Pandemic-driven Community Collaboration in Western North Carolina: The Silver Lining Around the COVID-19 Cloud

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Prior to the COVID-19 pandemic, hospitals, health departments, and other health care providers in Western North Carolina were siloed from one another. Now, as a direct result of responding to this pandemic, they have developed relationships that will last beyond this crisis to advance the health of everyone in the region.

Introduction

In January 2020, the word coronavirus was merely associated with the common cold and localized epidemics on the other side of the world. COVID-19 did not exist yet in Western North Carolina, and the health systems, health departments, and other health care providers serving the 18-county region enjoyed collegial, if not collaborative, relationships. In this predominately rural part of the state with nearly 1 million residents, multiple small-to-medium-size hospitals serve patients locally and connect with a large tertiary/quaternary care hospital for high-intensity care. Most of these hospitals are part of separate and competing health systems headquartered outside of the region. Prior to the arrival of COVID-19, hospitals, health departments, and other health care providers were clinically siloed from one another. A year and a half later, and as a direct result of responding to this pandemic, these hospitals, health departments, and health care professionals have developed relationships that go beyond collegiality and they are working together in a coordinated response to minimize the impact of COVID-19 in the region. Building on this collaboration offers an opportunity for continued collective post-pandemic work to advance the health of everyone in Western North Carolina.

Origins of the Collaboration

The first regional case of COVID-19 was reported on March 10, 2020, in a visitor to Buncombe County who had visited the Biltmore Estate before proceeding to Macon County. Anxieties were high given the prevailing news reports of communities in crisis across the globe and a local absence of experience with the illness. Treatment guidelines and national and state dashboards documenting case counts and resource availability had yet to be conceived, yet alone developed. National news reports amplified spreading fears about the lack of availability of testing, personal protective equipment (PPE), and other potentially scare resources. There was significant fear that local health care would rapidly be overwhelmed by rampant spread of the disease, as had happened elsewhere.

In this context, three chief medical officers (CMOs) of the hospital systems in Buncombe and Henderson counties organized a weekly informal COVID-19 regional collaboration call. Although the CMOs had a diverse array of available resources through their respective parent organizations, it was clear that there was an unmet need for intensified local support, information sharing, and pandemic planning as the region faced the unknown. Early discussions focused on sharing information around testing resources, availability of and efforts to procure PPE, case counts (which were few at the time), and other COVID-19-related issues. Gaining collective understanding of the CDC guidelines, the science and biology of disease transmission, and experiences of other hospital systems helped each CMO implement the rapidly changing guidance with greater confidence and consistency than they would have had working independently.

This CMO group soon connected with other organizations that were also meeting on pandemic response, including skilled nursing facilities, health departments, and health care professionals. As the COVID-19 response grew, so did the weekly regional collaboration call. Health department directors from Buncombe and Henderson counties joined, as did the medical director of the Cherokee Indian Hospital Authority, clinical/administrative leadership from other health system hospitals, and leaders from regional health organizations including Mountain Area Health Education Center (MAHEC), the regional community health nonprofit WNC Health Network, and Dogwood Health Trust. This multidisciplinary partnership between health systems, hos-

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pitals, health departments, funders, and community-based organizations was forged around the common goal of ensuring a robust, well-organized, and collaborative community-based response to the pandemic.

Meetings, while still informal, rapidly developed a cadence that included updates from each organization with a focus on case counts, resource needs, and discussions of hot topics. Initially, the group worked to maximize the availability of testing and PPE across the region. Where needs existed outside of attendee organizations, the group assisted with delivery of resources. This included attention to the long-term care facilities that were most direly affected and least prepared to face this pandemic. Donations of PPE, pulse oximeters, thermometers, blood pressure cuffs, and for a short time reprocessed PPE facilitated care in place for many facility residents, thereby reserving hospital beds for the critically ill in a time of limited inpatient resources.

The group discussed best ways to implement rapidly changing patient care guidelines, facility visitation policies,

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and the potential need to ration limited resources. Input on the allocation of scarce resources was shared with the North Carolina Institute of Medicine (NCIOM) to assist in the creation of its recommended state protocol [1]. As data regarding new therapies such as hydroxychloroquine, remdesivir, convalescent plasma, and monoclonal antibodies became available and prevention recommendations and guidance continued to change, it became increasingly important to share perspectives, experiences, and literature reviews within this group. With a significant surge in COVID-19 cases and hospitalizations late in 2020, hospital leaders freely shared information about bed and ventilator capacity, staffing issues, and other pressing needs in ways they had not previously. As a result, patients were transferred between hospitals to ensure that no hospital became overwhelmed and that patients received the appropriate level of care. The trust built among the hospital leadership through this collective work facilitated collaboration to maximize care for the region's population. Members of this group expressed the added benefit of collegial support through extremely challenging times when so many health care providers experienced isolation, frustration, and despair [2].

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As the group standardized practices, organizations presented consistent messaging to the community based on the North Carolina Department of Health and Human Services (NCDHHS) "Know Your Ws: Wear, Wait, Wash" campaign [3]. Health leaders and officials communicated this information in public forums including local government meetings, community briefings, and media interviews to emphasize the importance of accessing effective therapies and adhering to prevention measures. This regional approach helped to decrease confusion during an extremely confusing time.

In recognition of the importance of unified regional public messaging related to COVID-19, the group supported the efforts of the Western North Carolina (WNC) Health Communicators Collaborative, a collection of local and regional health communicators from health departments, hospitals, and regional stakeholders convened by WNC Health Network. Formed a year prior to the pandemic as a regional peer group, the collaborative pivoted in February 2020 to improve Western North Carolina's communications response to COVID-19. In August 2020 the collaborative braided together funding from MAHEC, AdventHealth Hendersonville, Dogwood Health Trust, and Mission Health to coordinate a three-month, five-county pilot of a collaborative regional COVID-19 communications campaign called My Reason WNC [4]. Based on the success of the pilot, in December 2020, Dogwood Health Trust provided funding to expand the campaign; 16 counties and the Eastern Band of

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Cherokee Indians elected to participate.

The My Reason WNC campaign built on messaging and guidance provided by the Centers for Disease Control and Prevention (CDC) and NCDHHS but featured local community members and leaders sharing their personal motivations for why they practice COVID-19 prevention measures and/or received a COVID-19 vaccine. Campaign materials were created regionally, then selected and branded locally. The campaign materials were primarily delivered through social media and allowed local public health entities to counter misinformation and to target hard-to-reach communities with positive, evidence-based messaging in both English and Spanish. The campaign also developed a My Reason WNC Partner Toolkit to make the resources and messages available to hospitals, institutions of higher education, community-based organizations, and all who wanted to participate in the regional campaign.

In the first three months of the regional campaign, more than half of WNC residents (455,168 unique individuals) were reached on social media (internal data, MAHEC). In an online public survey, almost a third of respondents who reported having seen an ad said that it led them to seek more information about COVID-19, and 39% of respondents said that it affected their behavior (internal data, MAHEC). This innovative regional collaborative resulted in infrastructure, relationships, processes, funding streams, and capacity to achieve high-quality health communications in a way that is engaging, measurable, effective, and sustainable in rural communities. This ability can be extended to other key health issues beyond COVID-19.

The Western North Carolina Vaccine Acceleration Consortium

Vaccine development was a recurrent topic throughout much of 2020. Discussing each new milestone in the science of vaccine development and results from clinical vaccine trials offered the CMO collaboratiave hope. With Emergency Use Authorization (EUA) approval of a COVID-19 vaccine from the US Food and Drug Administration in December 2020, conversations shifted to vaccine storage and handling, vaccination clinic planning, implementation, and documentation. To accommodate the initial disproportionate allocation of vaccines across the state [5], the group saw an opportunity to maximize distribution in Western North Carolina by expanding the collaboration.

Bringing together other health care providers, such as community health centers, urgent care centers, universities, pharmacies, and private providers with representatives from the region's hospitals, health departments/districts, regionally focused health organizations, and funders led to the creation of the Western North Carolina Vaccine Acceleration Consortium (WNC VAC). This multidisciplinary group of dedicated and innovative vaccine providers and partners met regularly to increase vaccine capacity and distribution in Western North Carolina with a focus on equitable distribution to populations experiencing the highest rates of COVID-19 disease and deaths. Having direct participation by NCDHHS staff facilitated real-time dialogue about the vaccine allocation process and best practices in vaccine distribution, as well as the ability to share challenges that led to improvements in the distribution effort.

WNC VAC developed a process to share information on vaccine allocation and capacity among all organizations and to arrange for transfer of vaccine to health care providers with small or large capacity, maximizing vaccine acceptance rates and facilitating widespread timely distribution throughout the region. This established fixed-site vaccine operations in some counties, mass vaccination drive-thru operations in others, and smaller outreach events through partnerships with faith-based organizations, rescue missions, and worksites especially focused on reaching historically marginalized populations. Initial vaccine distribution by NCDHHS averaged 14,000 doses per week for Western North Carolina, predominantly to the health systems and local health departments. Through advocacy for approval of additional priority providers, partnerships with local institutions of higher education, and development of equity outreach events, the weekly vaccine allocation grew to 25,000 by the end of February 2021 (unpublished data from weekly allocation email, NCDHHS).

The work of the consortium implemented a "hub and spoke" model of distribution within the region. Larger vaccine health care providers—the health systems, hospitals, and local health departments—worked with community partners, including universities and community colleges, to penetrate remote and disadvantaged areas in a region where the unique geography of the mountains and winding roads serve as barriers to vaccine access. This focus on partnerships with community organizations enabled health care professionals to apply for and accept more vaccine than they may have used independently and to transfer portions of their allocations to smaller community-based vaccine providers such as health centers and neighborhood pharmacies. This allowed for increased focus on equitable vaccine distribution. A weekly vaccine "Swap Shop"—a virtual gathering where those with excess supply committed to sharing with those who had excess capacity—not only minimized vaccine declination by health care professionals with limited capacity in any given week, but also, through vaccine redistribution even with short notice, minimized any waste of doses. As of March 28, 2021, 25.0% of Western North Carolina residents in 18 counties had received at least partial vaccination as compared to the state average of 21.6% [5]. Partial vaccination rates are above the state average for 17 of the 18 counties and completed vaccination rates are on par with the state average (Table 1) [6].

The Future

This regional community collaboration yielded multiple results ranging from practical applications of state and federal guidance to logistical solutions for enhancing prevention, testing, and vaccinations across Western North Carolina. While it is difficult to understand the exact impact of this collective effort, since its implementation Western North Carolina has consistently experienced lower rates of COVID-19 cases when compared to surrounding counties. This is dramatically apparent when viewing the Johns Hopkins Cases by County Map [7]. Health care leaders participating in this regional consortium routinely share gratitude for the emotional support gained through this collective experience. One of the most durable products of the collaboration is an evolved visibility into regional health care and public health capacity and an understanding that this capacity is greater than previously realized through connections among health care providers and community-based organizations. Capitalizing on this new knowledge, robust personal relationships, and demonstrated capacity to collaborate affords these health care providers and community partners an opportunity to further develop efforts to improve overall health and to ensure Western North Carolina is optimally prepared for what the future may hold. NCMJ

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TABLE 1.
Partial and Complete Vaccinations in WNC as of March 29, 2021

County	Partial	Complete	Percent Partial (%)	Percent Complete (%)
Avery	5057	3210	28.8	18.3
Buncombe	67312	40323	25.8	15.4
Burke	21021	14878	23.2	16.4
Cherokee	6584	4025	23	14.1
Clay	2564	1473	22.8	13.1
Graham	2043	1555	24.2	18.4
Haywood	14903	11117	23.9	17.8
Henderson	28158	19721	27.1	15.9
Jackson	11135	6423	25.3	14.6
Macon	11076	7840	30.9	21.9
Madison	5668	4341	26.1	20
McDowell	11455	7783	25	17
Mitchell	3639	1790	22.5	12
Polk	5617	3286	27.1	15.9
Rutherford	13737	7084	20.5	10.6
Swain	3616	2008	22.2	14.1
Transylvania	8494	6911	24.7	20.1
Yancey	4963	2728	27.5	15.1
18 County Total	**227,042**	**146,496**	**25.0**	**16.2**
State Total			**21.6**	**16.4**

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References

1. North Carolina Department of Health and Human Services. North Carolina Protocol for Allocating Scarce Inpatient Critical Care Resources in a Pandemic. Raleigh, NC: NCDHHS; 2021. https://covid19.ncdhhs.gov/media/1117/download. Published January 11, 2021. Accessed March 28, 2021.
2. Shapiro J, McDonald TB. Supporting clinicians during COVID-19 and beyond – learning from the past failures and envisioning new strategies. N Engl J Med. 2020;383(27):e142. doi: 10.1056/NEJMp2024834
3. North Carolina Department of Health and Human Services. COVID-19 Communications Toolkit. NCDHHS website. https://covid19.ncdhhs.gov/slow-spread/materials-resources/covid-19-communications-toolkit. Accessed March 28, 2021.
4. WNC Health Network. #MY REASON WNC Collaborative Regional COVID-19 Communications. WNC Health Network website. www.wnchn.org/myreasonwnc. Accessed March 28, 2021.
5. Smoot H, Bell A. Significant Racial Disparities in N.C. Vaccine Distribution. Governing.com. Governing.com/now/significant-racial-disparities-in-nc-vaccine-distribution.html. Published February 12, 2021. Accessed May 12, 2021.
6. North Carolina Department of Health and Human Services. Vaccinations. NCDHHS website. https://covid19.ncdhhs.gov/dashboard/vaccinations. Accessed March 29, 2021.
7. Johns Hopkins University & Medicine Coronavirus Resource Center. COVID-19 United States Cases by County. Johns Hopkins University website. https://coronavirus.jhu.edu/us-map. Accessed March 28, 2021.