Responding to One Rural Community's Primary Care Needs: Investing in Workforce and Broad Community Stakeholder Engagement

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Lack of access to high-quality primary care has been shown to contribute to urban-rural health disparities. We describe a model in which an academic health system made targeted primary care investments to address rural health disparities while building the health workforce to ensure sustainability.

Addressing Rural Health Disparities

Individuals in rural communities suffer from higher rates of chronic disease and preventable death compared to their urban and suburban counterparts [1, 2]. Lack of access to quality care contributes to worse health outcomes among rural residents [3, 4]. Increased investment in primary care is associated with fewer emergency department (ED) visits and hospitalizations, reductions in mortality and costs, and higher patient satisfaction [5–7]. However, 77% of rural counties in the United States are designated primary care health professional shortage areas [8]. Lower salaries and geographic isolation are challenges to rural recruitment of primary care providers [8]. Evidence indicates that primary care workforce supply is higher in more educated and affluent areas that offer a broader array of community amenities, as well as increased opportunities for professional networks [7].

Multiple studies demonstrate an association between better health outcomes and increased primary care physician (PCP) supply [4, 5, 9]. Targeting primary care investments to high-return initiatives multiplies impact on health outcomes [10]. Studies also show a correlation between primary care spending and improved health system performance [11, 12]. Despite this considerable evidence in favor of increased funding, primary care investment remains a fraction of overall US health care expenditures, averaging 5%–7% of total spending, indicating many payers and systems fail to realize the benefits [11].

Assessing Health Disparities in Rockingham County

Rockingham County, North Carolina, is a Federal Office of Rural Health Policy-designated rural area in the northern Piedmont region with a population of 89,819 [13]. Per the county's 2016 Community Health Assessment, 16% of county residents lacked health insurance; 19.4% of residents lived in poverty; and the per capita income was $21,138, below the state average of $25,608 [14]. Residents suffered from higher rates of food insecurity and lower rates of employment and education [15]. Economic contraction from local industry closure and decisions by political leaders to forgo Medicaid expansion had exacerbated poverty and reduced access to insurance. The county had higher rates of heart disease, diabetes, and cerebrovascular disease as well as lower life expectancy when compared to state averages. Demographic change was yielding an older and less-affluent population largely dependent on Medicaid and Medicare [14, 16]. Access to care was a significant challenge, yielding high rates of ED and urgent care visits, and was compounded by a small PCP base, an aging physician population nearing retirement, and challenges in provider recruitment. Rockingham County had fewer PCPs than the rest of North Carolina, at 5.12 per 10,000 residents compared to 7.06 for the state as a whole [14]. Lack of resources to address mental health and substance use disorder posed additional challenges.

Background: UNC Health Acquisition of Morehead Memorial Hospital

In 2018, UNC acquired Morehead Memorial Hospital in Rockingham County, later rebranded as UNC Rockingham, after the rural hospital sought bids for sale accompanying bankruptcy filings. In addition to financial challenges, UNC Rockingham was experiencing declining market share and patient volumes. UNC broadly engaged local stakeholders to identify and prioritize investments in order to improve health outcomes and support the hospital. In these discussions, weak primary care infrastructure was identified as a key factor contributing to poor health outcomes. With funding from Blue Cross and Blue Shield of North Carolina and the North Carolina General Assembly, UNC launched an evidence-based primary care initiative to bolster primary care infrastructure in Rockingham County and address community health needs, irrespective of any potential negative fiscal

Electronically published November 1, 2022.

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N C Med J. 2022;83(6):435-439. 0029-2559/2022/83616

impact from reduced patient volumes. The objective was to collaborate closely with community stakeholders, leveraging local insight to implement a replicable model for increasing access to and quality of primary care, build the health care workforce, and ultimately enhance health care capacity in Rockingham County.

A Model to Improve Rural Health Outcomes in North Carolina

In order to enhance access and quality in the near-term while growing the health workforce required to serve Rockingham County for the future, UNC needed a model that would strengthen primary care infrastructure. Leaders designed a five-factor approach informed by local stakeholders described in Figure 1.

Engaging Community Stakeholders

Key to this framework was broad community stakeholder engagement in assessing health needs and implementing culturally appropriate solutions. Population health management programs involving payers, local government, and community organizations have demonstrated success in improving outcomes for rural populations [10, 17]. UNC leaders conducted initial listening sessions followed by regular meetings comprising a consortium of health care leaders, public health professionals, educators, and other local representatives, later named the Rockingham County Primary Care Initiative, or "Rock PCI" (Figure 2).

Developing Interprofessional Practices

Interprofessional training is essential to managing the needs of rural communities, which often lack access to specialized services and need a broader pool of providers from other health professions [18]. With the imminent retirement of the sole PCP in the local UNC practice, recruitment was critical to ensuring continued care access. Rock PCI leveraged UNC resources to recruit one PCP and two family nurse practitioners (FNPs). A licensed clinical social worker (LCSW) was retained to pilot a tele-behavioral health program that developed a foundation for recruiting an onsite psychiatrist. Leaders also hired an FNP for a fellowship with a local orthopedic surgeon to increase orthopedic care access.

Since the initial effort to stabilize the primary care base, recruitment efforts have continued to expand, significantly bolstering the local health workforce. Forty-two new health professionals, including replacements for outgoing providers, have been recruited since Rock PCI's inception, including nine new physicians and related staff in family medicine, obstetrics and gynecology, cardiology, orthopedics, and hospitalist roles. UNC Physician Network's recruitment resources have been key to this success. Other potential contributing factors include the attractive benefits and compensation from employment within the UNC system, the UNC brand, and the additional community and opportunity that come with being part of a larger system.

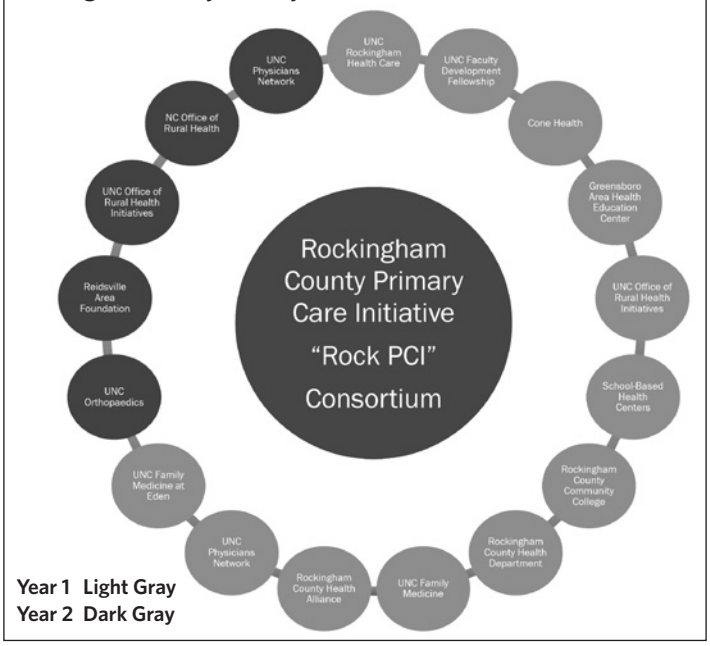
Engaging the Community to Build the Health Workforce for the Future

Challenges in recruiting physicians to rural practice result in physician shortages that reduce access and exacerbate disparities, but evidence shows that learners are more likely to practice in rural locations if they have rural origins or train

FIGURE 1.
Rockingham County Primary Care Initiative Five Factor Model and Outcomes

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Engaging Community Stakeholders	**Developing Interprofessional Practices**	**Advancing Patient-Centered Primary Care**	**Building the Health Workforce**	**Partnering with an Academic Medical Center**
Broad community stakeholder engagement in assessing health needs and implementing culturally-appropriate solutions. A consortium of 13 community partners identified; increased to 17 partners the following year (See Figure 2). Funding sources included Blue Cross Blue Shield NC and NC General Assembly.	Initially recruited health professionals to replace retiring provider: 1 PCP and 2 FNPs. 42 total recruitments since 2019. • 3,277 empaneled patients • Access- 100% of new patients able to get in at system target of <5 days • 95% of eligible patients have an advance care plan on file • 93% of patients report that the staff protected their safety during the visit on the CG-CAHPS survey • 100% of all eligible children 3-6 years old up to date on well child checks • Top performing practice on adolescent immunization measure • 91% of eligible patients at high risk for cardiovascular events on appropriate statin therapy • 79% of eligible patient up to date on colorectal cancer screening compared to overall system performance at 76% A licensed clinical social worker retained to pilot a tele-behavioral health program; later resulting in recruitment for an on-site psychiatrist. FNP hired for fellowship with local orthopedic surgeon to increase orthopedic care access. • Clinic visits increased by 35%, with new patient visits increasing by 97%. • Year over year changes 9/18–9/19 show 41% increase in referral conversion at 3 weeks and time to third appointment went from 11 to 2 days	Supported four health centers at local high schools to provide care to students. • 7,922 encounters with staff in the 2019-2020 year • 3,223 encounters with NP and PA • 1,263 encounters with behavioral health counselors Provided support for the local state-designated Rural Health Center. • Financial support for electronic medical record • Financial support for CNA salary Enhanced task force for diabetes treatment, management and education. • Hosted summer camp for children • Achieved 501 (c) 3 not-for-profit status • Partnership for Health Resources and Services Administration grant submission Funded perinatal classes at UNC Rockingham. Primary care visits helped to address substance abuse and behavioral health issues. Implemented opioid misuse training for practices. Launched a remote patient monitoring program. Obtained new funding to support 8 mobile food markets addressing increased food insecurity during the pandemic. • 27,100 pounds of food distributed	UNC nursing and medical students connected with community partners to support local leaders in addressing medical mistrust and building community resources while familiarizing students with rural health needs. Partnered with local community college to host health workforce event for Rockingham high school students interested in health professions. Sponsored 2019 UNC Family Medicine Summer Academy in Rockingham County which provides rural high school graduates, and often first-generation college students, with experiences in medicine for early exposure to health professions.	Designated and funded a community development project manager to coordinate stakeholder engagement. Competing health systems addressed shared needs. Provided capital, personnel, and intellectual property resources *Leveraged UNC's population health and virtual services to obtain equipment, resolve connectivity issues, and benefit from additional training to support telehealth pilot. *Leveraged UNC Physician's Network physician recruitment resources *Designed a logic model for outcomes evaluation in partnership with the UNC Gillings School of Global Public Health.
Replicable and Scalable Model Tracking and Evaluating Project Outcomes				

FIGURE 2.
Rockingham County Primary Care Initiative Consortium Partners



in rural areas [19, 20]. Decreasing admissions of rural students to medical and other health professions schools may further reduce the pool of providers for these communities [21]. Thus, in addition to developing interprofessional practices, Rock PCI implemented a long-term strategy to bolster the health workforce by providing opportunities for local students to engage with and explore health professional career offerings. Given the strong correlation between rural background and practice in a rural area, pipeline programs that offer early exposure to health professions are key to increasing physician supply in underserved areas.

UNC has previously demonstrated success with rural residency tracks and medical student pipeline programs. Building on this evidence, leaders implemented an initiative to connect UNC nursing and medical students with community partners to support local leaders in addressing medical mistrust and building community resources while familiarizing students with rural health needs. Additionally, Rock PCI partnered with a local community college to reach high school students with an informational event on careers in health professions. In 2019, Rock PCI launched the inaugural UNC Family Medicine Summer Academy, which provides rural high school graduates, and often first-generation college students, with experiences in medicine for early exposure to health professions.

Advancing Integrated Patient-Centered Care

Integrated models of patient-centered primary care improve quality and access with a comprehensive approach to health [22]. These models provide resources to PCPs for addressing substance abuse and behavioral health, among other needs, in regular visits. Evidence shows that the majority of PCP visits address behavioral health and many patients prefer having the option to receive these additional services during visits [23]. Recruitment of physicians and health professionals was fundamental to ensuring access and quality. Additionally, the collaborative supported four health centers in local high schools, often the only source of care for young adults; implemented training on opioid misuse for local practices; enhanced diabetes care through a task force; offered perinatal education at UNC Rockingham; and allocated funds to support the state-designated rural health center (a safety net provider functioning as the sole source of care for numerous residents). Most recently, Rock PCI launched a remote patient-monitoring program and obtained new funding to support eight mobile food markets addressing increased food insecurity during the COVID-19 pandemic.

Partnering with an Academic Health System

While community stakeholder engagement is essential for culturally appropriate care solutions, rural practices and centers often face significant capital constraints [24, 25]. Partnership with academic health systems can dramatically increase access to resources that foster sustainable solutions. Rock PCI relied on significant engagement from leaders at UNC. These leaders were crucial in obtaining the initial financial capital; providing expertise and tested models in quality improvement, access, and physician recruitment; and evaluating outcomes.

Challenges to Improving Rural Health Outcomes

Prior to the acquisition of UNC Rockingham, UNC was primarily active in the county through its outpatient prac-

tice and had few established community relationships. Developing the coalition necessitated significant outreach and engagement among local leaders and organizations. Frequent leadership changes and a lack of dedicated resources among community organizations exacerbated coalition-building challenges, leading UNC to retain a project manager for continued outreach and coordination.

Key to success was forming a partnership between the two competing health systems active in Rockingham—UNC and Cone Health. Leveraging existing mutual partners such as North Carolina Area Health Education Centers (NC AHEC) and the UNC Statewide Department of Family Medicine (a network of family practitioners with UNC faculty appointments who collaborate on research and education statewide), UNC leaders succeeded in gaining leadership buy-in by engaging Cone Health early in discussions and addressing shared needs.

Lack of access to high-speed internet was a barrier to implementing telehealth primary care and behavioral health visits. Rock PCI leveraged UNC's population health and virtual services to obtain equipment and resolve connectivity issues. The Rockingham practice was able to join a UNC telehealth pilot initiative and benefit from additional resources and training.

Metrics: Evaluating Interventions to Improve Health Outcomes in Rockingham

While the program is ongoing, early evaluation indicates improvements in access, successful implementation of initiatives to enhance quality, and additional outreach to build the county's future workforce (Figure 1).

Interprofessional practice development and associated provider recruitment prevented closure of the local UNC practice, which would have disrupted access to care for local residents and potentially resulted in increased ED utilization and higher costs for UNC Rockingham given elevated rates of uninsured patients (approximately 16% in 2016) [14]. The clinic currently maintains 100% access within five days for its panel of 3277 patients, with strong quality performance. The development of an orthopedic fellowship ensured sustainable specialty services, increased clinic visits by 35%, and reduced the time to third appointment from 11 days to 2 days (Rock PCI internal program data). Tele-behavioral health also addressed a critical community need while creating the foundation for onsite psychiatry services. In total, 42 health professionals have been recruited since Rock PCI's inception, significantly increasing the health workforce in the county.

Funding for student health centers supported 4222 encounters during the 2021–2022 academic year, including almost 1000 behavioral health sessions (internal data obtained by Rock PCI from Rockingham County Student Health Centers through UNC Health, 2022). Similarly, financial support for the local rural health center ensured electronic medical record continuation and certified nurse assistant retention. Additional quality enhancements included training for practices on opioid use disorder, perinatal education, mobile food markets, and a recently launched patient-monitoring program.

While the COVID-19 pandemic has slowed outreach, over 150 students have gained exposure to health professions through Rock PCI. Comprehensive outcome evaluation is ongoing in partnership with UNC, but the Rock PCI model has already been replicated and funded as a new initiative to enhance integrated behavioral health services in Eastern North Carolina.

Where to Start: Replication and Scaling

Rockingham is one of many rural and underserved counties where disparities and poor health outcomes represent ongoing challenges, making a replicable model a priority. In designing Rock PCI, UNC applied lessons learned from past initiatives—notably the development of a rural residency training track in Siler City, North Carolina, that yielded access and quality improvements for the local population. To facilitate replication, UNC and the UNC Gillings School of Public Health developed a model for tracking and evaluating project outcomes. Furthermore, UNC recently secured funding for a similar program that builds on this model to enhance behavioral health services through integration of primary care settings in Eastern North Carolina.

Rock PCI demonstrates the importance of broad community stakeholder engagement and investment in high-return initiatives for sustainable rural health solutions. Although UNC needed to stabilize a bankrupt hospital to ensure the community maintained that access, the community's health needs were broader than just backing the hospital. Community engagement in Rockingham was essential to identifying limited primary care infrastructure as a crucial need. Investing in primary care and the associated community initiatives helped manage patient health preventively before hospitalization was needed, potentially reducing fiscal impact to the hospital from uninsured/lower-reimbursement care. By collaborating with Cone Health and other local practices that are competitors, UNC gained community buy-in and was able to advance initiatives with potential for broader public health benefit to improve health outcomes for the whole community and not just system-affiliated patients.

Health systems seeking to replicate the Rockingham model should: engage community stakeholders and local leaders in investment decisions to ensure appropriate identification and prioritization of local health needs; evaluate past primary care investment with respect to sustainability and identify initiatives appropriate to replicate and scale; assess system affiliate communities for potential impact of and capacity for increased investment; engage in relationship building with community stakeholders irrespective of competitive dynamics; and use creative solutions to address community health priorities with a sustainable approach. NCMJ

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Acknowledgments

Financial. Blue Cross Blue Shield North Carolina and the North Carolina General Assembly contributed funds to launch the Rockingham County Primary Care Initiative.

Disclosure of interests. Authors Hawes, Page, and Zamierowski are currently employed by UNC School of Medicine, which is a close partner of UNC Health, the institution that acquired Morehead Memorial Hospital. Sherry Hay was previously employed by UNC School of Medicine.

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