of persuasion for these early-adopting sites was meeting with Dr. Arora and his staff at the ECHO Institute. Once the decision to adopt ECHO was made, leaders had to choose where to initially place an ECHO hub within the academic medical center. Across these four case studies, decisions about placement were shaped by three factors: the adopter's expertise, the alignment of ECHO with the mission of a particular unit, and/or funding opportunities.

Project ECHO Implementation and Sustainability Factors

The EPIS framework identifies outer (system) factors and inner (organizational) factors that have been found in previous studies to impact the implementation and sustainability of innovations (Aarons et al., 2011). No two academic medical centers describe the same set of factors as influencing the implementation of ECHO. Still, they do coalesce around five factors: Funding, Inter-organizational Environment and Networks, Organizational Staffing Processes, Leadership, and Individual Characteristics of Staff. Funding is the single factor that consistently surfaced related to the sustainability of Project ECHO. Below we illustrate how each of these factors influences the implementation and sustainability of ECHO at each study site.

Implementation Factors

Funding

A key characteristic of the ECHO model is that participants do not pay to attend ECHO programs. Offering the program at no cost to participants facilitates the democratization of knowledge as participation is not contingent on an ability to pay. ECHO hubs and programs must secure financial resources to support their work, and this is an ongoing challenge that influences how or if an ECHO program can be offered.

At ECHO Colorado, the funding model was described as "braided… a very diversified funding model." This comment well characterizes the funding at all four ECHO sites. Funding for ECHO typically came from five sources. Pass-through funds were issued by a federal agency to a state agency or institution who then awarded these funds to an academic medical center for ECHO work. Pass-through funds came as grants with a programmatic focus, such as opioid use disorder or COVID, and were made on an annual or bi-annual basis, though they may last for several years. The second source of funds was from or tied to Medicaid. Like pass-through funds, Medicaid-related funds came tied to a specific focus or condition. A third type of funds came from research grants where ECHO was typically not the primary focus but part of a bundle of interventions. Again, these funds were associated with a specific topic or workstream and were for a limited period. These three sources of external funds were a critical part of the budget but seldom supported all of the ongoing operations of an ECHO hub.

Institutional funds from the academic medical center or the university can bring a much-needed cushion to programs. These internal funds may function as recurring funds, even if they are not, and provide support for program development, marketing, evaluation, and research. Institutional support was common, but it was seldom in abundance. For example, ECHO Utah received institutional funds, but these funds were "just enough" to keep current programs running.

A final source of funds was foundations grants or gifts. Foundation funds were fewer in number, but they had significant impact. For example, the Colorado Health Foundation invested more than $3 million to jump-start ECHO Colorado. This investment allowed for a thoughtful approach to the role of ECHO Colorado and hiring an experienced director, coordinators, and learning specialists.

Looking for funding to support programmatic and operational needs was "exhausting." One respondent summed up the experience described at each study site: "A critical part of the job is looking for money. We all know that, eventually, this kind of money dries up because you're no longer as innovative as you once were, and so people don't always want to keep funding you." Funding was critical to implement ECHO. Academic medical centers had unique funding "braids" and sought to diversify their funding sources.

Inter-Organizational Environment and Networks

Academic medical centers operated ECHO in a network of professional relationships, and these relationships influenced the implementation of ECHO. Physician leaders reached out to safety net organizations, primary care groups, and state hospital associations, among other medical groups, to identify community needs, share information about ECHO, and recruit participants. Dr. Johnson at ECHO Chicago explained that he went to a care collaborative to "identify the safety net organizations that would be interested in hearing about ECHO, and then leveraged my relationships with FQHCs [Federally Qualified Health Centers] to launch ECHO." ECHO hubs at these four academic medical centers worked with state health and related services departments. State officials played multiple roles – funder, expert, connector, certifier, and thought partner. Respondents at three academic medical centers mentioned having advisory boards that include members from external organizational partners. Community-based organizations were also frequent partners. These organizations – some of which provided health and some of which offered safety nets for underserved populations – helped to identify community needs, connected the ECHO programs to participants, and sometimes provided experts to deliver the didactic portion of an ECHO session.

ECHO hubs were also reaching across their respective academic medical centers to identify faculty who could serve as facilitators, team members, or presenters. ECHO hub directors partnered with campus marketing, communication, and evaluation offices. Several respondents reported that ECHO program collaborations led to new partnerships and multidisciplinary research proposals. In a couple of situations, the ECHO hubs partnered with outreach and external affairs offices and were profiled as key outreach programs for the academic medical center.

Organizational Staffing Processes

Professional training in implementing the ECHO model was an essential factor identified at each of the four case sites. Nearly all of the ECHO hubs and programs staff attended a three-day “immersion” training provided by the ECHO Institute at the University of New Mexico. The immersion training provided an opportunity to see an ECHO program in action, making the process more tangible. Dr. Thomas at ECHO Colorado attended immersion training multiple times. Each time he traveled to New Mexico, he looked at ECHO from a unique perspective; “I went to look at it [ECHO] from an entrepreneurial perspective, I went from a technology perspective, I went from a healthcare delivery perspective. I tried to listen to it differently and interact with different people at different times.” Staff were encouraged to attend in teams, which many did. At ECHO Nevada, sending teams improved knowledge of how to implement ECHO and also created buy-in to the purpose of ECHO. The impact of the training extended beyond learning “how” to do ECHO. Respondents referenced “drinking the Kool-Aid” and finding camaraderie and shared purpose with attendees from their own and other institutions. At ECHO Utah, one respondent described immersion in a way similar to what we heard at other sites: “When you go to immersion and get fully immersed in everything ECHO, it gives you a different drive and a different understanding of what’s going to work and what’s not going to work.”

Respondents, and especially physicians, shared that working in clinics and their professional training influenced how they approached ECHO implementation. Experience as health practitioners in low-resource settings, community settings, and telehealth guided many physicians in their approach to ECHO programs. Physicians also relied on their substantive knowledge and expertise in the topic of the ECHO program. Some staff, though not all staff, drew on experiences in quality improvement training and their education in public health.

Training, especially immersion training at the ECHO Institute, was important to adhere to the model's fidelity. But the impact of immersion training went beyond “how to do” ECHO, it inculcated a shared sense of “why to do” ECHO.

Leadership

Institutional leadership strongly influenced the decision to adopt Project ECHO and influenced where ECHO was located, at least initially, in each academic medical center. Leadership continued to be important during the implementation phase though leaders changed and how they influenced implementation varied. At ECHO Nevada, the hub's medical director provided leadership of day-to-day operations and quality improvement. At the other three academic medical centers, medical directors continued to champion the work but much, if not all, of the leadership of operations, fell to administrative leaders. In ECHO Colorado and ECHO Chicago, the administrative leaders had a broad scope of responsibilities with upwards of ten direct reports.

Leadership was also evident at the program level, where medical experts facilitated sessions that encouraged a learning environment where "all teach, all learn." Program leaders were described as "modeling" openness and vulnerability. At ECHO Nevada, facilitators sometimes presented their patient cases and asked participants for review and consultation. This method showed that even subject matter experts did not have all the answers and can use input from others. Respondents at ECHO Colorado talked about the importance of the ECHO medical leader in mentoring facilitators, experts, and staff in developing a culture where everyone feels safe to share their challenges. At ECHO Chicago, one program facilitator talked about his role in setting "the tone" of the ECHO so that it was "about respect and seeing the people on the other end as equals. We're all doing this together."

ECHO implementation required leaders of hubs to champion the work to other parts of the academic medical center and the university. However, they did not need to provide day-to-day leadership of operations. At the program level, leadership was expressed as an ability and willingness to model behaviors that build a safe space where participants were comfortable sharing their cases, asking questions of their peers, and providing advice to their peers and the subject matter experts.

Individual Characteristics of Staff

Successful implementation of ECHO programs relied on the commitment and knowledge of program coordinators. ECHO coordinators often supported four or more ECHO programs and worked closely with program facilitators. At ECHO Chicago, one program facilitator stated, "The most important person for all of this has been our project coordinator. That is somebody that can do the type of outreach that she's done, run the sessions, and make sure that everything happens. It just doesn't work otherwise." Facilitators relied on coordinators as mentors who gave a sense of "here's the to-dos and not to-dos. Here's how you talk about it. Here's what's helpful. Here's how to brand it. Those basics really helped us get off to a confident, good start."

Coordinators also often linked the program team with the larger ECHO community or other stakeholder groups. They shared organizational knowledge about ECHO, its practices, values, and ethos. Across these four sites, facilitators and coordinators described close working relationships and respect for each other. Coordinators did more than administrative work; they were mentors to the facilitators, guiding them on how to work most effectively with participants and prepare for sessions.

Funding as a Sustainability Factor

The ECHO hubs and programs we studied anticipated growing their ECHO work over the next five years. Growth was often focused on increasing the number of participants attending programs and expanding into new geographic areas, delving into new topics (including moving outside of traditional medical areas), or increasing the number of cases from participants. Growth is not possible, nor is maintaining the status quo, if programs cannot be sustained over time. Funding was the one factor that emerged across these four sites as essential to maintain current and future ECHO work.

Each site was searching for ways to expand its financial base and gain greater financial stability. Three sites specifically mentioned working with the state to secure dedicated funds for ECHO. All sites were writing proposals for funds, often in response to a request from the state for pass-through funds, and to local and national foundations. Sites were looking for funds that extended beyond specific topics so that they were free to evolve their ECHO programming. They were looking for more "protected time" for academic center medical staff to work on ECHO to offset costs and increase dedication. Financial stability could lead to longer-term commitments for administrative staff and investments in strategic planning, evaluation, and research.

Sustainable funding was dependent, to some extent, on showing the value of ECHO to the university, the state, and others. Dr. Thomas at ECHO Colorado said, "We have to publish more than feel-good related articles, that we've done something with ECHO that is meaningful to our different partners." A program leader at ECHO Colorado said, "We're getting real results. People are doing things they weren't doing before that align with best practices. If someone could study the program and show the evidence, then I could expand it." ECHO Utah shared a similar sentiment, saying that they need to deliver a message to the state about "why we exist, why we matter, and how we're making an impact for citizens across the state and region." Some sites were encouraging academic faculty to include ECHO in research grant proposals which could increase the likelihood that ECHO outcomes are being measured.

Each ECHO hub collected routine process and outcome data as required by the ECHO Institute or continuing medical education credits. These data, however, fell short of showing impacts. Being part of an academic medical center did not guarantee access to researchers or evaluators. Finding staff who could conduct evaluations or analyze existing data was a need expressed by three ECHO hubs. A strategy to obtain longer-term funding is to invest in research that provides evidence that ECHO work is reducing health care disparities and or reducing health care costs.

Conclusions and Recommendations

ECHO hubs were well established in these four academic medical centers. Awareness of ECHO came from serendipitous encounters. Observations and conversations led to adoption. Finding a home for ECHO was an important initial implementation decision. Implementation of ECHO programs was shaped by funding, networks, training, leadership, and individual characteristics of staff. Sustainability is a consistent concern and focus. Attendees do not pay to participate in ECHO programs; thus, funding must come from elsewhere. ECHO hub leaders seeking funds from their respective states, foundations, and within their institution would be well served by having evidence of the impact of their work.

What can we learn from these four ECHO hubs that can inform the adoption and implementation of ECHO at other academic medical centers? For one, those curious should attend immersion training to see firsthand how ECHO programs and sessions are organized and delivered. These immersive trainings are very impactful and could lead to adoption or non-adoption decisions. Second, there is no one ideal place where ECHO should be housed within an academic medical center, which is not surprising as each center has a unique organizing structure. Fit is important with a faculty-physician-researcher's work or with the mission of a larger division or office, and fit may change over time. Third, ECHO programs are a form of community engagement as they cultivate partnerships with and respond to the needs of the larger community as well as within the organization. Fourth, the staff in the ECHO hubs are as critical as the medical experts. They are the glue that keeps programs moving forward. Beyond their administrative and coordination roles, they also train specialists in an "all teach, all learn" model of learning. Lastly, and most importantly, funding for these programs has to be addressed from the beginning. ECHO programs are not revenue-generating and require external and internal funding sources to implement and sustain them. Some programs have been discontinued at these successful ECHO hubs due to a lack of funding or shifts in funding priorities. Providing "protected time" for academic center medical staff to work on ECHO is one way to offset costs.

Much of what we are learning from the implementation of ECHO hubs at these four academic medical centers can apply to the adoption, implementation, and sustainability of other telementoring programs. One key translational finding is the role of serendipity. What if these physicians had not had the one-off conversation or happened across a journal article? We can be more intentional in finding effective innovative solutions to enduring problems. For example, we can provide medical experts and staff with time and support to attend conferences or events, especially those outside of their disciplinary expertise. Academic medical centers can also designate offices or individuals with systematic scanning of literature and conferences proceedings to identify promising interventions.

Another translational finding is that the factors identified in this study that influence implementation and sustainability are not novel or unique to ECHO – we find these factors influencing program implementation in many health systems (Aarons et al., 2011). If an academic medical center – or other organization – adopts a similar educational program, it should be attending to these factors from the start. For example, if a program is not revenue-generating or doesn't generate sufficient revenue to sustain the staff and other programmatic costs, finding stable funding should be a primary focus. As another example, when teams are going to implement a new program, having the opportunity to train together can foster fidelity to the model. Related, training should focus on "know why" and not only "know how." In addition, embedding programs in professional and community networks can strengthen the ties between medical experts and those in practice who are serving diverse populations. Networks also help with recruiting participants and guest speakers.

Another point to consider is that before COVID-19, the use of video technology such as Zoom was novel or at least unique in medical education. That is no longer the case. Project ECHO has kept from being just another webinar because of its continued focus on "all teach, all learn." Facilitating technology-based learning requires a new set of skills for many physicians and staff in academic medical centers. In addition to medical specialty knowledge, skills are needed in adult learning, facilitation, case-based learning, and peer-based collaboration.

Finally, while Project ECHO draws on partnerships and has generated new collaborations, the reach across the university to colleges in social science, business, and education, among others, and lifelong learning units is weak and should be strengthened. The social determinants of health that create the conditions that foment health disparities need a wide-angle lens to solve them. Inviting other disciplines to the work of Project ECHO could strengthen its impact. Too, lifelong learning efforts across campus could benefit from more knowledge about Project ECHO's highly elastic model for sharing best practices and mastering complex knowledge. We believe that the ECHO model could be widely used across disciplines.

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Original Research

Academic Center Partnership with Health Department and Church to Rapidly Deploy COVID-19 Vaccine POD Reaching Underserved Populations

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Cite as: Garmong, G.E., Calhoun, B. C., Colbert, A., Grigsby, V.J., Mann, J., Nagy, A., Namey, B., Parish, M.J. & Elliott, J.P. (2022). Academic center partnership with health department and church to rapidly deploy COVID-19 vaccine pod reaching underserved populations. *Metropolitan Universities*, 33(3), 110-137. DOI: 10.18060/25692

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Abstract

The COVID-19 pandemic has disproportionately impacted people of color, underscoring the importance of equity in the public health response. The Duquesne University Center for Integrative Health (DUCIH) is a university-wide center focused on training future practitioners and improving health equity in the Pittsburgh region. DUCIH's initial pandemic response included a virtual adaptation of community health programs and supporting partners' testing and vaccination efforts. In March 2021, the Allegheny County Health Department (ACHD) asked DUCIH to establish a vaccine Point of Dispensing (POD) at Central Baptist Church in Pittsburgh's Hill District, to reach underrepresented populations. DUCIH engaged the Schools of Health Sciences, Nursing, and Pharmacy and multiple university offices to recruit an interprofessional team of 263 volunteers. From March to June 2021, the POD administered 5,652 vaccines in an underserved neighborhood, with a majority of doses administered to people of color, meeting the POD's aim. This university-church partnership has continued with vaccine clinics and health screenings. This case study shares lessons for rapid response to public health emergencies through university-wide collaboration with community partners. Universities with health science schools should cultivate relationships with local health departments to promote awareness of these capabilities.

Keywords: COVID-19, vaccine equity, vaccine point of dispensing (POD), community engagement, community-academic partnership, academic health department, interprofessional education

Introduction: The Challenge and Potential Consequences

The 2019 coronavirus pandemic has had a disproportionate impact on people of color. Rates of laboratory-confirmed COVID-19-associated hospitalizations within the Centers for Disease Control and Prevention's (CDC) COVID-19-Associated Hospitalization Surveillance Network (COVID-NET) 14-state catchment area, adjusted for age differences between populations, were more than 2.5 times higher among Non-Hispanic American Indian or Alaska Native, Non-Hispanic Black, and Hispanic or Latino people than among Non-Hispanic White or Non-Hispanic Asian or Pacific Islander people between March 1, 2020, and September 18, 2021 (CDC, 2021b). CDC National Center for Health Statistics (NCHS) data also show disparities in age-adjusted COVID-19 death rates between racial and ethnic groups. Hispanic people make up 35.30% of COVID-19 deaths despite comprising only 19.40% of the U.S. population, Non-Hispanic Black people 22.60% of deaths but only 12.70% of the population, Non-Hispanic American Indian or Alaska Native people 2.60% of deaths but 0.70% of the population, and Non-Hispanic Native Hawaiian or Other Pacific Islander people 0.70% of deaths but 0.20% of the population (CDC, 2020b).

Consequently, equity in COVID-19 vaccine distribution has been an articulated priority of the CDC (CDC, 2021a). Specifically, the CDC identified activities to "build community capacity to reach disproportionately impacted populations with effective culturally and linguistically tailored programs and practices..." and "support capacity building for COVID-19 vaccine distribution and administration by establishing partnerships with organizations including federal, state, local, tribal and territorial agencies, national non-governmental, private sector partners, and community-based organizations" as important steps toward reaching this priority (CDC, 2020a).

Simultaneously, COVID-19 has posed disruptions to the functioning of communities due to mitigation measures (CDC, 2020c). Among these disruptions, health professions learners' participation in clinical rotations and community-engaged health programs was restricted throughout the United States in 2020 due to governmental stay-at-home orders, healthcare organization and community partner policies, and university policies (Fuller et al., 2020; Rose, 2020). Experiential learning is an integral component of health professions students' development of clinical competence and kinesthetic skills. The degree of the pandemic's disruption of clinical training varied among disciplines and the clinical sites students were assigned to.

For example, physician assistant and nursing students assigned to emergency departments were not permitted in these high-volume environments early in the pandemic, in some cases delaying graduations because students could not complete the required numbers of hours or patient encounters. Similarly, inpatient facilities with lower-acuity patients had lower censuses, often resulting in less capacity for students. From Spring to Summer 2020, many hospitals canceled elective surgical procedures, further limiting learning opportunities. Collectively, these situations had the potential to negatively impact student progression through their educational programs and the depth of the learning experience.

Duquesne University Center for Integrative Health

The Duquesne University Center for Integrative Health (DUCIH) is a university-wide, interdisciplinary center whose mission "is to train the next generation of practitioners who will address rural and urban health care disparities and thereby improve health equity in the Pittsburgh region and beyond" ("Center for Integrative Health," 2021). DUCIH was established in January 2020 to foster collaboration toward this mission among the Schools of Health Sciences, Nursing, and Pharmacy and the proposed College of Osteopathic Medicine. The Center was built upon a history of work that had been taking place between the university and multi-sector partners "to address problems that have a high cost, high burden, and significant racial disparity" ("Center for Integrative Health," 2021). Within the DUCIH is the School of Pharmacy's Center for Pharmacy Care (CPC), which is a pharmacist-provider of employee and student health programs, including robust immunization and travel health programs. DUCIH's Community Health Initiatives arm includes interdisciplinary school-based asthma clinics, a pharmacist-led community-clinical linkages program including chronic disease and social determinants of health screenings and care coordination, community-based chronic disease prevention programs (smoking cessation, CDC's Diabetes Prevention Program, etc.), and community-based vaccine clinics (Elliott et al., 2021). Through these programs, strong partnerships have been built over time with the Allegheny County Health Department (ACHD), school districts, churches, federally qualified health centers (FQHCs), the Housing Authority of the City of Pittsburgh, and community-based organizations, among others.

The university's programs affiliated with ACHD were undertaken with the explicit goals of both educating health professions students and improving public health. This pre-existing, established relationship demonstrates the key components of an Academic Health Department (AHD), including a formal partnership between an academic institution and a governmental agency (in this case, the local health department), a mutually beneficial agreement, and shared resources (Erwin & Keck, 2014). The AHD model is designed to enhance teaching, research, and service. Before the pandemic, various schools at the university partnered with ACHD on projects related to Head Start, screening, vaccination, and health education. This includes a five-year project, The Allegheny County Racial and Ethnic Approaches to Community Health (REACH) Project, to implement screenings for chronic disease and social determinants of health using community-based pharmacists (Elliott et al., 2021).

DUCIH Community Health Initiatives' Response to the Pandemic

Given the existing infrastructure of community-based health programs and established partnerships, DUCIH was able to quickly respond to the pandemic locally. Table 1 summarizes various partners' pandemic-response initiatives supported by DUCIH and lessons learned. Volunteer training and orientation for these activities generally were conducted on-site by the partners.

Table 1. DUCIH support of partners' pandemic response

Start of Initiative	**Volunteer Pool**	**Recruitment Mechanism**	**Volunteer Roles**	**Lessons Learned to Inform Future Initiatives**
Summer 2020: Testing at partner FQHCs	• DUCIH staff • School of Pharmacy faculty and staff	E-mail distribution list, with sign-up via Google Sheets	• "Crowd-control" (directing patients through the testing site) • Data intake • Providing self-swab instructions	A variety of volunteer roles allowed the engagement of both clinician and non-clinician volunteers.
Dec 2020: Support for Community Pharmacy and Health System Vaccine Clinics	• School of Pharmacy students and faculty	Announcements in "School of Pharmacy Pandemic Immunization Response" Blackboard	• Varied by partner and clinic	Central communication mechanism through learning management system facilitated sharing specific nature of

		community with links to sign-ups		volunteer needs, site-specific requirements, and sign-up mechanisms efficiently, with flexibility for partner needs
Jan 2021: COVID-19 vaccines at partner FQHCs	• DUCIH pharmacist staff and rotation students • School of Pharmacy pharmacist faculty and students	E-mails to Pharmacy Practice faculty; Blackboard community announcements; Google Sheets transitioning to SignUpGenius	• Vaccine administration (pharmacists only, due to FQHC credentialing process) • Intake and vaccine documentation (students)	DUCIH non-clinician staff member served as a liaison to FQHCs for pharmacist vaccinator credentialing and volunteer scheduling. Online volunteer management software (SignUpGenius) offered benefits over manual scheduling: allowed volunteers to customize availability week-to-week by signing up for available shifts easily, provided updates to the coordinator of any schedule changes, and sent automated shift reminders or notices of shift modifications.

Jan 2021: ACHD healthcare professional COVID-19 vaccine clinics on Duquesne campus	• DUCIH staff and rotation students • School of Pharmacy faculty, staff, and students	E-mail list (faculty and staff) and Blackboard community announcements (students), with sign up via Google Sheets	• Registration • Guiding patients through workflow • Vaccine preparation • Vaccine administration/ documentation • Post-vaccination monitoring/ Check-out	Roles for non-vaccinators (e.g., registration, guiding patients through clinic workflow) increased volunteer pool

While the hands-on experience with mass vaccination to meet an urgent public health need was impactful for all health professions, the opportunity to be involved in vaccine administration was particularly impactful for student pharmacists since this was the first time they were permitted to immunize in Pennsylvania. While legislation from 2015 authorized pharmacy interns to immunize under pharmacist supervision, Pennsylvania Board of Pharmacy regulations implementing interns' immunization authority had not been finalized by December 2020 (PA Act 8, 2015). Recognizing the potential of student pharmacists to assist in the COVID-19 vaccination effort, on December 8, 2020, Pennsylvania's governor issued an emergency waiver permitting trained pharmacy interns to immunize after notifying the Board of their intent (P.A. Department of State, 2020a). While this waiver is subject to expiration, a permanent application process was instituted for the "Authorization to Administer Injectables for Pharmacy Intern" in March 2021.

DUCIH worked with the School of Pharmacy's immunization training coordinator to establish a "School of Pharmacy Pandemic Immunization Response" community website in the university's learning management system (Blackboard). This website was populated with all immunization-trained student pharmacists, faculty, and staff. It communicated vaccination opportunities, whether with DUCIH, local health systems, or community pharmacies. The site also served as a repository for clinical resources related to each COVID-19 vaccine and vaccine administration. "Assignments" were created in the site, which prompted students to upload training certificates and proof of Board of Pharmacy notification. School of Pharmacy faculty and staff could then verify requirements were met.

DUCIH's support of early vaccination efforts at partner FQHCs (details in Table 1) emphasized the need for a flexible, nimble approach. Because vaccine supply was limited, and the FQHCs' vaccine allocations from the Pennsylvania Department of Health varied week-to-week, weekly communication between each volunteer pharmacist and the nursing coordinators at the FQHC sites was essential to determine the actual need for volunteers. These pharmacists then updated student pharmacists who were scheduled to work with them.

DUCIH and the CPC also partnered with ACHD in January 2021 to vaccinate health professionals. Recognizing the role of health professions students and faculty in the local healthcare system (placing them in the initial phase [1a] of vaccine eligibility), on-campus clinics were organized to vaccinate this population, both from Duquesne University and a local community college. DUCIH staff worked with university facilities and events staff to arrange the use of large ballroom space and partnered with ACHD staff to design a clinic workflow to promote social distancing and logical movement of patients through registration, a waiting area, vaccination stations, and post-vaccination observation.

ACHD contributed a staff member serving as clinic manager, the vaccine supply, and use of their documentation system (PrepMod). Vaccine-eligible individuals used this system to schedule appointments online and complete the required pre-vaccination screening questions. The system was also used on-site to register patients into the clinic and record vaccination details for reporting to the state immunization registry (PA-SIIS). This system sent automated e-mail reminders for patients to schedule their second dose of the vaccine series when due.

The School of Nursing was also involved with testing and vaccination efforts as soon as both became available. Nursing students and faculty worked at vaccine clinics run by ACHD, including established clinics, as well as operations that went to temporary clinic sites to reach a specific population. Several faculty members were also involved with vaccination efforts with local hospital systems. A faculty member who helped organize mass clinics with these partners would later lead a DUCIH team tasked with designing clinic workflow and logistics. Another of the school's clinical faculty members who took students in the early stages of vaccine distribution would be recruited as a Site Lead. Early participation in community efforts provided valuable insight into design and implementation for DUCIH's clinic.

Point of Dispensing (POD) in the Hill District Neighborhood of Pittsburgh

ACHD's initial approach to vaccinating the larger community focused on using large, regionally-situated COVID-19 vaccine Points of Dispensing (PODs), allowing efficient vaccination of large numbers of patients to meet the initially-high demand for vaccines. In March 2021, ACHD sought to open a POD "to target specific communities and populations who have not yet been reached through traditional means" (Allegheny County Health Department, 2021). The location selected for this POD was Central Baptist Church (CBC), a longstanding community institution in the Hill District, one of Pittsburgh's historic predominantly Black neighborhoods.

Recognizing Duquesne University's history of community-engaged work in the Hill District and DUCIH's success with working with community partners to implement health equity initiatives, ACHD approached DUCIH on March 2, 2021, with an ask to coordinate operations at this POD. In this descriptive case study, the authors undertake to share strategies utilized and lessons learned in rapidly deploying this public health response through university-wide collaboration with community partners. Descriptive statistics of vaccine recipient demographics are presented, based on aggregate reports generated from the POD's clinical documentation systems, to assess the POD's impact on reaching underrepresented groups, including people of color.

The Community and Partner: Hill District and Central Baptist Church

The Health Resources and Services Administration (HRSA) has designated the Hill District as a Low Income Medically Underserved Population Health Professional Shortage Area ("MUA Find," n.d.). Census data for the church's tract indicate that 35.3% of people live below the poverty line; 84% of the population identify as Black, 13% White, 2% two or more races, and 1% Asian (U.S. Census Bureau, 2019). CBC is a centrally-located, well-known institution within this neighborhood and is also along two bus routes, facilitating access by those from other neighborhoods who rely on public transportation.

Inasmuch as the African American community has been facing serious health disparities, CBC felt it was the church's mission to maintain levels of community engagement from an ethnographic framing that limited COVID-19 disparities from widening. CBC's public health initiatives have been a part of the church's mission for more than twenty years. To this end, the dispensing of the COVID-19 vaccine became a part of the public health, healthy living, and personal fitness mission.

POD Planning

Contributions of ACHD, CBC, and DUCIH to planning for the POD are summarized in Table 2. In addition to conceptualizing the model and procuring the site, ACHD provided vaccine supply for the POD, information technology, and financial support for supplies, marketing, and a full-time Site Lead. Given the limited financial resources of ACHD, though, a model was created in which all other POD operations were supported by university faculty, staff and student volunteers, and CBC staff/volunteers.

In addition to providing the space for the POD, CBC provided staffing support, as indicated in Table 2. Volunteers were enlisted to assist in mobilizing those who came for vaccination, primarily by appeals to the church congregation. These volunteers were mostly retirees who had a strong interest in public health and public service. However, eighteen hires were given part-time positions at minimum wage compensation to maintain the day-to-day operations. A detailed schedule was created for each week, and hospitality and COVID protocol training was implemented. Training in administrative procedures for COVID vaccination registration was also a part of the implementation process.

The church's leadership and congregation also assumed a lead role in promoting the importance of vaccination—and addressing hesitancy—among their community through pulpit announcements, word-of-mouth, personal calls, e-blasts, social media, and local television media interviews with the pastor and volunteers. CBC engaged in outreach to senior living facilities and churches and held a press conference collaborating with the Black Political Empowerment Project (B-PEP), Urban League, NFL Hall-of-Famers Mel Blount and Franco Harris, and the CBC pastor.

The Director of DUCIH worked with university administrators to obtain approval to support a campus-wide response quickly. The Hill District POD opened at CBC in less than three weeks, on March 19, 2021. The DUCIH Director identified individuals within select schools and offices to serve on the POD's coordination team (as noted in Table 2), provided leadership for this team, and worked closely with the ACHD, CBC, and university administrators to execute the necessary contracts and oversee all aspects of implementation.

The overarching Duquesne team met weekly beginning two weeks before the scheduled opening of the POD and provided planning and oversight of operations. The relatively large team was divided into four smaller teams, each with a designated lead and specific charges: Site Logistics, Vaccinator Training and Coordination, Coordination Logistics, and Promotion, as noted in Table 2. These teams began meeting, planning, and procuring resources upon receiving their charge to ensure processes and resources were in place prior to the POD opening. Importantly, representation from the Office of Civic Engagement and External Relations and the Office of Diversity and Inclusion on the coordination team provided perspective regarding cultural responsiveness in the team's planning.

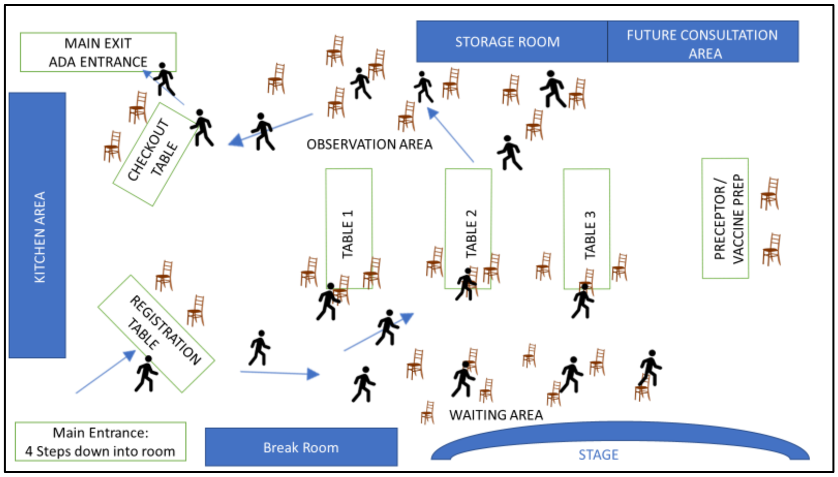
Table 2. POD contributions and coordination

Partner Organization or DUCIH Team	Representation	Charge
ACHD	ACHD Staff and Volunteers	• Conceptualization of model • Selection/procurement of CBC site • Input on workflow • Vaccine supply (and ancillary immunization supply kits) from state allocation • Provision of vaccine scheduling and documentation platforms (PrepMod, Clinic Portal) and information technology • Staff member and intern on-site • Volunteer vaccinators to fill in gaps (e.g., during finals week) • Financial support for DUCIH to purchase additional supplies, design/distribute marketing material, and hire one full-time site Lead • Promotion of POD through county channels (e.g., Allegheny Alerts)
CBC	Pastor, Administrative Team, Volunteers, and Paid Staff	• Facilities (ADA accessible): o 4,200 square foot fellowship hall o Two meeting spaces adjacent to the fellowship hall o ADA-accessible restrooms o Two parking lots totaling approximately seventy spaces. • Part-time positions: o Two managers to oversee and implement the organizational and operational plans o Two parking attendants for traffic control o Two greeters to welcome and direct people to registration o Site monitors that managed the intake and outtake flows, including ensuring patients waited for the appropriate observation time as indicated by the vaccinator o Janitorial cleaning service for sanitizing and disinfecting church daily o One payroll attendant o Custodial service for daily cleanup.

Duquesne Site Logistics Team	School of Nursing DUCIH	• Designing preliminary workflow of POD, including physical layout and patient movement from arrival in the parking lot to departure to promote: ○ Social distancing of patients ○ Efficiency and safety ○ Compliance with regulatory requirements (e.g., 15–30-minute observation period, provision of required documents) • Coordinating provision of I.T. needs with ACHD (e.g., computer and wireless network access) • Establishing vaccine ancillary supply procurement process from ACHD or DUCIH • Establishing process for volunteer access to ACHD's documentation system (partnership with Coordination Logistics team)
Duquesne Vaccinator Training and Coordination Team	School of Nursing School of Health Sciences School of Pharmacy DUCIH	• Establishing a process for recruiting volunteer Nursing, Physician Assistant, and Pharmacy student vaccinators and faculty preceptors to fill the POD schedule • Establishing process for vaccinator and preceptor volunteer communication and training: ○ Required advance training ○ On-site daily briefing by preceptor
Duquesne Coordination Logistics Team	Office of Civic Engagement and External Relations Online Learning and Strategy Office of Diversity and Inclusion (ODI) DUCIH School of Nursing	• Creating a "community site" in the university's learning management system (Blackboard) for volunteer information and communication ○ Required trainings ○ Job descriptions ○ Transportation logistics • Creating and managing a master schedule for all university POD roles/shifts • Recruitment of non-vaccinator volunteers (e.g., registration, workflow management)
Duquesne Promotion Team	Marketing and Communication ODI DUCIH	• Creating clinic signage and branded clinic documents (e.g., cards for end of observation time, vaccine cardholders) • Designing/procuring patient giveaways • Designing/procuring volunteer shirts and nametags • Procuring water for patients and volunteers

The team conducted an initial visit to the church vaccination site on March 18, 2021, one day prior to the POD's soft launch, to explore the space and meet with representatives of CBC and ACHD. DUCIH's previous experience with the ACHD on-campus vaccine clinics provided an initial workflow, adapted by the Site Logistics team to fit the available space in the fellowship hall and ACHD's goal volume of 150-200 vaccinations per five-hour day (Figure 1). The same core areas were maintained: registration stations (two with a volunteer at each), patient waiting area, vaccination tables (three stations, each with one vaccinator and one scribe [asked screening questions and completed the required documentation]), post-vaccine monitoring area, patient checkout table, vaccine preparation area, and supply storage. During this visit, videos were taken of the clinic space and proposed layout to post for future volunteer review.

Figure 1. POD workflow



Note. Adapted from volunteer orientation materials (not to scale).

Soft Opening and Initial Learning

The POD opened with a soft launch on Friday, March 19, 2021, with a limited schedule of 20 patient appointments and shorter clinic hours of 2-4 PM to pilot workflow. Appointments were scheduled in advance using ACHD's existing process of announcing clinics through the county's community notification system (Allegheny Alerts) and having patients schedule online or by calling the PA 211 community resource line. Members of the coordinating team, DUCIH staff and rotation students, ACHD staff members and interns, and volunteers from the church covered the schedule for this launch while university volunteer recruitment procedures were still being developed.

Appointments were increased to 50 percent of goal (approximately 75 appointments) the following week, Monday through Friday, from 1-4 PM. This gradual opening allowed the team to evaluate workflows and volunteer needs before opening the full schedule the following week. Based on the church supplying staffing support daily to assist patients in moving from the parking lot through the clinic, the anticipated need for non-vaccinator University volunteers was reduced to assisting with the registration process. Simultaneously, the coordination team observed that the registration process was more time-intensive than anticipated and created a bottleneck in the workflow. Consequently, a third registration volunteer was requested. Having two staff members present from ACHD allowed flexibility to provide additional registration support, in addition to their primary roles concerning monitoring vaccine supply, the clinic's virtual workflow, and providing technical/procedural guidance.

Additionally, the coordination team observed that the schedule was not always full but that patients were requesting vaccines on a walk-in basis. While walk-ins were not initially planned for, given the goal of the POD to promote accessibility and the need to avoid vaccine waste, the decision was made to accept walk-ins. However, all ten doses from each vaccine vial (Moderna mRNA) had to be administered or discarded within six hours of puncture. Thus, in the final two hours of the clinic, walk-in appointments could only be accommodated when there were extra doses anticipated from the vials needed for remaining appointments unless a full ten walk-ins were received. Some challenges were encountered in communicating this nuance of when walk-ins could be accommodated.

To further reduce waste, a volunteer from the church started to maintain a "standby list" of interested individuals if vaccine doses were remaining at the end of the clinic and assisted in calling these people in the order that they had expressed interest. The church also had a volunteer who could work with the county to pre-register individuals who did not have access to the internet or were not able to register on their own for any reason.

The desire to avoid wasting doses while vaccine supply was initially limited resulted in clinic staff staying longer than anticipated the first week. Patients were called in for remaining doses (transportation was sometimes a challenge), received their vaccines, and then completed observation. For transparency of the volunteer time commitment, the end of the shift was communicated as an hour after the last appointment to account for this process. As vaccine supply increased and demand decreased, beginning in May with a decline in first-doses at the POD, guidance from public health authorities shifted from a "no dose wasted" to a "no opportunity missed" approach, resulting in greater flexibility to accept walk-ins, even if wasted doses would result. This shift allowed the POD to further promote accessibility, particularly to those with scheduling or transportation limitations. This shift also decreased the importance of having a "standby list."

POD Site Lead and Student Intern Positions

To provide continuity and on-site leadership for the POD, a nurse practitioner was hired by DUCIH, funded by ACHD, to serve as the Site Lead at the POD. The Site Lead supervised the overall day-to-day operations at the POD, including supervising immunizing faculty and student volunteers to ensure patient safety, compliance, and efficiency. Sometimes reallocation and retraining of volunteers for alternate roles was necessary based on the clinic's daily needs. The lead also fulfilled an administrative role in the POD documentation system to manage volunteer access and ensure the completion of documentation. The Site Lead was also tasked with monitoring the inventory of vaccine doses administered in this system, compared with remaining doses and appointments to prevent waste. Additionally, the Site Lead assisted in other roles throughout the clinic.

Two student interns were eventually hired to provide administrative support to the Site Lead. One on-site intern was charged with monitoring clinic supply inventory and assisting where needed in workflow. The other intern worked primarily remotely and was responsible for communicating POD volunteer reminders and training information to faculty and students across campus.

Faculty and Student Volunteer Recruitment, Training and Oversight

Based on the clinic's staffing hours of weekdays 12 - 6:30 PM (vaccine appointments from 12:30 – 5:15 PM) and Saturday 8 AM – 2:30 PM (appointments 8:30 AM – 1:15 PM), the volunteer coordinators split the clinic into two overlapping 3.5-hour shifts to allow a shorter time commitment. However, a single volunteer could fill the two overlapping shifts for a given role when their availability allowed.

A master schedule of all university POD volunteer shifts (vaccinator and non-vaccinator) was created in a spreadsheet (Microsoft Excel) and uploaded to a secure University drive (Microsoft OneDrive). This helped identify any vacant slots to be filled by individuals from other disciplines. Particularly, regular check-ins between the School of Health Sciences, Nursing, and Pharmacy coordinators allowed them to arrange vaccinator coverage as needed during challenging periods for a particular school (e.g., the first week of rotations for pharmacy students, exam-heavy weeks, etc.). The master schedule spreadsheet also served as the mechanism for providing volunteer names and contact information for the POD Site Lead and student interns to arrange documentation system access and send reminders in advance of each shift.

Volunteer roles and recruitment strategies are described in Table 3. Student vaccinators and faculty preceptors were recruited from the School of Health Sciences Department of Physician Assistant (P.A.) Studies, School of Nursing, and School of Pharmacy. Non-vaccinator volunteers were recruited from a broader pool across the university.

Table 3. University volunteer roles and recruitment

Volunteer Type (# per shift)	Role	Recruitment Mechanism
Faculty Preceptor (1)	• Provided support and oversight for student immunizers • Conducted a start-of-shift huddle with vaccinator volunteers to review pertinent vaccine information (e.g., contraindications/ precautions to vaccination, intramuscular injection technique, etc.) and orient them to the clinic workflow and safety procedures. • Monitored students' interactions with patients throughout the clinic, provided feedback, answered questions • Evaluated special patient circumstances identified during the screening that might affect eligibility for vaccination. • Assisted in preparing vaccine doses and monitoring for, and	Assigned to one of the three health professions schools according to the day of the week, with all three schools rotating Saturdays. Each of the schools adopted a different approach to filling this role based on the availability of clinical faculty, whether assigning one person for a particular day of the week or coordinating a volunteer schedule for their school's day(s).

	responding to, any adverse events.	
Physician Assistant Student Vaccinators (2)	• Administering vaccines • Asking screening questions, documenting, providing counseling • Set-up and tear-down of vaccine stations	Identified students in the final year of the program and assigned them to the POD. Several of the students were suspended from originally-scheduled rotations due to the pandemic. Other students were assigned to the POD to supplement their primary care or internal medicine rotations during low patient censuses. Students in the didactic phase of their P.A. training were asked to volunteer for the Saturday shifts.
Nursing Student Vaccinators (2)	• Administering vaccines • Asking screening questions, documenting, providing counseling • Set-up and tear-down of vaccine stations	Recruited students to participate as part of their required Population Health course. These were 8-hour shifts, as expected with other clinical placement sites. Students had already been working at various other hospital- and community-based vaccine clinics within the county. The SON simulation lab faculty developed an online education module (via Nearpod) and provided open lab hours for students to practice their vaccination skills. Nursing student volunteers were primarily third-year undergraduates and second-degree students who had already completed coursework and clinical experiences that included intramuscular injection training. The response from nursing students was strong, and as such, students were initially limited to one shift in the clinic to ensure all those interested would have the opportunity.
Pharmacy Student Vaccinators (2)	• Administering vaccines • Asking screening questions, documenting, providing counseling • Set-up and tear-down of vaccine stations	Pharmacy Practice faculty members were asked by the coordinator, with the support of the Division Head and Dean, to occasionally release their final-year clinical rotation students to volunteer at the POD. Because these students were routinely expected to be at their site for an eight-hour day, they were generally asked to fill the entire 12 – 6:30 PM shift at the POD to minimize volunteer shift changes and the number of shifts to cover. Initially, the school's coordinator attempted to compile a list of student availability, by day of the week, from each faculty member via a survey (GoogleForms) and then assemble a school-wide

		schedule. Based on feedback that the survey was unclear and that students' availability might vary week-to-week based on rotation activities, the coordinator began using SignUpGenius to post the individual volunteer shifts and distributed this to the faculty. The majority of weekday shifts were filled through this method; any remaining shifts, including Saturdays, were distributed via the "School of Pharmacy Pandemic Immunization Response" Blackboard community. The coordinator also used this site to verify that student pharmacist volunteers had completed all training and Board-notification requirements before placing them on the schedule as vaccinators.
Non-vaccinator volunteers (2-3)	• Patient registration	Recruited from the university faculty, staff, and students through purposeful recruitment tactics. The initial ask for volunteers was centered around vaccinated individuals who had experience in allied health settings. This was the initial strategy to ensure that the non-vaccinator volunteers could assist in various roles at the site, despite not being able to vaccinate patients themselves. It became apparent that volunteers versed in healthcare terminology were of greater assistance in the registration role as they could assist individuals in completing the screening questions and answering questions about the vaccine and vaccination process itself. However, as the academic calendar came to a close, recruiting in this manner became more challenging due to student and employee availability during finals week. Therefore, larger open calls for volunteers were made via email through messaging on the institution's event management system (CampusLink). By opening the call to attract a broader audience, faculty, staff, and students from all nine schools of study were able to volunteer to support the POD.

The Vaccinator Training and Coordination team prepared training for students. This training included completing the CDC COVID-19 vaccine training modules for the specific vaccine products used at the POD (initially Moderna, and later Pfizer, mRNA vaccines) and reviewing a description of the vaccinator role, clinic workflow, and safety procedures. These training requirements were included in the reminder e-mail by the POD student intern prior to scheduled shifts, along with the shift date, time, address, parking information and map, dress expectations, and the POD Site Lead's contact information in the event of questions or inability to fulfill a shift. Volunteers were also advised that they would receive an e-mail to create an account in the documentation system before their shift.

Faculty preceptors were sent the same information directly (and carbon-copied on the student e-mails for their shifts) along with information about their role as preceptors in partnership with the Site Lead. This included a list of topics to review with students during the start-of-clinic huddle, including highlights from the CDC training modules. Preceptors were also asked to observe and coach students' injection technique at the start of the shift due to the students' varied experience and comfort levels. Non-vaccinator volunteers received a reminder e-mail the day of their shift, a map to the site, and training was provided on-site.

Educational Considerations: Interprofessional, Culturally-Competent Care

In addition to addressing a critical public health and health equity need in the community, the POD provided a unique interprofessional education opportunity for participating students. Health professions students worked alongside non-vaccinator volunteers from schools and departments across the university, as well as vaccinator volunteers from each of the three schools. While student vaccinators tended to gravitate toward working at a vaccine table with a student from the same discipline, sometimes uneven volunteer numbers from the schools resulted in organic interprofessional pairings. Even when this did not occur, the various health professions students had the opportunity to participate in the daily huddle, collaboratively problem solve throughout the day, and participate in informal conversations with students from the other professions. Additionally, due to the rotating preceptor schedule, students worked under the supervision of preceptors from other professions. This arrangement provided exposure to the different professions' clinical decision-making processes and expertise. While students engage in interprofessional experiences routinely during their didactic and experiential training, the aspect of being permitted to vaccinate under the supervision of a health professional from a different discipline was novel since this was permitted by state-specific pandemic emergency waivers (P.A. Department of State, 2020b, 2021).

Providing care at the POD also required student vaccinators to demonstrate culturally competent care, including mindfulness of the church site as a house of worship, respectfully listening and honestly responding to patients' questions and concerns about the vaccine, considering transportation availability for the timing of second doses, and working effectively with interpreters for patients who spoke languages other than English. Interpreter services were available telephonically at the POD, but patients were sometimes accompanied by a family member or friend who translated. Students were coached through these considerations by the preceptors.

Adaptations to POD Workflow

While the POD planned to open the full 200 appointments per day beginning March 29, 2021, ACHD transitioned to a new clinic documentation software (Clinic Portal) that week. To allow POD staff and volunteers time to learn the new software, 50 percent capacity was maintained for that week. This software allowed patients to schedule their second-dose appointment before leaving the clinic, reducing the possibility of scheduling barriers interrupting the two-dose vaccine series. Two checkout stations were routinely needed instead of one to integrate this feature. These were generally staffed utilizing a POD intern and staff member from ACHD. Early in the POD operation, it was identified that, while the open room layout was convenient for efficiency, it offered little privacy for patients requiring removal of clothing or who were anxious about the vaccination and benefited from additional privacy. A mobile, three-paneled privacy screen was delivered to the clinic to provide a suitable level of privacy for people who required it. The screen could also be positioned around church pews along the sides of the room to allow patients with a history of post-injection dizziness or syncopal episodes to lie down while receiving the vaccine.

Aware that the spring semester ended in May but that vaccination needs would extend into the summer, DUCIH received additional funding from ACHD to hire ten student vaccinator summer interns to ensure the POD would be appropriately staffed as the majority of the student body returned home or resumed summer jobs. The volunteer coordinator from each health profession school promoted these opportunities to their students and collected interest using a simple online questionnaire (Qualtrics) asking about their availability, relevant experience, and the reason for their interest in the role. The coordinators reviewed the interested candidates in collaboration with the DUCIH Director and selected interns with the goals of maximizing availability and including students from multiple health professions when their program structure permitted. The employment of interns began in May 2021, with each working an estimated 30 hours per week. As they were oriented to their position, the student volunteer positions were phased out.

Two additional second-degree nursing students also completed a public health-directed study during the summer months, focused on vaccine education and marketing the clinic to the neighborhood. These students worked with the site administrators, community agency, and community volunteers to create and test messaging and distribution strategies.

Two part-time assistant coordinators were also hired to cover the clinic coordinator role on days the Site Lead was scheduled off. These assistant coordinator positions also allowed the POD to phase out the need for faculty preceptor volunteers over the summer. ACHD and CBC continued to supply previous staff and volunteer support levels through the summer.

In late May 2021, following the Emergency Use Authorization of the Pfizer mRNA COVID-19 vaccine for adolescents aged 12-15 years old, ACHD asked the POD to offer this vaccine in addition to the Moderna vaccine previously offered. While this expansion was a positive development in reaching an expanded population, it required a careful re-evaluation of the clinic workflow to prevent product-related confusion or medication errors. The Moderna vaccines were reserved for those who had received the first dose of that product and needed to complete the two-dose series. Any new patients presenting to the POD were administered the Pfizer vaccine, barring contraindications, to eventually phase out the Moderna product.

Beginning May 24, 2021, the clinic layout was revised to create two separate workflows for each vaccine product on opposite sides of the room, converging in a shared post-vaccine observation area in the middle. The church volunteer greeting patients as they entered the clinic asked which dose patients were arriving for and directed them to the registration station corresponding to that number. Station 1 (first doses) was set up to register patients to receive the Pfizer vaccine on that side of the room. Station 2 (second dose of Moderna series) was set up to register for the Moderna vaccine on the other side. While still social distancing, patients waited in separate areas according to vaccine product, and two vaccine administration tables, along with one vaccine preparation station, were set up on each side of the room for the respective products. Keeping administration and preparation separate for the vaccine products was implemented to prevent errors due to the different preparation instructions (e.g., Pfizer required dilution, whereas Moderna did not) and dosing (0.3 mL for Pfizer vs. 0.5 mL for Moderna) for each vaccine. It was also necessary to prevent anyone under the age of 18 from inadvertently receiving the Moderna vaccine, which was not authorized for this population. Color-coded bins and syringe labels were used to distinguish the products and provide an additional layer of patient safety and quality assurance. Expanding to the adolescent population resulted in necessary changes around emergency preparedness, including extra vigilance for syncopal reactions and ensuring the availability of pediatric dose epinephrine injectors.

Remarkably, the demand for vaccines decreased at the end of May, as vaccine coverage increased. Seeing a decline in doses administered, ACHD adjusted the POD operation to two days only during the following week and then phased out with Friday clinics only for the next three weeks, concluding operations entirely on June 25, 2021. A timeline of operations milestones is presented in Table 4.

Table 4. Timeline of POD operations

Date (2021)	Event
March 2	ACHD asks DUCIH to operate Hill District POD
March 18	Initial team visit to CBC Site
March 19	Soft launch (20 appointments; 2-4 PM)
March 22-26	Ramp up to 50% of goal volume (75 appointments/day; 1-4 PM)
March 29	Transition from PrepMod to Clinic Portal documentation systems; hours increased to 12:30 – 5:15 PM Monday – Friday and 8:30 AM – 1:15 PM Saturday)
April 5	Increased to full goal volume (150-200 appointments/day)
Early May	Transition from student volunteers to paid summer interns
May 24	Addition of Pfizer mRNA vaccine
June 1	Beginning of POD phase-out (operated only two days this week, then next three Fridays)
June 25	Conclusion of POD operations

Outcomes

At the height of operations, the POD was staffed 6.5 hours per day, six days per week. Each shift, DUCIH POD staff, university volunteers, and ACHD staff/volunteers partnered to fill a goal of at least two registration positions, six vaccinator/scribe positions, a vaccinator oversight/precepting position, two checkout staffers, and a clinic coordinator (generally the Site Lead). The church provided staff daily to assist with patient movement into and through the POD workflow.

The DUCIH POD planning and oversight team included 19 individuals, including the Site Lead. DUCIH also employed three summer assistant coordinators, two student coordinator interns, and ten summer vaccine clinic interns through funding from ACHD.

The university volunteers included 160 student vaccinators, 25 faculty preceptors or vaccinators, two pharmacy residents, and 76 non-vaccinator volunteers. Coordinators attempted to fill vaccinator shifts evenly from the three health professions but collaborated to cover gaps. In addition to sending a staff member to the POD daily, ACHD provided an intern when available, and five health professional volunteers helped cover the schedule during finals week. CBC employed 18 individuals in part-time roles to assist with POD operations. From March 19 to June 25, 2021, 5,652 vaccine doses were administered at the POD. Patient demographics recorded for these vaccine doses are presented in Table 5. This data support that the POD achieved its aim to reach underrepresented groups, given that most doses were administered to people of color.

Table 5. Vaccine doses administered by recipient demographics

Age Group	Count	Percent
10-14	6	0.1%
15-19	177	3.1%
20-24	928	16.4%
25-29	716	12.7%
30-34	498	8.8%
35-39	355	6.3%
40-44	283	5.0%
45-49	301	5.3%
50-54	386	6.8%
55-59	540	9.6%
60-64	574	10.2%
65-69	317	5.6%
70-74	237	4.2%
75-79	89	1.6%
80-84	87	1.5%
85-89	38	0.7%
90-94	21	0.4%
95-99	6	0.1%
100-104	1	0.0%
Unavailable	92	1.6%
Total	5652	100%

Ethnicity	Count	Percent
Hispanic or Latinx	298	5.3%
Not Hispanic or Latinx	4970	87.9%
Unknown	384	6.8%
Total	5652	100%

Race	Count	Percent
Asian	555	9.8%

Black	2576	45.6%
Native Hawaiian or Other Pacific Islander	6	0.1%
White	2087	36.9%
Other Race	330	5.8%
Unknown	69	1.2%
American Indian	29	0.5%
Total	5652	100%

In addition to the direct public health and educational impact of the POD, DUCIH's partnership with Central Baptist Church has continued after the POD phase-out, with DUCIH continuing to hold weekly vaccine clinics utilizing their vaccine supply and free health screenings coinciding with the church's soup kitchen hours.

Reflection and Replication

The experience of DUCIH during the pandemic illustrates the importance of established relationships with community partners and infrastructure to support University-wide initiatives of this nature. While some of the Center's established community health programs had to shift to a virtual platform during the pandemic, trusted and existing relationships with community partners allowed the Center to identify opportunities to assist in the community's pandemic response on the ground, whether through testing, flu vaccines, or partners' COVID-19 vaccination efforts. In each of these partnered responses, communication was essential—both with the partner to understand the specific need for support, as well as with DUCIH staff and volunteers to ensure their preparation to meet the need. DUCIH's previous experience working with the county health department on community health programs to address health disparities, and the university's history of community-engaged work in the Hill District, also resulted in ACHD identifying DUCIH as an academic partner to coordinate the neighborhood's POD focused on reaching underserved populations.

DUCIH's position as a university-wide, interdisciplinary center and existing collaborative relationships within the university facilitated the rapid team response to this request, bringing together the expertise, perspectives, and resources of multiple university offices and schools. Organizing these representatives into a central planning and oversight team, with four sub-teams focused on specific areas of planning and execution, proved to be an effective approach for rapidly preparing to launch the POD. Additionally, DUCIH's previous experience working with ACHD at on-campus clinics provided a starting point for the POD workflow.

The hub-and-spoke model used for vaccinator recruitment promoted standardized training and helped to ensure the schedule was filled across schools while allowing a customized approach within each of the schools, as each school's coordinator was aware of which subsets of students would be most available to assist based on the curriculum of each program. The school coordinators also relied on relationships with faculty colleagues to request flexibility for student volunteering and to recruit faculty preceptors. Finally, coordinators were aware of and could verify any requirements for students within their profession to be authorized to vaccinate.
The availability of non-vaccinator roles expanded the pool of potential volunteers to assist in this large effort. Using technology in the volunteer recruitment process within individual volunteer pools, and then having a master schedule at the university level, helped to improve efficiency and streamline communication between volunteers, the coordinators, and the POD Site Lead.
For health professions students impacted by limitations on clinical placements, patient care activities at the POD also filled a need. While limitations eased as vaccines became available, some remained when the POD was conducted. In these cases, shifts at the POD provided important clinical opportunities when students could not participate in their originally-scheduled placement. The unique nature of the learning experience was also important. Typically, public health topics such as disease outbreaks and disaster management are covered in theory only, and students rely on simulations to get experience. The health professions schools were committed to ensuring that students had the opportunity to meaningfully engage in the massive public health response and serve the community.

In launching the POD and throughout its operation, adaptability to changing needs and open lines of communication within the university team and with partners at CBC and ACHD was essential. The Site Lead sent frequent e-mails (daily initially and during periods of change) to volunteer coordinators and DUCIH and ACHD leadership. Meetings were conducted weekly to keep all team members informed, maintain accountability for individuals' roles, and brainstorm solutions to implementation challenges. The Site Lead interacted with representatives of CBC on-site daily, providing updates and serving as a consistent, familiar point of contact for any questions or concerns. This relationship was particularly important given the staffing model of rotating preceptors and volunteers. Providing updates and gathering feedback were crucial around planned changes in the workflow to share the rationale, obtain input, and ensure that church staff could effectively assist patients with navigating changes. This communication and collaborative work toward a shared goal laid the additional groundwork for future collaboration.

Limitations

This POD was conducted in a single location. Due to the unique relationships between—and resources of—the partners, other organizations seeking to implement a similar public health partnership may need to adapt the general approach to their circumstances.

The volunteer coordinators initially intended to deploy a customized training program for the POD—including cultural competency training with readings, activities, and reflections—via a community page in the University learning management system. However, the urgent need for vaccine accessibility prompted a shift to on-site training—other than the Site Lead confirming vaccinators' completion of the existing CDC modules—to reduce barriers to participation and support the rapid launch. This adaptation may have been mitigated by incorporating cultural competency within program curricula and cultural diversity training programs accessible to the whole campus community. Nursing students participate in a series of diversity, equity, and inclusion workshops facilitated by the leadership of ODI and the Center for Community-Engaged Teaching and Research (CETR). Physician Assistant students take a course focusing on health disparities. Third-professional-year pharmacy students participate in a community-engaged learning course involving skill development, assessment, and reflection in cultural competency, building on foundations of cross-cultural communication earlier in the curriculum. Cultural competency modules are incorporated in courses within the Liberal Arts, and programs on diversity and cultural competency are offered during student orientation and throughout the academic year by ODI, the CETR, and the Division of Mission and Identity. Thus, students who volunteered to participate in the POD would likely have previously engaged with curricula focused on cross-cultural competency. This reflection highlights that having a university-wide cultural competency curriculum would ensure that any volunteers who could potentially engage with members of marginalized communities, such as during rapid responses to emergencies, are prepared to do so.

Finally, while systematically evaluating stakeholder perspectives would have provided valuable insight on the POD's impact, the rapid launch required focusing resources on operations.

Conclusions and Lessons Learned

Effective teamwork and communication within the university and community partners were critical in rapidly deploying this public health response. Frequent, open communication regarding needs and progress allowed the partners to adapt to new developments and address challenges nimbly. Within the University team, central leadership with an accountable delegation of specific tasks within individuals' areas of expertise helped to marshal resources and develop plans quickly. Using technology to efficiently organize volunteers (e.g., scheduling platforms) and share information (e.g., learning management systems, master schedule on University drive, templated e-mails, etc.) simplified coordinators' administrative workload.

Based on this experience, academic institutions with health science programs should consider the implications of their community health partnerships, not just for current programming, but to address future, possibly emergent, needs. Further, promoting awareness of community health programs, partnerships, and the populations served with local health departments may assist with the growth of those programs and result in greater recognition of the academic institution as a resource for responding to public health emergencies or other needs. Development and evaluation of these relationships can be informed by Erwin and Keck's (2014) Academic Health Department concept. The existence of a university-wide, interdisciplinary health-oriented Center or Institute, like DUCIH, to develop and maintain relationships with community partners and facilitate collaboration across the health professions is critical for academic institutions to respond to public health needs.

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