



# Re-imagining Leadership:

*A pathway for rural health  
to thrive in a COVID-19 world*

*A collaborative effort between*



Eugene S. Farley, Jr. Health Policy Center  
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS





# Table of Contents

**Acknowledgments** .....1

**Introduction to the Playbook** .....2

**Case Studies** .....3

    Sarahville Health Center

    Mountain Plains Family Health Clinic

**Rural Health Care Delivery System Assessment Tool** ..... 10

**Challenges**

    Introduction ..... 23

*IN EACH CHALLENGE SECTION:*

        The story continues

        How to close the gap

        Practical guidance

        Pearls from your peers

        Who can help

    Challenge #1 – Clinical care ..... 30

    Challenge #2 – Communication ..... 45

    Challenge #3 – Community ..... 51

    Challenge #4 – Cross-system collaboration..... 60

    Challenge #5 – Space..... 71

    Challenge #6 – Spending ..... 78

    Challenge #7 – Staffing ..... 89

    Challenge #8 – Statistics and surveillance ..... 98

    Challenge #9 – Supplies..... 105

**Looking Ahead** ..... 113

**Appendix** ..... 116

**References** ..... 119

# Acknowledgments

## Authors

This playbook was written by the following team:

Lauren S. Hughes, MD, MPH, MSc, FAAFP  
*State Policy Director, Eugene S. Farley, Jr. Health Policy Center, University of Colorado Anschutz Medical Campus*  
*Associate Professor, Department of Family Medicine, University of Colorado School of Medicine*

Benjamin D. Anderson, MBA, MHCDS  
*Vice President, Rural Health and Hospitals, Colorado Hospital Association*

Darlene B. Tad-y, MD, SFHM  
*Vice President, Clinical Affairs, Colorado Hospital Association*  
*Associate Professor of Medicine, Division of Hospital Medicine, University of Colorado School of Medicine*

Mark E. Deutchman, MD, FAAFP  
*Professor, Department of Family Medicine, University of Colorado School of Medicine*  
*Associate Dean for Rural Health, University of Colorado School of Medicine*

Stephanie B. Gold, MD  
*Scholar, Eugene S. Farley, Jr. Health Policy Center, University of Colorado Anschutz Medical Campus*  
*Assistant Professor, Department of Family Medicine, University of Colorado School of Medicine*

Kaitlyn M. Vagnini, MA  
*Graduate Research Assistant, Eugene S. Farley, Jr. Health Policy Center, University of Colorado Anschutz Medical Campus*

Susan R. Mathieu, MPP  
*Medicaid Policy Director, Eugene S. Farley, Jr. Health Policy Center, University of Colorado Anschutz Medical Campus*  
*Senior Instructor, Department of Family Medicine, University of Colorado School of Medicine*

Whit G. Oyler, MPH  
*Project Manager, Colorado Hospital Association*

Hallie Conyers-Tucker  
*Intern, Eugene S. Farley, Jr. Health Policy Center, University of Colorado Anschutz Medical Campus*  
*Undergraduate Student, Colorado College*

## Sponsors

This work is funded by CPSI and the ZOMA Foundation.

## Medical students

The authors wish to thank the following University of Colorado School of Medicine medical students who provided research support:

Alexis Gerk  
Marcus Marable  
Wesley Tran

## Advisors

The authors appreciate the following individuals for their reviews of early versions of this playbook:

Jeffrey Bacon, DO  
*Chief Medical Officer, Divisional Medical Director and Family Medicine Physician*  
*Banner Health, Sterling, CO*

Arlene Harms  
*Chief Executive Officer*  
*Rio Grande Hospital and Clinics, Del Norte, CO*

Cathy Harshbarger, BSN, MHA  
*Chief Executive Officer*  
*Melissa Memorial Hospital, Holyoke, CO*

Trish McClain, BSN, RN  
*Public Health Director*  
*Northeast Colorado Health Department, Sterling, CO*

Michelle Mills  
*Chief Executive Officer*  
*Colorado Rural Health Center, Aurora, CO*

Kevin Stansbury, JD, MS  
*Chief Executive Officer*  
*Lincoln Community Hospital and Care Center, Hugo, CO*

## Experts

The authors also thank **John Supplitt**, Senior Director, Field Engagement, Rural Health Services, American Hospital Association, and **Brock Slabach**, Senior Vice President for Member Services, National Rural Health Association, for their invaluable insight and expertise in informing this work.

## Special thanks

Colorado Wing, Civil Air Patrol – U.S. Air Force Auxiliary





# Introduction

*to the playbook*



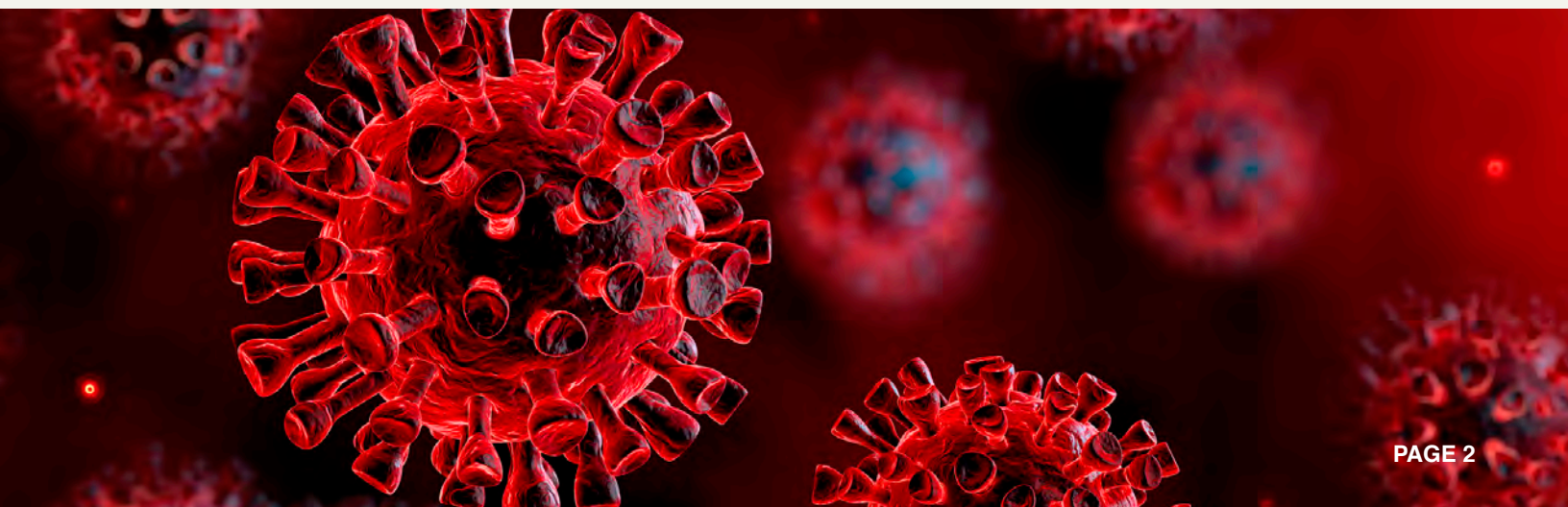
# Introduction to the Playbook

Shortly after COVID-19 arrived in the United States, the National Rural Health Association's Senior Vice President Brock Slabach stated, "The pandemic has shined a bright light on the widening fractures that exist in the rural health safety net."<sup>1</sup> Indeed, the unprecedented economic and public health trials facing rural communities and their health care delivery systems are daunting. Developing a meaningful plan to protect and improve the health of rural people and strengthen rural health care delivery systems during this time requires insight from those working on the front lines in these communities – hospital administrative and governance leaders, clinicians, public health leaders: your peers. Most importantly, it must also include the collective voice of rural patients, people who have personally experienced and have been impacted by initial response efforts.

This playbook was written with the wisdom gained from over 30 interviews with rural health leaders and community members, an extensive literature review, analysis of rural hospital and primary care data, and the development of a rural-focused health care delivery system assessment tool, with the understanding that a precise playbook for this once-in-a-lifetime crisis is impossible. Each rural community has its own unique identity, strengths, and challenges. There can be no scripted guide, no "silver bullet" that addresses all issues necessary for ensuring the survival and vitality of all rural communities and their local health care systems.

Through a pair of hypothetical cases that reflect reality for many rural health care delivery systems across the United States, this unique playbook is designed to build rural hospital and rural primary care leadership capacities around strategic thinking and local problem solving. Rather than instructing readers what to do, the cases and accompanying strategic prompts, practical guidance, innovative solutions, and key resources and tools encourage rural health leaders to critically think about how to approach and own their solutions. The transformational leadership skills that were previously considered best practices mastered by a few may now determine the very survival of some of America's most vulnerable places.<sup>2</sup> The time to build these urgently needed ethical, collaborative, and socially conscious leadership capacities is now.

The most innovative, effective, and impactful solutions originate not in our state or federal capitol buildings but rather in the industriousness and creativity of local people. With the same independent spirit that built our nation, rural communities can identify and solve their own problems, determine their own outcomes, and ensure future generations inherit a rural America that is even stronger than the one we know now. This is a playbook to help realize those aspirations.





# Case Studies

**NOTE:** *The cases in this playbook are fictional and were created in order to illustrate the issues faced by rural health care providers.*



# CASE STUDY



Mike Kruger stared nervously down the hallway of the medical/surgical unit at Sarahville Health Center (SHC), an aging 25-bed facility located in a rural farming town in northeastern Iowa where he serves as the hospital's Chief Executive Officer. The constant beeping of the aging telemetry units at the nurse's station, which were budgeted for replacement before the abrupt arrival of COVID-19 a week earlier, reminded him of the severity of the situation before him. The hospital had no intensive care unit (ICU) beds and only one ventilator. Mike hoped they would not need to simultaneously ventilate more than one patient. None of the local physicians had actively practiced critical care medicine since residency training.

Nurses wearing makeshift personal protective equipment (PPE) hustled in and out of hospital rooms, answering call lights. Mike winced when an emergency room technician ran by him wearing a black trash bag as a gown. Dr. Toli Berezovsky, a family physician and friend of Mike's, noticed his subtle response. "We only offer the best gowns for our staff," he said with a smile. "It's Glad or Hefty." It was Dr. Berezovsky's honest attempt to lighten the heavy mood in the hospital, knowing PPE was in short supply everywhere. Mike didn't laugh. Three staff members had been diagnosed since the first case arrived in the county, and investigations were still pending as to whether they contracted the virus while at work. The team was working hard, but there was quiet grumbling in the ranks about being expected to come to work without adequate protection. This disgruntlement was starting to spread in the community.

Mike had barely slept since the pandemic was declared a statewide emergency. COVID-19 positive patients in ICU beds soared across the state of Iowa during that time, and if the trend continued, the state would issue crisis standards of care. When the first three cases were discovered in Iowa, he halted elective procedures and any other non-essential care, a decision that would prove to wreak havoc on SHC's financial future. Despite the team's swift response and best efforts, the work ahead seemed insurmountable.



## About Sarahville Health Center

A politically conservative agricultural town of approximately 10,000 people, Sarahville was a 90-minute drive from the closest major city. Like many rural towns, school events and church activities were interwoven into the fabric of the local culture. Sarahville boasted the world's largest ball of barbed wire, which attracted several hundred curious spectators each year to the community. Its annual Memorial Day festival included patriotic music, air shows, sky diving, children's activities, and everything from sticks of butter to oversized marshmallows fried on a stick.

Agriculture was the heart of the local economy, and the presence of several cattle ranches, a feedlot, and a small meat-packing plant drove some ethnic diversity to the area. Though the town faced challenges common to rural places, such as declining population, it was home to a reputable public school, a community college, a grocery store, several banks, restaurants, a dozen churches, a community center, and a hospital that had developed a national reputation for its impressive maternity program.

## Case Studies continued

# CASE STUDY

SHC was designated by the federal Centers for Medicare and Medicaid Services (CMS) as a Critical Access Hospital (CAH), which provided certain financial benefits, such as cost-based reimbursement for what CMS defined as allowable services. SHC was a stand-alone health care delivery system that included an attached 40-bed nursing home and was not affiliated with a major health system. Its board members were appointed by the county commission.

SHC employed a full-time general surgeon and six full-spectrum family physicians who shared the responsibilities in the hospital and its several Rural Health Clinics for covering endoscopy, minor surgeries, obstetrics, inpatient and outpatient care, skilled care, a geriatric psychiatry unit, and a certified Level-IV Trauma Center.

SHC's facilities and equipment were aging and parts of the campus had been poorly maintained in recent years. Any upgrades were in areas most visible to patients or attached to revenue-generating service lines; this had left its less-noticeable infrastructure susceptible to breakdown. The \$1.5 million in funds from property taxes intended to offset the cost of capital improvements as part of SHC's \$20 million annual budget were instead being utilized to cover the unpaid care of the growing number of patients who lacked insurance or were covered by Medicaid, which had low reimbursement rates.

### **Sarahville Health Center leadership**

Most of the SHC leadership team was newly assembled with the arrival of Mike two years prior. Its Chief Financial Officer, Mary Liz Overcash, was a hard-working local accountant in her late 20s with no prior health care or leadership experience. The Chief Nursing Officer, Colson Files, was a former military nurse who was recruited from an urban hospital on the West Coast to finish his career in Sarahville if he could survive the cultural transition. The Medical Director, Dr. Daniel Thomas, was the practicing general surgeon and the senior physician. He grew up near Sarahville and inherited the position by default. He regularly reminded Mike of his general disdain for meetings and that none of his time was officially allotted for administrative responsibilities.

The SHC Board of Directors consisted of seven members, four men, and three women. Among the men were a young farmer, a real estate agent, an elderly dentist, and a retired radiology technician. One of the women owned a local salon. The second was a community college business professor. The third was a retired schoolteacher. Nearly all the board members were generally engaged and forward-thinking, but levels of health care governance education and engagement varied widely. Most of them attended an annual hospital governance education event sponsored by the Iowa Hospital Association.

The Board chairperson, the professor, was particularly astute and often found herself redirecting the rancher when he would individually insert himself in the operations and maintenance of the facilities. Mike had recently met with the Board chair to discuss his concerns regarding signs of dementia in the retired radiology technician and how to manage his odd behaviors, which included repeatedly asking the same questions and falling asleep – even snoring – during Board meetings.





## Case Studies continued

# CASE STUDY

### Community response to COVID-19

Initially, the community showed a strong sense of togetherness. They organized sewing groups to produce cloth face coverings for health care workers and community members. They prepared and brought meals and notes of encouragement to staff at the hospital and nursing home. They showed their support for SHC and its employees on social media and encouraged safe social distancing practices.

But as time passed and the economic damage of COVID-19 became more evident, some of the initial enthusiasm waned and there emerged a growing group of local people leading a resistance effort. They refused to wear masks in public areas, calling such a requirement an infringement on their personal liberties. They hosted social events that exceeded the Governor's recommendations for size of gatherings. They posted opinions on social media that the pandemic was simply politically driven propaganda. One patient caused considerable commotion by arriving for an outpatient appointment wearing fishnet pantyhose over his head, mockingly claiming it was his face mask. To exacerbate the issue, county commissioners were frequently seen in public not wearing masks and disregarding social distancing guidelines.

These incidents led to an article in a statewide newspaper, citing Sarahville as a community that did not take the pandemic seriously. This growing resistance presented problems for Mike and the SHC leadership team as they sought ways to limit the local spread of the disease and address misinformation in the community, some of which was being fueled by cable news.

### Sarahville Health Center response to COVID-19

Both Mike and Dr. Thomas had followed with great interest the global spread of COVID-19 prior to its arrival in the United States. When the first person died from COVID-19 in Washington State, Mike immediately convened the hospital Incident Command (IC) team, which began to meet frequently to anticipate problems and think through solutions. The group understood the plan in place and they meticulously followed protocols. He created a

specific section within the IC team for innovation, sending out a note to all employees, stating, "If anyone has ever called you MacGyver, we need you." He collected a group of innovative people that started producing ideas to solve complex problems.

Very shortly, the group had designated and labeled with visible signage an isolated hallway of the hospital for patients who were COVID-19 positive or presumed to be positive. They stopped all elective procedures approximately a week before it was mandated by state government.

Then, five college students drove from Michigan to Sarahville during their spring break to see the world's largest barbed wire exhibit. The group ate at a restaurant in Sarahville and by that evening in a local hotel, all of them experienced illness and presented at SHC's emergency department. Community spread had already begun to occur.

### Meanwhile, Mike's mind was consumed with unanswered questions.

How would local people be screened for COVID-19? How would those health statistics be publicized to an already anxious community? How long could SHC, which only had around 30 days of cash-on-hand prior to the start of the pandemic, be able to weather its massive revenue losses? Should SHC be able to avoid employee layoffs, what if the virus spread through the ranks, crippling the hospital's ability to achieve its mission? What if people died or were avoidably harmed because the systems being developed and implemented failed to work as intended? To help the leadership team best position the organization to respond to the situation, they decided to utilize a formal tool to assess their organizational capacity to address their key challenges. Out of all the questions Mike was worried about, he decided the key ones were how to mitigate community resistance to public health measures; where to reduce operational costs and preserve cash; how to ensure adequate staffing coverage; and who should take ownership of screening and reporting.



# CASE STUDY



## Mountain Plains FAMILY HEALTH CLINIC

With the telephone call from the county health department replaying in her head, family physician Dr. Samantha Handler drove home after finishing her day's clinic charts, wondering when, not if, after-hours calls would start coming in. The call from Rachel Sisson, the county health nurse, brought unwelcome, but not unexpected, news of a cluster of COVID-19 cases in a nursing home about 200 miles away. The first isolated case in the area was only three weeks earlier. She was glad to be asked to join the local Incident Command (IC) team, which was just being formed but worried about the time commitment required on top of her clinical and practice management responsibilities. Rachel's call also warned of an impending shortage of masks and other personal protective equipment (PPE). She also articulated a dizzying number of issues including laboratory testing and ways to limit person-to-person contact. Rachel and Samantha discussed the need to protect the vulnerable residents in the closest nursing home about 20 miles away, where Samantha's physician husband, Michael, served as medical director. Most concerning of all, Rachel shared possible plans for shutting down schools and businesses and deferring all in-person non-acute medical care.

The clinic was already separating well patients from those with respiratory symptoms by scheduling well visits and elective procedures in the mornings and sick visits in the afternoons. However, the clinic's layout of one long hallway with all exam rooms and treatment rooms accessed from that single, dead-end hallway was not well-suited to any further physical subdivisions of the current clinical space. The clinic was also directing the care of any respiratory patients away from one of the physician assistants (PAs) in the practice who was in her first trimester of pregnancy. The clinic purchased medical supplies including PPE through the co-op run by the Washington Academy of Family Physicians. The clinic kept only about a one-month supply on hand to manage inventory costs and reserved the use of masks and gloves for the care of respiratory patients.

### About Mountain Plains Family Health Clinic

Twenty years earlier, Samantha and Michael Handler founded Mountain Plains Family Health Clinic (MPFHC) in Centennial, Washington, as an independent private practice after completing their family medicine and internal medicine residencies, respectively. Since then, the practice added four additional full-time clinicians: two family medicine physicians and two PAs. All four were ten years younger and in the process of buying into the ownership of the clinic via deferred compensation.

MPFHC offered extended weekday hours and limited weekend appointments, while also accommodating walk-in visits. The clinic provided in-office labs, ECGs, PFTs, x-rays, ultrasounds, treadmill testing, and minor surgeries. Its wide scope of care and



convenient open hours were publicized to encourage area citizens to receive their health care locally. Samantha and her husband provided leadership in the clinic with support of a long-term office manager, Kaila Ackerman. The clinic accepted Medicaid, Medicare, and several private insurance plans and maintained about two weeks of cash on hand. They investigated the prospect of becoming a certified Rural Health Clinic but decided that the administrative burden was too great.



## Case Studies continued

# CASE STUDY

The nearest hospital, Forrest Point Health and Living Center (FPHLC), was a critical access facility with an attached nursing home 20 minutes away in good weather. That hospital was independently owned and operated and supported by a taxing district. FPHLC had a growing relationship with Peaks Memorial Regional Hospital (PMRH) 80 miles away, which sent visiting consultants, accepted the transfer of complex cases, and served as the reference laboratory. The CEO and Board of FPHLC were considering the possibility of opening a weekday, daytime-only urgent care clinic in Centennial and openly desired to acquire the lab, imaging, treadmill testing, and other ancillary services provided by MPFHC. The MPFHC medical providers had admitting privileges at the FPHLC, took follow-up referrals from the emergency department, and were able to turn over care of inpatients to other physicians at the hospital for cases requiring more than a daily visit.

Centennial Emergency Medical Services (EMS) was composed of five employed paramedics and several EMT volunteers, some of whom were also part of the local fire department. Ashley Daniels, one of the early career physicians at MPFHC, served as the EMS medical advisor.



### About Centennial, Washington

The town of Centennial had a permanent population of about 4,000 people within the city limits and an additional 1,500 that lived in neighboring communities. There was a substantial population of retirees and second-home, part-time residents. Located at 6,000 feet elevation in a geographically transitional area between mountains and plains, there were seasonal tourist peaks in winter and summer.

The largest employers were the school system, fish hatchery, and the combination of several orchards and vineyards that employ significant numbers of

seasonal workers. The clinic was also a significant employer with about 25 total employees including the clinicians. Original long-term residents of Centennial were mostly descendants of the original Western European and Scandinavian immigrants who settled the area when it was a center of logging in the early 1900s. As logging declined, orchards and vineyards were established, attracting Hispanic agricultural workers, many of whom stayed in the area. Additional seasonal workers increased the Hispanic population at pruning and harvest time. The culture and politics of Centennial were fiscally, religiously, and culturally conservative, taking pride in independence and self-reliance with some mistrust of the increasing presence of second-home owners and retirees. Those newcomers were perceived to oppose local tax levies that sustained schools and public services.

### Clinic and community leadership

Samantha and her husband operated the clinic with support of Kaila Ackerman. Their management style was traditionally directive, but they were both very approachable and preferred to be called by their first names. When the younger partners began buying into the practice, they began facilitating monthly partnership meetings to set policies and make significant decisions as a group. The clinic had a patient advisory committee that was consulted regarding scope of services and hours of operation.

MPFHC had a good relationship with local government, law enforcement, the school system, various employers, and the county health department. The clinic advertised in the local weekly newspaper and partnered with the county public health nurse, Rachel Sisson, to provide a “Your Health” column once monthly, mostly about seasonal health concerns and preventive care. The formation of the COVID-19 IC team was new and was the first time that any formal collaboration was being established around a community-wide health concern. The town of Centennial was governed by a five-member city council. Its elected mayor, Shannon McCormick, also ran a local vineyard. The city council included a teacher, two small business owners, a retired lawyer, and the pastor of a local Hispanic church. The council was chaired by the pastor, Justin Sanchez.

## Case Studies continued

# CASE STUDY

### **Centennial and Mountain Plains Family Health Clinic response to COVID-19**

News of the COVID-19 outbreak only 200 miles away became the topic of community-wide attention. The early response efforts of the clinic went largely unnoticed by community leaders. Still, the health department and clinic were eager to get the IC team established. They felt that doing so was urgent to manage potential local cases and to establish and maintain community confidence in the response.

Initially, the IC team was composed of representatives from the health department, MPFHC, EMS, the school system, nursing home, and city government. Soon after, a local pastor and a member of the Chamber of Commerce were added. Members of the IC team agreed to meet daily and have all communications originate from the health department via a weekly COVID-19 update in the newspaper and the town's Facebook page. It would be the IC team's job to keep abreast of CDC recommendations and communicate and adapt them to the rural realities of Centennial.

Many other issues beyond the clinic surfaced as well. The health department established a drive-through site for taking nasal swabs of symptomatic patients and also accepting them from the clinic. Weekly press releases and Facebook postings discouraged symptomatic “worried” patients from requesting tests. The IC team considered whether other communication methods and channels would help reach the wider public as well as what special populations in the community would need customized outreach approaches because of differences in language or culture.

However, swabs and transport media were rapidly depleted, and testing was temporarily stopped. The IC team advised the area nursing home to stop allowing in-person visits from friends and family of residents. The nursing home focused on developing virtual methods for keeping residents in touch with their loved ones. It initially wanted to screen nursing home employees for COVID-19, but the health department did not have enough testing capacity to test asymptomatic people. The turnaround time of six to seven days compromised the purpose of even testing symptomatic people, so the recommendation was simply to self-quarantine those with presumptive symptoms. The IC team struggled with the implementation of effective screening and contact tracing methods considering the limitations with testing capacity. They were searching for additional options for testing through private labs.

The State Board of Education's recommendation that all public-school systems transition to virtual instruction created challenges for employees with school-aged children at home. Among the 25 clinic employees, 15 had children in school and several had smaller children in daycare. The office manager identified some clinic jobs that could be done from home and investigated whether the clinic could set up its own daycare program or “learning pods”.





## Case Studies continued

# CASE STUDY

Centennial's first COVID-19 case was diagnosed in a second homeowner who had come into contact with someone from the outbreak in that nursing home 200 miles away. Fortunately, that person had contact with only a few Centennial residents who cooperated through self-quarantine for two weeks in their homes. The pastor on the IC team led an effort to publicize the need for food delivery to the quarantined individuals. The CDC and state health department recommended that restaurants and bars be closed in communities where the incidence rate reached ten per 100,000 population, but there were questions regarding the meaningful interpretation of such a threshold and how it could be applied to an area with only 5,500 people.

The Chamber of Commerce member of the IC team discovered the possibility of applying to the State for waivers to the closure directive and insisted that the health department do so on behalf of Centennial's restaurants and small businesses because of the low population density and low case rate. The IC team also discussed the upcoming summer church camp that was scheduled to bring 100 children and staff to the area in within a few months.

**Meanwhile, Samantha wondered about the immediate and long-term future of the clinic and community.**

How would they continue to modify the use of space in their clinic if the cases dramatically increased? What would be the strategy for managing those cases and containing the spread of the disease? How would she secure adequate PPE to ensure the safety of her team members and patients? How would they communicate important messaging to patients and community members? To help focus the clinic staff, Kaila suggested they complete a self-assessment to better understand what resources they had at their disposal to solve their key problems. As a team, they realized their main challenges were how to ensure optimal health outcomes for COVID-19 positive and presumptively positive patients; manage crisis communications when unexpected circumstances arise; convene community leaders to solve complex problems; allocate space to prevent the spread of the disease; and secure and steward equipment and supplies.





# Rural Health Care Delivery System **Assessment Tool**





# Table of Contents

<b>Introduction</b> .....	11
<b>Governance and Leadership</b> .....	12
Board Members	
Senior Leadership	
Clinical Leadership	
<b>Community Engagement</b> .....	14
<b>Financial Health</b> .....	16
Index of Financial Distress (FDI)	
Value-based Care	
<b>Clinical Care</b> .....	18
Health Outcomes and	
Performance Improvement	
Access to Care	
<b>Emergency Preparedness</b>	
<b>and Resilience</b> .....	21
Health Care and Medical Response	
Coordination	
Continuity of Health Care Service Delivery	
Medical Surge	
<b>Methods</b> .....	22
<b>References</b> .....	119

# Introduction

Effective organizational process improvement often starts with awareness of strengths and weaknesses and a clear understanding of barriers to success. Existing tools frequently examine narrow aspects of a health care organization's performance – assessing tele-health readiness or predicting financial distress – and may lack the wide-ranging view necessary to effect systems change.

This assessment tool was created and designed to provide transformational rural health care and community leaders a comprehensive and systematic approach to examine their local health care systems. This resource can be used as both a self-assessment and as a way to compare one system or community to another, sharing information with both parties. It allows leaders to assess the local health care delivery system across five domains impacting efficiency and effectiveness, including Governance and Leadership, Community Engagement, Financial Health, Clinical Care, and Emergency Preparedness and Resilience. These domains were specifically chosen because of their relevance to a rural health care organization's ability to effectively respond to a public health emergency. However, the tool can also provide insight into the broader health and infrastructure of rural health organizations, identifying opportunities to meet the needs of their communities. Notably, it is specifically aimed at rural hospitals and primary care practices, which differ greatly in scope, scale, and function from their urban counterparts. We recognize that some of the resources and data elements listed in the five domains may be absent and therefore inapplicable in small primary care practices.

The tool is designed to prompt health care leaders to carefully and objectively assess their capacities relative to the needs of their communities both during and after the acute impact of COVID-19. This process is intended to equip and inspire rural health care delivery systems to contemplate strategic interventions that would increase those capacities in a new and remarkably different health care landscape.

## Completing the tool and interpreting the results

Rather than providing a score or ranking, this tool serves as an “honest look in the mirror” and creates the fodder for an organization and its leaders to generate actionable insights regarding opportunities for improvement. The results may be used by leadership teams to drive conversations with community stakeholders and patients. Comparisons may be made with neighboring organizations or even across states or regions. The emphasis of the results should remain on the process of using the tool to assess the capacities of a rural hospital or primary care practice. Thoughtful answers to each question – which are best produced by an engaged committee of diverse team members – will lay the groundwork for thriving, vibrant rural health care delivery systems well-positioned to weather future COVID-19 surges or other unforeseen challenges.

We recommend that an organization convenes a representative taskforce of board members, administrative and clinical leaders, frontline workers, local citizens, and others to thoughtfully deliberate and answer the questions in the tool. We recognize that within rural health care delivery systems, many people serve in multiple roles and carry several titles. For the purposes of completing the tool, the following functions or perspectives are particularly important:

- Financial expert
- Clinician and/or clinical leader
- Governance member or owner (if applicable)
- Leader in strategy, health care transformation, and/or value-based care
- Emergency preparedness and response director
- Communications leader; strong writer to capture responses
- Community member, volunteer, or business owner

This group should reserve approximately four consecutive hours to complete the assessment. Once finished, we recommend it be reviewed by the organization's senior leadership team and then by the hospital Board of Directors or by the owners of the primary care practice.



# Governance and Leadership

The leadership team of a rural hospital or primary care practice provides overall direction and guides organizational culture and practices. The members are ultimately responsible for and accountable to patients in their respective communities. They serve as a conscience or moral compass for the organization and make decisions that are informed by the expertise of clinicians and other health care workers. In this section, the characteristics of the leadership team are examined to identify gaps in representation or effectiveness.<sup>a</sup>



## Board members

1. Describe how your Board is diverse. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. How does your organization evaluate Board and CEO performance, and how do you address areas for improvement? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Describe your process for identifying qualified candidates to fill board positions.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. How does the board manage potential conflicts of interest? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*continued*

# Governance and Leadership



## Senior leadership

5. How is your senior leadership team accountable to measurably:

- Improve clinical quality and patient safety \_\_\_\_\_
- Improve the patient experience \_\_\_\_\_
- Reduce health disparities \_\_\_\_\_
- Decrease per capita cost of health care \_\_\_\_\_
- Increase employee engagement \_\_\_\_\_
- Enhance health care provider wellness \_\_\_\_\_

6. How do your senior leaders invite employee input as it relates to the organization's mission, vision, core values, and strategic plan? \_\_\_\_\_

---

---

---

7. How does your organization view or address organizational affiliations, partnerships, or mergers? \_\_\_\_\_

---

---

---

## Clinical leadership

8. How are clinicians involved in:

- Strategic decision-making \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Operational decision-making \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Financial decision-making \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Community Engagement

Effective community engagement provides a health care organization with necessary information to ensure services and products meet the needs of patients. Employing best practices for conducting a community health needs or similar assessment aligns organizational priorities with the health care needs of its community and positions the health care organization to thrive.<sup>a,b</sup> This section examines an organization's ability to understand and meet the needs of its community.



1. In what ways does your organization engage your community?
  - a. Community Health Needs Assessment (or similar assessment)
    - Last date performed? \_\_\_\_\_
    - How did the involved individuals represent your community? \_\_\_\_\_  
\_\_\_\_\_
    - What strategic priorities did you identify in your community through this work?  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Patient and Family Advisory Council [PFAC] (or similar forum)
    - How often does the PFAC meet? \_\_\_\_\_  
\_\_\_\_\_
    - Describe the effectiveness of the PFAC leadership and how they source ideas from its members: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
    - How is the PFAC incorporated into the strategic planning and implementation process?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Which of the following care management or population health services does your organization provide?  
(Check all that apply)
  - ☐ Care managers for vulnerable patient populations
  - ☐ Chronic disease management services
  - ☐ Patient navigators
  - ☐ Community paramedicine
  - ☐ Community health workers
  - ☐ Other \_\_\_\_\_

continued

# Community Engagement



3. Which of the following community resources does your organization leverage to support health care delivery and how? *(Check all that apply)*

- ☐ County/state governmental agencies, including local public health departments
- ☐ Elected officials
- ☐ Philanthropic organizations or foundations
- ☐ School systems / early childhood centers
- ☐ Faith-based organizations
- ☐ Local businesses / Chamber of Commerce
- ☐ Nursing homes and assisted living facilities
- ☐ The county extension agency
- ☐ Community volunteer groups
- ☐ Other \_\_\_\_\_

4. What metrics does your organization track to understand performance in community engagement?

---

---

---



# Financial Health

Amidst formidable financial challenges, rural health care delivery systems can seize opportunities to leverage community resources to ensure their vitality. In this section, an organization may examine its financial health using traditional metrics. This section also helps rural health care delivery systems evaluate strategies and ensure readiness for participating in value-based care.<sup>a</sup>



1. How does your organization utilize the following strategies to ensure financial vitality?
  - ☐ Monitors outmigration data (market share) for different service lines
  - ☐ The organization utilizes efficiency methodologies such as Lean or Six Sigma
  - ☐ The organization can accept risk of spending greater than targets
  - ☐ Participation in risk contracts, stop-loss insurance, or risk corridors
  - ☐ Ongoing monitoring of cost to deliver services compared to revenues
  - ☐ Cost accounting system capable of quantifying cost per encounter or service
  - ☐ Other \_\_\_\_\_
2. What is your organization's three-year trend for the following measures:
  - ☐ Profit margin/operating margin \_\_\_\_\_
  - ☐ Days cash on hand \_\_\_\_\_
  - ☐ Days in accounts receivable \_\_\_\_\_
  - ☐ Debt-to-equity ratio \_\_\_\_\_
  - ☐ Bad debt \_\_\_\_\_
  - ☐ Payer mix \_\_\_\_\_

Rural hospitals are also able to evaluate the probability of financial distress using the “financial distress index” (FDI) designed specifically for them.<sup>c</sup> The FDI is a model predicting a latent index of financial distress by unprofitability, equity decline, insolvency, and closure.<sup>c</sup>

*continued*

# Financial Health *continued*



## Index of financial distress (FDI)

### 3. Financial performance:

- ☐ Percent total margin \_\_\_\_\_
- ☐ Retained earnings \_\_\_\_\_
- ☐ Present benchmarks met \_\_\_\_\_

### 4. Government reimbursement:

- ☐ Critical access hospital status \_\_\_\_\_
- ☐ Medicaid-to-Medicare fee index \_\_\_\_\_
- ☐ Certified Rural Health Clinic status \_\_\_\_\_

### 5. Organizational characteristics:

- ☐ For-profit status \_\_\_\_\_
- ☐ Government facility \_\_\_\_\_
- ☐ Net patient revenue \_\_\_\_\_

### 6. Market characteristics:

- ☐ Miles to nearest hospital with greater than 100 beds or ambulatory care center \_\_\_\_\_
- ☐ Market share \_\_\_\_\_
- ☐ Proportion of households in poverty \_\_\_\_\_
- ☐ Market population \_\_\_\_\_

## Value-based care

### 7. What percentage of your organization's revenue is tied to value-based contracts, and what are those methodologies (e.g., per member per month [PMPM], accountable care organizations [ACOs], global budgets, etc.)? \_\_\_\_\_

---

---

---

### 8. In what ways does your organization participate in value-based care?

- ☐ Clinician contracts provide incentives related to clinical care performance
- ☐ The organization is financially capable of managing the total cost of care for a defined population
- ☐ Your organization validates payer-defined cost targets and risk adjustment methodologies
- ☐ Not applicable

# Clinical Care

Clinical care is the overarching purpose of the health care delivery system. This section equips organizations to consider how their services are responsive to the needs of their staff and communities and how they are engaged in improving health equity and making care more accessible.<sup>d,e</sup>



**Health outcomes and performance improvement**

1. Describe your performance in quality and patient safety metrics.

	List three metrics in which you are performing well	Benchmark	List three metrics in which your performance needs improvement	Benchmark
Quality of Care	1.  2.  3.		1.  2.  3.	
Patient Safety	1.  2.  3.		1.  2.  3.	

2. What structure and processes does your organization have in place for performance improvement?

*continued*





Access to care

3. Describe your identified community health needs and the services your organization provides to meet those needs. Examples are provided in each category.

Health Needs Identified (based on CHNA or other health needs assessments)	Services Available (number of providers or service lines, clinics, virtual care, etc.)
Primary Care 1. <i>Well-child visits</i> 2. 3.	
Chronic Conditions 1. <i>Diabetes mellitus</i> 2. 3.	
Behavioral Health 1. <i>Substance use treatment</i> 2. 3.	
Specialty Care 1. <i>Cardiology</i> 2. 3.	
Other/Non-clinical 1. <i>Physical therapy</i> 2. 3.	

4. How does your organization address provider/staff wellness? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. How does your organization assess equitable access to health care services? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Clinical Care *continued*



6. Does your organization provide patients the option to access virtual care (including telemedicine)?<sup>f,g</sup>

☐ Yes

- What telemedicine services does your organization provide? \_\_\_\_\_  
\_\_\_\_\_
- How does your organization staff telemedicine services? \_\_\_\_\_  
\_\_\_\_\_
- What feedback have you received from patients on virtual care options? \_\_\_\_\_  
\_\_\_\_\_
- What training does staff receive on providing telemedicine services? \_\_\_\_\_  
\_\_\_\_\_
- What impact has telemedicine volume had on your financial performance? \_\_\_\_\_  
\_\_\_\_\_

☐ No

- Does your organization have a champion(s) for bringing telemedicine to your organization? \_\_\_\_\_  
\_\_\_\_\_
- Does your organization have the technical capability to provide telemedicine services?  
If not, which capabilities are missing? \_\_\_\_\_  
\_\_\_\_\_
- Has your organization created telemedicine policies? \_\_\_\_\_  
\_\_\_\_\_
- Has your organization begun training staff on providing telemedicine services? \_\_\_\_\_  
\_\_\_\_\_
- Does your organization have a financial model for the use of telemedicine? \_\_\_\_\_  
\_\_\_\_\_

# Emergency Preparedness and Resilience

Emergency response preparedness is vital for a health care delivery system to maintain the ability to care for patients during incidents, including natural disasters, mass casualty accidents, bioterrorism emergencies, and emerging infectious diseases, that would normally exceed usual demands. The U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response has outlined Health Care Preparedness and Response Capabilities to guide the elements of preparation for health care delivery systems.<sup>h</sup> In this section, three preparedness capabilities are examined that take into consideration the unique challenges facing rural health care organizations.



## Health care and medical response coordination

1. In reviewing your Emergency Operations Plan (EOP), describe how your organization will:
  - a. Continue to provide clinical care \_\_\_\_\_
  - b. Modify staff roles and responsibilities \_\_\_\_\_
  - c. Collaborate with local public health, community, and governmental organizations \_\_\_\_\_
2. What is your strategy for sharing information internally with staff and externally to the public?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Continuity of health care service delivery

3. What are key health care functions that your organization intends to continue during an incident?  
\_\_\_\_\_  
\_\_\_\_\_
4. How will your organization manage administrative and financial functions during an incident?  
\_\_\_\_\_
5. How will your organization acquire supplies, equipment, pharmaceuticals, and other necessary resources in the event of supply chain disruptions? \_\_\_\_\_
6. What procedures does your organization have in place to protect health care information systems, networks, and privacy? \_\_\_\_\_

## Medical surge

7. Describe your organization's plan for responding to a medical surge during an incident.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Methods

To develop this assessment tool, a peer-reviewed literature search for existing tools was conducted within PubMed and Google Scholar, starting with the search terms “rural health” + “assessment” + “tool”. Abstracts of the search results were reviewed to identify relevant tools and background articles. Search results that were not written in English were excluded. References in the relevant articles were also reviewed to identify snowball resources. From this initial search, the review of the resulting articles prompted the team to conduct additional, narrower searches using the following search terms:

“Rural hospital” + “financial”

“Rural” + “primary care” + “assessment” + “tool”

“Rural” + “health care delivery system” + “assessment”

“Rural” + “value-based care”

“Rural” + “telehealth” **AND/OR** “telemedicine”  
**AND/OR** “virtual health”

“Assessment” + “telehealth” **AND/OR** “telemedicine”  
**AND/OR** “virtual health”

“Assessment tool” + “primary care” **AND/OR** “hospital”

“Emergency preparedness” **OR** “public health emergency” + “rural”

We evaluated the tools that were identified based on their ability to assess multiple domains within health care delivery systems; relevance to rural communities; and ease of use. Key informant interviews and feedback from subject matter experts additionally informed the ultimate selection of domains for this new tool, as well as the areas of focus within each domain. In some cases, such as with the financial health domain, established measures already existed. In these instances, the team supplemented existing measures with questions designed to gauge how prepared an organization is to respond to health care trends, such as value-based care. Once the draft tool was created, including domains, areas of focus, and the assessment questions themselves, it was evaluated iteratively by an advisory group comprised of rural hospital, primary care, and public health representatives until the final version was complete.





# Challenges



# Introduction to the Nine Challenges

*“... The impacts of the coronavirus epidemic on rural communities will also have major implications for urban populations. Rural America supplies disproportionate shares of the nation’s food, energy, military personnel, and natural amenity recreation. These are resources that urban America depends upon. Rural, urban, or somewhere in between – we are all in this together.”*<sup>3</sup>



## Rural challenges entering COVID-19

Just 20% of Americans live in rural and frontier communities that comprise 97% of the land mass in the country.<sup>4</sup> The rural minority fuels the economy with vital food and water, energy, and natural resources.<sup>5</sup> Despite the criticality of rural America to the nation’s health, the health of the people that choose to live and work in rural places often lags that of urban residents.<sup>6</sup> Furthermore, the diversity within rural America, especially the experiences of immigrants, people with disabilities, and Black, Latinx, and Native American populations, is sometimes missed as some view rural America as one homogenous group, when in fact one in five rural Americans is Indigenous or a person of color.<sup>5,7</sup>



As urbanization trends increase, those remaining in rural America grow comparatively older, sicker, and poorer.<sup>4,8-13</sup> Rural areas tend to have an older demographic, including a substantial number of retirees,<sup>14</sup> that faces a greater chronic disease burden than their urban counterparts, including higher rates of depression, heart disease, high blood pressure, stroke, diabetes, chronic lower respiratory disease, cancer, obesity, tobacco use, and unintentional injury.<sup>3,4,15</sup> Rural residents are less likely to pursue preventive care such as cancer screenings and vaccinations.<sup>16</sup> Prior to COVID-19, significant public health attention was being paid to two rural health issues: 1) rising maternal and infant mortality rates;<sup>17</sup> and 2) the worsening opioid crisis and associated increase in hepatitis B and C and HIV.<sup>18</sup> These health issues remain and may worsen as limited resources are diverted to combat the pandemic.



# Introduction *continued*

Rural America entered COVID-19 having recovered more slowly from the Great Recession of 2007-09 compared to their urban peers.<sup>3,19</sup> Rural people tend to work in economically vulnerable industries, including tourism, child care, retail, agriculture, mining, manufacturing, and meat-packing, that operate at narrow margins and are essential jobs where remote work is generally impossible.<sup>6,19,20</sup> Rural families have lower median household income than urban ones (\$49.9K vs. \$66.1K), and more rural people live below the poverty line compared to urban dwellers (14.7% vs. 11.3%).<sup>4</sup> Rural Americans are less likely to have health insurance<sup>21</sup> and more likely to carry debt because of a medical emergency.<sup>14</sup>

Rural families experience food insecurity, transportation challenges, and higher rates of homelessness,<sup>14,22</sup> and they have fewer resources available to them to navigate a more fragmented and limited set of social services. Older individuals in rural communities tend to rely on informal caregiving from friends and family to get needed food, medications, and social interaction.<sup>3</sup> Social distancing guidelines may worsen depression or anxiety as a result of isolation; additionally, restrictions on group sizes have impacted usual activities that connect rural community members, such as small town parades, county fairs, and rodeos; family reunions, weddings, and funerals; church services and retreats; and high school sports and adult tournaments.

Perhaps the greatest challenge in rural communities is the lack of universal broadband. Now in high demand for school, work, health care, and to purchase needed goods, rural broadband coverage is generally slow, expensive, and often unreliable.<sup>19</sup> Connectivity speeds may not be strong enough to support video conferencing; some rural residents may not even have adequate cell or landline coverage.<sup>23</sup> And, given COVID-19 restrictions, public wi-fi hotspots, such as fast food restaurants and libraries, may be unavailable. According to a 2016 Federal Communications Commission study, 39% of rural residents lacked access to 25 mps broadband compared to 10% of the general population.<sup>20</sup>

## **The rural experience since the arrival of COVID-19**

Rural America is not likely to be impacted in one, uniform wave but rather in a series of hot spots that ebb and flow.<sup>24</sup> In a Kaiser Family Foundation study from April 2020, the researchers found that while metro counties experienced significantly higher case numbers and death rates per capita, the growth rates in the number of new cases and in deaths were higher in rural counties.<sup>25</sup> While there is built-in natural social distancing with fewer people and fewer mass gatherings in rural communities, rural places are certainly not immune from new diseases like COVID-19 and are susceptible in distinct ways. While population density drives community spread and the potential for numerically large outbreaks in metropolitan areas, the explanation for rural, semi-rural, and micropolitan susceptibility – or, the conditions that could allow the virus to take hold and spread – is quite different.<sup>21</sup> Rural communities are largely susceptible because of the proportion of its population over the age of 65 with chronic conditions like diabetes; in semi-rural locations, institutional facilities like military bases and prisons add additional susceptibilities; and in micropolitan settings, meat and poultry processing plants further increase susceptibility to COVID-19.<sup>21,26–28</sup>



# Introduction *continued*

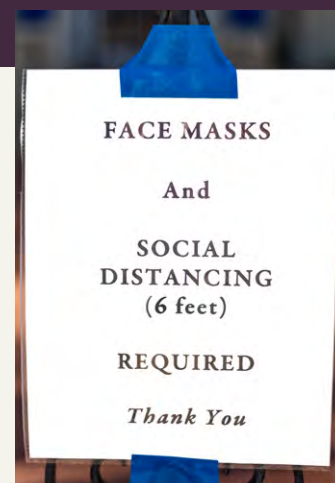
It's important to place the unique susceptibilities of rural communities in their appropriate context of a less robust health care infrastructure and social safety net.<sup>21,27,28</sup> There are fewer health care providers in rural areas, which means longer wait times and driving distances to access care which may lead to greater complications for those with underlying health conditions.<sup>21</sup> Appreciating differences in susceptibility across the rural-urban continuum allows public health and health care leaders to tailor local responses. For example, business closures and shelter-in-place orders make a great deal of sense in cities to slow community spread, while in rural communities, prioritizing and protecting vulnerable populations in institutional and group settings, e.g., nursing homes, prisons, and meat-packing plants, becomes paramount.<sup>21,26</sup> Tailoring planning and outreach to vulnerable, rural groups may mean delivering food and medications via volunteer networks or civic groups; navigating gaps in telemedicine and social services given unreliable broadband coverage; and employing culturally- and linguistically-appropriate messengers to reach employees in meat and poultry processing facilities to not further marginalize those groups.<sup>21</sup>

Rural America is shaped by different political, geographic, and cultural factors. While rural America tends to lean conservative, rural and urban Republicans don't share the same views on the pandemic. At the end of March 2020, the American Enterprise Institute surveyed 611 adults who self-identified as Republicans and found, compared to their urban Republican counterparts, that rural Republicans were less worried they or their family members would contract coronavirus; were less likely to have stockpiled food, medicine, and toilet paper; and were less likely to support the idea that businesses needed to remain closed even if it hurt the economy.<sup>29</sup> On the other hand, rural – as opposed to urban – Republicans were more likely to report that President Trump had thus far responded well to the outbreak.<sup>29</sup> During COVID-19, some rural communities have taken up legal challenges to public health restrictions.<sup>30</sup> In addition, delayed stay-at-home or shelter-in-place orders may have allowed COVID-19 to spread silently in rural parts of the country. In early April, 300 million people – or 90% of

the population – were under orders to stay indoors except for essential activities and jobs; however, there were seven states that had not issued orders at that point – Arkansas, Iowa, Nebraska, North Dakota, South Dakota, Utah, and Wyoming – all rural states led by Republican governors.<sup>31</sup> And when rural communities get confounding messages from television, radio, the newspaper, social media, and local influencers such as religious, civic, and elected leaders, it's understandable that such conflicting sources allow for misinformation to take root.<sup>19</sup> Kirk Siegler from National Public Radio shares,

***"In a divided country, in a divided town even, something as small as wearing a mask can mark you on one side or the other: red versus blue, pro-science versus anti-science; you're taking the virus seriously or you think it's overblown."***<sup>30</sup>

Across the 32 key informants interviewed for this project, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients, two key themes emerged: 1) the neighborliness of rural communities that initially supported the local response; and 2) the growing political resentment toward COVID-19 as 2020 has progressed. In March, rural hospitals and primary care practices witnessed incredible support, understanding, volunteerism, and adherence to public health recommendations. As the pandemic has worn on, however, compliance fatigue has set in, and rural citizens have grown more worried about economic, as opposed to health, consequences. The fatigue has largely been due to challenges in accessing testing; job frustrations and business closures; and the fact that some rural communities have yet to see a substantial number of positive cases. From a political standpoint, initial distrust



# Introduction *continued*

and fear have given way to anger and an increasing belief among a minority of community members that COVID-19 is a hoax. Many rural towns have experienced significant pushback re: mask wearing and challenges correcting misinformation promoted on social media. Rural business owners are frustrated as to why some businesses were deemed essential and others not when it came to shelter-in-place orders. In some communities, law enforcement has made it clear they won't enforce mask orders or local public health ordinances; some hospitals have had to manage very public lack of governance buy-in. Across the board, a majority of key informants shared that a "one size fits all" approach in terms of guidance between rural and urban areas doesn't work and that they would welcome tailored guidance specific to rural communities and local control when it comes to re-opening procedures and pace.



## **Rural health care delivery systems and COVID-19**

Rural health care delivery systems, including rural hospitals and primary care practices, have historically been challenged despite their criticality to local economies, including providing higher-paying jobs and attracting other industries. Some of these reasons include:

- Profitability has been challenged due to declining inpatient volumes and demographic shifts; the trend toward outpatient care doesn't make up the loss of inpatient revenue.
- It is more difficult to recruit and retain physicians and advanced practice providers to rural settings, in large part because of the mismatch between how the pipeline is trained (i.e., accustomed to specialty care access and technology) and the realities of rural practice, as well as significant educational debt loads graduates carry when they finish.<sup>32</sup> The doctors that rural communities are fortunate to have are often older and approaching retirement.<sup>6</sup>
- The rural health care safety net resides squarely at the end of the supply chain, making acquisition of needed supplies, equipment, and pharmaceuticals challenging even in normal times.
- Behavioral and mental health services are less readily available, and emergency medical services transport times are often longer.
- Payment models in rural health care, still largely based on volume, don't adequately reflect the realities of higher per unit operating costs and smaller population sizes.<sup>17</sup>
- Rural public health departments lack adequate infrastructure given state budget cuts, lower property tax revenues from demographic shifts, and increased pension contributions.<sup>10,18,33</sup> With limited resources and poor bench strength, local public health departments have struggled to fulfill their disease mitigation and surveillance responsibilities, including contact tracing.



# Introduction *continued*

The ironic reality of our predominantly volume-based, fee-for-service health care system during COVID-19 is that rural hospitals and rural primary care practices risk closure and paradoxical layoffs just when their communities need them the most. They continue to face revenue lag after elective procedures and most outpatient visits were abruptly stopped to mitigate disease spread while simultaneously experiencing price gouging for needed personal protective equipment (PPE), medications, and other supplies.<sup>34</sup> They must solve short-term cash flow challenges so they can make payroll and buy needed equipment; stay on top of accounts receivable; and navigate state and federal aid applications, all with different rules and requirements.

Surge capacity is limited in rural health care delivery systems, given space constraints and more difficult access to PPE and equipment at the end of the supply chain.<sup>3</sup> Rural communities have fewer ICU resources in the face of an older and sicker population with more severe underlying chronic illnesses.<sup>35</sup> In fact, in an unadjusted analysis, the number of hospital beds per capita is similar between urban and rural communities (23.5 per 10K versus 23.8 per 10K).<sup>35</sup> However, when adjusted for age, the number of ICU beds per capita between urban and rural settings changes substantially: 2.9 beds per 10K in urban versus 1.6 beds per 10K in rural.<sup>35</sup> There is great concern about hospital strain and capacity if there is a surge in a rural region, as older adults are more likely to experience severe illness and potentially require ICU-level care and need

mechanical ventilation.<sup>35</sup> Rural communities also have less access to the right personnel with the right type of expertise (i.e., infectious disease specialists and critical care intensivists) or specialized equipment such as ventilators.<sup>35</sup> Rural physicians tend to be older, which places them at greater personal risk when providing direct patient care.<sup>3</sup>

**Access to adequate testing is also challenging in rural and frontier communities<sup>36</sup>; increasing its availability is critical so that state and federal governments know where to allocate equipment and supplies.<sup>3</sup>**

Community members may also be more willing to comply with quarantine if there are known positives in the community.<sup>3</sup> Poor testing availability also makes it harder to identify asymptomatic carriers.<sup>3</sup> From a primary care standpoint, clinicians are concerned for their patients who are not receiving adequate chronic care follow-up, who are falling behind on well-child and preventive visits, and the overall mental and emotional well-being and safety of their patients.<sup>36</sup> Rural health care delivery systems are also working with local public health and social sector agencies in ways and at an intensity they've never had to do before.<sup>37</sup>

Given challenges rural health care delivery systems encountered before and since COVID-19 arrived, this review focuses on nine common problems rural hospitals and primary care practices are likely to face during the ongoing presence of this pandemic: clinical care of a new and evolving disease; communication to staff and the public; community needs and how to meet them; cross-system collaboration principles and opportunities; space re-configuration; spending and financial hurdles; staffing needs and well-being; statistics and surveillance; and supply acquisition, maintenance, and re-purposing. The goal of the content that follows is to help rural health leaders think critically about issues that may arise and to build problem solving and leadership capacities that allow them to create tailored solutions for local challenges.



# Introduction *continued*

## General resources

- **Rural Response to Coronavirus Disease (COVID-19)**. This RHIHub site features frequently updated COVID-19 related resources, trends, toolkits, and other information to equip rural communities to successfully manage their pandemic response. It includes links to regulatory guidance, webinars, provider tools, and more.
- **NRHA COVID-19 Technical Assistance Center**. This online technical assistance site, hosted by the National Rural Health Association (NRHA), offers rural health care delivery systems resources for acquiring PPE, financial support, supply chain tips, and innovative partnerships and collaborations.
- **AHA Rural Health Services**. This webpage collects an ongoing set of resources highlighting rural hospital innovation detailed through fact sheets, case studies, podcasts, and more. This is a helpful site for learning from peer hospitals and how they solved various challenges.
- **AMA COVID-19 Resource Center for Physicians**. This multi-media platform is an informative pandemic resource center from the American Medical Association that provides clinicians and other health care leaders solutions to complex problems related to the pandemic. The site includes resources for private practices and information on serology testing, infection control, home care, and more.
- **State Data and Policy Actions to Address Coronavirus**. This frequently refreshed Kaiser Family Foundation site compares and contrasts social distancing and health policy actions, health care provider capacity, insurance coverage, and more on a state-by-state basis. Such information can help inform local response efforts.

## Government resources

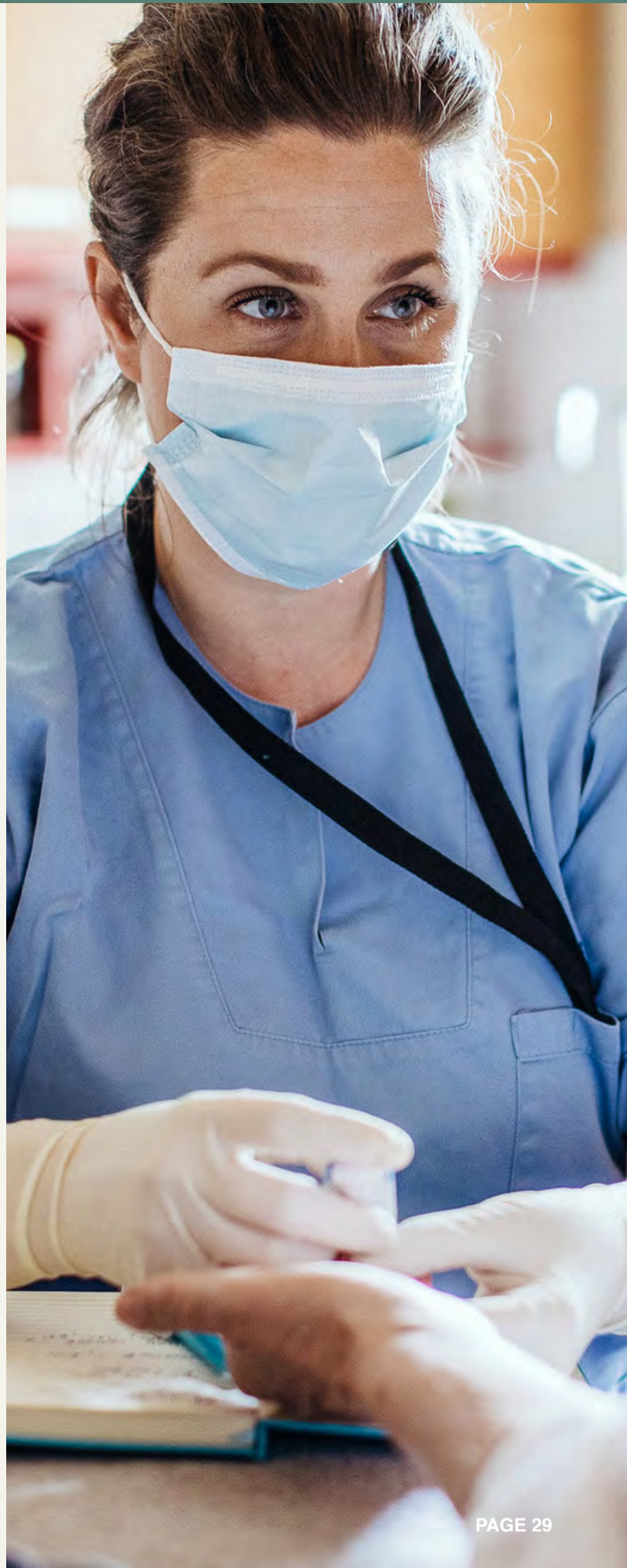
- **Rural Communities**. The Centers for Disease Control and Prevention maintains this website featuring tools and best practices for businesses, health care providers, and communities to plan for and respond to COVID-19. Health care leaders may find this site useful as they develop action plans in partnership with their local public health departments and other stakeholders.
- **Coronavirus Disease 2019**. The Centers for Medicare and Medicaid Services (CMS) offers up-to-date information on COVID-19, including telehealth, billing and coding, coverage, Medicaid and CHIP, and Marketplace guidance, among other topics. This is an excellent one-stop shop to access the latest developments on waivers and other flexibilities granted by CMS.
- **COVID-19 Frequently Asked Questions (FAQs)**. This page from the Health Resources and Services Administration (HRSA) is dedicated to answering COVID-19 questions specific to federally qualified health centers. Rural health care delivery system leaders will find the site easy to navigate as FAQs are categorized into relevant sections such as funding and other resources, program oversight and monitoring, providing care during emergencies, testing, etc.
- **COVID-19 Hospital Resource Compilation**. This document provides resources and guidance for hospital executives and preparedness professionals in several areas, including crisis standards of care, staffing and supply surge, regulatory relief, workforce protection, recovery and resumption of services, etc. The PDF contains hyperlinks to other relevant resources throughout the document.
- **Novel coronavirus resources**. This repository is curated by the Technical Resources, Assistance Center, and Information Exchange (TRACIE) in the US Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response. The site features numerous resources spanning clinical and administrative topics; federal websites; and infectious disease and COVID-19 TRACIE-developed tools.



# Introduction *continued*

## Training resources

- **Coronavirus Disease 2019 (COVID-19) Training.** The TRAIN Learning Network, hosted by the Public Health Foundation, aggregates health care, public health, and preparedness training materials and modules from multiple sources. The free training focuses on risk communication, infection control, non-pharmaceutical interventions, mental health and well-being of health care workers, and contact tracing, among other COVID-19 related topics.
- **Project ECHO COVID-19 Response.** Project ECHO (Extension for Community Healthcare Outcomes) at the University of New Mexico connects experts with frontline health care workers to learn the latest COVID-19 developments. This repository of timely and relevant education is available from both the domestic and international perspectives.
- **Training for Healthcare Professionals.** This CDC website provides a list of COVID-19 trainings on PPE, emergency preparedness and response, infection prevention and control, non-pharmaceutical interventions, and other related topics. The information applies to health care leaders seeking resources on community outreach, long-term care and specialty facilities, and preventing community spread, among others.



# CHALLENGE #1

## Clinical Care



### THE STORY CONTINUES

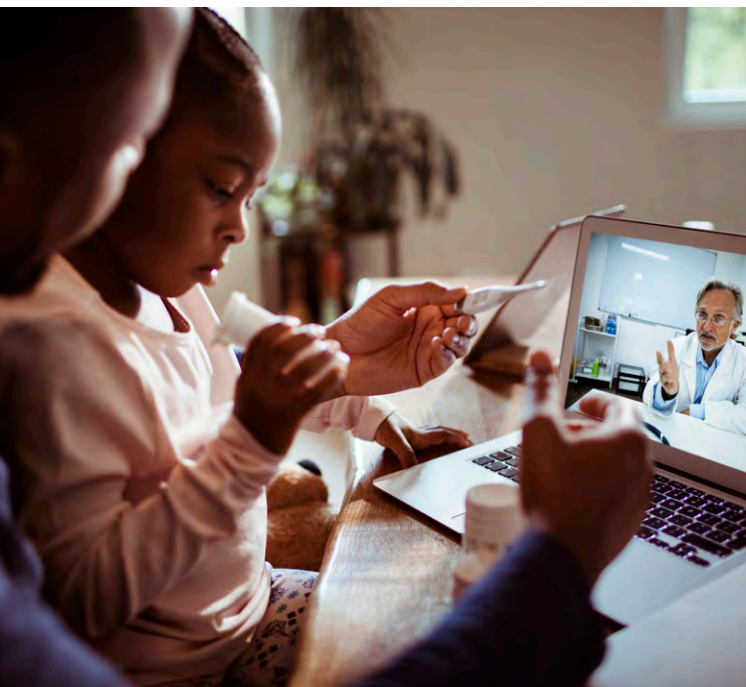


Mountain Plains  
FAMILY HEALTH CLINIC

As part of its strategy to mitigate the space issue and minimize the presence of non-COVID-19 patients in the clinic, Kaila and the clinic staff began calling patients with chronic conditions who required routine visits, establishing pathways for virtual care. Dr. Ashley Daniels piloted the first few of these telehealth visits and within a week, the team switched to a virtual care platform offered by the Washington Academy of Family Physicians. Their successful strategy to limit potential exposure of those vulnerable patients to the virus caused an immediate 20% drop in clinic charges. Kaila wondered if Medicare, Medicaid, and private insurers would pay for phone and virtual visits. She also desired guidance on the proper billing procedures and codes for such care delivery models. With news of COVID-19 entering the area, Mountain Plains Family Health Center stopped scheduling elective minor surgical procedures, which further decreased charges by another 20%.

Anticipating more cases in the area, the clinicians met to establish some internal guidelines about testing and contact tracing. Because of limited testing capacity, the health department would only test patients with symptoms suggestive of COVID-19, not their asymptomatic contacts. They also defined a set of signs and symptoms to use to designate patients as “presumptively positive” for COVID-19 in situations when testing results were not immediately available or when testing was totally unavailable. The health department acknowledged its jurisdiction over contact tracing and provided a single confidential contact to report confirmed or presumptive cases.

In anticipation of severely ill patients, the clinicians consulted with the Incident Command (IC) team at Peaks Memorial Regional Hospital (PMRH) about their clinical criteria for admission and asked for an immediate update if PMRH should go on “divert” for new patients who might require intubation.



As medical director of the nursing home at Forrest Point Health and Living Center, Michael worked with the nursing director there to establish care protocols that would limit the number of staff in direct contact with residents. He also found that there were no pulse oximeter capabilities at the center and immediately had them purchase several to be used when assessing any patient with respiratory symptoms. He advised them to establish the same testing criteria and presumptive positive diagnostic criteria as used in the clinic. In addition, they designated the end of one wing of the facility where any positive or presumptively positive patient(s) would be moved and built a temporary wall and doorway between that end and the rest of the facility.



# Clinical Care *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of evolving clinical care protocols. The following questions may be applied to the above case or in the context of your own story.



1. What policies and procedures have you developed to improve clinical outcomes for patients with positive or presumptively positive cases of COVID-19?
2. How are you ensuring continued access to primary care services during a local COVID-19 outbreak?
3. What protocols would ensure the safe transfer of COVID-19 positive or presumptively positive patients to regional centers? If you represent that regional center, are you partnering with referring health care delivery systems to standardize processes and ensure optimal outcomes?
4. Knowing what you know about influenza management, how can those best practices be leveraged to prevent the spread of COVID-19?
5. What are effective ways to simultaneously manage both influenza and COVID-19?
6. What considerations are being given to COVID-19 positive or presumptively positive patients with other chronic conditions? How are you convening an integrated care team to consider and recommend care decisions to patients and family members?
7. How could new triage hotlines be created, or existing ones be modified to help answer your patients' questions about symptoms, testing, and treatment?
8. What special considerations are you giving to caring for nursing home residents who are COVID-19 positive or presumptively positive?
9. How is behavioral health being integrated into your care plans for COVID-19 positive or presumptively positive patients and their family members? How early are they being involved in the care experience? Are they involved throughout the entire process?
10. How are you continuing to maintain your focus on preventive care services during COVID-19? Does your approach involve all entities within the local and regional health care delivery system (e.g., clinics, hospitals, public health, regional health systems, home health, behavioral health, emergency medical services, etc.)?
11. How do you use clinical outcomes and other data to evaluate your scope of care related to COVID-19? How do you use evidence-based care to decide what care to retain and what to transfer to larger health care delivery systems?
12. What new clinical workflows have you put in place and how should they change? Are you maximizing the function of your electronic medical record? Who is leading this clinical effort on your team? How are you learning from the best practices of your peers?
13. What is your strategy for implementing telehealth services? How will you navigate the uncertainty of whether regulatory waivers for telehealth will continue after the public health emergency ends?
14. Have you considered partnering with statewide efforts for improving the quality and cost of broadband services?
15. As vaccinations are in various phases of development, how are you currently thinking about how you would develop systems to educate and vaccinate people?

## Clinical Care *continued*

### PRACTICAL GUIDANCE

#### Clinical care

Rural populations have higher rates of several risk factors for more severe disease including cardiovascular disease, chronic respiratory disease, obesity, smoking, and old age.<sup>38,39,40</sup> There are no specific approved antiviral drugs or vaccines to date for COVID-19, and treatment has largely been symptomatic and to support oxygenation needs.<sup>38</sup> Patients may have a prolonged course of illness and decompensate quickly.<sup>41</sup>

At an individual level, mitigation strategies include hand washing or use of hand sanitizer and wearing a mask. At a community level, mitigation strategies involve social distancing and restrictions on public gatherings and non-essential travel.<sup>38</sup> For health care organizations, mitigation strategies consist of screening all individuals entering the facility; limiting visitation; postponement of elective surgeries, procedures, and visits; patient education; and reducing potential for exposure to confirmed positive COVID-19 cases or persons under investigation.<sup>42</sup> Approaches used for these mitigation strategies are detailed below based on published experience and recommendations from rural health care leaders and other experts; outcomes have not been studied, and the evidence is rapidly evolving.

The risk of exposure for COVID-negative health care workers and patients can be reduced by screening all visitors and employees and limiting visitation.

- Screening considerations:
  - Check temperatures and screen for symptoms and history of COVID-19 positive contacts and recent travel in all visitors and employees entering the facility. Limit open entrances to facilitate screening at a small number of entry points. Using an infrared thermometer eliminates the need for physical contact when checking temperatures.<sup>42,43</sup>
  - Open screening tents or kiosks outside of the facility for patients with respiratory symptoms.<sup>43,44</sup>
- Visitation considerations:
  - Implement a no-visitor policy except in limited circumstances.<sup>42</sup>
  - Coordinate video chat visits for inpatients who are not permitted visitors.<sup>43</sup>



## Clinical Care *continued*

Patients with confirmed or suspected COVID-19 should be encouraged to stay at home and be managed remotely unless requiring hospitalization.<sup>45</sup> For those patients requiring admission to a health care facility, exposure risks can be reduced through several means. Considerations for procedural and medical management are described below. For recommendations regarding the use of separate units and isolation rooms see “Space”; for additional information on procuring, preserving, and disinfecting personal protective equipment (PPE), see “Supplies.”

- Procedures:

- Considerations for intubation to limit aerosol generation and exposure include using rapid sequence intubation, standard use of a Glidescope,<sup>43</sup> having a dedicated intubation team,<sup>44</sup> using additional PPE, and adjusting the threshold for intubation and use of non-invasive positive pressure ventilation or high-flow nasal cannula.<sup>45</sup> Protocols should allow for individualized clinical decision-making. One rural tertiary care center reevaluated their policies on proceeding to intubation without a trial of high-flow nasal cannula or non-invasive positive pressure ventilation and passive pre-oxygenation before rapid sequence intubation without bag-mask. As a result, they revised their policies to allow high-flow nasal cannula, non-invasive positive pressure ventilation, and bag-mask ventilation per provider discretion.<sup>46</sup>
- Use High Efficiency Particulate Air (HEPA) filters on ventilators or at a minimum HEPA/HME (Heat and Moisture Exchangers) filters on endotracheal tubes.<sup>45</sup>

- Symptom management:

- Control and suppress cough as able. This could include more aggressive sedation/paralysis strategies when applicable.<sup>45</sup>
- Limit suctioning as able.<sup>45</sup>
- Use inhalers rather than nebulized medications.<sup>45</sup>

- PPE:

- Patients should wear flexible masks to reduce droplet generation unless wearing an oxygen mask.<sup>45</sup> Given that patients may be asymptomatic or have non-specific symptoms, follow a “mask for every patient” policy.<sup>41,44</sup>

In addition to strategies that limit transmission from COVID-19 positive patients, adaptations to usual care such as postponements or remote delivery of care reduce the potential for COVID-19 negative patients to be exposed. Additional suggestions for alternate settings of care and facility engineering adjustments to separate sick and well individuals can be found under “Space.”

- Adaptations to usual care:

- Expand telemedicine and virtual care options for patients. (See also “Telemedicine” within this section.)
- Offer curbside lab draws and visits.<sup>44</sup>
- Consider augmenting access for acute care needs to offload the emergency department through extended hours.<sup>45</sup>
- Set up a nurse triage phone line.<sup>43,44</sup> The Centers for Disease Control and Prevention has a [phone advice script and decision algorithm](#) that can be used as is or adapted.





## Clinical Care *continued*

- Postponements:

- In line with guidance from the American College of Surgeons and the Society of American Gastrointestinal and Endoscopic Surgeons, hospitals almost universally postponed elective surgeries and procedures starting at the beginning of the pandemic.<sup>42</sup>
- Long-term postponements of annual physicals, routine screenings, and immunizations can be detrimental to health, so delays should be limited. As appropriate and as capabilities allow, telemedicine can be used to provide these services.<sup>42</sup> (See also “Telemedicine” within this section.)

With rapidly changing evidence and resource constraints, processes to create and continually update protocols for clinical care for COVID-19 positive and presumptively positive patients are necessary.

- Establish a multidisciplinary group to guide decisions on treatment. This group should include infectious disease physicians and pharmacists. In developing guidance, the group should monitor for new evidence as it becomes available, critically assess the new evidence, and collaborate on group decision-making.<sup>42</sup>
  - In critical assessment of new evidence, keep in mind that rural residents, as well as racial and ethnic minorities, are underrepresented in clinical trials.<sup>47</sup>
- Develop specific protocols and guidance for minimizing aerosol dispersion during intubation, CPR, acute coronary syndrome care, and regional ICU referrals for COVID-19 positive patients.<sup>43,45,16</sup> Conduct walk-throughs of fake patients with COVID-19 requiring surgery or procedural care.<sup>43</sup>

Mitigating exposure risks and ensuring appropriate care requires patient education and engagement.

- Provide education on alternative means of access to care such as telemedicine, recommendations on what health care appointments should be kept, and hygiene and preventive practices. This education should include information on safety of obtaining care at the facility when appropriate.<sup>3,37</sup>
- Encourage creation of a phone tree with friends, family, and neighbors for sharing information.<sup>40</sup>





# Clinical Care *continued*

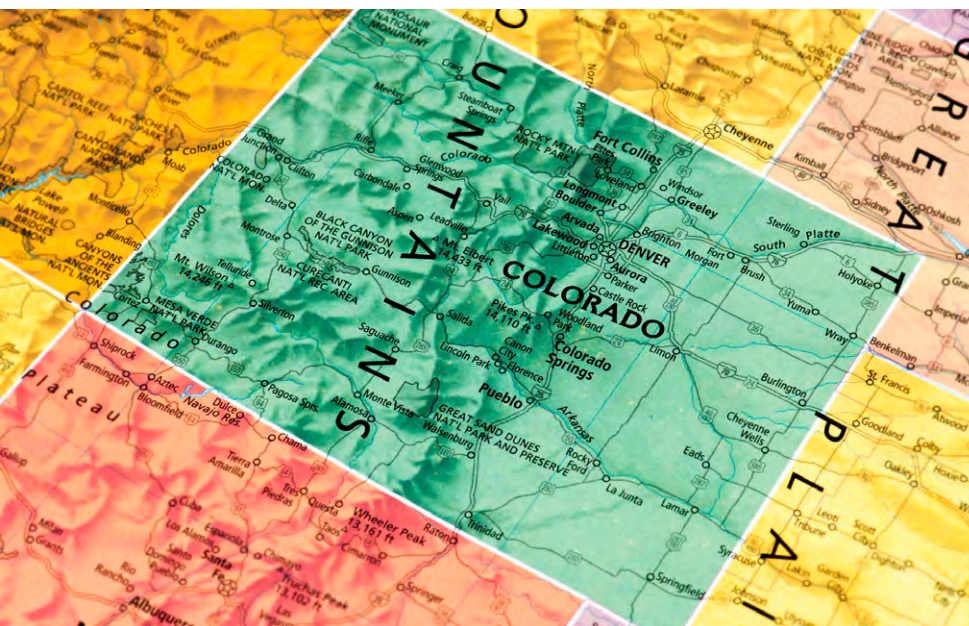
## Telemedicine

Telehealth refers to the use of electronic information and telecommunications technologies to support long-distance clinical health care, health education, and health administration. Telemedicine specifically refers to remote delivery of clinical services through these technologies.<sup>48</sup>

The use of telemedicine has exploded since the start of the COVID-19 pandemic to limit exposures of healthy patients and staff to the virus, preserve personal protective equipment (PPE), and maintain access to services. Telemedicine can maintain the safety of vulnerable health care workers while allowing them to still provide care.<sup>49</sup> As of May 2020, 97% of rural health clinics and critical access hospitals surveyed reported they were offering telemedicine services, though only 12% reported an increase in revenue.<sup>50</sup> Telemedicine capabilities are more predictably available in facilities that are larger, part of systems, and teaching hospitals.<sup>51</sup> Lower reimbursement and the cost of implementation have created barriers for many rural health providers.<sup>50,52</sup>

Many regulations have changed to pave the way for rapid telemedicine expansion,<sup>53,54</sup> primarily the lifting of restrictions by the Centers for Medicare and Medicaid Services (CMS) that telemedicine can only be provided in rural areas with specific audio-visual equipment. Additionally, CMS now allows federally-qualified health centers and rural health clinics to provide telemedicine services and permits telemedicine care to be delivered across state lines. The Drug Enforcement Agency (DEA) grants buprenorphine prescribing over the phone if certain conditions are met. And during this public health emergency period, non-public facing platforms such as FaceTime, Facebook Messenger video chat, Google Hangout, and Skype can be utilized without penalties for non-compliance with HIPAA; public-facing platforms such as Facebook Live, TikTok, and Twitch are not permitted.

Private practice providers have many platforms to choose from for delivering telemedicine services. The following platforms are some currently used by providers. Providers are encouraged to conduct due diligence to ensure the platform is right for your practice.<sup>55</sup>



- [Doxy.me](#)
- [eVisit](#)
- [Simple Visit](#)
- [vSee](#)
- [Mend](#)
- [SpruceHealth](#)

# Clinical Care *continued*



Comparing and contrasting available options during a hectic time may seem daunting. Practical questions to consider when selecting a virtual platform include:<sup>55</sup>

- Can I exit my contract at any time (i.e., not locked into a two-year contract)?
- Is there a waiting room feature so I can queue my patients?
- Is the platform device agnostic (i.e., can physicians/providers and patients use a device of their choosing for virtual care)?
- Is there an out-of-office message noting we're not available to take your call right now (i.e., during off hours or overnight)?
- Does the software have the ability to schedule a visit? (This is a more advanced feature; not required, but useful to have.)
- Is the platform deployable within days?

Increased opportunities to bill for telemedicine services have opened up across payers. Under Medicare, there are three options: telemedicine visits, virtual check-ins, and e-visits. Requirements for each visit type and their respective codes can be found [here](#).

While the increased ability to bill for telemedicine services supports care delivery, there can be significant additional up-front costs to implement the infrastructure needed.

Potential sources of infrastructure funding support are as follows:

- The Federal Communications Commission (FCC) offers these relevant programs:
  - The [Rural Health Care Program](#) funds voice and broadband service for health care facilities in rural areas. It is comprised of two programs: 1) the Healthcare Connect Fund Program and 2) the Telecommunications Program. Eligible health care providers include teaching hospitals, community health centers, not-for-profit hospitals, and rural health clinics. The paperwork can be burdensome; health care providers have joined consortia to access dedicated staff to work on this.<sup>56</sup>
  - The [Lifeline Program](#) provides discount phone and broadband service for low-income customers.
  - The [Rural Digital Opportunity Fund](#) will increase broadband access in rural communities; an auction is scheduled to begin late October 2020.
  - No longer accepting applications: the [COVID-19 Telehealth Program](#) helped health care providers connect to patients via telemedicine with \$200 million allocated from the CARES Act.
- The US Department of Agriculture (USDA) has invested more than \$750 billion in loans and grants through the [ReConnect Program](#) for the infrastructure needed for broadband service in rural areas. This funding is open to non-profit entities and for-profit corporations.<sup>10</sup>



## Clinical Care *continued*

When starting to implement telemedicine, there are several key considerations that can streamline the process:

- Having a physician champion helps drive the process<sup>44</sup>
- Explore staff perceptions ahead of implementation to address concerns and barriers<sup>49</sup>
- Host mock sessions with test patients to ensure complete access and functionality<sup>49</sup>
- Collect feedback after a few days for rapid improvement<sup>49</sup>
- Hold daily huddles or other means of frequent communication updates during implementation to review logistics and workflow<sup>44</sup>
- Reach out to patients to let them know telemedicine is an option available to them<sup>58</sup>
- Trial two different telemedicine platforms with patients and learn from them which one they prefer<sup>59</sup>

**Broadband is increasingly recognized as a necessity, not a luxury, but about a third of rural Americans do not have adequate access to support video-based visits.<sup>60</sup>**



The reach of virtual services may also be limited due to lack of smartphones, tablets, or computers.<sup>61</sup> Considerations in communities with limited broadband access or for individual patients who do not have access include conducting phone rather than video visits<sup>60</sup>; sending a medical assistant or other support staff to a patient's home with a tablet<sup>44</sup>; and arranging for patients to go to a dedicated location with reliable internet to complete a visit.<sup>60,62</sup>

Supported by the increased coverage and funding support for telemedicine and driven by patient safety and capacity needs, rural clinics and hospitals have expanded their applications of telemedicine to new and innovative uses.

### Inpatient potential uses of telemedicine:

- *Provider-to-provider specialty consultation or direct patient care remotely with onsite support.* Tele-ICU services can expand critical care capacity and enhance care for patients who are too sick to transfer by having an intensivist from an urban center support local providers.<sup>44,37,41</sup>
- *Nocturnist or cross-cover roles.* Tele-hospitalists can provide cross-coverage and/or admitting services at night in collaboration with an onsite, in-person provider. The onsite provider conducts physical exams, attends to emergencies, and cares for sick patients while the tele-hospitalist places orders and responds to calls.<sup>49</sup>
- *Emergency department (ED) care.* Tele-ED can help decrease the volume of patients in the emergency department by caring for lower acuity patients and thus reduce potential exposures.<sup>2,63</sup>

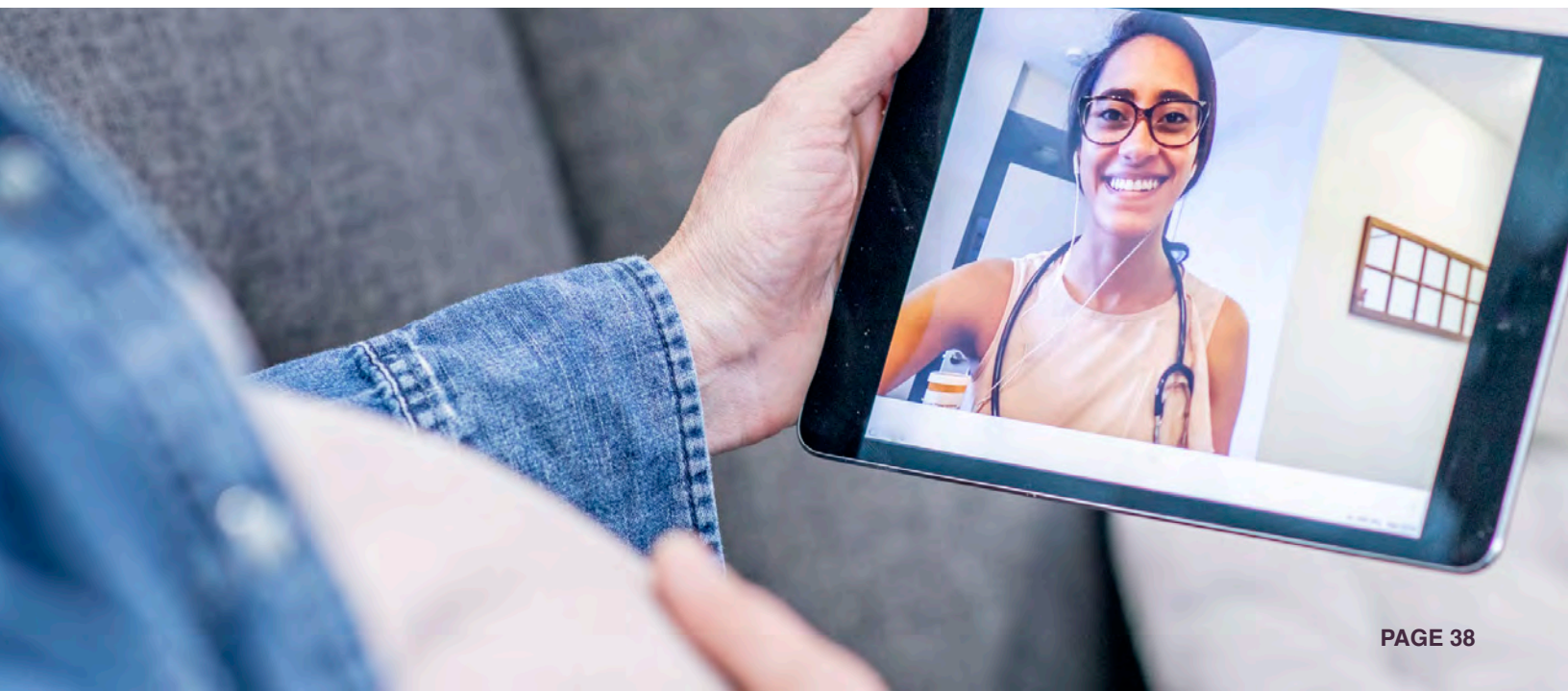
## Clinical Care *continued*

### Outpatient potential uses of telemedicine:

- *Routine office visits and select new patient encounters.* This can include uncomplicated post-operative visits.<sup>64</sup>
- *Initial evaluation of possible COVID-19 symptoms.*<sup>65</sup>
- *Home monitoring for COVID-19 positive patients.* If able to obtain supplemental funds, consider using them to purchase remote patient monitoring equipment (e.g., pulse oximeters), network upgrades, and tablets for patient use.<sup>44</sup>
- *Virtual check-ins.* Consider this option for patients who have scheduled visits for medication refills or other similar reasons that may not require a full appointment but require at least 5 minutes of discussion to determine whether an office visit is needed.<sup>44</sup>
- *Tele-behavioral health, including psychotherapy and psychotropic medication management.*<sup>54,65</sup>

### Potential uses of telemedicine that bridge inpatient and outpatient settings:

- *Physical therapy, occupational therapy, and speech language pathology e-visits.* New rules allow for billing for established patients under Medicare.<sup>53</sup>
- *Peer support for frontline clinicians and crisis responders.*<sup>54</sup>
- *Long-term care facilities.* There is an opportunity to reduce exposures for high-risk groups, strengthen collaboration between settings, and potentially generate revenue.<sup>66</sup>
- *Specialty care consultations.* Telemedicine has been employed for a variety of specialty care clinics and consultations including oncology, urology, spine, hand trauma, and for tele-retinal scans.<sup>67</sup> Independent of the pandemic, there is potential to reduce large amounts of travel time for rural patients who receive specialty care from tertiary centers.<sup>68</sup>
- *Hospital-at-home.* To maintain capacity for sicker patients, select lower acuity patients could be cared for at home through a hospital-at-home model delivered via telemedicine. This may be of particular use for those who are higher risk and/or elderly.<sup>49</sup>





## Clinical Care *continued*

### Mental health

The COVID-19 pandemic is placing further strain on rural residents' mental health and well-being. Nationally, more than 50% of the U.S. population is experiencing anxiety and more than 45% are experiencing depression. Anxiety is associated with living in rural locations, female gender, history of hospitalization, loneliness, and job loss. Depression is associated with female gender, history of hospitalization, loneliness, job loss, less time spent outdoors, and living in a smaller home.<sup>69</sup>

At baseline, rural communities disproportionately face difficulties accessing mental health care and experience higher risk factors for suicide. Such challenges include greater perceived stigma regarding mental health and seeking help; more widespread access to firearms; increased social isolation related to living in a low-density populated area; more severe and chronic intimate partner violence; and limited availability of skilled mental health providers.<sup>70,71</sup> Some rural health systems are seeing a decrease in mental health visit no-show rates and an increase in the productivity of mental health providers during the COVID-19 response.<sup>37</sup>

The pandemic is exacerbating several risk factors for worsened mental health and suicide,<sup>70,71</sup> namely prolonged social isolation related to physical distancing in light of unreliable and inconsistent access to high-speed internet that limits the ability to connect virtually. Other contributing factors include socioeconomic stressors such as housing instability and unemployment; interpersonal violence; and fear, anxiety, and uncertainty regarding infection risk and disruption to normal daily life. Increasing or maintaining social interaction by enjoying the outdoors; setting up systems whereby communities can identify vulnerable or struggling individuals; and creating opportunities for collective engagement in value-driven activities may help counteract the negative impacts of social distancing guidelines.<sup>70</sup>



Practical strategies for mitigating risk factors associated with worsened mental health and suicide include:<sup>70,71</sup>

- Increasing access to mental health care and crisis services by:
  - Creating an emotional support hotline.
  - Expanding access to tele-behavioral health.<sup>54</sup> (See also “Telemedicine” within this section.)
  - Providing medication-assisted treatment (MAT) with buprenorphine for opioid use disorder over the phone if indicated (phone initiation for new patients allowed by the Drug Enforcement Administration for the duration of the public health emergency).
- Disseminating public health messaging on:
  - The benefits of safe firearm storage.
  - Ways to access mental health care and crisis support.
  - De-stigmatizing receiving mental health care services.
- Exploring options for temporarily reducing firearm access for individuals at elevated risk for suicide.

## Clinical Care *continued*

### Vaccination

While there is not yet a vaccine available against this new disease, efforts are ongoing to develop one as quickly as is feasible and safe. There are lessons from vaccine-preventable respiratory illness outbreaks in the past that could help planning for COVID-19 vaccination strategies. As of the end of July 2020, many states noted they have heard little about mass vaccination plans for communities.<sup>72</sup>

**For planning purposes, existing influenza vaccine advisory committees could be retooled or expanded to focus on COVID-19<sup>72</sup>. Furthermore, rural hospitals and State Offices of Rural Health have successfully collaborated in the past to conduct mass vaccination clinics<sup>72</sup>.**



Successful immunization campaigns take into consideration the key factors influencing patients and their decisions to pursue vaccination, such as motivation to protect family members from illness<sup>73,74</sup>; provider recommendations<sup>73</sup>; higher perceived severity of illness<sup>74</sup>; anticipated positive social norms regarding vaccination<sup>74</sup>; knowing someone who became sick from the vaccine-preventable illness in question<sup>74</sup>; hearing about the vaccine-preventable illness on the news<sup>74</sup>; and perceived efficacy of vaccination<sup>75</sup>. Barriers to vaccination include concerns about potential cost<sup>73</sup>; “newness” of a vaccine with inadequate research on safety<sup>73,74</sup>; views that the media and government officials are exaggerating disease severity and associated mistrust<sup>73</sup>; perceived low risk due to physical distance from cases<sup>73</sup>; and concerns the vaccine could cause illness or side effects<sup>74</sup>. In deciding whether to get vaccinated, patients seek information from friends, family, and the internet. The oversaturation of messages inducing fear, as well as the difficulty in finding accurate information, can lead to exhaustion.<sup>73</sup>

To enhance vaccine uptake in rural communities, patient education initiatives may be more effective if they emphasize the threat of local transmission and spread even within low-density communities<sup>73</sup>; describe susceptibility to infection<sup>76</sup>; detail the benefit of protection for one’s family; share information from trusted individuals such as doctors<sup>74</sup>; and comment on vaccine safety.<sup>76</sup>

Rural communities can leverage existing relationships to increase local vaccination rates. For example, a multi-component, school-based program focused on adolescents found that mailing a brochure to students’ homes; giving a presentation at school; and free, school-based vaccine provision led to increased vaccination rates.<sup>77</sup> On the other hand, targeting critical locations frequented by many people for vaccination drives likely does not lead to more cases prevented than random or traditional vaccination campaigns.<sup>78</sup>

# Clinical Care *continued*

### PEARLS FROM YOUR PEERS

Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to providing clinical care during this pandemic.



#### Staff Solutions:

- Tap into peer-to-peer education and sharing of best practices through Project ECHO (Extension for Community Healthcare Outcomes), state offices of rural health, grand rounds if affiliated with a larger system, or educational webinars through state and national hospital, primary care, or rural health organizations or alliances. Many interviewees appreciated these forums for learning new protocols and the latest information regarding testing and treatment, as well as for emotional support and morale boosting.
- Leverage memberships with state associations to connect with peers in other states to learn about their on-the-ground experiences and recommendations.
- Increase access to provider-to-provider telehealth for staff, i.e., tele-pulmonology or tele-hospitalist support to help manage vented patients. This strategy helped several rural health care delivery systems expand their capacity to provide inpatient care at a higher level of acuity.
- Establish transfer criteria and protocols for moving patients to appropriate levels of care as early as possible, in addition to developing plan(s) for accepting patients from urban hospitals.
- Devise a plan for managing obstetrics patients and how to best care for expectant mothers in the case of a local COVID-19 surge.
- Remind staff on a consistent basis that they “know how to handle infectious diseases” by properly wearing PPE and maintaining a safe distance from others in an effort to curb worries about managing a new illness.
- Invite frontline staff to provide input into new clinical protocols. This ensures out-of-the-box thinking and buy-in.



# Clinical Care *continued*



### Patient Solutions:

- Create a dedicated COVID-19 hotline and advertise it widely; adjust hours of service depending on local disease prevalence and staffing availability.
- Ask patients to call ahead of appointments so they can be screened for COVID-19 symptoms; if they screened positive, clinicians at one office knew to gown up in PPE and see patients in their vehicles.
- Use care managers to triage every patient for their acuity level and technology savvy to determine whether they need to be seen in person or can be seen virtually.
- Change protocols for medication refills, allowing patients to get their regular medications without having to see a provider and/or for a longer period of time. Consider verbal authorization for refills, if not already allowed, and ensure that patients on medication-assisted treatment (MAT) for substance use disorders are able to access their medications.
- Move as much care as possible to patients' vehicles, i.e., administer vaccines; deliver family planning services; review screening questionnaires, etc.
- Make house calls for home-bound patients or those that need special medical attention such as wound care.
- Arrange to have behavioral health providers on call to pull into telemedicine visits if needed, given the profound impact social isolation and loneliness have had upon patients with mental illness and/or substance use disorders and those who are at risk for domestic violence.

# Clinical Care *continued*

## WHO CAN HELP

### Clinical care

- **Centers for Disease Control and Prevention (CDC) page for Healthcare Professionals.** This high-yield resource includes current guidance and recommendations for professionals, with sections focused on testing strategies, clinical care, infection control, and more. The clinical care section includes guidelines for home management and ending isolation for patients not requiring hospitalization; guidelines for discontinuation of transmission-based precautions; and considerations for maternal-child health care.
- **National Institutes of Health COVID-19 Treatment Guidelines.** This page provides updated information on treatment recommendations and links to summaries of the evidence for or against different COVID-19 treatments under investigation.
- **New England Journal of Medicine (NEJM) Coronavirus (COVID-19) page.** The NEJM is providing all COVID-19 related content for free. On this page, you will find articles and other resources, including management guidelines, clinical reports, and commentary.

### Telemedicine

- **American Medical Association Telehealth quick guide.** This quick guide includes implementation considerations; policy, coding, and payment information; and links to additional resources. The implementation considerations include helpful examples of workflows, tips for conducting a successful telemedicine visit, and a sample patient education handout. There is a link to a downloadable Telehealth Implementation Playbook on the overview page for more detail on implementation planning.
- **Telehealth.HHS.Gov.** This page from the US Department of Health and Human Services features sections for patients on understanding and accessing telehealth, as well as for providers on getting started with virtual care; policy changes related to telehealth during the pandemic; how to bill for telehealth; and legal considerations.
- **National Consortium of Telehealth Resource Centers.** Telehealth Resource Centers (TRCs) provide assistance, education, and information to organizations who are providing or interested in implementing telehealth. Assistance is generally provided free of charge. This site provides a map to identify and link to your regional TRC.
- **Primary Care Development Corporation COVID-19 Telehealth and Telemedicine Webinar Series.** Webinar topics include “Telehealth and communication strategies: enhancing your webside manner!”; “Maximizing telemedicine to meet patient and practice needs,” and “Is telemedicine/telehealth as effective as usual care?” The Corporation is a primary care-focused community development financial institution that delivers technical assistance and promotes policies that advance primary care.

# Clinical Care *continued*

- **State Data and Policy Actions to Address Coronavirus.** This site from the Kaiser Family Foundation includes several tables on state-level policy actions related to the COVID-19 pandemic including one on “State Actions on Telehealth.” This table covers requirements for coverage of telehealth services; limits on cost-sharing for telehealth services; reimbursement parity for telehealth and in-person services; and expanded options for telehealth service delivery by state.

### **Mental health**

- **University of Nebraska’s Rural Wellness page on how to manage stress related to COVID-19.** This page links to many resources to support mental health during COVID-19 primarily aimed at rural and agricultural communities. The resources include podcasts, informational handouts, and a free mobile app which could be shared with patients.
- **Mental Health Technology Transfer Center Network: Responding to COVID-19.** This site features specific resource pages related to grief, loss, and bereavement; intimate partner violence and child abuse; mental health disparities; school mental health; and telehealth. Other general resources cover topics such as stress management and coping strategies during the pandemic, as well as considerations for the mental health workforce.



## CHALLENGE #2

### Communication



#### THE STORY CONTINUES



Kaila Ackerman was both shocked and livid when she received a voicemail from CNN about an accusation that the Mountain Plains Family Health Clinic (MPFHC) was “overreporting” COVID diagnoses. The message referenced the contents of a national podcast interview with a medical assistant who said he was employed at MPFHC. Kaila immediately located the interview online, which included this man’s “personal experience” in their clinic, and surmised his inaccurate reporting was motivated by a political agenda. Kaila knew this medical assistant but not well. He was a rural Oregon resident in his early 20s who would occasionally travel to Centennial to work a few shifts as he stayed with friends, fished, and enjoyed the outdoors.

Indeed, this medical assistant was a part-time, on-call employee who had only worked one shift since the arrival of COVID-19. There was no negative history with this employee. The best she could tell, this man was enjoying the attention he was receiving for his “first-hand experience with treating COVID-19 patients,” and he seemed to have succumbed to exaggeration and outright untruthfulness. To make things worse, Kaila simultaneously received a text from Centennial Mayor Shannon McCormick about this situation, indicating he had received a similar call from CNN. Shannon was a reasonable man, but he wanted immediate answers as this debacle could also affect the vineyard he managed.

Before responding to the CNN correspondent, she hustled to find either or both Handlers. Samantha and Michael were both speechless and caught off guard by the news. Word of these accusations, if spread locally, risked damaging MPFHC’s longstanding credibility in the community and exacerbating the existing and legitimate issues with conflicting information around COVID-19 reporting at a local and state level. MPFHC was trying to be a leader in convening local stakeholders to align and improve the integrity of collective messaging.

**How would they manage this communication crisis with Shannon and the Centennial community? What would they say to CNN or to this misguided employee? Who else should they involve in this potentially volatile and extremely time-sensitive situation?**



# Communication *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of clear, consistent, and coordinated communication to your staff and the public. The following questions may be applied to the above case or in the context of your own story.



1. Does your team have a clearly defined strategy for crisis communications and public relations?
2. Is the Public Information Officer or communications leader on your incident command team or executive leadership team equipped to manage crisis communications and public relations? If not, what is necessary to equip them for this important work?
3. What are the key messages (no more than three) your community needs to hear?
4. Who is the right spokesperson for your organization? Is he/she trained to serve in this capacity during a crisis?
5. What press releases related to COVID-19 could be pre-written in anticipation of key events (e.g., first community member diagnosed, first employee diagnosed, first inpatient admission, first local death, necessity of care diversion, recurring surges, etc.) that could subsequently be quickly updated and released?
6. What is your plan for effectively communicating within your own organization about important updates?
7. What are your options for sources of information for community members, community leaders, patients, health care providers, etc.? How do you assess their value and reliability?
8. What are ways to collaborate with other health care and public health leaders in your region and at the state level to ensure consistency of information shared?
9. What are ways to collaborate with local city and county government officials to ensure clear, consistent, and coordinated messaging?
10. How are you partnering with your state trade associations' communications teams to leverage their wisdom, experience, and expertise to navigate complex communications challenges?
11. What is your strategy for ongoing patient education? How are you communicating changes in guidelines in line with public health agencies? How are you using visual tools in your local communities?
12. What is your approach to conveying infectious disease statistics and epidemiological modeling and their significance in a clear, straightforward way?
13. How are local businesses, faith leaders, or other key influencers being engaged to disseminate accurate information in a timely way?
14. How is local public media (e.g., newspapers, radio, and television stations, etc.) being engaged to disseminate accurate and timely information and prevent misinformation? Does the Public Information Officer or the communications lead on your incident command team maintain a trusting relationship with these entities?
15. What is your strategy for leveraging social media platforms and forums, including Facebook, Twitter, Instagram, virtual town halls, live Q&A sessions, etc.?
16. How do you communicate information you're learning from state and federal sources in such a way that is relevant to your local, rural community?

## Communication *continued*

### PRACTICAL GUIDANCE

It is critical to maintain transparent and frequent communication with both the public and health care employees during a time when public health guidance and medical knowledge about COVID-19 are rapidly evolving.<sup>79</sup> This requires seeking out, validating, and sharing up-to-date COVID-19 information through a rural sociocultural lens informed by data from the local, county, and state levels.<sup>80,81</sup> It's imperative to not rely solely on state-level data, for doing so may mask local hot spots, (i.e., nursing homes, meat-packing plants, etc.<sup>80</sup>). To develop effective messaging and education, communications specialists must be aware of local literacy and specifically health literacy levels to properly convey how the disease is transmitted; risks associated with certain activities; and what protective measures can be taken in ways that are intuitive, accessible, and accepted.<sup>81,82</sup> Communication gaps may increase vulnerability among rural populations, which may trigger disease misinformation, uninformed policies, insufficient planning, and non-adherence with public health recommendations, predisposing rural communities to greater risk.<sup>66,82</sup> Rural hospitals and primary care practices have an important role to play in keeping their communities safe and informed during an uncertain time.<sup>83</sup>



### Communications to the public

Rural and urban areas may perceive COVID-19 risks differently due to their distinct characteristics. By understanding the unique context of rural areas, tailored messages sent from local public health officials, hospitals, and clinicians are often more relatable and trusted. Some of these contextual factors include:

- Tight-knit social networks, making social distancing harder to achieve<sup>84</sup>
- Different consumption patterns, with greater likelihood of congregating in fewer options in stores<sup>85</sup>
- Regular church attendance<sup>85</sup>
- A large proportion of residents who speak a native language other than English in rural communities<sup>86</sup>
- Immigrants and refugees who are employees of meat and poultry processing facilities and/or work in other agricultural industries<sup>86</sup>
- Greater reliance on grandparents or great-grandparents to provide child care to support working parents<sup>84</sup>
- Less likely to have paid sick leave benefits, causing some employees to continue working while sick<sup>84</sup>

Creating public health messaging that targets rural residents' sense of community and resilience by framing how their actions can protect their neighbors and boost the local economy can help improve adherence to preventive measures.<sup>84</sup> Patients and community members should be involved in planning communications messages and venues, as well as other components of the overall emergency response.<sup>81</sup> Trusted community leaders, especially local business owners and religious figures, are essential for crafting and delivering key messages and for reaching those who may not routinely access social or other online media.<sup>84,87</sup> Other groups to involve in collaborative communications efforts include local health departments, pharmacists,<sup>88</sup> schools,<sup>89</sup> law enforcement, local government leaders, and community-based organizations.<sup>40</sup>



## Communication *continued*

### PEARLS FROM YOUR PEERS



Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to communicating to the public and with staff.



### Communicating to the public:

- Identify trusted community influencers to join with you in sharing united and consistent messages with the public, including leaders from businesses and local non-profits, the faith community, education, and government; elected officials; and health care and public health executives and clinicians, among others.
- Make the reasons for engaging in prevention, including wearing masks, hand hygiene, and social distancing, personal and real. Frame public health recommendations from the point-of-view of what local citizens can do, as opposed to what they cannot do.
- Coordinate key messages such as community-wide testing and return-to-work guidance across multiple counties and their commissioners if your service area spans a wide geography.
- Prioritize sharing information with local businesses (such as through a dedicated webpage or a weekly Zoom call) that helps them adapt evolving state and federal guidance to their operations.
- Plan in advance for how you will handle sharing bad news, including the community's first positive case; the death of a prominent community member; the hospital's first COVID-19 patient transfer; the first medical personnel to fall ill, etc. Consider hiring a crisis communications firm to help navigate any controversies or conspiracies that may arise.
- Include links to accurate and reliable websites in press releases so that community members can independently review the information. Be honest about what is and is not known in an ever-evolving environment. Prioritize rural-focused information whenever possible.
- Hold virtual town halls with the local newspaper or Facebook Live press conferences to inform the public about COVID-19 symptoms, testing, treatment, and prevention. Consider including different community representatives to present, including from public health, law enforcement, and county officials, as well as health care leaders.
- Diversify communication channels, i.e., bus station posters, public service announcements on the radio, banners over bridges, digital signage on websites, etc. Adjust communication methods based on local demographics and how those individuals typically access information.
- Produce materials in as many languages as is necessary given your local population. Employ trusted cultural messengers and liaisons.
- Place variable message boards on the perimeter of the hospital property that are easy to update as guidance changes.
- Film COVID-19 survivor videos to use in ongoing public health information campaigns.
- Encourage willing medical staff to write op-eds and letters to the editor and testify to local city and county officials about the importance of public health prevention measures.
- Send patients a letter letting them know you are "open for business", detailing ways in which you and your team will keep them safe when they seek medical care. Launch a marketing campaign that achieves the same goal.

# Communication *continued*



### Communicating with staff and governance:

- Send daily emails from administrative or clinical leadership to all staff and/or after key incident command meetings. Be consistent in funneling information from a single source. Adapt these messages, as appropriate, into press releases and broader social media messaging.
- Host standing, daily (or other appropriate frequency) Zoom meetings or conference calls with the goal of transparently sharing the most up-to-date information, protocols, and plans with the team. Consider inviting all levels of clinical staff, governance, public information officers, maintenance and environmental services staff, human resources and finance team members, materials personnel, and others to participate in these briefings. Rotate different team members to lead these meetings so they gain facilitation skills.
- Deliver frequent staff education on how state and federal guidelines are changing and why and how these changes impact clinical workflows.
- Use newer social media platforms to engage your younger team members (i.e., the Workplace platform via Facebook).
- Manage quickly employees who post inaccurate information on social media that may negatively impact the hospital or primary care practice.



## Communication *continued*

### WHO CAN HELP

- **Risk Communication in Rural Settings.** This toolkit, developed by a 16-county public health district in southeast Georgia, offers a series of risk communications tools and strategies for communicating with the public during natural, biological, chemical, radiological, and/or mass vaccination / medication events. Rural health care leaders can also learn how to launch a community-wide joint information center to respond to local health emergencies.
- **AHA COVID-19 Communications Resources.** Rural hospitals and health systems can access communications resources jointly developed by the American Hospital Association and the Society of Health Care Strategy and Market Development. The tools include examples of internal and external communications; social media; and media relations, as well as links to COVID-19 videos produced by the CDC in American Sign Language; a Coronavirus Response Toolkit through a CDC / Ad Council partnership; and COVID-19 fact sheets in multiple languages.
- **NRHA COVID-19 Communications Toolkit.** This free and customizable communications toolkit produced by the National Rural Health Association and Legato Healthcare Marketing is helpful for rural health care delivery systems responding to COVID-19 without a robust communications department. Content includes radio scripts, social media graphics, news releases, print ads, and infographics.
- **Emergency Communication in Rural Areas.** This RHIMHub landing page features a variety of crisis communication resources, including guides and templates created by the CDC; an emergency risk communications toolkit produced by the California Department of Health Services; and instructions on how to develop a texting platform for emergency communications based on the experiences of the Northwest Center for Public Health Practice at the University of Washington and the King County Public Health Department.
- **CDC Communication Resources.** This CDC site provides several resources that may be useful for rural health care delivery systems, including a digital press kit, resources for travelers, videos, public service announcements, and educational materials in multiple languages designed to meet the needs of migrants, refugees, and other limited English proficiency populations.



## CHALLENGE #3

### Community



#### THE STORY CONTINUES



When Sarahville Health Center (SHC) announced the positive diagnosis of its first staff member, the dentist/Board member received a phone call from an elderly woman and fellow church member. She and six other women were longtime participants in a sewing guild, and they had several thousand yards of fabric accumulated among them. They were seeking approval of a simple pattern for a face covering that could be used by non-frontline staff or community members. They wanted to donate their time to help with this effort. Their call was quickly forwarded to Mike who then involved a local weekly newspaper writer. A subsequent story led to the launch of a community-wide mask drive. A local lumber yard donated filter material to be sewn inside the masks. The area meatpacking plant agreed to purchase them for their team members at a premium price to contribute to the effort. More than 10,000 masks were produced in 30 days. The local brewery began to make hand sanitizer.

Simultaneously, several retired teachers from a different church had intuitively organized an effort to establish safe daycare and virtual education programs for the children of health care workers.



Meanwhile, there was a growing resistance to the idea of wearing masks. Ideas were spreading throughout the community that COVID-19 was a hoax, no more consequential than a common flu virus, and that the push for face coverings and social distancing was a politically driven agenda. The resistance was also tied to financial desperation. Local businesses had been shuttered for over a month and the paycheck protection program loans were quickly depleting. Significant community pressure was being directed toward the local county health nurse, Jacquelyn Ayres, whose recent decisions were viewed in some circles as egotistical and power-hungry. Among her most vociferous opposers was one of the three county commissioners.

To make matters more difficult, out-of-state sportsmen were coming to Sarahville County to hunt and were refusing to adhere to local public health guidelines. Mike was disheartened by this dynamic, and Dr. Thomas was angry. The SHC leadership team saw this resistance effort as a significant threat to community health and the viability of SHC.

Mike had engaged the same newspaper to print a series of stories with information on COVID-19 and the impact of its local spread. SHC submitted similar posts for the hospital and public health social media sites. Still, Mike wondered how it should handle the growing community skepticism regarding the danger of COVID-19.

# Community *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of community engagement, partnerships, and social needs. The following questions may be applied to the above case or in the context of your own story.



1. How can the development of a diverse local taskforce encourage safe public health practices?
2. What are the key motivators of local people (e.g., safety of family members, advice from trusted friends, job protection, viability of the economy, etc.) for adhering to safe public health practices and how may they be leveraged to improve compliance rates?
3. When people are sent home with a positive diagnosis to quarantine, a system is necessary to ensure patients and their family members are adequately cared for at home, including access to food, medications, and other daily needs. What systems exist to ensure those support networks are in place? How are you tracking the impact of this work?
4. What are your collaborative processes for managing the well-being of people in isolation or quarantine? Do these efforts involve other major sectors in your community (e.g., health care, public health, education, pre-school/daycare, faith community, employers, local government, etc.)?
5. What social support systems do you have in place that combat the health effects of social isolation and loneliness? Aside from phones or screens, how are you creating safe opportunities for people to connect with each other? Are there socially distanced ways to eat and exercise together?
6. How has your team considered ways to involve the out-of-town friends and family members of COVID-19 positive or presumptively positive patients? How could these people contribute to solutions?
7. How can the hospital, local public health department, and clinics partner with other organizations to develop and implement solutions for community education and in-home support?
8. How could you partner with your local school system to help families enroll in Medicaid, access other services, or learn about best public health practices?
9. How could collaborative partnerships be formed to provide solutions for virtual education and childcare for essential workers?
10. What coordinated efforts are in place to ensure adequate food and housing are available for all community members, especially those diagnosed with COVID-19 or other members of their households?
11. How would you ensure the hospital, local health department, and area clinics are partnering to improve community coordination of social services during COVID-19?
12. Who would be your locally credible ambassadors or influencers that could help address community misperceptions about COVID-19?
13. What options do you have available to you in your local environment to source volunteers to help meet your community's social needs?



# Community *continued*

### PRACTICAL GUIDANCE

Rural communities have faced unique challenges during the COVID-19 pandemic relative to their urban peers. Compared to 14% in urban areas, 18% of the population in rural areas is older than 65 years of age, and rural residents have higher rates of medical co-morbidities.<sup>100</sup> Shelter-in-place precautions are often less feasible in rural settings where there are more older adults dependent on others for food, medicine, and social support. Rural hospitals have faced closures due to poor financial health, workforce shortages, aging facilities, and low occupancy rates. Moreover, lack of broadband access impairs telemedicine and slows the availability of timely and accurate information. There may be greater shortages of food and other needed goods, as well as worse socioeconomic impacts on the local economy than in larger cities.<sup>100</sup>

Rural communities, however, are not homogeneous in their composition or resource levels, and their vulnerability to COVID-19 varies widely across the US. The [COVID-19 Community Vulnerability Index \(CCVI\)](#), developed by Surgo Foundation, provides a metric for understanding communities' ability to mitigate, treat, and delay disease transmission and to reduce subsequent economic and social impacts.





# Community *continued*



Practical strategies for mitigating the health, economic, and social impacts of COVID-19 in rural communities include:

- **Develop a central resource for communities to access timely and accurate information relevant to their specific state or community.**<sup>100</sup> [Iowa's COVID-19 website](#) provides an example of a site that is easy to navigate and offers county-specific resources, FAQs, information about rumors and scams, and other community resources.<sup>101</sup> Strong efforts should be made to inform the community of mandates, such as mandatory mask-wearing, as shoppers in rural stores may be less likely to wear masks than those in urban and suburban communities.<sup>102</sup>
- **Build upon local infrastructure to mount a response.** One hospital in Louisiana, prior to COVID-19, volunteered its foundation to support a local consortium of more than 25 partners, including health care, local government, faith-based groups, and community-based organizations.<sup>94</sup> Normally, this consortium jointly tackles social determinants of health challenges through a wellness hub, its resource directory, and through hosting roundtables on rural mental health.<sup>94</sup> Given this pre-existing consortium, the community could quickly create a communications system to respond to COVID-19 needs within the community.<sup>94</sup>
- **Mitigate spread of disease through community guidance, such as restrictions on mass gatherings, mandatory quarantine, and social distancing.**<sup>100</sup> By adhering to and stressing the importance of state guidelines, faith-based organizations can serve as local leaders in protecting the health and well-being of their communities.<sup>103</sup>
- **Consider the unique workforces within each community.** Rural communities with crowded workplaces, such as meat and poultry processing facilities, may be at increased risk for COVID-19 and should take extra precautions to maintain safety of workers while preserving the function of critical infrastructure industries.<sup>104</sup>
- **Anticipate needs of vulnerable populations.** When creating plans and disseminating resources and supports, health systems and other stakeholders should pay attention to groups within their communities that bear a disproportionate burden not only during the COVID-19 pandemic itself but also over the long-term.<sup>7</sup> Existing systems like electronic health records can be used to identify vulnerable patients and address health and social needs.<sup>7</sup>
- **Collaborate and integrate community supports, such as family resource centers, to address the needs of vulnerable citizens, such as older adults (i.e., assistance with housing, transportation, grocery shopping, and hygiene supplies).**<sup>105</sup> As an example, prior to the pandemic, one clinic established a food program in collaboration with local farms to provide fresh produce to patients with chronic diseases. Once the pandemic began, clinic care coordinators began bagging groceries and delivering them directly to patients' homes.<sup>106</sup> Integrated networks that bring health systems together with social service providers and communities facilitate rapid mobilization despite resource constraints.<sup>107</sup>

## Community *continued*



Hospitals and clinics should also designate a specific lead to facilitate communication and coordination between the hospital and the surrounding community. The community may wish to help hospitals and clinics by creating homemade masks, holding prayer vigils, donating food, gift cards, PPE, and other medical supplies, and driving specimens to the laboratory.<sup>41</sup> This touching example of a close-knit rural community and its hospital demonstrates how hospital systems can provide the community with education and health care, while communities can step up to donate supplies or meals and to express gratitude through cards, children's artwork, and street signs.

### Focus on special populations

When preparing for a pandemic or other natural or man-made emergency, it is critical to understand the unique health and social needs of special populations and to acknowledge challenges they may face when it comes to following public health guidance and requirements of isolation or quarantine. Rural and frontier areas tend to have higher concentrations of these vulnerable, at-risk groups:

#### Older adults

In rural areas, the greater proportion of older adults, coupled with their higher rates of underlying health conditions and more limited access to health care, places them at greater risk for adverse COVID-19-related outcomes. Rural hospital administrators and primary care clinicians should consider the unique challenges that older adults face during the pandemic, such as increased vulnerability to contracting COVID-19; more hurdles navigating telemedicine platforms; being safe isolating at home alone; and potentially experiencing more profound social isolation and loneliness. Pre-existing rural/urban inequities in health care access, economic security, availability of technology, and social needs, together with within-rural inequities by socio-demographic characteristics, amount to a heightened risk of illness and isolation for many older adults in rural areas.<sup>108</sup>



#### Nursing home residents

Similar to non-residential older adults in the community, nursing home residents over the age of 65 are at higher risk for COVID-19 complications given their underlying chronic disease burden.<sup>109</sup> Nursing home personnel may also be slower to recognize potential cases on the basis of signs and symptoms and lack of adequate access to testing.<sup>109</sup> Staff factors contribute to the increased susceptibility of nursing home residents, including those who work at multiple facilities; come to work ill with potential symptoms of COVID-19; face challenges acquiring needed PPE; and are unfamiliar with standard, droplet, and contact precautions.<sup>109</sup> Moreover, nursing homes frequently face staff shortages.<sup>110</sup> Strategies that may help limit spread of COVID-19 in nursing homes include implementing visitor screening and restriction policies and procedures; routine screening of health care workers; quarantining exposed staff; symptom monitoring of residents; limiting group activities and communal dining; restricting staff and resident movement; and plans to acquire and safely reuse PPE.<sup>109,110</sup>

**Community** *continued***Veterans**

Rural residents account for approximately one-quarter of the US veteran population. Mental health issues are important considerations for this population during the COVID-19 pandemic, including an anticipated increase in acute stress disorder and subsequent posttraumatic stress disorder (PTSD). Combat veterans with chronic PTSD could experience the pandemic as a traumatic reminder of a prior invisible biological or toxic threat. The risk is especially great in rural patients, who manifest a higher baseline of chronic medical conditions and have historically suffered from diminished access to quality health care, including mental health services. Telemedicine technologies can be used for psychotherapy and psychotropic medication management to help veterans in rural communities cope with and manage their mental health while limiting exposure to COVID-19 by staying safe at home.<sup>65</sup>

**Meat and poultry processing facility employees**

Meat and poultry processing facilities, by nature of their work and limited tele-commuting options, are breeding grounds for viral spread.<sup>33</sup> Workers tend to live in multi-generational housing units and travel to work in company buses. Once at work, they operate at a frenzied pace – which can make it more difficult to wear masks properly – in close proximity to one another in cold temperatures that are more likely to permit the virus to stay viable for longer periods of time on various surfaces.<sup>111</sup> Aggressive ventilation systems, designed to prevent meat from spoiling, may inadvertently circulate the virus, increasing the risk of infection. Undocumented workers that work in meat-packing plants may be less willing to participate in contact tracing or seek medical care.<sup>111</sup>

**Prison populations**

Between 1980 and 1999, rural America witnessed a boon in prison construction to the point that now more than 70% of the country's more than 1100 prisons are outside of metropolitan centers.<sup>112</sup> A source of major jobs in rural communities, prisons represent substantial personnel traffic – and of incarcerated persons to a lesser extent – in and out facilities on a daily basis as employees leave and re-enter.<sup>113</sup> Compared to prisons, jails hold individuals pre-trial and generally see greater turnover, inherently increasing the risk of COVID-19 transmission.<sup>112</sup> According to a recent report, 12% of people in jails nationwide are held in counties without any intensive care unit beds; in some states, it's more than one-third.<sup>114</sup> If there is an extensive outbreak in a rural prison or jail, it may very well overwhelm the local rural health care delivery system.



## Community *continued*

### Second-home owners

Many rural communities are prime vacation and second-home owner destinations, such as skiing or beachfront resorts and towns near national parks and outdoor recreation.<sup>115</sup> Travel to these areas, particularly from urban ‘hot spots’ or from overseas, can be problematic and increase infection rates.<sup>116</sup> According to the American Communities Project, two of its fifteen community types are particularly susceptible with a large percentage of second-home cabin and condominium owners and long-term renters.<sup>117</sup> Nearly 20% of homes in Graying America communities, including the Mountain West, parts of Florida, and rural areas in the North, are classified as second homes, while 11% of homes in Native American Lands in Arizona, New Mexico, and Montana are the same.<sup>117</sup> Given the substantial impact of the recreation economy, these communities face tough decisions: welcome tourists and their dollars or ask them to stay away to curb the spread of disease.

### The Navajo Nation

The Navajo Nation, in particular, has been hard hit for multiple reasons. It is common to find multi-generational families living in the same household making social distancing difficult. They tend to reside in food deserts, which means they are more likely to visit a fewer number of gas stations and convenience or grocery stores to get needed supplies, furthering likelihood of disease spread.<sup>118</sup> Navajo families often lack adequate internet access, cleaning supplies, and functioning sewer systems; 30 – 40% of homes are without running water.<sup>118,119</sup> Such challenges result in not being able to learn factual information about the pandemic and not being able to maintain hygiene practices.

*Dr. Heather Kovich describes her experience working at a Navajo Nation drive-up COVID-19 testing center in the emergency department parking lot:<sup>120</sup> “I hear a driver explain matter-of-factly, ‘I know. We’re supposed to be six feet apart, but this was the only way to manage today.’”*



There are seven people in the car, and they have driven 50 miles to get here. The driver is in charge of the family and is ill. One of the passengers, diagnosed with COVID-19 several days ago, has been getting increasingly short of breath. A few others came to be tested; young children and a grandmother couldn’t be safely left at home.”

An important consideration is that many special populations are not prepared for disasters, leaving them even more vulnerable to adverse outcomes in the event of a public health crisis.<sup>96</sup> Much of the rural population, including special populations, rely on community resources, such as transportation services, to help them through a disaster.<sup>96</sup> It is important to consider which special populations may not have access to health care services when usual community services are disrupted. Rural hospitals and primary care practices should make every effort to collaborate with outside systems and the wider community to ensure that these vulnerable populations have access to the care they need during crises.

# Community *continued*

### PEARLS FROM YOUR PEERS



Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to engaging and supporting the community and those in isolation or quarantine during the pandemic.

- Recruit a group of volunteers or partner with organizations like the local Red Cross to serve the community. Develop HIPAA policies and training for volunteers that wish to deliver food and medicines to higher-risk neighbors, serve as couriers for transporting lab specimens, or provide other patient-facing services where privacy may need to be protected.
- Identify a staff member to manage community support and gifts, including sewing masks, donating food and money, making signs and sending cards of encouragement, gifting restaurant certificates, etc.
- Establish a community resource line or a Facebook bulletin that matches specific needs with potential donors. Ask local non-profits with knowledge about community services to help connect people to needed resources.
- Ask local gyms and fitness centers to offer exercise classes online, especially to support the elderly in combatting isolation. Invite teachers and daycare operators to design educational programming, drawing contests, or socially distanced outdoor activities to support health care and other essential workers with children.
- Distribute lists of where public wi-fi is available for purposes of work, school, and accessing health care services.
- Host contests with fun prizes to award community members if they are 'caught' engaging in recommended prevention behaviors and/or caring for their neighbors.
- Help increase compliance with isolation and quarantine by connecting impacted individuals to local social and human services agencies to help meet basic needs like rent and food.
- Encourage local citizens, particularly the elderly, to develop a plan to follow if / when they get sick, including how they will get needed food and medicines; who they can call for help; and the right numbers to reach the local hospital or clinic.
- Engage local and community-based foundations about COVID-19 related grants and loans.
- Explore waiver options, if available, through the state public health agency or other similar authority to allow libraries, restaurants, movie theaters, bowling alleys, places of worship, and other community services to open at different paces according to local disease transmission dynamics.



# Community *continued*

### WHO CAN HELP

- **The COVID-19 Community Vulnerability Index (CCVI)**. This index, created by the Surgo Foundation, compiles four factors from the CDC's Social Vulnerability Index (socioeconomic status, housing type and transportation, minority status and language, and household composition and disability) with health care system and epidemiologic factors into scores that can be ranked and compared to one another at the county and state levels. Knowing a county's score compared to peers helps inform policy and resource allocation decisions in light of ongoing COVID-19 challenges.
- **Evidence-Based Toolkits for Rural Community Health**. This RHIHub site features over 20 evidence-based toolkits designed to help rural communities enhance the health and well-being of their residents. With a primary focus on the social determinants of health, rural health care leaders can access resources on caring for people with disabilities, substance use disorders, or chronic illnesses such as diabetes and chronic obstructive pulmonary disease, as well as learn how to address transportation, leverage community health workers, and integrate a variety of social services. Special attention is paid to implementing programs in resource-scarce settings.
- **Community Paramedicine Impact Reference Guide**. This well-cited reference guide illustrates the measurable impact of community paramedicine on health care systems, payers, providers, and patients. This guide includes actual examples of community paramedicine programs, which may inform rural health care leaders as they consider researching, designing, and implementing similar solutions in their own service areas.
- **Rural COVID-19 Innovations: Helping Community Members**. This RHIHub online resource details practical and rural specific examples of health care delivery system innovations from across the US geared toward students, farmworkers, seniors, tribal members, and others. Users can sort by topic or geography.



## CHALLENGE #4

# Cross-System Collaboration



### THE STORY CONTINUES



Samantha and Rachel vented to each other about the woefully under-resourced reality of the public health department to meet the community testing needs in Centennial. The pandemic had exposed the inadequate resource allocation to local public health departments and yet their local public health department was receiving significant community criticism for its “failure to test everyone”. Rachel had even received threatening phone calls and online social media posts for publicly endorsing mandatory masking policies. State and national politicization of these public health recommendations were exacerbating the problem. “Scientists may be able to create a vaccine for this terrible virus,” Rachel lamented, “but there is no vaccine for ignorance and foolishness.”

To make matters more challenging, there existed a significant cultural distrust of state and federal government. Conspiracy theories were rampant around ill-intended government officials’ secret plans to use the call for contact tracing to compromise the privacy of local citizens for political gain. Contact tracing had turned into a “political hot potato” and there was still confusion as to who was responsible for collecting specimens and processing the tests and who was responsible for the tracing and other follow-up work. Employers in Centennial also needed recommendations for when and how to screen and test employees.

Both Forrest Point Health and Living Center and Peaks Memorial Regional Hospital seemed to be receiving a disproportionate share of financial assistance (albeit not specifically for community testing) from federal funding sources during the pandemic. They had more robust laboratories. They had social workers and care coordinators. They had political capital with legislators and state officials. They seemed to have money, at least for the time being. Health care and public health leaders would need to engage the city council, the county commission, local churches, civic organizations, and the area chamber of commerce in new and creative ways to develop and implement solutions.

Dr. Ashley Daniels, the newest Mountain Plains Family Health Clinic physician and county EMS medical advisor could play an important role in convening people. She had a winsome personality and was eager to contribute as a community leader. Furthermore, she had an MPH degree, spoke fluent Spanish, and had become fast friends with Rachel Sisson and Justin Sanchez. Samantha and Rachel contemplated the best way to engage her and other stakeholders in an environment with a growing number of competing priorities.

***“Scientists may be able to create a vaccine for this terrible virus, but there is no vaccine for ignorance and foolishness.”***



# Cross-System Collaboration *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of effective cross-system collaboration and response. The following questions may be applied to the above case or in the context of your own story.



1. What are ways for health care and public health partners to coordinate their efforts, maximize the use of resources, and prevent any confusion or duplication of services?
2. What is your community's strategy for limiting the spread of COVID-19 in your community? Are all the necessary stakeholders involved? Who is missing and what can each partner contribute to meaningfully solving complex problems you face?
3. What guidance and recommendations have been released to community-based caregivers, employers, and other organizations regarding safe practices and appropriate methods and times for screening people? If possible, are they aligned with national, state, and local recommendations?
4. How are you collaborating with other local health care providers in the region to ensure optimal health outcomes related to COVID-19? How are you sharing staff as volumes fluctuate? How are you procuring, sanitizing, and sharing your supplies?
5. How are you and other local health care providers partnering with regional systems to best utilize those resources and economies of scale to meet the needs of local community members?
6. How are you partnering with local nursing homes, assisted living facilities, and social sector organizations to combat COVID-19? Have you identified ways in which you will share expertise, staff, and supplies?
7. How are you and other local health care providers partnering with your state's or your region's academic medical center to learn the latest COVID-19 research or new clinical protocols or to partner on testing?
8. How are community-based paramedics and community health workers being engaged as part of collaborative solutions for community testing and contact tracing? How else could they be part of creative solutions?
9. Understanding that containment of COVID-19 impacts local economic activity, how are individual businesses and the local chamber of commerce being engaged to help develop solutions?
10. When you consider the make-up of your local incident command team, which essential stakeholders are missing? Are there others you could engage to introduce new ideas and increase community buy-in (e.g., pastors, the city marketing manager, maintenance crew, mayor, local business owners, etc.)?
11. How can the temporarily underutilized resources in your community be leveraged to solve problems (e.g., bus drivers not transporting children instead delivering meals to homes, school custodial staff helping with sanitation of essential community buildings while school buildings are closed, restaurant servers helping with contact tracing, etc.)?
12. What is your strategy for transportation of meals, supplies, health care workers for home visits, etc., especially in winter months with inclement weather? Can weather-ready local and state government vehicles be leveraged to assist with transportation?
13. Have you developed a system from your community's most innovative or creative minds to harvest their ideas to implement new clinical innovations? Could this be a subgroup of your incident command team?

# Cross-System Collaboration *continued*

### PRACTICAL GUIDANCE

The COVID-19 pandemic is a public health and health care crisis unlike any we have seen in a generation. It has called upon rural health care leaders to be innovative, strategic, and adept at problem solving to meet the needs of their communities. This new coronavirus has also called upon rural health care, local government, businesses, funders, and social sector organizations to collaborate in new and different ways and to share ideas, expertise, and resources. Many lessons on how to build and sustain cross-sector partnerships have been learned since March 2020. Key factors that increase collective capacity to respond include<sup>107,121,122</sup>:



- Experience treating a broad spectrum of patients
- Lean organizational structures
- Strong, pre-existing community partnerships during non-emergency times
- Deep understanding of the local population
- Integrated health care and social service networks
- Interconnected data systems
- Willingness to share funds and supplies
- A trusted entity to serve as the communications lead
- Respected community “champions” and spokespersons
- Use of direct contacts and incentives to recruit and engage volunteers

The above characteristics help a community identify vulnerable patients and families and rapidly mobilize services despite resource constraints.<sup>107</sup> Robust organizational relationships in rural communities also facilitate launch of incident command and emergency operations center structures, as well as clear delineation of roles and responsibilities within each.



## Cross-System Collaboration *continued*

### Setting up incident command

The composition of incident command (IC) teams will vary from community to community based on expertise, bandwidth, local needs, and prior experience with emergency response. Some rural health care delivery systems may choose to form IC specific to the hospital or primary care practice; others may choose to implement a community-wide model. Many IC teams also establish special surge committees that focus on how and when they will redeploy staff; reconfigure space; acquire, distribute, and preserve supplies; and transition into crisis standards of care.<sup>45,123</sup> Options for IC participation include<sup>123</sup>:

- Rural hospital leadership (i.e., the CEO, CFO, CMO, CNO, department or division directors for inpatient and outpatient services, etc.)
- Board chair or members
- Frontline clinicians (i.e., primary care providers, clinical nurse managers, etc.)
- Clinical experts in infectious disease, critical care / pulmonology, etc.
- Representatives from ancillary support services, such as laboratory, materials management, pharmacy, operations, purchasing, and infection prevention
- Ethics or spiritual support
- Rural public health directors and/or public health nurses
- Town and county government officials
- Local business, faith, and press leaders
- Public relations and marketing specialists
- Fire, police, and EMS personnel
- Community-based organizations, including funders and those representing vulnerable populations
- Volunteer groups

How IC is structured and led by the incident commander is critical for overall effectiveness of response. Often, it can help to employ a standardized approach to running IC meetings to ensure that information is being consistently shared.<sup>124</sup>



*One rural hospital approached its IC in the following way each time: “We designed a standard template and reviewed this twice per day to help keep us up to date. This template included information on beds occupied/available; number of patients with COVID-19; number of patients on ventilators; number of patients transferred; number of patients tested; critical staffing positions; personal protective equipment inventory; the local nursing home report; our daily objectives; and an incident command sections report (which is comprised of public information such as local FEMA, county board of health information, county commissioner information or requests, community requests; safety, operations, planning, logistics, finance).”<sup>124</sup>*

In addition to templating IC meetings, consider inviting process improvement specialists to join the team; they can provide recommendations to reduce chaos and streamline protocols and procedures.<sup>125</sup>

# Cross-System Collaboration *continued*

The number and breadth of issues IC teams may manage are vast and may wax and wane in severity and urgency, given the unpredictability of the COVID-19 pandemic and when the virus will appear or re-appear in different rural communities.



Local leaders should anticipate a wide range of issues, including:<sup>45</sup>

- Ensuring adequate staffing and supplies
- Managing resource needs across the entire community
- Accessing the latest research and information about testing and treatment
- Adapting space to care for COVID-19 positive or presumptively positive patients
- Arranging transfer protocols ahead of time with regional centers
- Considering and designing alternate care sites
- Testing protocols and availability and how to coordinate this with local and state agencies
- Caring for the well-being of clinicians and staff
- Effective partnership with public health departments and county officials, including contact tracing and enforcing local ordinances
- How to maintain access to needed acute, chronic, and preventive care
- What to communicate re: local disease prevalence to the community and public health measures, via which outlets, and how often
- Engaging community volunteers to fabricate PPE and other supplies and to support neighbors needing to isolate or quarantine, particularly the elderly
- Surge planning and when to implement crisis standards of care

Understanding ingoing and ongoing needs and susceptibilities for each rural community is critically important to inform emergency response and IC efforts. One such tool available through the Centers for Disease Control and Prevention is its Social Vulnerability Index (SVI).<sup>126</sup> The SVI characterizes communities based on several factors, including housing, transportation, socioeconomic status, housing, race and ethnicity, and language barriers.<sup>126</sup> These data points can be helpful in determining how to help support rural communities before, during, and after COVID-19.<sup>40</sup>

## Cross-System Collaboration *continued*

### Examples of creative cross-system collaborations

Rural communities are used to working together and sharing resources to solve problems, and the COVID-19 pandemic has been no different. Partnerships have sprung up between rural hospitals, between hospitals and primary care practices, and between rural health care delivery systems and academic medical centers, public health, nursing homes, businesses, and community-based and social sector organizations. The following examples may prompt ideas of solutions applicable to your community:

- **Form coalitions** among rural hospitals and primary care practices to share information and resources and improve negotiating power. The New England Alliance is a group of more than 20 small rural hospitals that participated in monthly calls and shared a supply chain for pharmaceuticals and supplies prior to COVID-19.<sup>37</sup> Since March 2020, this alliance has launched a Project ECHO-style platform to discuss best practices learned from setting up incident command, various policies and procedures, new clinical workflows, etc.<sup>37</sup> The Alliance has also created networking opportunities for member hospitals to learn from other institutions.
- **Expand the notion** of who should be engaged in emergency preparedness planning in the community, in addition to who might fund this work. After the Sept. 11 terrorist attacks, the U.S. Department of Health and Human Services created the Hospital Preparedness Program in the Office of the Assistant Secretary for Preparedness and Response as the only federal source of funding focused on furthering community emergency preparedness.<sup>127</sup> This funding often extends to primary care practices owned by the hospital, as well as first responders, but there is less attention and funding available for independent practices, specialty care centers, and long-term care facilities.<sup>121</sup> As rural communities continue to face COVID-19, there may be opportunities to leverage federal funding to acquire local foundation dollars to support ongoing preparedness activities for a broader group of health and health care providers and to overcome common barriers such as: 1) lack of revenue associated with preparedness activities including planning or participating in drills; 2) low institutional prioritization of stockpiling supplies and committing staff given the low probability of events; and 3) encouraging competitors to work together collaboratively.<sup>121</sup> COVID-19 may increase the recognition that emergency management is part of everyone's scope of responsibilities, including for non-traditional partners such as employers, school systems, faith-based organizations, and local and state medical societies.<sup>121,122</sup>
- **Pool resources** to hire an emergency manager that is shared across two or more rural hospitals.<sup>121</sup> This position could design and lead preparedness training and help serve as part of a joint incident command across service areas, as well as act as the liaison to the state office of rural health and local and state public health departments.



## Cross-System Collaboration *continued*

- **Execute collaborative practice agreements** between local pharmacists and other health care providers or practices to expand clinical services pharmacists could provide during a public health emergency, either embedded in a rural hospital or primary care practice or from a distance.<sup>128</sup> Potential roles include referring patients for testing; triaging for and encouraging seeking treatment when appropriate; selecting drug therapy; providing information to limit the spread of disease; offering vaccination once it becomes available; identifying potential drug-drug interactions; and recommending treatment alternatives as more COVID-19 treatment options become available.<sup>128</sup> Tele-pharmacy can be used for remote order entry and medication approval, if the pharmacist is working remotely.<sup>128</sup>
- **Consider proactively developing ties** between rural hospitals and university health care administration programs and faculty to enhance local strategic planning and quality improvement initiatives, as well as to increase capacity and operational competencies among executive teams, management, and governance.<sup>129</sup>
- **Build partnerships** between rural primary practices and regional entities, including local and state public health departments and academic health centers, that provide primary care practices and providers with the knowledge and skills necessary to navigate a new disease, including testing, treatment, and contact tracing.<sup>130</sup> On March 30, 2020, the Oregon Health & Science University launched the COVID-19 Connected Care Center, a hotline dedicated to answering patients' questions about the new coronavirus and connecting them to primary care telemedicine if necessary.<sup>131</sup> The hotline later expanded to include a dedicated provider line, which was staffed by students, residents, and faculty, to assist practices and providers throughout the state with COVID-19 operations, logistics, and clinical questions.<sup>130</sup> The patient hotline then expanded its availability to the 25% of Oregonians without regular access to primary care. Such a hotline system provides an example of how to create a primary care extension system.<sup>130</sup>
- **Partner with local nursing and senior homes** to share PPE and to develop clinical workflows that provide for triaging and caring for as many patients as possible in the institutional setting before transferring them to the hospital to minimize COVID-19 exposure risk.<sup>91,124</sup>
- **Include the county's Office of Emergency Services** in surge planning to ensure a focus on facility and equipment needs, accommodating patients of all types, and emergency privileging.<sup>91</sup> Ask the local ethics committee to review extraordinary policies (i.e., POLST, triage, rationing of care).<sup>91</sup> Outreach to vulnerable populations and organizations that serve them (i.e., homeless shelters) to provide sheltering options and clinical support.<sup>91</sup>

## Cross-System Collaboration *continued*



- **Engage the state's cooperative extension service** to support patients and families who fall ill, must quarantine, or find themselves navigating multiple responsibilities and new routines.<sup>132</sup> With more than 425 faculty and staff, the University of Missouri (MU) Extension team typically focuses its work on education and technical assistance around agriculture and the environment; youth and family; business and community; and health and safety.<sup>132</sup> To support Missourians throughout the COVID-19 pandemic, the extension service has: 1) disseminated resources on transitioning to online learning; 2) created online, hands-on science lessons for kids to help working parents; 3) developed education and tools to help businesses; 4) produced nutrition and health guidance to support families doing more cooking at home; and 5) designed materials to support health care professionals in diagnosing and treating patients infected with the new virus and in safeguarding their communities.<sup>132</sup>
- **Leverage existing relationships** to ensure that community members and health care workers get access to social services they need. Examples include:
  - A rural hospital in a community that largely gets its mail in post office boxes in town partnered with the U.S. Postal Service to deliver mail to seniors to avoid them needing to leave their homes.<sup>105</sup>
  - A mutual aid society created an online tool to connect those in need with community volunteers and resources, including financial aid, transportation, and interpretation services.<sup>72</sup>
  - For health care workers whose homes are not appropriately wired for remote work and need to work offsite, consider arranging for them to work in schools empty of students.<sup>125</sup>

### Focus on older adults

Cross-system collaboration is especially important when it comes to meeting the needs of special populations, such as those with access and functional concerns.<sup>133</sup> Older adults are one such population. Rural communities have a disproportionate number of adults over the age of 65 that are particularly vulnerable to developing severe complications from COVID-19. These same communities also often lack intensive care unit (ICU) bed capacity, which presents additional challenges in a pandemic. Although 19% of the U.S. population lives in rural counties, these counties contain only 1% of all ICU beds in the country.<sup>134</sup> Prior to the pandemic, rural hospitals were able to transfer critically ill patients to nearby urban hospitals, but transfers are only accepted when there is capacity for patients. Urban hospitals may lack this capacity if they also face an outbreak, leaving rural adults without access to the care they need. Recommended solutions include:<sup>134</sup>

- Partnering with another local critical access hospital (e.g., “one hospital, two-campus” model)
- Collaborating with community organizations, local foundations, and state officials to re-open and re-purpose previously closed rural hospitals for other health care needs
- Calling on local businesses to fabricate medical supplies
- Building new delivery systems to accommodate more patient volume
- Creatively sourcing medical personnel from within and outside of the local community
- Building alliances with neighboring communities to share health care resources

## Cross-System Collaboration *continued*

### PEARLS FROM YOUR PEERS

Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to establishing effective incident command structures, cross-system collaboration, and partnerships with community providers.



#### Effective approaches to incident command:

- Think critically about who needs to participate in incident command and contribute their skills and expertise, including county commissioners, clinicians, business owners, the local police chief, the city manager, county public health representatives, hospital executives, daycare owners, non-profit or faith leaders, city marketing or public relations professionals, etc. Leverage incident command to speak with one, transparent voice to the community.
- Implement a separate, dedicated clinical group that meets separately from the hospital's incident command team to tackle issues of triage, testing, treatment protocols, visitation policies, alternate care sites, etc. Consider appointing co-incident commanders given the clinical nature of the COVID-19 disaster, one that is point on medical issues and one that has a more traditional outlook on emergency preparedness.
- Establish a non-traditional role or task force within the incident command team that focuses solely on innovation (e.g., how to acquire masks or build shields; how to screen patients or set up respiratory clinics, etc.). Pull in staff that find themselves not providing as much direct patient care during temporary cessation of outpatient services and elective procedures and other staff that have demonstrated the ability to think outside the box.
- Create a sub-team within incident command that researches how other states have responded to COVID-19 – both successfully and not so successfully – as well as regional and national patterns and shares those learnings with the broader team.
- Offer hospital and primary care resources and expertise to augment the bandwidth of rural public health departments and the unified incident command team. This could take the shape of lending infection control specialists, helping emergency medical services get needed supplies, or educating local businesses on necessary public health precautions.

**COVID-19  
DRIVE-UP  
TESTING**



Please remain  
in your car with  
the windows  
rolled up.



# Cross-System Collaboration *continued*



### Partnering with other providers:

- Ask independent primary care clinicians in the community who are experiencing reduced clinical volume and revenue if they'd be willing and interested in staffing alternate care sites, should these be needed.
- Arrange collaborative care protocols whereby emergency department providers triage nursing home patients onsite to decide whether or not they need to come to the hospital.
- Set up a hospital infection control / PPE strike team that can assist nursing homes with testing and quarantine should the need arise.



### Collaborating with community organizations:

- Partner with local school systems, community colleges, and businesses to provide apps, tools, education, and contact tracing services.
- Work with businesses and schools to apply for local waivers where it makes sense to do so. Create re-opening criteria that are clear and tied to epidemiological triggers. Ensure that businesses and organizations understand and sign-off on public health guidelines.
- Coordinate county officials and employers to deliver consistent guidance on returning to work after isolation or quarantine.
- Connect school and public health nurses with local health care leaders to ensure that all entities are on the same page regarding re-opening decisions.
- Balance and appreciate the different perspectives of public health and health care – population health and patient care – to inform the collective response to COVID-19.
- Lend support to public health colleagues who may be navigating challenging dynamics with county commissioners, elected officials, or local law enforcement.

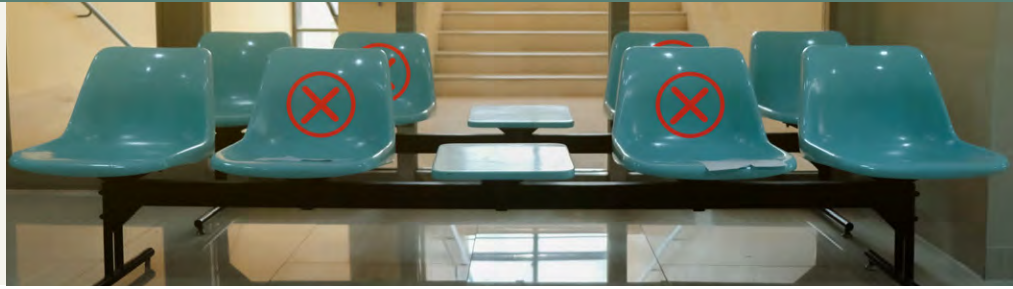
# Cross-System Collaboration *continued*

### WHO CAN HELP

- **Community Assessment for Public Health Emergency Response (CASPER).** This CDC-sponsored resource equips rural health care and public health leaders with tools and techniques for conducting a rapid needs assessment at the household level within a community. The information gathered from this quick, cost-effective, and flexible tool can help facilitate disaster planning, response, and recovery efforts.
- **The Community Planning Framework for Healthcare Preparedness.** Rural health care leaders seeking to develop or strengthen a community-wide medical surge plan will find this CDC resource especially helpful. The website provides a framework for community planners that emphasizes building planning teams and coalitions, alternate care sites, different models of health care delivery, essential health care services, and crisis standards of care.
- **ASPR TRACIE Incident Management.** The office of the U.S. Assistant Secretary for Preparedness and Response created TRACIE (Technical Resources, Assistance Center, and Information Exchange) to assemble a wide variety of resources for health care and public health organizations working in system and emergency preparedness. This site contains education and training; lessons learned; and plans and tools for helping health care organizations successfully coordinate and lead incident command structures alongside peer systems and agencies.

## CHALLENGE #5

### Space



#### THE STORY CONTINUES

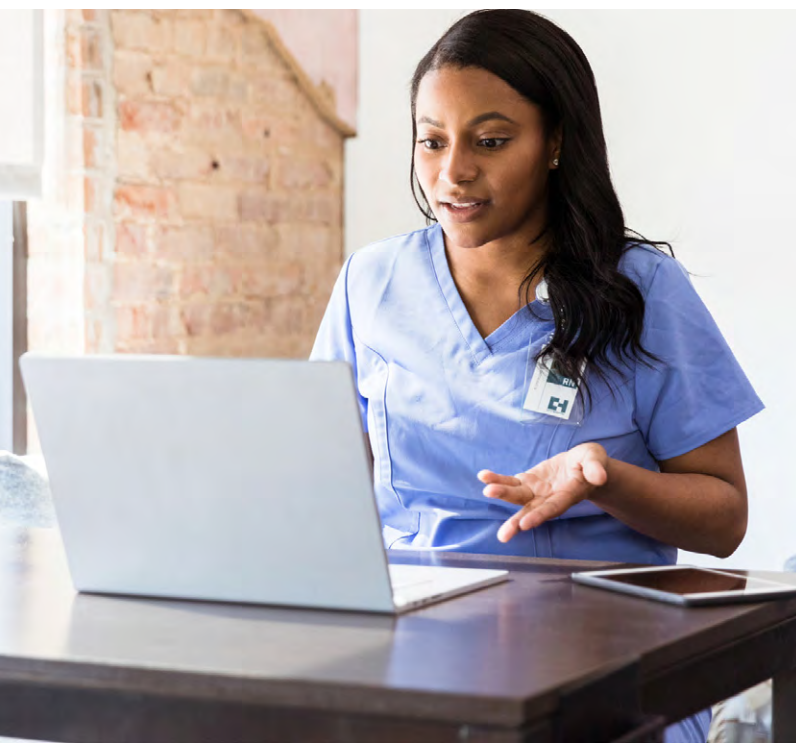


“How do we keep people from contracting COVID-19 when they come to our clinic?” thought Samantha. “They’re coming here to heal, not pick up this yucky virus. We must do everything possible to avoid harm to them.” She shuddered at the thought of one of her elderly patients coming in with a non-COVID-19 acute illness, only to contract it in the hallway or exam room of her clinic and end up in an ICU bed.

She realized the clinic needed to make some rapid changes to patient care delivery. Because the clinic structure would not permit simultaneous, separated “well” and “sick” visits, or one-way foot traffic, they set up a tent in front of the clinic where sick patients could be screened and evaluated before being brought into the clinic. Those with respiratory symptoms were treated in and released from the tent. Separate personnel in PPE staffed the tent to avoid coming in and out of the clinic building and reduce the “burn” rate of PPE. Still, Samantha wondered about the safest and most effective way to use such a tent in terms of size, spacing, air flow, and use of PPE.

Kaila and the Handlers also wondered what to do if this situation extended into the winter months when the tent would become less practical or realistic. Centennial typically received 23 inches of rain and 53 inches of snow during the winter months, and this care delivery model would quickly become uncomfortable and even dangerous when the temperature dropped below freezing or if the weight of a heavy snow would collapse the tent.

As part of its strategy to mitigate the space issue and minimize the presence of non-COVID-19 patients in the clinic, the staff began calling patients with chronic conditions who required routine visits, establishing pathways for virtual care.



Within a week of starting those virtual visits, they realized a **70% drop in clinic volume.**



## Space *continued*

### HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of efficient and safe allocation of space. The following questions may be applied to the above case or in the context of your own story.



1. What are your strategies for physically separating sick patients from well patients? What are your strategies for physically separating COVID-19-positive or presumptively positive patients from all other patients?
2. How does your incident command team define alternate care sites? What are your strategies for developing them? Which community stakeholders need to be engaged?
3. How have you considered indoor versus outdoor spaces for patient evaluations? What are ways to accommodate patients in outdoor spaces when weather is a potential barrier?
4. How are you ensuring that any new solution you create is ADA-compliant?
5. What are creative ways you could winterize outdoor triage options, such as tents, drive-through testing lanes, or screening kiosks?
6. What is your approach for re-routing traffic away from COVID-19 positive or presumptively positive spaces within your health care facility or within your community?
7. How have you considered the creation or implementation of negative pressure wings or rooms to prevent or limit the spread of COVID-19?
8. How should your approach for sanitizing COVID-19 positive or presumptively positive spaces differ (if at all) from your standard processes?
9. How could temporary walls or barriers help limit or prevent the spread of COVID-19? What materials do you have at your disposal to build such walls or barriers?
10. Are there unused or underutilized (indoor or outdoor) spaces in your community (e.g., temporarily closed or vacated buildings, etc.) that could be repurposed for community screening or testing?
11. Where are you locating testing or screening sites in your facilities and in the community?

Space *continued*PRACTICAL  
GUIDANCE**Anticipating surge capacity**

Upon entering the pandemic, there were just over 6,300 total ICU beds in rural hospitals nationwide; 870 of them are in critical access hospitals, while 5,439 beds are in rural and community hospitals.<sup>135</sup> On average, there is one rural ICU bed for every 9,500 rural Americans.<sup>135</sup> 63% of rural hospitals in the US do not have a single ICU bed.<sup>136</sup> Approximately 18 million people live in counties without access to intensive care, and 25% of that group is 60 or older.<sup>136</sup>

According to the Sheps Center at the University of North Carolina, in 48 out of 50 states, rural hospitals experience lower acute care occupancy rates compared to their urban peers.<sup>137</sup> Nationally, the acute care occupancy rate was 37% in rural versus 62% in urban hospitals.<sup>137</sup> Similar trends exist for intensive care unit (ICU) occupancy rates: in 49 out of 50 states, the rate is lower for rural hospitals with a national average of 45% in rural areas versus 65% in urban settings.<sup>137</sup>

These low occupancy rates appear to provide surge capacity for rural health care delivery systems, but there are several complicating factors.<sup>137</sup> First, access to and the allocation of space could limit actual use of the surge capacity.<sup>137</sup> Second, because of the small size of rural health care facilities, sudden surges could quickly outstrip that capacity.<sup>137</sup> Third, some rural health care delivery systems are better equipped than others to care for patients in respiratory distress.<sup>137</sup> If rural health care delivery systems plan to view their low occupancy rates as representing surge capacity, they need to plan for how to allocate the space, staffing, and supplies accordingly to manage a surge.<sup>137</sup>



Space *continued***Re-engineering clinical spaces**

Aging rural health care facilities often present challenges to modification and re-purposing of internal space. Many health care leaders have considered utilizing alternative areas for care delivery, including mobile or outdoor spaces to prevent the spread of COVID-19.<sup>138</sup> Recommendations for space utilization and patient and staff flow include the following:

- Pre-screen or triage patients virtually or before entering buildings.<sup>138</sup>
- Designate one entrance and clearly define traffic flow for COVID-19 positive or presumptively positive patients.<sup>135</sup>
- Locate PPE and disinfecting hand sanitizers in locations that are convenient and accessible to patients, family members, and community members.<sup>138</sup>
- Place physical distancing markers in highly populated environments or other waiting areas.<sup>138</sup>
- Develop new check-in protocols, including a virtual process that does not use or limits the use of waiting rooms.<sup>138</sup> Make whatever new plans necessary to care for pediatric and obstetric patients.<sup>45</sup>
- Modify policies that determine access to clinical spaces, eliminating walk-in visits and limiting access to visitors.<sup>138</sup>
- Implement a system for screening, testing, or outpatient examinations to occur in vehicles or other areas outside the clinic or hospital.<sup>138</sup>
- Utilize ambulances, mobile clinic vans, and organizational and personal vehicles to increase access to testing and evaluations.<sup>139</sup>
- Alter the physical environment, dedicating certain areas of a building for COVID-19 positive or presumptively positive patients.<sup>138</sup>
- Convert operating rooms into spaces for COVID-positive patients; such arrangements allow use of anesthesia machines for mechanical ventilation, if needed.<sup>64</sup> Gastroenterology suites or step-down units can also be used for expanding critical care capacity.<sup>45</sup>
- If there are multiple medical buildings, designate them by use (e.g., COVID-19 positive or presumptively positive, acutely ill, non-COVID-19, etc.). Efficiently utilize medical provider time and resources and limit exposure through telemedicine between buildings.<sup>41</sup>
- If dividing space is difficult or impossible due to facility limitations (e.g., only one long hallway with several clinic exam rooms), schedule patients in cohorts and space appointments (i.e., sick patients in the morning, well patients in the afternoon, etc.).<sup>138</sup>
- Develop multi-level surge plans for the utilization of space that may be implemented in phases.<sup>41</sup>
- Identify alternative spaces such as local hotels or gymnasiums that can be used to house residents of skilled nursing facilities so that the nursing homes can be leveraged as overflow capacity for the hospitals.<sup>105</sup>
- Set up video conferencing capabilities in schools and in offsite specialty centers to allow providers at rural hospitals and primary care practices to evaluate patients remotely.<sup>140</sup>



### Space *continued*

#### Special design focus

With creative and intentional design, it is possible to develop cost-effective solutions for the utilization of space that prevent or mitigate the spread of communicable disease.<sup>141</sup> Nearly a decade before the initial outbreak of COVID-19, the MASS Design Group designed the Butaro District Hospital in southern Rwanda to reduce the transmission of airborne disease.<sup>141</sup> The layout utilized different patient and staff flows, as well as natural cross-ventilation to create safer environments for patients.<sup>138</sup> Each hallway in the facility is located along the building's exterior so that patients and staff experience the open air. Inside, the wards are inverted so that each patient has an outside view and natural light and ventilation. Cross-ventilation is supported using high ceilings, large windows, and low-speed fans to circulate air and minimize the risk of reinfection.<sup>141</sup> Ultraviolet Germicidal Irradiation light fixtures were installed in each section of the hospital to deactivate microbes, lowering the risk of nosocomial infection. Additionally, a continuous, non-permeable floor finish provides a durable surface that's easily cleanable and infection-resistant.<sup>141</sup> Most impressively, the project utilized materials and labor from the immediate surroundings to complete the project, ensuring that 85% of the building costs were invested locally.<sup>141</sup>



**As you think about designing or re-purposing space during COVID-19, what can you learn from our neighbors in Rwanda?**

### Space *continued*

#### PEARLS FROM YOUR PEERS



Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to creating safe physical spaces both on- and offsite to care for COVID-19 positive or presumptively positive patients.

- Develop screening protocols at hospital and clinic entrances.
- Arrange drive-through COVID-19 testing in hospital or clinic parking lots.
- Have only three to four primary care clinicians working simultaneously so that social distancing guidelines can be observed.
- Close waiting rooms temporarily; have patients move right from their vehicles directly to an exam room to be seen.
- Create temporary negative pressure COVID-19 rooms, wings, or floors with associated PPE donning and doffing antechamber stations. Map out spaces that tend to be relatively under-utilized and out of heavy trafficked areas. Hold the PACU on deck to serve as additional negative pressure capacity if needed.
- Use simple materials to build donning and doffing stations, such as PVC piping and shower curtains.
- Design new traffic flows within facilities and ensure that those are well-marked for staff and patients to follow. Lock emergency department doors, and require buzzing for entry. Ensure chemotherapy patients have easy entry / exit points for accessing care that don't require them to walk through the hospital or outpatient center.
- Pay close attention to where staff are entering and for what purpose. If they are providing care for COVID-19 patients, they should remain in those units and not enter others.
- Turn the visiting specialist (or similar) clinic into a temporary respiratory clinic; doing so allows other clinics to remain open for business. The temporary respiratory clinic helps reduce emergency department stress because potentially positive COVID-19 patients don't have to be co-mingled with other patients.
- Set up a respiratory tent at the hospital; if a COVID-19 surge is occurring, this can be used to triage and test patients. If prevalence is low, such a tent can be used for pre-operative screening.
- Establish mobile sites near the emergency department to handle overflow patients.
- Consider what spaces you have at your disposal to create overflow or alternate care space (e.g., the local community college gym, the physical therapy center, an old clinic site, the county fairgrounds, the recreation center, the local hockey rink, etc.).
- Direct sick patients to offsite rapid care clinics to minimize exposure to other patients that need to present for non-COVID-19-related care.
- Verify ADA accessibility requirements with any new proposed structures.

### Space *continued*

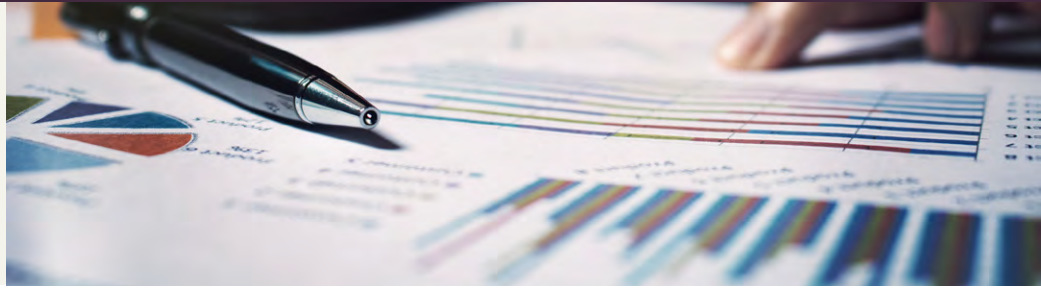
#### WHO CAN HELP

- **Healthcare Facilities: Managing Operations During the COVID-19 Pandemic.** This CDC site equips rural health care leaders with strategies for re-purposing or better utilizing clinical space through more efficient and safe operations, service delivery modifications that include virtual care, and customizations that incorporate infection prevention and control processes. Recommendations include those specific to both inpatient and ambulatory care settings.
- **COVID-19 Alternative Care Sites.** This American Institute of Architects resource, developed by a task force of architects specializing in the built environment, highlights recommendations on how to safely adapt non-health care settings or buildings to care for patients during COVID-19. The PDF contains a link to an evolving set of case study examples of alternative care site solutions.
- **Rural Healthcare Surge Readiness: Space.** This RHIHub site details techniques, strategies, and tools rural health care leaders can utilize to re-purpose and/or transform existing clinical spaces to prepare for and respond to COVID-19 care demands. Information is grouped into four main components: 1) EMS, pre-hospital, and 911; 2) inpatient and hospital care; 3) ambulatory care; and 4) long-term care.
- **Considerations for Alternate Care Sites.** This CDC resource provides key background information on establishing alternate care sites during COVID-19. It offers rural health care leaders practical planning guidance and specific examples in physical infrastructure, services, and patient care across three settings: non-acute, acute, and hospital care.



## CHALLENGE #6

### Spending



#### THE STORY CONTINUES



Immediately following the announcement that the first three people in Iowa City had tested positive for COVID-19, Mike called the Sarahville Health Center (SHC) executive team together. Sarahville was only 100 miles north of Iowa City, which served as a major shopping hub for the region. It would only be a matter of time before a local citizen would return from there having been exposed. Hospital leaders were already anticipating the potential for community spread which could include their personnel. Mike had reached out to the county's emergency manager for additional PPE. His response was friendly but noncommittal.

The team was faced with the difficult decision of reducing its services to prevent local spread of the disease. The proposed changes, which included a 50% reduction in volume in Rural Health Clinic (RHC) visits and a 90% reduction in elective surgeries and other procedures, could result in as much as a 70% reduction in revenue for SHC. Emergency legislation had just been approved to establish payment for outpatient telehealth visits, but the reimbursement rates would only be a fraction of SHC's typical RHC Medicare and Medicaid encounter rates.

During the meeting, Mary Liz Overcash ran a proforma on her laptop, calculating how many days SHC could continue to meet its payroll and other obligations without the revenue from SHC's typical volumes for RHC visits and elective surgeries and other procedures. These changes would particularly affect Dr. Thomas' practice as a general surgeon, as well as his income. Mike anticipated the inevitable "meeting after the meeting" with both Mary Liz and Dr. Thomas.

**The group discussed possible reductions in staffing, delaying capital purchases, closing its unprofitable home health service, and freezing continuing education activities, among other ideas. The team wondered how it would weather the potentially devastating financial impact SHC was facing.**



# Spending *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of financial stewardship. The following questions may be applied to the above case or in the context of your own story.



1. What budget planning needs to be considered? What financial forecasting needs to be reviewed or changed?
2. What are ways to measure and evaluate the overall impact of continued operations or temporary closure of outpatient services? In the event of reduction in services, how could some of those resources be repurposed to accommodate the upcoming surge of patients?
3. Are you able to meet the grant deadlines that existed before COVID-19? If not, what is the plan to adjust? Have you reached out to grantors with explanations and asked for an extension?
4. What are the financial implications of implementing telehealth?
5. What are ways to reevaluate the value and cost effectiveness of equipment maintenance contracts?
6. Is your electronic business office software being effectively utilized to ensure optimal revenue cycle practices? Are your coding practices accurate? Are there any parts of your process manual that could be automated to improve efficiency and reduce errors?
7. How could you leverage technology to continue to provide reimbursable outpatient services?
8. How will you measure and evaluate the community and organizational financial impact of laying off or furloughing employees?
9. How could early retirement benefits be a tool for managing staffing costs?
10. How could certain medical providers, or other highly paid staff, be encouraged or required to utilize their PTO while certain services are temporarily discontinued?
11. How will you effectively and efficiently source opportunities to secure cash through grants or loans? Should there be a dedicated taskforce established? Who should lead it?
12. Who in your organization or community is trained and responsible for pursuing grant funding? What are collaborative ways to enhance grant-writing efforts at a county level?
13. What role does philanthropy play in bridging any budget deficits? Who in your community or on your team should lead these efforts? Which other stakeholders should be engaged in fundraising? Amid COVID-19, what are safer alternatives to traditional fundraising events, such as fundraising dinners? Does anything need to be rescheduled or restructured?
14. Are you pursuing all of the state and federal funding opportunities or provisions that are available to your organization? Are there members of your board or leadership team that could help with preparing and submitting applications?
15. How will you maintain or improve your pursuit of value-based care initiatives? What are some alternative sources (e.g., private foundations, etc.) that could provide funding to ensure the safety and sustainability of wrap-around services?

# Spending *continued*

## PRACTICAL GUIDANCE

### Spending

Rural hospitals and primary care practices, many of which perpetually exist on razor-thin margins or operate entirely in the red, entered COVID-19 in precarious financial positions.<sup>142</sup> The reasons why rural health care delivery systems face financial hardship are numerous:

- Rural health care delivery systems often care for patients that are older, sicker, and poorer.<sup>143</sup>
- Patients that have to be hospitalized today may need more complex care that is only available in urban settings, while improvements in medical care and advancements in technology mean that more care is shifting to the outpatient – rather than a more profitable inpatient – setting, leading to less revenue.<sup>37,143,144</sup> The increasing prevalence of virtual care is often resulting in less revenue per outpatient encounter.
- Profitability has also been challenged because of shifting demographics and patient out-migration; workforce shortages and increasing operating expenses related to recruiting new professionals; perceptions of poor quality that prompt patients to bypass the nearest facility; and in certain instances, local financial mismanagement.<sup>143–145</sup>
- Poor physical plant structures may make it more difficult to attract acute care business.<sup>37</sup> Equipment, such as mammography or laboratory machines, costs the same, regardless of patient volumes.<sup>37</sup>
- Changes in state and federal policy, such as bad debt and sequestration, impact bottom lines, as well as recent changes in health care delivery, including system consolidation, value-based purchasing, and referral patterns that exclude rural hospitals.<sup>143,144</sup>
- Medicaid non-expansion states are more likely to care for a greater proportion of patients without insurance.<sup>10</sup> In general, the payer mix in rural areas is often skewed toward more public payers than better-paying private payers.



**At the end of the day, the math doesn't add up ... rural health care delivery systems face decreased reimbursements, increased costs, and don't typically have the volumes to make up the difference.<sup>37</sup>**

The novel coronavirus introduced a brand new set of financial pressures above and beyond what they already faced.<sup>146</sup> In terms of revenue, rural hospitals and primary care practices witnessed significant and sudden drop-offs in non-urgent services; experienced changes in payer mix as more patients enrolled in Medicaid following job loss; and navigated differential rules and reimbursement for telemedicine services (i.e., video, phone) across public and private payers.<sup>146</sup> Rural providers also discovered substantial increases in expenses on several fronts, including a greater need for and higher unit costs of PPE; facility redesign to care for COVID-19 positive patients; staff training to bring them up-to-date with new regulations; technology upgrades to support remote work; personnel to manage point-of-entry screening; and employee disruptions due to balancing work and family obligations.<sup>146</sup>



## Spending *continued*

### A special note about rural hospitals

To date, 134 rural hospitals have closed nationwide in the past decade alone, predominantly in the south and southeast.<sup>147</sup> Rural hospitals of various types entered COVID-19 with varying numbers of days cash on hand. Analyzing the most recent Medicare Cost Report data, the North Carolina Rural Health Research Program demonstrated that on the low-end, rural Prospective Payment System (PPS) hospitals with 26 – 50 beds started the pandemic with a median of 21.3 days cash on hand, while Medicare Dependent Hospitals had a median 28.4 days cash on hand.<sup>148</sup> On the high end, Rural Referral Centers began COVID-19 with a median 55.8 days cash on hand, while Critical Access Hospitals had a median 73.2 days cash on hand.<sup>148</sup> Rural hospitals in non-Medicaid expansion states face greater financial challenges than their peers in states that did expand Medicaid; the median operating margin in non-expansion states is -0.3%, while in expansion states, the median operating margin is 0.8%.<sup>149</sup> Rural health care delivery systems face growing accounts payable and, in some cases, maxed out lines of credit. Alicia Emanuel from the National Health Law Program summarizes the current financial reality for rural hospitals well:

*“Hospitals typically stay afloat by providing imaging, lab tests, physical therapy, and outpatient procedures, but these sources of revenue have dried up with elective procedures being cancelled to stop the spread of the virus. Hospitals are also experiencing higher staffing needs and supply costs, while at the same time dealing with price [gouging] due to the pandemic. There is deep concern that cash-strapped rural hospitals won’t be able to overcome the financial strain, especially given the median rural hospital’s operating margin is 0.7%. And even if rural hospitals keep operating, they might not be able to meet a surge of gravely ill COVID-19 patients because they have fewer intensive care beds per capita than metro areas. Rural Americans are accustomed to provider shortages and long drive times to medical care, but during the pandemic, an extra 20-minute drive could mean life or death.”<sup>15</sup>*

In September 2019, the Chartis Center for Rural Health conducted an analysis to identify the probability of closure and associated characteristics thereof of the 1,844 rural hospitals that were open at the time the study was conducted. The researchers examined probability of closure compared to hospitals that had closed in the decade prior (n=113).<sup>149</sup> As of Jan. 1, 2020, 120 rural hospitals had closed in the past decade; the states with the greatest number of closures over this time period were Texas, Tennessee, Oklahoma, Georgia, Alabama, and Missouri, none of which were Medicaid expansion states at the time the analysis was completed.<sup>149</sup> The southeast and lower Great Plains states, which sustained the greatest number of closures over the past decade, remain the most vulnerable to closure in this new analysis.



## Spending *continued*

Of the 113 hospitals that had closed in the prior decade, the tipping point appeared to be the period between three years and one year before closure when operating margins and revenue started to steadily downturn, followed by a 12-month precipitous decline.<sup>149</sup>



The Chartis team modeled key factors that would be likely to impact a hospital's ability to sustain operations during the tipping point window. They identified 16 factors, nine of which were statistically significant in terms of decreasing the likelihood a rural hospital would close:<sup>149</sup>

1. Average age of plant: Average age and condition of physical plant determines the necessity of unpredictable capital expenditures that can destabilize a rural health care delivery system in an uncertain environment.
2. Case mix index: When considering the case mix index, an increase in the diversity of service lines creates more opportunities to treat and retain patients.
3. Government control status: A government-controlled status can lead to additional funding and resources and reduce a hospital's risk of closure by 70%.
4. Capital efficiency: An increase in the percentage of capital efficiency may indicate hospitals are extracting greater financial value from the services they provide.
5. Total revenue: A positive change in total revenue can indicate momentum and improve the financial health of an organization.
6. Occupancy: With the current reimbursement structures in place for hospitals, a higher percentage of occupancy reduces its risk of closure.
7. Outpatient revenue: A rising percentage of revenue attributed to profitable outpatient service lines indicates the ability of a rural hospital to counter losses in inpatient revenue.
8. System affiliation status: Being affiliated with a health system allows for upstream interventions and access to more resources, expertise, and service line offerings, decreasing the likelihood of a rural hospital closure by 47%.
9. Medicaid expansion: Being in a state that has expanded Medicaid allows more rural patients to gain access to insurance, decreasing the likelihood of rural hospital closures by 62%.

Based on their modeling, the Chartis Center for Rural Health identified 453 rural hospitals – nearly a quarter of the 1,844 open at the time of the analysis – that are vulnerable and could close, including 216 that are the “most vulnerable” and 237 that are “at risk.”<sup>149</sup> Note that this represents nearly a quarter of rural hospitals that were deemed vulnerable **prior to COVID-19**. These hospitals have been rendered even more vulnerable by low days cash on hand (all-rural median = 33 days) and swift loss of outpatient revenue from stopping non-urgent and elective care early in the pandemic to mitigate disease spread.<sup>135</sup> It's important to note that a vast majority of these hospitals at risk of closure are considered essential, whether on the basis of their local economic impact, distance to the nearest health care facility, their trauma center classification, and service to vulnerable populations.<sup>145</sup>

## Spending *continued*

### A special note about rural primary care practices

The Larry A. Green Center, in collaboration with the Primary Care Collaborative, has been fielding national clinician surveys since March 13, 2020, to better understand the response and capacity of U.S. primary care practices to COVID-19, as well as the impact of the pandemic.<sup>36</sup> In general, primary care providers are managing increased physical and mental health concerns from their patients; connecting those they serve to more comprehensive social services and supports; and developing stronger partnerships with public and behavioral health to combat the virus, all while navigating rapid adoption of telehealth technologies.<sup>150</sup> As with hospitals, the COVID-19 pandemic has presented significant financial challenges for primary care practices nationwide. Over the course of the 19 voluntary, convenience sample surveys conducted between March and August 2020, primary care clinicians report global financial strain, substantial drops in revenue, reduction in staff and lay-offs, working without pay, and lack of reimbursement for many services.<sup>36</sup> These clinical and financial impacts have waxed and waned since March 2020 and although fairly universally shared between urban and rural primary care practices, key distinctions between the way self-reported rural providers across the country are experiencing this pandemic as compared to their urban peers have emerged. At the national level, rural primary care providers are more likely to report that decreases in patient volume are a stressor compared to non-rural counterparts; that they are more likely to use the telephone as a telemedicine modality than their non-rural counterparts (and hence, lower reimbursement); and that they are more likely to feel uncertain about their ability to estimate upcoming months' revenue and expenses than non-rural primary care clinicians.<sup>36</sup>

According to the Larry A. Green Center, federal relief efforts have been inadequate when compared to the magnitude of the COVID-19 financial challenges primary care practices have faced and the value they offer their communities. Survey respondents capture the strain well:

*"I am a solo family practice doctor running my own clinic. I am in a total panic about how I'm going to pay my staff who all rely on their paycheck to pay their bills and feed their children. I want to know that I can do telemedicine visits and get reimbursed by insurance and how to do that. I have tried accessing webinars that are full and feel very scared."*

– OREGON<sup>151</sup>

*"Our biggest issue right now is cash flow. Visits have [plummeted], and we are trying to avoid laying off experienced staff. We are projecting that physician owners will have zero income this year at best and may have to put money back into the practice in order to keep it viable if social distancing continues for more than two months. We are actually in better shape than most practices in our area."*

– NEW YORK<sup>151</sup>



## Spending *continued*

“

*“My revenue is down by 80% because my health system is not allowing us to bring in any non-urgent visits such as well-child checks or physicals. My health system is ALSO not allowing us to bring in ANY patients with any respiratory symptoms whatsoever. It is a very depressing time for me right now because I continue to have lots of administrative, unpaid work.”*

– INDIANA<sup>153</sup>

*“This pandemic has unmasked the inadequate support for our primary care and public health infrastructure. Telemedicine reimbursement MUST have parity with office reimbursement. I don’t want schmaltzy commercials thanking me for being a frontline hero. I want the tools to do my job – PPE, testing, tracing AND compensation.”*

– CALIFORNIA<sup>154</sup>

*“Who else but rural is caring for our farmers and farm communities who rely on us? We are 50 miles from any large hospital system. We have COVID-19 cases in our county and all surrounding counties and people are scared. I suspect my clinic and many others like it will have to close after this crisis is past, and then what will happen to rural America?”*

– ILLINOIS<sup>154</sup>

*“Our independent rural practice is the only medical care in our town of 2,000 people. We serve 6,000+ from surrounding areas with no access to care. We were already struggling due to increased reporting regulations, onerous prior authorizations, and out-of-pocket deductibles our patients are not able to pay. We have laid off employees, requested loans and grants to try to keep our doors open, but it’s hard to imagine how we are going to be able to bounce back. I suspect that in another year, the family medicine practice I served for the past 23 years will either be closed or absorbed into some larger consolidated network.”*

– WISCONSIN<sup>155</sup>

*“Primary Care is the front line, daily exposure to COVID-19, yet struggling to keep our practices afloat. PPP loan was approved but the rules for using it are confusing. Need the help of our accountants ... This adds to our overhead of 60% plus.”*

– NEW MEXICO<sup>156</sup>

*“We lost at least \$400K in March and April. We have a large elderly, disabled, and low-income population. We are rural and do not have access to reliable broadband. I have been able to continue to provide care, mostly by phone.”*

– NEW HAMPSHIRE<sup>157</sup>

*“We are doing almost exclusively COVID related work, and our workload is very high. Our payer mix is really bad right now, and the patients out of work have no money to pay us. Most of our work is not reimbursed at all right now.”*

– NEBRASKA<sup>157</sup>

*“Business has dropped off immensely, and we are giving away a lot of free care but are trying to remedy that with technology. I am very worried about cash flow for our small rural hospital and clinic.”*

– MISSOURI<sup>152</sup>

”

## Spending *continued*

### Cash flow is paramount

A key factor making COVID-19 especially challenging for rural health care delivery systems is access to cash. Both rural hospitals and primary care clinics realized crippling reductions in revenues beginning in March 2020 due to the cancellation or postponement of elective procedures and routine outpatient care to ensure capacity for COVID-19 patients and the safety of the general population. Many also faced higher expenses because of supplies, equipment, and staff required to care for COVID-19 patients.<sup>148</sup>

The following suggestions represent practical solutions that rural health care delivery systems can consider to improve cash flow:

- To offset the loss of traditional, in-person outpatient volumes, establish telehealth and curbside appointments.<sup>44</sup>
- Continually evaluate service lines to anticipate changing needs during and post-COVID-19.<sup>44</sup>
- Assess the right mix of in-person and virtual visits as clinic volume increases while being sensitive to day-to-day changes in local transmission dynamics.<sup>158</sup>
- Actively reach out to patients, starting with the highest-risk patients first; let them know the clinic is open for business and how, what safety measures are in place, etc.<sup>158</sup>
- Closely monitor financial parameters, including payer mix, accounts receivables, and other metrics, adjusting as necessary.<sup>158</sup>
- Learn new billing codes and rules, especially for various forms of virtual care, and ensure staff compliance.<sup>158</sup>
- Make sure your front desk staff are paying close attention to patients' insurance coverage. Some may have lost it with the loss of their job; certain insurers are not currently charging co-pays for telehealth visits.<sup>158</sup>
- Review and cut current expenses if possible. Consider negotiating forgiveness from landlords and vendors.<sup>158</sup>
- Try to anticipate unanticipated expenses, such as those for telehealth infrastructure and equipment upgrades. Make do with personal smartphones or donated iPads. Investigate possibility of using pre-paid SIM cards in old smartphones to do FaceTime or Skype with patients that may struggle with more complex, HIPAA-compliant platforms.<sup>158</sup>
- Apply for advanced Medicare payments and other state or federal financial assistance programs.<sup>44</sup>
- Consider lines of credit or cash advances.<sup>158</sup>
- Strategically plan how these dollars will be invested, and carefully document use of funds for reporting purposes.<sup>146</sup> Pay close attention to limitations on use of federal relief dollars and obtain clarification on conflicting guidelines.<sup>158</sup>
- Create a voluntary work reduction program, encouraging employees to take paid time off or unpaid leave while keeping their benefits.<sup>44</sup> Adjust your staffing levels, as may be necessary, including furloughs, rotating days off, and not hiring for open positions.<sup>158</sup>
- Employ consultants to identify opportunities for grants, low-interest loans, and other financial assistance. Document all pandemic-related activities to help secure future funding from the Federal Emergency Management Agency and state offices of emergency management.<sup>44</sup>
- Develop a clear strategy and taskforce for philanthropy that is aligned with your organization's financial and overall strategic plan.<sup>159</sup> This should transcend COVID-19 and requires a long-term approach to developing relationships (e.g., academic institutions, health funders, companies, and individuals), cultivating interest, engaging in education, and identifying mutual goals.<sup>159</sup> Leverage board members that have connections, influence, and bandwidth to help foster potential funding opportunities.
- Enroll in a federally subsidized broadband services consortium to increase bandwidth and lower the cost of connectivity.<sup>44</sup>
- Devise strategies to assist employers with offering insurance to their employees, including assistance with enrolling themselves and dependents in state Medicaid coverage.<sup>44</sup>

### Spending *continued*

The plight of rural health care delivery systems has received substantial attention from state and federal officials. The U.S. Department of Health and Human Services (HHS) distributed \$10 billion to rural hospitals and clinics, including rural acute care general hospitals and critical access hospitals, rural health clinics, and community health centers. HHS also provided an additional \$1 billion for specialty rural hospitals, urban hospitals with certain rural Medicare designations, and hospitals in small, metropolitan areas.<sup>160</sup>





# Spending *continued*

### PEARLS FROM YOUR PEERS



Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to maintaining financial viability of rural health care delivery systems during a sharp decline in patient volume and revenue.

- Understand your governance or senior leadership's risk tolerance for pursuing grants and loans; opening lines of credit or dipping into reserves to keep your organization financially solvent during the pandemic.
- Leverage governance or senior leadership connections and expertise to financially support the local hospital or clinic.
- Apply for all the state and federal government financial support programs possible, even if you're not sure up front whether or not you qualify, so that you have cash available if needed. Pay attention to what details are known about payback stipulations. Work closely with your auditing firm to understand how receipt of state or federal dollars should be accounted for on your organization's financial documents.
- If your hospital has the option to continue elective procedures, closely evaluate whether this is right for your system or not. Factors to take into consideration include adequate access to PPE; local disease prevalence; sufficient staff bench strength to pivot if needed; and incoming financial position of the hospital.
- Explore new sources of revenue for your facility, such as contractual services for hospital or primary care staff to provide screening for local employers.
- Calculate courier costs for shuttling lab specimens to larger facilities for testing; consider engaging volunteers or law enforcement to help with courier services to minimize costs.
- Implement a temporary hiring freeze. Offer early retirement to eligible team members.
- Ask for voluntary reductions in pay from employees at all levels within the organization.
- Reduce FTE percentages across the board to keep staff employed (i.e., take nurses, finance, and administrative staff down to 0.75 FTE).
- Stop unnecessary overtime and call pay.

# Spending *continued*

## WHO CAN HELP

- **COVID-19 Funding Sources Impacting Rural Providers.** This resource includes regularly updated information about the availability of federal funds for COVID-19 response and recovery efforts to support rural health care delivery systems and their communities. A series of tables detail eligibility of participation for various funds by provider type, including rural critical access and prospective payment system hospitals; rural health clinics; federally qualified health centers; emergency medical services; long-term care and skilled nursing facilities; and tribal facilities.
- **Delta Region Community Health System Development (DRCHSD) COVID-19 Financial Recovery Series.** This site provides links to a five-part webinar series with best practices, opportunities, and strategies pertaining to rural hospital and primary care COVID-19 finances and operations. Topics range from tracking, reporting, compliance, and expenditures for COVID-19 funding, as well as operational considerations, revenue cycle strategies, and strategic planning.
- **RHIHub Rural Funding and Opportunities.** This Rural Health Information Hub (RHIHub) website contains a summary of available rural health funding programs that can be narrowed by type, sponsor, topic, or state. There are also funding topic guides on capital funding, grant writing, and scholarships and loan repayment for rural health professionals.
- **RHIHub Rural Philanthropy Toolkit.** This RHIHub page features a philanthropy toolkit that compiles best practices and resources to support rural communities and to establish and maintain rural philanthropy relationships, including a program clearinghouse, implementation and evaluation strategies, and tips for sustainability and dissemination.
- **Community Foundations Public Awareness Initiative: Coronavirus Relief Efforts.** This webpage collates verified fund information from more than 600 community foundations nationwide that have created COVID-19 relief funds. The funding opportunities are sorted by state.
- **Stroudwater's 26-Week Cash Flow Model.** This workbook contains an example 26-week cash flow planning tool that a rural hospital could use to prepare cash projections and identify resources needed during the COVID-19 pandemic. A cash flow plan provides a hospital leadership team with the ability to anticipate needs in the face of uncertainty.
- **Health Insurance Providers Respond to Coronavirus (COVID-19).** This America's Health Insurance Plans link provides details on how various health insurers across the country are helping communities combat COVID-19, including prevention and access to testing and treatment.

## CHALLENGE #7

### Staffing



#### THE STORY CONTINUES



Mike was initiating a call to the Iowa Department of Public Health when Colson Files walked into his office and motioned for him to hang up. He had two nurses and three nurse aids who were refusing to come in for their scheduled shifts that evening unless they were offered hazard pay and one refused to report to the hospital at all. With several staff having been recently diagnosed with COVID-19, they wanted assurances about the availability and effectiveness of PPE and to know that the hospital was concerned for their safety.

Additionally, each of them was insisting they be given new N95 masks to wear on each shift in any area of the facility. They were not comfortable with Sarahville Health Center (SHC)'s approach to sanitize and reuse masks. In this group were all three of the nurses scheduled to work the next overnight shift and one of them, the daughter-in-law of the board member/rancher, was one of the most experienced nurses at SHC. Colson planned to personally be on the floor providing clinical care that evening, but he worried about the impact of such a fear-driven ultimatum in the ranks. He was already sensing anxiety and emotional fatigue among many staff members.



**Yet another nurse was telling Colson she could no longer work her scheduled day shifts due to a childcare shortage. The local schools had closed due to COVID-19, and she was a single mother to a nine-year-old son. She could only come to work if she could bring him with her for all her shifts.**

Nurse staffing had been a chronic problem at SHC, especially in its nursing home. Even before COVID-19, there never seemed to be enough nurses to cover the various shifts. There were several other nurses in the organization who he could utilize, but they were currently serving in administrative roles and had been out of clinical care for years. Agency staffing fees had increased by as much as 150% since COVID-19 had arrived, and the experienced, broad-spectrum nurses with inpatient, emergency room, and obstetrics experience were almost impossible to find. Mike and Colson evaluated their options.



# Staffing *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of staffing decisions and the well-being of health care workers. The following questions may be applied to the above case or in the context of your own story.



1. How will you approach re-training, cross-training, and re-purposing of staff to respond to COVID-19 in your organization and community?
2. How could you facilitate, develop, or leverage collaborative partnerships between neighboring rural health care delivery systems to share staff between organizations as volumes fluctuate?
3. How are you utilizing health professions students (e.g., medicine, nursing, physician assistant, public health, dentistry, social work, and other trainees, etc.) to extend your team's bandwidth and workforce?
4. How could nurses serving in administrative roles be re-oriented into clinical care and safely re-purposed during this crisis?
5. What are opportunities to re-purpose into essential and mission-critical roles staff members whose positions would otherwise be eliminated or furloughed? Are there ways to train administrative or support staff to perform basic clinical duties, reducing stress for the clinical staff?
6. How are you engaging retired health care workers in your area that might be willing to return to work amidst a crisis need? What can be done (e.g., licensing, training, etc.) to ensure they are prepared to contribute?
7. As you think about the health status of your existing and possible recruited help, some workers may be in high-risk categories. How could their skills be utilized in ways that consider their personal health risks and limit their exposure to COVID-19?
8. If or as you rely upon staffing through agency contracts, are you at risk of losing some level of staffing access as needs ramp up in larger health systems? What are ways to manage this risk?
9. What are some creative ways you can avoid reductions in force while still protecting the financial viability of your organization?
10. How could you cross-train staff members on billing and coding procedures in case those staff members fall ill or get exposed and need to quarantine? Are there contractual services you could put in place to ensure billing and coding processes are not halted or compromised?
11. How should your team communicate with all staff members when furloughs or layoffs are necessary?
12. How many of your licensed beds are you prepared to staff tomorrow with an influx of med/surg patients needing care at an appropriate level of acuity at your facility? What are the barriers to full census? What is needed to address those barriers?

**Staffing** *continued*

- 13.** What are ways you could partner with the state to engage and compensate furloughed employees with local trust and relationships to facilitate contact tracing efforts? How could this be implemented?
- 14.** What is your plan for recruiting and training volunteers and employed staff? Is your plan ADA-compliant?
- 15.** If you rely on volunteers, have you clearly communicated to them varying levels of risk associated with different levels of activities?
- 16.** What plans are in place for instances when a volunteer does not comply with your organization's masking or social distancing policies or violates HIPAA privacy regulations?
- 17.** What are ways to maintain trust with team members, ensuring them all precautions are being taken to protect their safety? Do you have the appropriate amount of PPE to safeguard your team members?
- 18.** How are you training volunteers and staff on appropriately handling and using PPE?
- 19.** What is your plan for team members requiring quarantine following exposure or potential exposure to COVID-19? What is your plan for testing them? What is the return-to-work plan?
- 20.** When you consider your strategy for working from home, does it involve a virtual platform (e.g., Zoom, Microsoft Teams, etc.) to ensure communication remains strong? Have all team members who will be utilizing these systems been trained? Are you regularly evaluating your plan to ensure its effectiveness?
- 21.** How have you communicated to clinical staff members who have been working remotely the plan and timeline to return to elective procedures?
- 22.** How do you manage conflicts of interest at governance and staff levels?
- 23.** How do you mitigate the negative impact of micromanagement and inappropriate behavior from individual board members?
- 24.** What are safe and creative ways you can accommodate the child and adolescent care needs of your staff members?
- 25.** What is your plan to address and support the mental, emotional, and spiritual needs of your employees as they care for others?

## Staffing *continued*

### PRACTICAL GUIDANCE

#### Staffing

Rural health care delivery systems are widely known for experiencing pre-pandemic difficulty recruiting and retaining health care workers, in large part because of the mismatch between how the pipeline is trained (i.e., accustomed to specialty care access and technology) and the realities of rural health care.<sup>16,32</sup> These growing shortages, which include medical providers, nurses, and other professionals, vary widely by community and are due to multiple, complex factors.<sup>32</sup> The rural health care workforce often lacks bench strength due to sheer numbers, lack of certain expertise, and the reality of cross-covering multiple roles, and so the loss of one or two staff in any one department could result in the total reduction of capability in key areas like respiratory therapy, emergency services, infection control, etc.<sup>140</sup> In a COVID-19 environment, staffing challenges are accentuated because of continuously evolving protocols and clinical care needs, as well as potential exposure and illness to a novel disease and the associated personal stress and anxiety and worry of infecting family members.<sup>59</sup> Staffing solutions during this pandemic primarily fall into two, inextricably connected areas: surge coverage and well-being.

#### Surge coverage and planning

Effective surge planning and coordination are essential to ensuring adequate staff coverage. These activities necessarily involve collaboration among area rural health care delivery systems, independent primary care practices, nursing homes, public health departments, county governments, and regional academic institutions.<sup>59</sup>

Multiple independent or affiliated health care delivery systems can collaborate to survey needs; flex staff at various locations; and share staff across multiple sites.<sup>140,161</sup>

County involvement can prevent the duplication of efforts across organizations and ensure effective allocation of critical resources, such as PPE provided through the local

Emergency Operations Center and personnel that can be re-purposed from industries impacted by the economic downturn (e.g., restaurant servers, bus drivers, teachers, etc.).<sup>91</sup> Trade associations can help devise solutions for sourcing supplies and deploying essential staff where needed.<sup>162</sup>





## Staffing *continued*

At an individual organizational level, understanding the capacities of local staff is paramount for informing plans to prevent coverage gaps. At the Marshall Medical Center in the foothills of the Sierra Nevada Mountains in northern California, medical staff leadership leveraged data to solve their staffing problems.<sup>59</sup> Rather than recruiting new positions to fulfill needed functions in the backdrop of substantial revenue losses, they surveyed their clinical staff across the organization to assess their inpatient skills.<sup>59</sup> The executive team then compared those self-identified capacities to the data informing anticipated staffing needs for different COVID-19 surge levels to develop a targeted staffing strategy using existing employees.<sup>59</sup> Emergency operations plans that allow leadership teams to rescind or suspend paid time off or reassign staff based on organizational needs are two other strategies for ensuring the flexibility needed to address gaps in staffing.<sup>124</sup>

### Additional surge staffing solutions include:

- Creating a labor pool working group that maintains an inventory of inpatient and outpatient skill sets and responds to cross-training needs both within and outside the organization.<sup>163</sup>
- Examining new, local workforce options in the community that can fulfill non-direct care needs, (e.g., restaurant servers delivering food and medicine to patients quarantining at home; college students taking online classes could assist in dietary or maintenance departments, community paramedics to conduct phone screening and mobile testing, etc.).<sup>72,163</sup>
- Inviting frontline clinical staff to help review changes to workflows and protocols to ensure buy-in.<sup>162</sup>
- Cross-training existing staff to meet clinical and non-clinical needs (i.e., operating room nurses providing floor coverage; radiology technicians supporting materials management, pairing up nurses to learn from ICU patients, etc.).<sup>92,164</sup>
- Developing a provider pool from which to reassign clinicians if staff became ill or over-capacity (e.g., primary care physicians to evaluate patients without surgical issues in the emergency department).<sup>64</sup>
- Striking the right balance between training new staff in high consequence skills (i.e., ventilator management, versus asking those with those skills to temporarily care for a larger number of patients).<sup>45</sup>
- Asking the anesthesiologists to serve as the 24/7 code team on suspected COVID-19 patients in the hospital so critical care and floor nurses can focus on other duties.<sup>59</sup>
- Providing opportunities for professionals in largely administrative roles to return to clinical duties, if properly trained.<sup>45</sup>
- Employing health professionals whose practices have temporarily closed (i.e., physical therapists, optometrists, dentists, etc.) to assist with screening, taking vitals, reporting data, and conducting contact tracing.<sup>162</sup>
- Allowing health care professionals to practice at the top of their license.<sup>16</sup>
- Expanding scope of practice for certain professionals (i.e., pharmacists to administer vaccines, licensed practical nurses to administer low-risk medications).<sup>165,166</sup>
- Engaging health professions students, including medical, nursing, pharmacy, physical therapy, public health, and other students, in non-frontline clinical tasks such as screening, conducting phone triage, collecting data, serving as patient navigators, etc.<sup>162</sup>
- Considering recruiting recently-retired professionals back to serve; consider how to expedite the recertification process and loosen requirements for license reactivation.<sup>165</sup>
- Permitting nurses and other health care professionals in good standing in other states to practice in yours, either in person or virtually.<sup>162,166</sup>
- Re-deploying the infection control director or a nursing team member to serve as the PPE coach and monitor.<sup>124</sup>

## Staffing *continued*



### Ensuring staff well-being

Since the arrival of COVID-19, health care workers are under tremendous pressure both at home and at work. The way they are supported and engaged by their employers during this unprecedented time can have measurable impacts on quality of care and ultimately patient outcomes. When employees feel informed – perhaps through daily written communications or videos from leadership – they are often more engaged in the technical aspects of their jobs, the quality of services they provide, and more dedicated to the overall mission of the organization.<sup>44</sup>

To perform at their best, health care employees need adequate rest and safety assurances, as well as food, transportation, housing, and access to child and/or elder care. Employers can create a wellness council to assess the needs of their health care workers and develop a strategy to meet them.<sup>161</sup> Creative solutions include:

- Informing staff about PPE availability, training, and preservation strategies.<sup>45</sup>
- Closing the employee gym, gift shop, cafeteria seating area, and coffee shop to limit exposure.<sup>64</sup>
- Ensuring adequate testing is available for employees who may have been exposed or become ill with COVID-19.<sup>44</sup>
- Developing a clear fitness for duty and return-to-work plan for employees who contract COVID-19 at work.<sup>167</sup>
- Offering a pantry of items that staff could purchase at a steep discount to make food more affordable or prevent them from having to go grocery shopping.<sup>92</sup>
- Providing “emotional PPE” (virtual behavioral health services) at little or no cost to help staff manage stress, frustration, fear, and fatigue.<sup>161</sup>
- Producing and sharing videos from psychologists or psychiatrists on staff about signs and symptoms of burnout, stress, and anxiety and how to manage those.<sup>140</sup>
- Arranging “wellness pods” for employees to take needed breaks to exercise and enjoy healthy snacks and to access private bathrooms, laundry services, and shower facilities.<sup>168</sup>
- Creating a variety of employee assistance services from which employees can choose, including mindfulness apps, virtual yoga, or dedicated hotlines.<sup>44</sup>
- Emphasizing the availability of employee assistance programs and chaplaincy services.<sup>164</sup>
- Inviting governance members to share personal messages of support with the executive team and staff.<sup>169</sup>
- Subsidizing the cost of child care or establishing offsite daycare services to reduce absenteeism, including asking for community volunteers to care for children.<sup>45,166</sup>
- Establishing temporary housing for employees who wish to avoid exposing their family members.<sup>45,166</sup>
- Incentivizing work attendance with extra wages.<sup>166,170</sup>

## Staffing *continued*

### PEARLS FROM YOUR PEERS



Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to ensuring adequate staffing throughout the organization and caring for their mental and emotional well-being during an unprecedented time.

#### Ensuring adequate staffing:

- Send anyone home to work remotely that can, including medical records, billing, finance, communications, and human resources staff.
- Write position descriptions for new functions that are needed so that expectations are clear, (i.e., screening, specimen collection, etc.).
- Re-purpose staff where it is safe and strategic to do so. Examples include radiology technicians restocking PPE; anesthesiologists monitoring airway management on the floor; finance staff conducting screening; nurses running the COVID-19 triage line; human resources staff running a daycare specifically for children of health care workers, etc.
- Cross-train staff to perform new roles where it is safe and strategic to do so (i.e., operating room staff learning emergency department workflows or care protocols for the local nursing home or assisted living facility).
- Re-train staff in clinical areas they previously have performed but have not practiced in a while. Evaluate any safety issues and degree of risk tolerance that accompany re-training or cross-training staff in areas they don't typically perform.
- Engage your nursing education team to teach a two or three-day "crash course" on floor nursing principles. Involve CRNAs to provide airway management classes. Invite local nursing students to participate and deploy them where appropriate on the floor or in the clinic.
- Decide when you would hire traveling clinicians, for what reasons, and at what price point. Devise a process by which they get up to speed quickly with local processes and procedures.
- Redirect chronic disease care managers and emergency medical services personnel to perform community paramedicine functions such as home visits and in-home testing. Turn hospital or primary care chronic disease care managers into pediatric care managers at local schools to monitor re-opening.
- Determine whether your local emergency medical technicians could swap in for or back-up nursing staff if needed.
- Engage medical and other health professions and public health students as members of your COVID-19 response team. Potential roles for students include applying for grants; researching telemedicine platforms; acquiring PPE and equipment; designing alternate care sites and surge plans; setting up and conducting drive-through testing; running temporary daycare centers to support health care providers, etc.
- Tackle longstanding projects or anticipate preparation for future ones to keep all staff members productive if they are not performing their usual duties.
- Run multiple scenarios about how your organization will respond if several nurses or other types of professionals get sick or become exposed and need to isolate/quarantine.



### Staffing *continued*



#### **Caring for the mental and emotional well-being of staff:**

- Address quickly any staff concerns about stress, safety, their paychecks, spousal job worries, managing children who might not be in school or daycare, and minimizing likelihood of COVID-19 exposure for their families.
- Encourage staff, including the executive team and senior clinical leaders, to take a break from the news and to take time off so they can return refreshed and recharged. This is critically important in rural health care delivery systems when duplicity of roles is common.
- Arrange counseling support services for staff, including onsite, online, or by phone. Deploy your behavioral health staff who may not be seeing patients to support employees navigate stress, anxiety, or depression.
- Offer emotional support sessions to employees that mitigate impacts of stress and burnout.
- Create a dedicated employee hotline and encourage use of Employee Assistance Programs.
- Increase “wellness” leave for staff to allow them to “de-COVID.”
- Develop a financial support program for employees; arrange for a PTO donation program.
- Explore opening your own daycare to help staff who have children; consider which areas of the hospital or clinic or which community buildings are not currently in use and could be safely re-purposed to care for children. Offer daycare services at no cost to employees, if possible.
- Assure your employees they will continue to be paid, even if they are quarantining at home, if this is an assurance that can be made and is backed by governance or senior clinical leadership.

# Staffing *continued*

## WHO CAN HELP

- **COVID-19 Workforce Virtual Toolkit: Resources for Healthcare Decision-Makers Responding to COVID-19 Workforce Concerns.** This site, created by the U.S. Office of the Assistant Secretary for Preparedness and Response, addresses several issues related to ensuring an adequate staffing response to COVID-19, including federal regulatory and funding flexibilities, liability protections, surge and volunteer planning, scope of practice expansions, and workforce training, protection, and resiliency. These and other topics may help rural health care leaders develop their own staffing strategies.
- **Strategies to Mitigate Healthcare Personnel Staffing Shortages.** This CDC resource helps health care leaders anticipate and mitigate staffing shortages and challenges that may arise when responding to the COVID-19 pandemic. It identifies the key drivers for staff shortages, including exposure, illness, and the need to care for family members; offers resources to address staff safety and stress; and suggests strategies for ensuring adequate coverage.
- **Key Imperatives for COVID-19 Staffing Strategies.** This Advisory Board article outlines several key points to consider when planning for staffing needs during COVID-19, including adjusting staffing projections appropriately given increased clinical care demands and potential staff illness; redeploying clinicians to settings best suited for their skills; scaling COVID-19 related expertise in key specialties; and providing opportunities for staff to process grief and loss.
- **Rural Healthcare Surge Readiness: Workforce.** This RHIHub webpage provides a series of resources for rural health care leaders to facilitate surge planning and response amidst COVID-19. Information is setting-specific for EMS, inpatient and hospital care, ambulatory care, and long-term care and includes links to infection prevention and control strategies, PPE and contact tracing training, and how to mitigate employee absenteeism, stress, and anxiety.
- **Healthcare Facility Onboarding Checklist.** Health care leaders can utilize this three-phase onboarding checklist when planning for potential staff surges associated with sudden increases in hospital admissions, either in med-surge or intensive care units. It is a useful tool for streamlining staff acquisition and onboarding.

## CHALLENGE #8

# Statistics and Surveillance



### THE STORY CONTINUES



Three days after COVID-19 arrived in the state of Iowa, a screening taskforce led by Colson Files was ensuring every person who entered the Sarahville Health Center (SHC) campus was screened for a fever and questioned regarding recent exposure, symptoms, or travel. Several people per day were directed to take a COVID-19 test. So far, a dozen community members had received positive diagnoses and several patients were quarantined at home, awaiting their test results which were averaging a seven-day turnaround time.

To improve the turnaround time for tests, the University of Iowa Hospitals and Clinics health care system in Iowa City announced their intent to begin receiving specimens from SHC, but that arrangement would not go live for seven more days. Colson wondered if cases had been missed and believed it would be a matter of time before there was confirmation of community spread.

Meanwhile, one member of the board had read an article on social media about various testing modalities that were available on the internet and had recommended the hospital purchase them. Mike, Colson, and Dr. Thomas all had concerns about the effectiveness of the testing and politely declined the recommendation. The board meeting minutes posted in the local newspaper the following week led to a flurry of social media activity as some community members accused the hospital of not doing all it could to address the testing issue. Others surmised that the hospital was implying the pandemic may not be real or urgent after all.



The Iowa Department of Public Health was attempting to develop a statewide system for reporting with regional testing sites, but the limitation always seemed to be connected to access to the swabs. The person leading that effort had turned over twice in the past 20 days, and neither Colson nor Mike were sure who to call for more information. The local public health nurse was a well-intended, semi-retired, half-time nurse who was overwhelmed and under-resourced.

The SHC leadership team grappled with which organization should take ownership of the testing and reporting for Sarahville County.



# Statistics and Surveillance *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of active disease surveillance and reporting of results. The following questions may be applied to the above case or in the context of your own story.



1. Does your organization have a standard screening approach for every patient entering the facility?
2. How are you utilizing screening protocols to determine who is screened and when?
3. What are ways you can partner with your local public health department and area primary care providers to improve the efficacy and appropriateness of screening efforts?
4. What is your approach for distributing testing kits across your health care delivery system and community? How do you determine which patients first receive testing?
5. How and where will patients, visitors, and staff be screened in the absence of testing kits?
6. How are you incorporating COVID-19 testing into patient care?
7. What is your plan or specific message for community members who seek COVID-19 testing?
8. What is your turnaround time for testing results, and what are some collaborative and innovative ways to improve or hasten turnaround times?
9. What are ways you can partner with the state public health department to regionalize screening and reporting of COVID-19 positive patients?
10. Are the roles of each member of a local health care delivery system (e.g., hospital, local health department, primary care clinic, etc.) clearly defined as they relate to conducting screening and reporting results? Is each entity aware of its role? What are ways to ensure role clarity?
11. Has a taskforce with a clear vision and competent, engaged leadership been formed to organize and coordinate statistical reporting and screening efforts? What are the systems in place for direct and regular communication between this group and the local incident command team?
12. What is your community-wide contact tracing strategy? How do you coordinate these efforts with your local county and public health officials?
13. What are ways you can engage local employers, churches, and other civic organizations to improve or advance screening and contact tracing efforts in a rural county?
14. How could you facilitate collaboration with local organizations and state or federal partners to ensure the efficiency and effectiveness of statistical reporting and eliminate misinformation and confusion? How can you leverage local relationships and credibility to mitigate local suspicions or misperceptions of government invasion of privacy?
15. Has the local county leveraged all state, federal, and private foundation funding to solve problems related to statistical reporting and community screening? Who is in charge of locating and securing these resources?

# Statistics and Surveillance *continued*

## PRACTICAL GUIDANCE

### Testing and contact tracing

Testing availability in many areas has been inadequate, and there are often significant delays in obtaining test results. Testing accuracy has also been an issue with a broad range of reported false negatives. Experts recommend keeping the false negative rate in mind and following clinical suspicion regardless of the test result.<sup>44</sup>

As of mid-June 2020, two-thirds of rural counties did not have a testing site.<sup>171</sup> The data from COVID-19 testing and surveillance may underrepresent the rates of infection in medically vulnerable populations, including rural residents.<sup>172,173</sup>



Establishing and operating testing sites requires attention to logistics, partnerships, and staffing. Some potential strategies include:

- Provide drive-through testing with unidirectional traffic flow or consider creating a mobile testing site.<sup>8,174</sup>
- Develop an online or mobile scheduling app to allow community members to schedule testing.<sup>8</sup>
- Create or expand capabilities to run in-house testing, whenever possible.<sup>123</sup>
- Partner with local public health departments to set up testing sites.<sup>72</sup> Consider non-traditional sites such as local fairgrounds, parking garages, agricultural hotspots, and workplace locations.<sup>1,6</sup>
- Establish regular communication on testing between the state lab and health care facilities through programs such as ECHO (Extension for Community Healthcare Outcomes).<sup>72</sup>
- Consider the use of alternative staffing arrangements for testing sites, employing medical students, residents, and community paramedics.<sup>72</sup>
- Explore self-swabbing by patients to limit health care worker exposure.<sup>175</sup>

Improper specimen quality control or result reporting can lead to loss of specimens and inappropriate false positive and false negative determinations. One suggestion is to ensure the use of tightly sealed vials; inspect vials prior to testing; and store vials upright in individual biohazard storage bags.<sup>176</sup> The second recommendation is to consider identification of an indeterminate cycle threshold [Ct] (the number of cycles that exceeds a threshold for positive values) and make these values available to the health department.<sup>177</sup>

## Statistics and Surveillance *continued*

**Community feature<sup>176</sup>:** One rural town successfully rolled out community-wide testing through a partnership with area health organizations and the local public health and fire departments. A virtual town hall was held to introduce the idea to the community. Community liaisons were tasked with specific outreach to vulnerable populations, including individuals experiencing homelessness, home-bound elders, and the Latinx community. Residents registered online via a custom, HIPAA-compliant interface and provided contact information for two-factor authentication. If unable to register online, residents were able to call a local facility to have first responder volunteers help them complete the process. Households were scheduled for 15-minute appointments with a maximum of five people per

car. Confirmation of appointment time was sent via text or email. Specimen labels contained two personal identifiers (i.e., name and date of birth), as well as a random letter code in plain language and QR code format for scanning. Based on challenges encountered, the organizers concluded that the effort could be improved with having an onsite label printer and barcode scanner in each lane to automate the process and avoid needing to handwrite labels for residents who did not preregister. A small number of viral transport media tubes leaked en route to the laboratory; recommendations for improvement include tightly sealing vials and storing samples upright in individual biohazard bags. A dry run of the entire process from start to finish prior to roll-out could also help identify any issues that need to be fixed.



Contact tracing can effectively decrease the spread of COVID-19. One modeling study in a rural college town estimated that just 20% of contacts would need to be traced for efforts to be cost effective.<sup>178</sup> In some areas, contact tracing is coordinated at the state agency level.<sup>6</sup> Where it is coordinated at the community level, partnerships with local public health departments are key. In such partnerships, rural hospitals have had success conducting testing, receiving results, and sending them to the health department to inform patients and conduct contact tracing.<sup>4</sup> Academic institutions can provide a helpful source of volunteers.<sup>6</sup>

**Special population focus<sup>179</sup>:** Among the approximately six million individuals receiving care through the U.S. Department of Veterans Affairs Health Care System (VA), racial and ethnic disparities in COVID-19 testing have been discovered. Testing rates for COVID-19 in the VA were higher among Black and Hispanic individuals compared to white individuals, as well as those Black and Hispanic persons living in rural settings compared to their peers residing in urban areas. Moreover, Black and Hispanic veterans were more likely to test positive than their white counterparts even after accounting for underlying health conditions, other demographics, residence type, and site of care.



## Statistics and Surveillance *continued*

### Statistics and data

Rural communities face distinct medical and social risks. While lower population density provides some protection from initial disease spread, it does not protect against the increased mortality that is associated with medical and social vulnerability.<sup>180</sup> Assessing the risks unique to a given community, such as through the tools listed below, helps to inform emergency preparedness planning and response.<sup>40</sup>

- [Social Vulnerability Index](#) – This tool from the Centers for Disease Control and Prevention (CDC) provides a county-level assessment of vulnerability based on social factors such as transportation, socioeconomic status, housing, race and ethnicity, and language.<sup>40</sup>
- [COVID-19 Preparedness Scores](#) – These county-level preparedness scores are based on the CDC's Social Vulnerability Index, the number of hospital beds and critical care staff within a 40-minute drive, percentage of the population age 65 and older, and estimates of ICU bed shortages. A similar tool from the National Institute of Environmental Health Sciences, the [COVID-19 Pandemic Vulnerability Index](#), assesses vulnerability by infection rate, population concentration, social distancing, testing, population demographics, air pollution, age distribution, health disparities, medical co-morbidities, and hospital beds at a county level.<sup>181</sup>

With the number of cases rapidly changing, it is useful to have a few go-to sites for information on spread and emerging hot spots. In looking at case data, there are two important caveats to keep in mind: first, insufficient capacity for testing in many rural areas may lead to an incomplete picture of the extent of spread;<sup>171,173</sup> and second, the use of state-level data can hide hot spots in rural areas.<sup>182,183,184</sup>

- [HelpBeatCOVID19.org](#) – This crowdsourced, geographic symptom tracker asks individuals to log information daily through a three to five-minute questionnaire on how they are feeling that day, current symptoms, health conditions, and social factors.<sup>185</sup>
- [COVID Urban Rural Explorer](#) – This tracking tool shows cases and deaths by county using data from *The New York Times* and is updated daily. Users are able to compare metro and non-metro counties. It is designed to help identify case spikes early and examine rural-urban inequities.<sup>186</sup>
- [COVID-19 Dashboard by the Center for Systems Science and Engineering at Johns Hopkins University](#) – This easy-to-use map shows updated cumulative cases and deaths at a county level. Active cases, incidence rate, case-fatality ratio, and testing rates are reported at a state level.<sup>187</sup>

## Statistics and Surveillance *continued*

### PEARLS FROM YOUR PEERS

Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to setting up testing procedures and reporting local disease statistics.



- Rely on experts within your local infectious disease response team for epidemiological modeling, scenario planning at different levels of risk, community education, and outreach to vulnerable and/or minority populations.
- Create a community-wide testing plan involving the hospital, primary care, and public health that details roles, locations, referral patterns, testing priorities, access to testing supplies and PPE, reporting procedures, contact tracing functions, etc.
- Delineate who is going to perform what specific aspect of testing, reporting, and contact tracing (i.e., the hospital or primary care clinic obtains specimens while public health informs patients about their results and drives contact tracing).
- Decide how testing and PPE conservation strategies relate to and inform one another.
- Leverage relationships with academic medical centers or larger, neighboring hospitals to get test results faster and to access their screening protocols to support local efforts.
- Diversify where you get tests resulted (i.e., conducting rapid in-house versus send-out testing; sending labs to the state versus private companies, etc.).
- Increase effectiveness of local contact tracing efforts by offering support of hospital infection control personnel to public health and by employing native Spanish speakers to help increase usefulness and accuracy of information acquired.
- Purchase a subscription to Tableau to make it easier to share test results and other data points with the public; this represents an opportunity to collaborate with the local public health department.
- Lend hospital communications expertise to the local public health department to help write press releases related to key COVID-19 statistics.
- Navigate carefully HIPAA privacy regulations in a rural community when it comes to reporting results and statistics. Share positive results at a county, rather than community, level to avoid patient identification.



# Statistics and Surveillance *continued*

## WHO CAN HELP

### Testing and contact tracing

- **Centers for Disease Control and Prevention (CDC) page for Healthcare Professionals.** This high-yield resource includes current guidance and recommendations, with sections focused on testing strategies, clinical care, infection control, and more. The testing section includes guidance on who to test and recommendations for conducting broad-based testing and for testing health care personnel.
- **Centers for Disease Control and Prevention: Contact Tracing.** This site includes links to principles of contact tracing, a contact tracing toolkit, training information, case investigation guidance, and other resources.
- **Rural Test and Trace Toolkit: RT3.** This website describes the strategy used by a rural island community to set up a testing site. Their description includes details on the test site and logistics, collaboration with their incident command team, use of a self-testing strategy, tracking samples and results, reporting and contact tracing, public outreach and information, and legal considerations.
- **Making Contact: A Training for COVID-19 Contact Tracers.** This training is an introductory course for entry-level contact tracers from the Association of State and Territorial Health Officials. The training is free to anyone who registers.

### Statistics and data

- **Sheps Center for Health Services Research Rural COVID Research and Figures.** This webpage by the Sheps Center at the University of North Carolina at Chapel Hill contains a variety of rural-specific graphs and briefs examining emerging hot spots in rural and urban areas, growth of COVID-19 in rural counties, and rural hospital and community COVID-19 vulnerability, among others.



## CHALLENGE #9

### Supplies



#### THE STORY CONTINUES



"I guess that's an indicator that we're about out of masks," said Michael, as he walked by the open door of Ashley's office. Ashley was wearing a bandana around her neck as she recorded a recent telehealth visit in the Mountain Plains Family Health Clinic (MPFHC) electronic medical record. She stopped typing and shrugged at Michael. They both knew there were precious few N95 masks locked up in the medicine room, and they were allocating the last of the disposable surgical masks for the nurses and medical assistants. The bandana was the best solution she could come up with. Kaila heard Michael in the hallway and emerged from her office. Her heart sunk. She had been frantically looking for PPE since the arrival of COVID-19 with no success. They simply did not have the "buying power" to be given priority or fair pricing with any PPE orders.

"Gowns are next," Ashley said. "Next thing you know, we'll be wearing our fly-fishing bibs to work." The doctors didn't blame Kaila for not being able to secure PPE. It didn't seem like anyone in the area could find these supplies. The PPE they could locate was listed at more than five times the pre-pandemic price, which was reflective of a global shortage and unsustainable for MPFHC. A recent local news story reported that Forrest Point Health and Living Center (FPHLC) was unable to secure enough masks to protect its nursing home staff and 40 residents, and there were rumors of a new nursing home outbreak there.

A local sewing guild was producing these cloth bandanas out of thousands of yards of decades-old fabric that emerged from the attic of a resident who had recently moved into FPHLC. Ashley understood the likely poor effectiveness of the bandanas and that the moisture from her breath on the material would further compromise any protection from COVID-19 exposure. The cotton material was thin, almost transparent. Still, she hoped her wearing it would encourage compliance from her patients as an option that was "better than nothing."

"Justin Sanchez with the city council tells me there is a statewide effort called 'Energize-Washington' to secure and distribute PPE for health care workers and other businesses," said Kaila. "He says the Washington Health Foundation is behind it. Angel Flight West pilots are volunteering their planes, their gas, and their time to deliver these supplies to rural communities for free! I'm calling about it today." Still, the group knew this wouldn't be a long-term solution to the crippled supply chain. How would they ensure their staff and patients were protected? How would MPFHC avoid becoming a hotspot for community spread of COVID-19?

# Supplies *continued*

## HOW TO CLOSE THE GAP

These questions are designed to encourage thoughtful, collaborative, and innovative problem solving for you and your leadership team in the area of procuring, managing, and preserving supplies and equipment. The following questions may be applied to the above case or in the context of your own story.




1. How are you facilitating supply sharing within your organization and in partnership with other health care delivery systems? Are there any additional processes you could put in place for transporting and tracking of supplies?
2. How are local health care delivery systems partnering with school systems and other employers to increase the purchasing power and fair pricing of supplies?
3. How are you or your local partners tapping into state or national efforts for supply acquisition and distribution?
4. How have you or your local partners explored possibilities of engaging private or philanthropic organizations to ensure adequate access to supplies?
5. How are you communicating or collaborating with state and federal agencies to ensure an adequate inventory of supplies (e.g., testing machines, swabs, reagents, etc.) needed to implement an effective local testing strategy? How is the effectiveness of these items being considered or measured?
6. How are you engaging local volunteers, businesses, and civic organizations to create traditional or alternative sources of PPE (e.g., cloth face coverings, hand sanitizer, face shields, etc.)? How can those fabricated items be used to limit the spread of COVID-19 among employees, patients, residents, and community members? How can they preserve the supply of other traditional forms of PPE for the highest-risk situations?
7. What evidence-based strategies are you employing to limit the “burn rate” of your supplies?
8. What evidence-based strategies are you employing to extend the life of your supplies (e.g., cleaning, disinfecting, re-using, etc.)?
9. What supply items do you need to safeguard in your facilities? How are you balancing safeguarding these supplies with appropriate access for staff?
10. What are some creative ways to store (including offsite) and inventory high-demand items as you procure them?
11. What factors should you consider if rationing is necessary, and who should be involved in making those decisions?
12. What substitutes are available for the most commonly used supplies? How can you work with manufacturers to produce them and ensure their efficacy?
13. What is your strategy to collaborate with others in your region to ensure adequate ventilator coverage during future surges? What is your plan to collaborate to ensure optimal use of resources at a regional level?
14. What equipment or supplies do you anticipate needing during future surges or during the recovery phase? How are you procuring those items while the demand is not as acute?
15. How can the sale, trade, or gift values of these high-need items (as you are able to procure and store them) be used to improve trust and collaboration with area partners? Will your possession of them lead other partners to believe they can count on you in crucial situations?

# Supplies *continued*

## PRACTICAL GUIDANCE

### Supply chain crisis

Rural hospitals and primary care practices have experienced extreme shortages of and unprecedented challenges in acquiring personal protective equipment (PPE) to safeguard their employees against both droplet and airborne transmission of the new coronavirus.<sup>188</sup> COVID-19 testing supplies and ventilators have also been in short supply. Rural health care delivery systems sit squarely at the end of the global supply chain and entered the pandemic already vulnerable to disruptions, in large part given their historically smaller volume orders and less negotiating power compared to their urban peers.<sup>182,189</sup> The supply chain during COVID-19 has been adversely impacted by three key factors. First, China, an early outbreak epicenter, is also a major supplier of PPE in the United States. Second, chaotic purchases were simultaneously being made early on by government, health care systems, and individuals themselves, making it difficult for rural communities to purchase what they needed. And third, many rural health care delivery systems have witnessed extraordinary price gouging on basic supplies such as masks, gowns, and gloves. Entering influenza season, concern for additional supply chain issues grows. Benjamin Anderson, vice president of rural health and hospitals at Colorado Hospital Association, captures the challenge well:



*"This is not a short-term problem. This is a long-term problem. We are going to see PPE shortages for the next 12-24 months. Until we have either a vaccine or herd immunity, we are going to see shortages of PPE ... [Access to PPE] will determine, in many ways, the outcome of rural health care in the United States."<sup>189</sup>*

Leveraging data to anticipate needs and track the inventory of currently available supplies will inform rural health care delivery systems and their future procurement efforts; modification of policies; and development of creative approaches to obtaining supplies. The Sheps Center at the University of North Carolina, in partnership with the state's office of rural health and the North Carolina Area Health Education Centers, created a data system to collect information on supply and workforce needs of North Carolina's primary care practices.<sup>190</sup> Interactive maps allow users to identify where there are needs for face shields, testing supplies, and PPE.<sup>190</sup> The CDC has made publicly available an Excel spreadsheet PPE [burn rate calculator](#) to assist health care facilities with PPE planning and optimization.



## Supplies *continued*

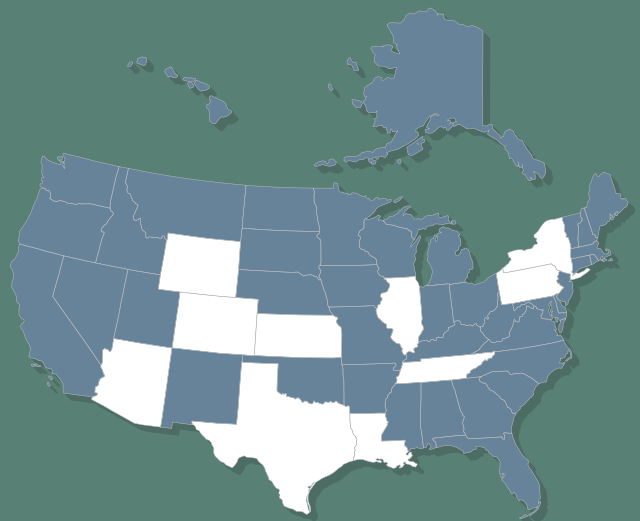
### Procuring PPE

Given significant rural supply chain challenges and disruptions, rural health care delivery systems nationwide have identified alternative supply chains to acquire needed PPE; have partnered with their communities to fabricate PPE locally; and have sourced supplies via state or national associations and campaigns. Some of these strategies include:

- Accepting donations of unused PPE from the community.<sup>64</sup>
- Purchasing N95 respirators, gloves, masks, and gowns from automotive, agricultural, veterinarian, chemistry lab, or construction and home repair supply chains.<sup>191</sup>
- Acquiring supplies through your state's PPE Marketplace, such as the one in [Missouri](#).<sup>79</sup>
- Identifying local businesses that can help manufacture PPE (e.g., a fabric store to sew gowns, a plastics factory to create face shields, an upholstery company to fashion reusable hospital gowns out of fabric normally used to protect vegetation from frost).<sup>95,161</sup>
- Partnering with the local community college to fabricate face shields on its 3D printer that range from \$3.50 - \$5.00 per unit.<sup>95</sup>
- Inviting community members with sewing skills to fabricate masks and gowns.<sup>43</sup>
- Investing in PPE made from reusable materials that can easily be laundered.<sup>45</sup>
- Requesting supplies that have been purchased by the state through the Strategic National Stockpile.<sup>79</sup>
- Arranging rapid testing with the nearest academic medical center to reduce the PPE burn rate.<sup>59</sup>
- Researching whether old ventilators could be refurbished and put back into commission.<sup>164</sup>
- Exploring whether medical device repair companies have any ventilators for sale.<sup>140</sup>
- Asking to borrow ventilators from nearby facilities.<sup>164</sup>



The [#Heart4Heroes](#) campaign, a collaboration of Colorado safety net associations, the state emergency operations center, health foundations, [Angel Flight West](#), the [Colorado Civil Air Patrol](#), [Project C.U.R.E.](#), and a company called [Perfect Image](#), was launched in May 2020 to help raise donations and awareness for small, rural hospitals to obtain the PPE supplies needed to care for COVID-19 patients. With the goal of “hacking the supply chain,” this initiative has procured over 250,000 pieces of PPE and delivered them to hospitals and providers all throughout rural Colorado.<sup>189,192</sup> The National Rural Health Association is working to scale this effort nationally with more than two million pieces of PPE distributed in other states.<sup>192</sup>



States with locations that have received PPE through #Heart4Heroes campaign as of Nov. 15, 2020.<sup>192</sup>

## Supplies *continued*

### Preserving PPE

After realizing substantial PPE burn rates early on in the pandemic, rural health care delivery systems quickly devised preservation strategies that concurrently extended the life of their local stockpiles and protected staff, including prioritizing which staff needed what type of PPE; altering clinical workflows to minimize the use of protective equipment in the first place; and disinfecting, storing, and reusing PPE. As the COVID-19 pandemic continues to evolve, it will be critical for rural hospitals and primary care practices to monitor new information about PPE use, adaptations, and preservation and incorporate those recommendations into practice as appropriate and applicable.<sup>3</sup> These approaches include:

- Limiting need for PPE by maximizing the use of barrier controls whenever possible, such as Plexiglas shields.<sup>191</sup>
- Creating visitor access for patients through technology-based alternatives, such as video chat.<sup>191</sup>
- Devising clinical workflows that employ tele-consultation or remote camera monitoring.<sup>191</sup>
- Asking non-clinical staff who must work onsite to wear cloth face coverings to preserve surgical masks for clinical staff.<sup>3</sup>
- Developing a process that ensures clear understanding among staff of PPE requirements and proper use / preservation.<sup>193</sup>
- Dispensing specific PPE to staff at the beginning of their shifts and checking it back in at the end so that the PPE can be labeled, cleaned, and stored for reuse as appropriate.<sup>191</sup>
- Cohorting COVID-19 patients in designated units and considering a continuous, rather than intermittent, PPE use model.<sup>45</sup>
- Placing IV towers, ventilators, and other equipment directly outside of patient rooms so that monitoring of fluids, medications, and vent settings can be performed without donning of PPE.<sup>194</sup>
- Automating supply and food delivery to limit person-to-person exposure risk.<sup>191</sup>
- Reserving the most protective eyewear, respiratory gear, and gowns for clinicians performing high-risk interventions, such as intubations.<sup>45</sup>
- Preserving use of barrier gowns for patients experiencing gastrointestinal symptoms, if supplies are low.<sup>45</sup>
- Extending the use-life of undamaged, non-visibly soiled PPE beyond single patient contact through re-wearing or laundering.<sup>191</sup>
- Wearing a surgical mask or face shield over an N95 respirator to prevent contamination.<sup>45</sup>
- Storing N95 respirators in facility-provided containers or Ziploc bags with silica gel packs to absorb moisture.<sup>41</sup>
- Recycling N95 respirators after proper de-contamination procedures.<sup>195</sup>
- Purchasing alternative NIOSH-approved respirators such as powered, air-purifying respirators (PAPRs) instead of N95s.<sup>191</sup>
- Suspending fit testing of N95 respirators so that they can be reserved for clinical use.<sup>64</sup>



# Supplies *continued*

## PEARLS FROM YOUR PEERS

Thirty-two key informants were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients. They shared examples of innovative solutions they implemented in their local communities and rural health care systems to mitigate the spread of COVID-19 and to care for patients that became or were presumed to be sick from the new virus. What follows are a selection of their collective, anonymized ideas specific to fabricating, conserving, and managing PPE, other supplies, and equipment.



### Acquiring PPE and supplies:

- Manage purchasing early and aggressively; create a proactive plan to get what you need with the idea that stockpiling PPE is acceptable as it will eventually be used.
- Partner with non-traditional suppliers to acquire PPE, including auto, paint, hardware, veterinary, and agriculture supply stores.
- Ask local industry for PPE donations and whether they'd be able to fabricate shields, masks, or gowns. Coordinate mask sewing with community volunteers.
- Post the need for blankets, cots, and extra oxygen tanks and concentrators in the local paper or on the hospital's social media site.
- Explore statewide or association initiatives to acquire PPE for free or at a reduced cost.
- Start your own, in-house PPE workshop with employees whose principal duties have changed as a result of the pandemic.
- Distribute any excess community-made masks to the Chamber of Commerce for use in local businesses.
- Use sanitizing wipes to clean shoes instead of wearing disposable shoe coverings.
- Consider the use of anesthesia machines as needed for ventilators.
- Acquire as many antibiotics as is possible to safely store in anticipation of COVID-19 complications, the upcoming influenza season, etc.
- Beware of potential lab or PPE supply scams.
- Think six months ahead to what supplies will be needed and order them now (e.g., syringes for eventual COVID-19 vaccines).





# Supplies *continued*



### Conserving and managing PPE:

- Buy UV light machines for the hospital and nursing home to disinfect PPE.
- Use the blue wrap from surgical trays to cover and extend the life of N95 masks.
- Bundle care for patients to minimize PPE use (e.g., one nurse is assigned to a patient each shift and performs lab draws, delivers meals, administers medications, and assists with bathing and toiletry needs). In this example, phlebotomists, pharmacy technicians, and certified nursing assistants are not additionally entering a patient's room and using PPE.
- Place IV poles for medications and fluids outside of a patient's room, so a nurse can change these out without having to enter the patient's room or using PPE.
- Implement new PPE conservation strategies (e.g., one gown per patient per day, not one gown each time you enter a patient's room).
- Conduct extensive education on masks (i.e., if it's not soiled, the mask can be reused a second time).
- Appoint "PPE czars or managers" to track burn rates and monitor proper usage.
- Create a portable PPE cart with masks, gowns, gloves, and shields that is locked at all times. The house supervisor is the only one who has a key to access the cart and is available every shift if staff need to get properly fitted for N95s, have questions about re-processing PPE, need to get clean PPE, etc.



# Supplies *continued*

### WHO CAN HELP

- **Optimizing Personal Protective Equipment.** This CDC site is a common-sense resource for optimizing the use of PPE by specific type, including face masks, gowns, gloves, eye protection, and N95 and other respirators. It also includes information on developing capacities for varying surge levels, as well as donning and doffing equipment. Health care leaders can reference this site when developing their PPE utilization and preservation strategies.
- **Personal Protective Equipment Burn Rate Calculator.** This CDC-sponsored PPE burn rate calculator helps health care providers and systems plan for and optimize the use of PPE amidst COVID-19. In addition to utilizing it themselves, health care leaders could recommend the use of this spreadsheet-based model to employers and other organizations in their communities.
- **Rural Healthcare Surge Readiness: Supplies.** This RHIMHub webpage provides several PPE-focused resources, including donning, preserving, and optimizing PPE, in addition to suggestions on how to manage the supply chain and train staff on proper PPE use. Health care leaders can use these resources to evaluate their own techniques, policies, and procedures as they assess and maximize the impact of their supply inventories amidst chronic shortages.



# Looking Ahead



# Looking Ahead

The 32 key informants who were interviewed, including rural hospital administrators and board members, primary care clinicians, local public health directors, and community members and patients, provided rich insight into what their COVID-19 experiences have been thus far and innovative solutions they have launched in their communities to combat the pandemic. Additionally, they shared their collective wisdom about what they would like to see changed or strengthened moving forward relative to the ongoing response to COVID-19 in rural communities. What follows is a selection of their ideas.



## Clinical care

- Take universal precautions as seriously for respiratory illnesses as for blood and other bodily fluids.
- Assume that every patient is COVID-19 positive, not just those that meet the “clinical trilogy” criteria of fever, cough, and shortness of breath. Too many employees got exposed or sick early on and had to quarantine or isolate, disrupting operations.
- Establish and maintain relationships with larger urban facilities and/or academic medical centers. Doing so provides support for testing, access to infectious disease and intensivist expertise, and the ability to transfer and/or accept patients, as needed.
- Continue to expand telehealth technologies and broadband reach; telemedicine increases access to specialty care for rural populations and improves the ability to monitor chronic diseases at home, as well as enhances access to provider-to-provider support for managing more complex care locally.
- Make certain social distancing and disease precautions standard practice in medical care moving forward such as wearing a mask if you’re sick and seeking medical attention, limiting the number of people waiting in the doctor’s office, etc.



## Communications

- Strive to share reliable information in a cohesive way across trusted messengers that’s not politicized and is backed by science. Create messaging that is personal and relates to local, everyday life. Be honest with what is known and not known. Debunk misinformation promptly and directly.
- Consider launching a communications steering committee within the community to guide what is shared when and how and by whom.
- Share crisis communications services and expertise between public health agencies and health care entities.
- Offer a dedicated phone line about the latest COVID-19 information for elderly residents so they don’t have to navigate video or online platforms.
- Help patients better understand and analyze levels of risk for engaging in different types of activities (e.g., how to exercise or socialize safely). Frame guidance in terms of what one can do, instead of what one cannot do.

# Looking Ahead *continued*



## Community

- Prioritize planning for the most vulnerable residents first (i.e., nursing home residents, people with disabilities, essential workers in agricultural industries, etc.).
- Increase cultural and linguistic competencies among health care teams so that they're better able to reach and connect with diverse populations in their communities.
- Educate the public on what services their local rural hospital, primary care clinic, and public health department offer to the community.



## Cross-system collaboration

- Foster relationships with a wide variety of agencies in the community, including county commissioners, emergency managers, law enforcement, public health, and local business and faith leaders. Meet regularly to better understand how each one can assist the other. Periodically review what incident command and emergency operations centers are and how they work, who will assume which role(s) in an emergency, etc.
- Ensure that all future tabletop exercises include managing infectious disease outbreaks, as well as responding to fire, flood, winter weather, chemical spill, bioterrorism, and mass casualty incidents.
- Explore a regional approach to monitoring staff and supply levels, the number of available hospital beds and ventilators, testing and tracing capacity, etc. Develop a mechanism that allows regional public health and health care stakeholders to offer, take, or swap resources as needed.



## Space

- Design future construction or renovation projects with the potential need to create separate spaces for emerging infectious diseases in mind.
- Develop a better understanding of the physical plant and regularly engage in pre-planning of alternative workflows and spaces.

**Link rural health care and public health process and outcome measures in more thoughtful and intentional ways, such as:**

- Tie the ability to perform elective procedures and to re-open schools and businesses according to local disease transmission dynamics.
- Strike the right balance between the use of blunt (i.e., stay-at-home orders) and refined tools (i.e., incrementally adapt re-opening guidance based on local disease prevalence, transmission rates, etc.) to mitigate disease spread.
- Open more slowly and at a measured pace so that transmission dynamics can be studied at different levels of "openness."

# Looking Ahead *continued*



## Spending

- Incorporate philanthropy as a more routine component of a COVID-19 recovery strategy. Tap into governance and community leaders with philanthropic experience and connections to lead this work. Map community relationships and networks that may help raise money.
- Re-evaluate earlier and more consistently whether to resume elective procedures, should COVID-19 surge once more and prompt the need to stop these again.
- Apply immediately for any state or federal financial assistance, even if it's not clear at the outset whether the entity qualifies.
- Review the criteria for becoming a certified rural health clinic to determine if it's possible to receive higher reimbursement for services rendered.



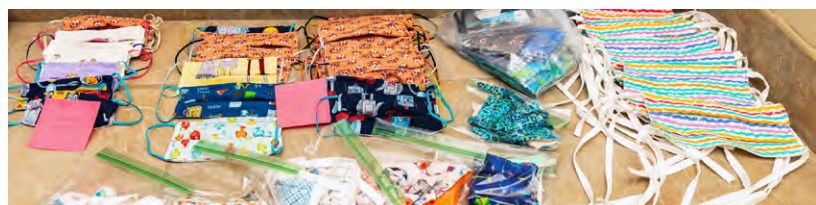
## Staffing

- Invest in less brick and mortar-based solutions. Investigate and support new ways to support staff that are creative, flexible, and more cost-effective.
- Cross-train staff at all times so that the organization is surge-ready.
- Expand non-revenue generating staff in key areas such as employee health and infection control.
- Listen to frontline staff more consistently about their concerns and recommendations. Encourage all employees to think outside the box and to speak up with new ideas.



## Statistics and surveillance

- Communicate to the public more clearly what test results mean, as well as basic statistics and how to interpret them relative to COVID-19.
- Partner with local and state agencies and academic medical centers to develop more tailored epidemiological models specific to rural communities and their unique characteristics that can better inform local public health planning and economic restrictions.
- Create a regional testing strategy whereby tests could be processed and resulted locally, provided the regional hub has adequate access to needed reagents, laboratory equipment, etc. Such an approach could significantly decrease courier costs and coordination and overall wait times for results.



## Supplies

- Transition permanently to multi-use PPE that can be re-laundered and reused.
- Restore and expand local or regional PPE stockpiles to larger than what they were prior to COVID-19.
- Diversify the supply chain in traditional and non-traditional ways.



# Appendix

This appendix provides details on the study methodologies used to produce this playbook. This project was reviewed by the Colorado Multiple Institutional Review Board (COMIRB) and determined to be exempt (protocol 20-1733).

## Description of study methodologies

- For background on the methods used to produce the Rural Health Care Delivery System Assessment Tool, please refer to the tool-specific section within this playbook.
- Rapid literature review:
  - Both peer-reviewed and gray literature were searched following a rapid literature review methodology. This methodology is designed to search and synthesize available evidence to inform decision making in a shorter timeframe than traditional systematic reviews.<sup>196,197</sup>
    - Peer-reviewed literature was searched in PubMed, Google Scholar, and MedRxiv (a preprint publication server). Search terms for the PubMed search were selected to be inclusive of emergency preparedness for any airborne pandemic occurring from Jan. 1, 2009, to present; search terms selected for Google Scholar and MedRxiv were specific to COVID-19 to capture any recent peer-reviewed literature not yet indexed in PubMed. A librarian was consulted to refine search terms. These searches resulted in 428 results. Of these 428 articles, 311 were excluded leading to a total of 117 articles included for review. Reasons for exclusion included articles from outside the United States, lack of content related to rural emergency preparedness for airborne pandemics, no English full text available, and inappropriate level of evidence (e.g., letters to the editor, news articles). Any exclusions were confirmed by a second reviewer.
    - Gray literature was searched via Google on .edu, .org, and .gov sites. The search terms “rural coronavirus” were used in all three domains and were selected to pull COVID-19 specific material. The gray literature search ultimately resulted in a total of 395 sites for review. Of these 395 sites, 279 were excluded leading to a total of 116 sites included for review. The same exclusion criteria and process as for the peer-reviewed literature search were applied to the gray literature. In addition, expert consultation and the snowball method led to an additional 20 and 54 articles or resources, respectively.
  - The results of the rapid literature review were largely used to inform the “Practical guidance” sections throughout, as well as background material.

## Appendix *continued*

- Key informant interviews:
  - Thirty-two one-hour key informant interviews were conducted and analyzed, including nine hospital administrators (i.e., CEOs, CNOs); five hospital governance members (i.e., board chairs and members); six primary care clinicians (i.e., physicians and advanced practice providers); five rural public health department representatives (i.e., directors and public health nurses); and seven patients and community members. A majority of the health care professional interviews were conducted in person; six were held virtually due to scheduling or travel limitations. All patient and community member interviews were conducted virtually. The 25 health care professional key informants were chosen through purposeful sampling to achieve a balance across the following selection criteria:
    - Type of rural hospital (PPS or critical access)
    - Characteristics of rural hospital (size of operations, financial performance, system affiliation)
    - Type of primary care practice (hospital-based outpatient clinic, rural health clinic, federally qualified health center, independent practice)
    - Geography across Colorado based on rural versus frontier designation at the county level and by region
    - Key population health issues statewide
    - Gender

The patient and community member key informants were chosen purposefully to balance geography across Colorado and gender. Two interviewers from the project team participated in each interview, a combination of either Drs. Hughes or Deutchman or Benjamin Anderson. Consent was obtained from all participants.

- The results of the key informant interviews were largely used to develop the “Pearls from your peers” and “Looking ahead” sections. Implemented solutions and recommendations were anonymized and pulled from several interviews to create these sections.

### Additional notes

- The Sarahville Health Center and Mountain Plains Family Health Clinic case studies are fictional and informed by the authors’ professional experiences working in rural health care delivery systems. Any semblance to real people, places, and events is entirely coincidental.
- The strategic thinking questions in each of the “How to close the gap” sections were largely informed by the authors’ previous experiences in rural health care and policy, as well as these resources.<sup>198–200</sup>
- Resources and tools selected for the “Who can help” sections were chosen with preference given to the following criteria: rural-specific (if possible); produced by a reputable organization; frequently updated content; dynamic, rather than static, information; easily navigable site; highly applicable and practical advice; and diversity of resource offerings.

# Appendix *continued*

## Project partners



### COLORADO HOSPITAL ASSOCIATION

Colorado Hospital Association (CHA) is the leading voice of Colorado's hospital and health system community. Representing more than 100 member hospitals and health systems throughout the state, CHA serves as a trusted, credible and reliable resource on health issues, hospital data and trends for its members, media, policymakers and the general public. Through CHA, Colorado's hospitals and health systems work together in their shared commitment to improve health and health care in Colorado. Learn more at [www.cha.com](http://www.cha.com).



Eugene S. Farley, Jr. Health Policy Center  
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

### EUGENE S. FARLEY, JR. HEALTH POLICY CENTER

The Eugene S. Farley, Jr. Health Policy Center (FHPC) at the University of Colorado Anschutz Medical Campus develops and translates evidence to inform the design, implementation, and evaluation of health and social policy at the local, state, and federal levels. The FHPC strives to advance policy solutions that overcome fragmented systems; integrate strategies that improve individual, family, and population health; and achieve health equity.

## Project sponsors



CPSI, a healthcare solutions company, helps advance community healthcare by connecting communities, patients and providers to ensure a better patient care experience and improve the financial operations for the customers we serve. Learn more at [www.cpsi.com](http://www.cpsi.com).

## ZOMAFoundation

ZOMA Foundation was founded by Ben and Lucy Ana Walton to catalyze bold and innovative solutions to social issues facing their home regions of Colorado and Chile to help build resilient, thriving communities that will endure for future generations. ZOMA Foundation supports non-profit organizations to advance systems level alignment as well as pilot, incubate, and prove novel solutions in early childhood and community economic development.



# References

## Assessment tool references

- <sup>a</sup> Rural Policy Research Institute, Stratis Health. Value-Based Care Assessment Tool.
- <sup>b</sup> Forming a Patient and Family Advisory Council (PFAC) Patient and family perspectives can help you achieve more patient-centered care in your practice. Published online 2018:16.
- <sup>c</sup> Holmes GM, Kaufman BG, Pink GH. Predicting Financial Distress and Closure in Rural Hospitals. *The Journal of Rural Health*. 2017;33(3):239-249. doi:10.1111/jrh.12187
- <sup>d</sup> Bodenheimer T, Sinsky C. From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider. *The Annals of Family Medicine*. 2014;12(6):573-576. doi:10.1370/afm.1713
- <sup>e</sup> Langley GJ, Moen RD, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 2nd ed. Jossey-Bass; 2009.
- <sup>f</sup> Jennett P, Gagnon M, Brandstadt H. Readiness for Rural Telehealth.pdf. *Journal of Postgraduate Medicine*. 2005;51(4).
- <sup>g</sup> Sabesan S, Allen DT, Caldwell P, et al. Practical aspects of telehealth: establishing telehealth in an institution. *Intern Med J*. 2014;44(2):202-205. doi:10.1111/imj.12339
- <sup>h</sup> Office of the Assistant Secretary for Preparedness and Response DW. 2017-2022 Health Care Preparedness and Response Capabilities. Published online November 2016. doi:10.1037/e658332011-001

## Playbook references

- <sup>1</sup> Daly R. Rural hospitals get financial assistance as COVID-19 exacerbates their struggles. Published May 6, 2020. <https://www.hfma.org/topics/news/2020/05/rural-hospitals-get-financial-assistance-as-covid-19-exacerbates.html>
- <sup>2</sup> Anderson B. Transformational Leadership: A Vaccine for Rural Healthcare Delivery. ASTHO Experts Blog. Published July 23, 2020. <https://www.astho.org/StatePublicHealth/Transformational-Leadership-A-Vaccine-for-Rural-Healthcare-Delivery/07-23-20/>
- <sup>3</sup> Monnat S. Why coronavirus could hit rural areas harder. Issue Brief. 2020;16.
- <sup>4</sup> Rural Health in America: How Shifting Populations Leave People Behind. NIHCM. <https://www.nihcm.org/categories/rural-health-in-america-how-shifting-populations-leave-people-behind>
- <sup>5</sup> Emanuel A. The COVID-19 Pandemic Will Cause Deep Cuts to Rural America. Published May 19, 2020. <https://healthlaw.org/the-covid-19-pandemic-will-cause-deep-cuts-to-rural-america/>
- <sup>6</sup> Felder T. COVID-19 impact: Rural communities face unique challenges. University of South Carolina. Published March 24, 2020. [https://www.sc.edu/uofsc/posts/2020/03/COVID\\_Rural\\_Health.php#.X1IH0BFzIW](https://www.sc.edu/uofsc/posts/2020/03/COVID_Rural_Health.php#.X1IH0BFzIW)
- <sup>7</sup> Henning-Smith C, Tuttle M, Kozhimannil KB. Unequal distribution of COVID-19 risk among rural residents by race and ethnicity. *J Rural Health*. Published online 2020.
- <sup>8</sup> Weiner S. Rural and at risk for COVID-19. AAMC. Published May 14, 2020. <https://www.aamc.org/news-insights/rural-and-risk-covid-19>
- <sup>9</sup> Far from immune, rural areas face unique COVID-19 challenges. American Heart Association News. <https://www.heart.org/en/news/2020/04/30/far-from-immune-rural-areas-face-unique-covid-19-challenges>. Published April 30, 2020.
- <sup>10</sup> Simpson A. Coronavirus Threatens Strained Rural Health Care System. Pew - Stateline. <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/03/17/coronavirus-threatens-strained-rural-health-care-system>. Published March 17, 2020.
- <sup>11</sup> Siegler K. Rural Hospitals Brace For Coronavirus. NPR. <https://www.npr.org/2020/03/15/815638096/rural-hospitals-brace-for-coronavirus>. Published March 15, 2020.
- <sup>12</sup> Biello P, Sasani A. Dartmouth Study: Rural N.H. Prepared Strong Response to COVID-19. NHPR. <https://www.nhpr.org/post/dartmouth-study-rural-nh-prepared-strong-response-covid-19#stream/0>. Published June 23, 2020.
- <sup>13</sup> Daschle T, Abrams S. Tom Daschle and Stacey Abrams: Why rural America is vulnerable to the coronavirus. USA Today. <https://www.usatoday.com/story/opinion/2020/04/17/rural-america-vulnerable-coronavirus-daschle-abrams-column/2994619001/>. Published April 17, 2020.
- <sup>14</sup> Ajilore O. Rural America is starting to feel the impact of the coronavirus. Cent Am Prog Available <https://www.amj.org/sueseeconomyreports20200428484016rural-Am-Start-Feel-Impact-Coronavirus> Accessed April. 2020;30.
- <sup>15</sup> Cafer A, Rosenthal M. COVID-19 in the Rural South: A Perfect Storm of Disease, Health Access, and Co-Morbidity. :4.
- <sup>16</sup> Fahs P. COVID-19 and Rural Health Care. Online J Rural Nurs Health Care. <https://rnojournal.binghamton.edu/index.php/RNO/article/view/626/459>

## References *continued*

- 17 Confronting Rural America's Health Care Crisis: BPC Rural Health Task Force Policy Recommendations. Bipartisan Policy Center; 2020. [https://bipartisanpolicy.org/wp-content/uploads/2020/04/WEB\\_BPC\\_Rural-Health-Care-Report.pdf](https://bipartisanpolicy.org/wp-content/uploads/2020/04/WEB_BPC_Rural-Health-Care-Report.pdf)
- 18 Brumage M. Rural America Isn't Ready for a Pandemic. The Atlantic. Published online March 18, 2020. <https://www.theatlantic.com/ideas/archive/2020/03/west-virginia-doesnt-need-coronavirus-too/608239/>
- 19 Topolsky J. Rural Frontlines and COVID-19: Reporting from the Field. The Aspen Institute. Published April 9, 2020. <https://www.aspeninstitute.org/blog-posts/rural-frontlines-and-covid-19-reporting-from-the-field/>
- 20 Scigliano E. 'It Really Is the Perfect Storm': Coronavirus Comes for Rural America. Politico. <https://www.politico.com/news/magazine/2020/04/15/coronavirus-rural-america-covid-19-186031>. Published April 15, 2020.
- 21 Peters D. Rural America is more vulnerable to COVID-19 than cities are, and it's starting to show. The Conversation. <https://theconversation.com/rural-america-is-more-vulnerable-to-covid-19-than-cities-are-and-its-starting-to-show-140532>. Published June 18, 2020.
- 22 Johnson KM. An Older Population Increases Estimated COVID-19 Death Rates in Rural America. Published online 2020.
- 23 Engel-Smith L. COVID breathes life into North Carolina's rural telehealth, but broadband remains an obstacle. North Carolina Health News. <https://www.northcarolinahealthnews.org/2020/05/14/coronavirus-rural-telehealth/>. Published May 14, 2020.
- 24 Thebault R, Hauslohner A. A deadly 'checkerboard': Covid-19's new surge across rural America. Washington Post. <https://www.washingtonpost.com/nation/2020/05/24/coronavirus-rural-america-outbreaks/?arc404=true>. Published May 24, 2020.
- 25 Fehr R, Kates J, Cox C, Michaud J. COVID-19 in Rural America – Is There Cause for Concern? Published April 30, 2020. <https://www.kff.org/coronavirus-covid-19/issue-brief/covid-19-in-rural-america-is-there-cause-for-concern/>
- 26 Cohen PN. The COVID-19 epidemic in rural US counties. SocArXiv May. 2020;17.
- 27 Wang Y, Liu Y, Struthers J, Lian M. Spatiotemporal Characteristics of COVID-19 Epidemic in the United States. Clin Infect Dis Off Publ Infect Dis Soc Am. Published online July 8, 2020. doi:10.1093/cid/ciaa934
- 28 Half of Rural Residents at High Risk of Serious Illness Due to COVID 19, Creating Stress on Rural Hospitals - Kaufman - - The Journal of Rural Health - Wiley Online Library. Accessed August 25, 2020. <https://onlinelibrary.wiley.com/doi/full/10.1111/jrh.12481>
- 29 Cox D. The urban-rural divide over the coronavirus outbreak. American Enterprise Institute. Published April 16, 2020. <https://www.aei.org/politics-and-public-opinion/the-urban-rural-divide-over-the-coronavirus-outbreak/>
- 30 Siegler K. Why Parts Of Rural America Are Pushing Back On Coronavirus Restrictions. NPR. <https://www.npr.org/2020/05/27/862831144/why-parts-of-rural-america-are-pushing-back-on-coronavirus-restrictions>. Published May 27, 2020.
- 31 Silverstein J. 43 states now have stay-at-home orders for coronavirus. These are the 7 that don't. CBS News. [https://www.cbsnews.com/news/stay-at-home-orders-states/?\\_ga=2.148301296.610473753.1598327308-1026006331.1596601044](https://www.cbsnews.com/news/stay-at-home-orders-states/?_ga=2.148301296.610473753.1598327308-1026006331.1596601044). Published April 6, 2020.
- 32 Addressing Rural Health Disparities in a Pandemic. <https://www.astho.org/generickey/GenericKeyDetails.aspx?contentid=22780&folderid=5158&catid=7237>
- 33 Cheney C. "It's alarming!" Coronavirus Pandemic Hitting Rural Communities Hard. Health Leaders Media. <https://www.healthleadersmedia.com/clinical-care/its-alarming-coronavirus-pandemic-hitting-rural-communities-hard>. Published April 23, 2020.
- 34 Weber L. Coronavirus Threatens The Lives Of Rural Hospitals Already Stretched To Breaking Point [Internet]. Kais Health News. Published online 2020.
- 35 Orgera K, McDermott D, Rae M, Claxton G, Koma W, Cox C. Urban and Rural Differences in Coronavirus Pandemic Preparedness.; 2020. <https://www.healthsystemtracker.org/brief/urban-and-rural-differences-in-coronavirus-pandemic-preparedness/>
- 36 Quick COVID-19 Survey. The Larry A. Green Center. <https://www.green-center.org/covid-survey>
- 37 COVID-19 and Rural Hospital Struggles.; 2020. <https://bipartisanpolicy.org/event/covid-19-and-rural-hospital-struggles/>
- 38 Lakhani HV, Pillai SS, Zehra M, Sharma I, Sodhi K. Systematic Review of Clinical Insights into Novel Coronavirus (CoVID-19) Pandemic: Persisting Challenges in U.S. Rural Population. Int J Environ Res Public Health. 2020;17(12). doi:10.3390/ijerph17124279
- 39 Shah P, Owens J, Franklin J, et al. Demographics, Comorbidities, and Outcomes in Hospitalized Covid-19 Patients in Rural Southwest Georgia. Ann Med. Published online July 3, 2020:1-17. doi:10.1080/07853890.2020.1791356
- 40 Coronavirus Disease 2019 (COVID-19) Rural Communities. Centers for Disease Control and Prevention <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/other-at-risk-populations/rural-communities.html#why-higher-risk>

# References *continued*

- 41 Putnam T. COVID-19 Guidance for Rural Hospitals. Indiana State Department of Health Epidemiology Resource Center; 2020. [https://www.indianaruralhealth.org/clientuploads/IN\\_COVID-19\\_Rural\\_Hospital\\_Guidance\\_4.1.20.pdf](https://www.indianaruralhealth.org/clientuploads/IN_COVID-19_Rural_Hospital_Guidance_4.1.20.pdf)
- 42 Brown J, Guru S, Williams K, Florentino R, Miner J, Cagir B. Rural Healthcare Center Preparation and Readiness Response to Threat of COVID-19. *J Am Coll Surg*. 2020;230(6):1105-1110. doi:10.1016/j.jamcollsurg.2020.04.006
- 43 Sarap M, Conyers J, Cunningham C, et al. US Rural Surgeon Responses to the COVID-19 Pandemic: Leadership in a Time of Crisis. *Am Surg*. 2020;86(6):602-610.
- 44 Rural Hospital Interventions for COVID-19. American Hospital Association <https://www.aha.org/system/files/media/file/2020/07/rural-COVID-19-resources.pdf>
- 45 Hick JL, Hanfling D, Wynia MK, Pavia AT. Duty to Plan: Health Care, Crisis Standards of Care, and Novel Coronavirus SARS-CoV-2. *National Academies of Medicine*; 2020. <https://nam.edu/duty-to-plan-health-care-crisis-standards-of-care-and-novel-coronavirus-sars-cov-2/>
- 46 Mittal A, Chapman KD, Forte M, Al-Jaroushi H. Lessons learned: Commentary on patient harm related to COVID-19 prevention policies at a rural academic tertiary care facility. *Ann Med Surg*. 2020;57:20.
- 47 Dandachi D, Reece R, Wang EW, Nelson T, Rojas-Moreno C, Shoemaker DM. Treating COVID-19 in Rural America. *J Rural Health*. Published online 2020.
- 48 What Is Telehealth? How Is Telehealth Different from Telemedicine? Office of the National Coordinator for Health Information Technology; 2019. <https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine>
- 49 Gutierrez J, Kuperman E, Kaboli PJ. Using Telehealth as a Tool for Rural Hospitals in the COVID-19 Pandemic Response. *J Rural Health*. Published online 2020.
- 50 COVID-19 Resources Page. Colorado Rural Health Center <https://coruralhealth.org/covid19>
- 51 Puro NA, Feyereisen S. Telehealth Availability in US Hospitals in the Face of the COVID-19 Pandemic. *J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc*. Published online June 30, 2020. doi:10.1111/jrh.12482
- 52 Sisk B, Alexander J, Bodnar C, et al. Pediatrician Attitudes Toward and Experiences With Telehealth Use: Results From a National Survey. *Acad Pediatr*. 2020;20(5):628-635. doi:10.1016/j.acap.2020.05.004
- 53 Medicare Telemedicine Health Care Provider Fact Sheet. Centers for Medicare & Medicaid Services; 2020. <https://www.cms.gov/newsroom/fact-sheets/medicare-telemedicine-health-care-provider-fact-sheet>
- 54 Using Telebehavioral Health to Increase Access to Care for Rural and Vulnerable Populations Amid COVID-19. Association of State and Territorial Health Officials Accessed September 1, 2020. <https://www.astho.org/COVID-19/Telebehavioral-Health-to-Increase-Access-to-Care/>
- 55 Using Telehealth to Care for Patients During the COVID-19 Pandemic. American Academy of Family Physicians; 2020. Accessed September 2, 2020. <https://www.aafp.org/patient-care/emergency/2019-coronavirus/telehealth.html>
- 56 Rural Broadband in the Time of COVID, Part 2: Recording and Transcript.; 2020. <https://ruralassembly.org/rural-broadband-in-the-time-of-covid-part-2-recording-and-transcript/>
- 57 Rural Health and COVID 19.; 2020. <https://www.ruralhealthinfo.org/webinars/rural-health-covid-19>
- 58 Blakely K. Rural Health during the COVID-19 Pandemic.; 2020. <https://sma.org/podcasts/rural-health-during-the-covid-19-pandemic/>
- 59 Supplitt J. Surviving the COVID-19 Surge - Marshall Medical Center. <https://soundcloud.com/advancinghealth/surviving-the-covid-19-surge-marshall-medical-center>
- 60 Hirko KA, Kerver JM, Ford S, et al. Telehealth in Response to the Covid-19 Pandemic: Implications for Rural Health Disparities. *J Am Med Inform Assoc*. Published online 2020.
- 61 Fisk M, Livingstone A, Pit SW. Telehealth in the Context of COVID-19: Changing Perspectives in Australia, the United Kingdom, and the United States. *J Med Internet Res*. 2020;22(6):e19264. doi:10.2196/19264
- 62 Williams P. Veteran Caregivers in Rural Areas Face Unique COVID-19 Challenges. <https://www.moaa.org/content/publications-and-media/news-articles/2020-news-articles/veteran-caregivers-in-rural-areas-face-unique-covid-19-challenges/>. Published July 21, 2020.
- 63 Diaz A, Chhabra KR, Scott JW. The COVID-19 pandemic and rural hospitals—adding insult to injury. *Health Aff Blog*. Published online 2020.
- 64 Brown J, Guru S, Williams K, Florentino R, Miner J, Cagir B. Rural Healthcare Center Preparation and Readiness Response to Threat of COVID-19. *J Am Coll Surg*. 2020;230(6):1105-1110. doi:10.1016/j.jamcollsurg.2020.04.006
- 65 Shura RD, Brearly TW, Tupler LA. Telehealth in Response to the COVID-19 Pandemic in Rural Veteran and Military Beneficiaries. *J Rural Health*. Published online 2020.
- 66 Brumage M, Graham J, Warren J, Dash S. COVID-19 Webinar Series Session 11 – Rural Health System Response.; 2020. <https://www.allhealthpolicy.org/covid-19-webinar-series-session-11-rural-health-system-response/>



## References *continued*

- 67 James C, Jansen M, Morrow B, Henning-Smith C. Health in Rural America: Innovative Solutions to Address Disparities. NIHCM National Institute for Health Care Management. Published November 13, 2019. <https://www.nihcm.org/categories/event/health-in-rural-america>
- 68 Thota R, Gill DM, Brant JL, Yeatman TJ, Haslem DS. Telehealth Is a Sustainable Population Health Strategy to Lower Costs and Increase Quality of Health Care in Rural Utah. *JCO Oncol Pract*. 2020;16(7):e557-e562. doi:10.1200/JOP.19.00764
- 69 Kantor BN, Kantor J. Mental health outcomes and associations during the coronavirus disease 2019 pandemic: A cross-sectional survey of the US general population. *medRxiv*. Published online May 28, 2020. doi:10.1101/2020.05.26.20114140
- 70 Monteith LL, Holliday R, Brown TL, Brenner LA, Mohatt NV. Preventing Suicide in Rural Communities During the COVID-19 Pandemic. *J Rural Health*. Published online 2020.
- 71 Summers-Gabr NM. Rural-urban mental health disparities in the United States during COVID-19. *Psychol Trauma Theory Res Pract Policy*. Published online June 1, 2020. doi:10.1037/tra0000871
- 72 SORH COVID-19 Learning Community Notes. National Organization of State Offices of Rural Health (NOSORH). Published July 30, 2020. <https://nosorh.org/rural-health-concerns-opportunities-strategies-for-covid19-early-thoughts-of-the-sorh/>
- 73 Boyd CA, Gazmararian JA, Thompson WW. Knowledge, attitudes, and behaviors of low-income women considered high priority for receiving the novel influenza A (H1N1) vaccine. *Matern Child Health J*. 2013;17(5):852-861. doi:10.1007/s10995-012-1063-2
- 74 Gargano LM, Painter JE, Sales JM, et al. Seasonal and 2009 H1N1 influenza vaccine uptake, predictors of vaccination, and self-reported barriers to vaccination among secondary school teachers and staff. *Hum Vaccin*. 2011;7(1):89-95. doi:10.4161/hv.7.1.13460
- 75 Painter JE, Sales JM, Pazol K, et al. Psychosocial correlates of intention to receive an influenza vaccination among rural adolescents. *Health Educ Res*. 2010;25(5):853-864. doi:10.1093/her/cyq037
- 76 Painter JE, Gargano LM, Sales JM, et al. Correlates of 2009 H1N1 influenza vaccine acceptability among parents and their adolescent children. *Health Educ Res*. 2011;26(5):751-760. doi:10.1093/her/cyr025
- 77 Gargano LM, Pazol K, Sales JM, et al. Multicomponent interventions to enhance influenza vaccine delivery to adolescents. *Pediatrics*. 2011;128(5):e1092-1099. doi:10.1542/peds.2011-0453
- 78 Schumm P, Schumm W, Scoglio C. Impact of preventive responses to epidemics in rural regions. *PloS One*. 2013;8(3):e59028. doi:10.1371/journal.pone.0059028
- 79 COVID-19: Rural Hospital Compendium. Missouri Hospital Association; 2020. [https://www.mhanet.com/mhaimages/COVID-19/Rural\\_Information\\_Compendium.pdf](https://www.mhanet.com/mhaimages/COVID-19/Rural_Information_Compendium.pdf)
- 80 Boren S. Covering rural health care amid COVID-19: 4 tips from Carrie Henning-Smith. Published June 12, 2020. <https://journalistsresource.org/studies/society/public-health/rural-health-care-covid-19-4-tips/>
- 81 Erwin C, Aultman J, Harter T, Illes J, Kogan RCJ. Rural and Remote Communities: Unique Ethical Issues in the COVID-19 Pandemic. *Am J Bioeth*. Published online 2020:1-4.
- 82 Lakhani HV, Pillai SS, Zehra M, Sharma I, Sodhi K. Systematic Review of Clinical Insights into Novel Coronavirus (CoVID-19) Pandemic: Persisting Challenges in U.S. Rural Population. *Int J Environ Res Public Health*. 2020;17(12). doi:10.3390/ijerph17124279
- 83 Dash S, Brumage M, Graham JS, Warren J. COVID-19 Webinar Series Session 11 – Rural Health System Response.; 2020. <https://www.allhealthpolicy.org/covid-19-webinar-series-session-11-rural-health-system-response/>
- 84 Prusaczyk B. Strategies for Disseminating and Implementing COVID-19 Public Health Prevention Practices in Rural Areas. *J Rural Health*. Published online 2020.
- 85 Jilani Z. Can Urban and Rural Americans Get on the Same Page About COVID-19? Published April 8, 2020. [https://greatergood.berkeley.edu/article/item/urban\\_and\\_rural\\_americans\\_same\\_page\\_covid](https://greatergood.berkeley.edu/article/item/urban_and_rural_americans_same_page_covid)
- 86 Bennett-Begaye J, Clayton C, Simpson A, Marema T. Save the Date: Conversation with Rural Reporters on COVID-19.; 2020. <https://ruralassembly.org/save-the-date-conversation-with-rural-reporters-on-covid-19/>
- 87 Medina-Marino A, Reynolds D, Finley C, Hays S, Jones J, Soyemi K. Communication and mass vaccination strategies after pertussis outbreak in rural Amish communities-Illinois, 2009-2010. *J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc*. 2013;29(4):413-419. doi:10.1111/jrh.12019
- 88 Dearinger AT, Howard A, Ingram R, et al. Communication efforts among local health departments and health care professionals during the 2009 H1N1 outbreak. *J Public Health Manag Pract JPHMP*. 2011;17(1):45-51. doi:10.1097/PHH.0b013e3181f54110

# References *continued*

- <sup>89</sup> Centers for Disease Control and Prevention (CDC). Mycoplasma pneumoniae respiratory illness - two rural counties, West Virginia, 2011. MMWR Morb Mortal Wkly Rep. 2012;61(41):834-838.
- <sup>90</sup> Green S. Study: Rural disease response should differ from urban areas. Kansas Health Institute. Published June 18, 2009. <https://www.khi.org/news/article/study-rural-disease-response-should-differ-urban-a>
- <sup>91</sup> Four Stages of Planning and Implementation during COVID-19: One Rural Hospital's Preparations. American Hospital Association <https://www.aha.org/system/files/media/file/2020/04/rural-members-in-action-case-study-four-stages-planning-implementation-during-covid-19-one-rural-hospital-preparations-marshall-medical-center.pdf>
- <sup>92</sup> Managing COVID-19 in a Rural Community. American Hospital Association. <https://www.aha.org/other-resources/2020-05-31-managing-covid-19-rural-community>
- <sup>93</sup> Barnett DJ, Thompson CB, Semon NL, et al. EPPM and willingness to respond: the role of risk and efficacy communication in strengthening public health emergency response systems. Health Commun. 2014;29(6):598-609. doi:10.1080/10410236.2013.785474
- <sup>94</sup> Healthy St. Landry Alliance Leads Coordinated Community Response during COVID-19 Pandemic. American Hospital Association <https://www.aha.org/system/files/media/file/2020/05/aha-cs-st-landry-0520.pdf>
- <sup>95</sup> Wilson Medical Center Implements Creative Care Alternatives to Address COVID-19. American Hospital Association <https://www.aha.org/system/files/media/file/2020/04/rural-case-study-wilson-medical-center-implements-creative-care-alternatives-to-address-covid-19.pdf>
- <sup>96</sup> Hamann CJ, Mello E, Wu H, Yang J, Waldron D, Ramirez M. Disaster Preparedness in Rural Families of Children With Special Health Care Needs. Disaster Med Public Health Prep. 2016;10(2):225-232. doi:10.1017/dmp.2015.159
- <sup>97</sup> Gray GC, Kayali G. Facing pandemic influenza threats: the importance of including poultry and swine workers in preparedness plans. Poult Sci. 2009;88(4):880-884. doi:10.3382/ps.2008-00335
- <sup>98</sup> Sood L, Sood V. Being African American and Rural: A Double Jeopardy from Covid-19. J Rural Health. Published online 2020.
- <sup>99</sup> Witrigo E, Perez MA. Preparing for an influenza pandemic: policy implications for rural Latino populations. J Health Care Poor Underserved. 2011;22(3 Suppl):58-71. doi:10.1353/hpu.2011.0105
- <sup>100</sup> Ameh G, Njoku A, Inungu J, Younis M. Rural America and the coronavirus epidemic: challenges and solutions. European J Environment Public Health. Published online 2020.
- <sup>101</sup> COVID-19 In IOWA. <https://coronavirus.iowa.gov/>
- <sup>102</sup> Haischer MH, Beilfuss R, Hart MR, et al. Who is wearing a mask? Gender-, age-, and location-related differences during the COVID-19 pandemic. medRxiv. Published online January 1, 2020:2020.07.13.20152736. doi:10.1101/2020.07.13.20152736
- <sup>103</sup> James A, Eagle L, Phillips C, et al. High COVID-19 Attack Rate Among Attendees at Events at a Church - Arkansas, March 2020. MMWR Morb Mortal Wkly Rep. 2020;69(20):632-635. doi:10.15585/mmwr.mm6920e2
- <sup>104</sup> Dyal et al. COVID-19 Among Workers in Meat and Poultry Processing Facilities - 19 States, April 2020.; 2020. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6918e3.htm>
- <sup>105</sup> SoHum Health. Getting in Front of COVID-19: Addressing Social Determinants of Health to Save the Lives of Seniors. American Hospital Association; 2020. <https://www.aha.org/system/files/media/file/2020/04/getting-in-front-of-covid-19-addressing-social-determinants-health-to-save-lives-seniors-sohum-health-case-study.pdf>
- <sup>106</sup> Suresh A, Barkatullah AF, Boardman MB. Addressing Food Insecurity During COVID-19: A Role for Rural Federally Qualified Health Centers. Published online 2020.
- <sup>107</sup> Sosin A, Carpenter-Song E. Village versus virus: Rural ethos protects where public health fails. Health Affairs Blog. Published July 27, 2020. <https://www.healthaffairs.org/doi/10.1377/hblog20200722.490817/full/>
- <sup>108</sup> Henning-Smith C. The Unique Impact of COVID-19 on Older Adults in Rural Areas. J Aging Soc Policy. Published online 2020:1-7.
- <sup>109</sup> McMichael T, Clark S, Pogojans S, et al. COVID-19 in a Long-Term Care Facility — King County, Washington, February 27–March 9, 2020. Centers for Disease Control and Prevention; 2020. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e1.htm>
- <sup>110</sup> Lehmann C. COVID-19 Shows Gaps in Controls at Nursing Homes. Published April 10, 2020. <https://www.webmd.com/lung/news/20200410/covid-19-shows-gaps-in-controls-at-nursing-homes>
- <sup>111</sup> Molteni M. Why Meatpacking Plants Have Become Covid-19 Hot Spots. Wired. <https://www.wired.com/story/why-meatpacking-plants-have-become-covid-19-hot-spots/>. Published May 7, 2020.
- <sup>112</sup> Dawson L. Under COVID Cloud, Prisons In Rural America Threaten To Choke Rural Hospitals. Kaiser Health News. <https://khn.org/news/under-covid-cloud-prisons-in-rural-america-threaten-to-choke-rural-hospitals/>. Published May 14, 2020.

# References *continued*

- <sup>113</sup> Paschal O. Here's what's driving the rural South's COVID-19 outbreaks. Facing South. <https://www.facingsouth.org/2020/05/here%27s-what%27s-driving-rural-souths-covid-19-outbreaks>. Published May 19, 2020.
- <sup>114</sup> Littman A, Sudeall L, Pishko J. Protecting Rural Jails From Coronavirus. The Justice Collaborative; 2020. <https://filesforprogress.org/memos/rural-jails-coronavirus.pdf>
- <sup>115</sup> Wilson R. Rural areas with vacation homes more susceptible to coronavirus outbreaks. The Hill. <https://thehill.com/homenews/state-watch/492008-rural-areas-with-vacation-homes-more-susceptible-to-coronavirus>. Published April 9, 2020.
- <sup>116</sup> Shaver K. Thousands from coronavirus hot spots flocked to Maryland and Virginia as parts of the states reopened. Washington Post. [https://www.washingtonpost.com/local/trafficandcommuting/thousands-from-coronavirus-hotspots-flocked-to-maryland-and-virginia-as-parts-of-the-states-reopened/2020/05/20/c34172b6-99e7-11ea-89fd-28fb313d1886\\_story.html](https://www.washingtonpost.com/local/trafficandcommuting/thousands-from-coronavirus-hotspots-flocked-to-maryland-and-virginia-as-parts-of-the-states-reopened/2020/05/20/c34172b6-99e7-11ea-89fd-28fb313d1886_story.html). Published May 20, 2020.
- <sup>117</sup> Chinni D. In America's Second-Home Communities, Covid-19 Poses Special Concerns Now. American Communities Project. Published June 11, 2020. <https://www.americancommunities.org/in-americas-second-home-communities-covid-19-poses-special-concerns-now/>
- <sup>118</sup> Silverman H, Toropin K, Sidner S, Perrot L. Navajo Nation surpasses New York state for the highest Covid-19 infection rate in the US. CNN. <https://www.cnn.com/2020/05/18/us/navajo-nation-infection-rate-trnd/index.html>. Published May 18, 2020.
- <sup>119</sup> Goodluck K. COVID-19 impacts every corner of the Navajo Nation. High Country News. <https://www.hcn.org/issues/52.6/covid-19-impacts-every-corner-of-the-navajo-nation>. Published May 19, 2020.
- <sup>120</sup> Kovich H. Rural Matters—Coronavirus and the Navajo Nation. N Engl J Med. Published online April 24, 2020.
- <sup>121</sup> Carrier E, Yee T, Cross D, Samuel D. Emergency preparedness and community coalitions: opportunities and challenges. Res Brief. 2012;(24):1-9.
- <sup>122</sup> McCabe OL, Semon NL, Lating JM, et al. An academic-government-faith partnership to build disaster mental health preparedness and community resilience. Public Health Rep Wash DC 1974. 2014;129 Suppl 4:96-106. doi:10.1177/00333549141296S413
- <sup>123</sup> Richmond BK. The Coronavirus Pandemic: Experience From a Rural West Virginia Tertiary Care Hospital. Am Surg. 2020;86(6):611-614.
- <sup>124</sup> Q&A with two rural health care CEO's on managing COVID-19 in their communities. Published April 29, 2020. <https://www.aha.org/news/insights-and-analysis/2020-04-29-qa-two-rural-health-care-ceos-managing-covid-19-their>
- <sup>125</sup> Rural COVID-19 Case Study: Surviving a COVID-19 Surge. American Hospital Association <https://www.aha.org/system/files/media/file/2020/04/rural-covid-19-case-study-surviving-a-covid-19-surge-margaret-mary-health.pdf>
- <sup>126</sup> CDC Social Vulnerability Index. Agency for Toxic Substances and Disease Registry. <https://www.atsdr.cdc.gov/placeandhealth/svi/index.html>
- <sup>127</sup> Hospital Preparedness Program. US Department of Health and Human Services. <https://www.phe.gov/preparedness/planning/hpp/pages/default.aspx>
- <sup>128</sup> Adunlin G, Murphy PZ, Manis M. COVID-19: How Can Rural Community Pharmacies Respond to the Outbreak? J Rural Health. Published online 2020.
- <sup>129</sup> Howard S, Counte M, Mikes J, Dybdal L, Linomaz J. Rural Health Care Delivery Organizations and COVID-19: Major Challenges and Implications for Health Care Management Education and Training. J Rural Health. Published online 2020.
- <sup>130</sup> DeVoe J, Cheng A, Krist, Alex. Regional Strategies for Academic Health Centers to Support Primary Care During the COVID-19 Pandemic: A Plea From the Front Lines. JAMA Health Forum. Published online April 8, 2020. <https://jamanetwork.com/channels/health-forum/fullarticle/2764405>
- <sup>131</sup> OHSU's COVID-19 Hotline Helped Oregonians.; 2020. [https://www.ohsu.edu/sites/default/files/2020-06/Research%20Brief\\_Connected%20Care%20Center%20Hotline.pdf](https://www.ohsu.edu/sites/default/files/2020-06/Research%20Brief_Connected%20Care%20Center%20Hotline.pdf)
- <sup>132</sup> Quinn K, Eldridge Houser JL, Kapp JM. Missouri Rapid Rural Population Health Response to the COVID-19 Pandemic. Mo Med. 2020;117(3):177-179.
- <sup>133</sup> Schroeder J, Bouldin ED. Inclusive Public Health Preparedness Program to Promote Resilience in Rural Appalachia (2016-2018). Am J Public Health. 2019;109(S4):S283-S285. doi:10.2105/AJPH.2019.305086
- <sup>134</sup> Davoodi NM, Healy M, Goldberg EM. Rural America's Hospitals are Not Prepared to Protect Older Adults From a Surge in COVID-19 Cases. Gerontol Geriatr Med. 2020;6:2333721420936168.
- <sup>135</sup> The Rural Health Safety Net Under Pressure: Understanding the Potential Impact of COVID-19. Chartis Center for Rural Health; 2020:10. [https://www.chartis.com/resources/files/CCRH\\_Research\\_Update-Covid-19.pdf](https://www.chartis.com/resources/files/CCRH_Research_Update-Covid-19.pdf)



# References *continued*

- <sup>136</sup> Schulte F, Lucas E, Rau J, Szabo L, Hancock J. Millions Of Older Americans Live In Counties With No ICU Beds As Pandemic Intensifies. Kaiser Health News. <https://khn.org/news/as-coronavirus-spreads-widely-millions-of-older-americans-live-in-counties-with-no-icu-beds/>. Published March 20, 2020.
- <sup>137</sup> Occupancy Rates in Rural and Urban Hospitals: Value and Limitations in Use as a Measure of Surge Capacity. North Carolina Rural Health Research Program; 2020:7. <https://www.ruralhealthresearch.org/publications/1324>
- <sup>138</sup> Quick COVID-19 Primary Care Survey - Series 16 Fielded July 10 - 13, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5f1af2ac7d6bfd1787ad68f2/1595601581976/C19+Series+16+National+Executive+Summary.pdf>
- <sup>139</sup> Attipoe-Dorcoo S, Delgado R, Gupta A, Bennet J, Oriol NE, Jain SH. Mobile health clinic model in the COVID-19 pandemic: lessons learned and opportunities for policy changes and innovation. *Int J Equity Health*. 2020;19(1):73. doi:10.1186/s12939-020-01175-7
- <sup>140</sup> Supplitt J. Surviving the Coronavirus Surge – Margaret Mary Healthcare, Batesville, Ind. <https://soundcloud.com/advancinghealth/surviving-the-coronavirus-surge-margaret-mary-healthcare-batesville-ind>
- <sup>141</sup> Butaro District Hospital. Mass Design Group. <https://massdesigngroup.org/work/design/butaro-district-hospital>
- <sup>142</sup> Walters E. Rural Texas hospitals should be staffing up to face coronavirus. Many can't afford to. *The Texas Tribune*. <https://www.texastribune.org/2020/03/24/texas-rural-hospitals-out-money-coronavirus-threat-looms/>. Published March 24, 2020.
- <sup>143</sup> Topchik M. Research Update: Rural Hospital Closures Eclipse the Century Mark. Chartis Center for Rural Health. Published March 19, 2019. <https://www.ivantageindex.com/rural-hospital-closures-eclipsing-the-century-mark/>
- <sup>144</sup> Rural Hospital Closures: More Information. Cecil G. Sheps Center for Health Services Research. <https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures-archive/rural-hospital-closures/>
- <sup>145</sup> States Support Rural Hospitals While COVID-19 Highlights Challenges. ASTHO Experts Blog. Published June 24, 2020. <https://www.astho.org/StatePublicHealth/States-Support-Rural-Hospitals-While-COVID-19-Highlights-Challenges/06-24-20/?terms=rural>
- <sup>146</sup> Llewellyn RJ. Supporting Rural Provider Financial Pressure During the Pandemic. National Rural Health Resource Center. <https://www.ruralcenter.org/resource-library/supporting-rural-provider-financial-pressure-during-the-pandemic>
- <sup>147</sup> 174 Rural Hospital Closures: January 2005 – Present (134 since 2010). The Cecil G. Sharps Center for Health Services Research. <https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/>
- <sup>148</sup> Most Rural Hospitals Have Little Cash Going into COVID-19. Cecil G. Sheps Center for Health Services Research. <https://www.shepscenter.unc.edu/product/most-rural-hospitals-have-little-cash-going-into-covid-19/>
- <sup>149</sup> The Rural Health Safety Net Under Pressure: Rural Hospital Vulnerability. Chartis Center for Rural Health; 2020. [https://www.ivantageindex.com/wp-content/uploads/2020/02/CCRH\\_Vulnerability-Research\\_FINAL-02.14.20.pdf](https://www.ivantageindex.com/wp-content/uploads/2020/02/CCRH_Vulnerability-Research_FINAL-02.14.20.pdf)
- <sup>150</sup> Quick COVID-19 Primary Care Survey: Series 19 Fielded August 21-24, 2020. Larry A. Green Center; 2020. <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5f47defcceda12236bb2d660/1598545661461/C19+Series+19+National+Executive+Summary.pdf>
- <sup>151</sup> Quick COVID-19 Primary Care Survey - Series 2 Fielded March 20 - 23, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5e861fcd21caed68eb8b196f/1585848269986/C19+Series+2+Nat+Executive+Summary+with+comments.pdf>
- <sup>152</sup> Quick COVID-19 Primary Care Survey - Series 3 Fielded March 27 - 30, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5e861fd6f218f93aefa2f0b8/1585848278581/C19+Series+3+National+Sample+Executive+Summary.pdf>
- <sup>153</sup> Quick COVID-19 Primary Care Survey - Series 4 Fielded April 3 - 6, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5e8f30db971c052db435edbf/1586442459773/C19+Series+4+National+Executive+Summary.pdf>
- <sup>154</sup> Quick COVID-19 Primary Care Survey - Series 7 Fielded April 24 - 27, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5eaffa894f6a412098294b7a/1588591241666/PC+C19+Series+7+Nat+Exec+Summary+with+comments.pdf>
- <sup>155</sup> Quick COVID-19 Primary Care Survey - Series 8 Fielded May 1 - 4, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5eb45e0115428367956ec27f/1588878849350/C19+Series+8+National+Executive+Summary+with+comments.pdf>
- <sup>156</sup> Quick COVID-19 Primary Care Survey - Series 9 Fielded May 8 - 11, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5ebe8e3aa633d80ce5e7c107/1589546555002/C19+Series+9+National+Executive+Summary+with+comments.pdf>

# References *continued*

- 157 Quick COVID-19 Primary Care Survey - Series 11 Fielded May 22 - 26, 2020. Larry A. Green Center <https://static1.squarespace.com/static/5d7ff8184cf0e01e4566cb02/t/5ecea10bebe58e1aea04692a/1590599948613/C19+Series+11+National+Executive+Summary+with+comments.pdf>
- 158 Reddy S. Recovering patient volume and practice finances in the wake of COVID-19: 12 tips. Published June 7, 2020. [https://www.aafp.org/journals/fpm/blogs/inpractice/entry/recovering\\_practice\\_finances.html?cmpid=em\\_FPM\\_20200610](https://www.aafp.org/journals/fpm/blogs/inpractice/entry/recovering_practice_finances.html?cmpid=em_FPM_20200610)
- 159 Lewis J. Rural philanthropy as a long-term strategy. <https://soundcloud.com/advancinghealth/rural-philanthropy-as-a-long-term-strategy>
- 160 CARES Act Provider Relief Fund. <https://www.hhs.gov/coronavirus/cares-act-provider-relief-fund/index.html>
- 161 Living and Learning through COVID-19. American Hospital Association <https://www.aha.org/system/files/media/file/2020/08/aha-cs-lincoln-0820.pdf>
- 162 Fraher E, Pittman P, Frogner B, et al. Ensuring and Sustaining a Pandemic Workforce. *N Engl J Med*. 2020;2020(382):2181-2183. doi:DOI: 10.1056/NEJMp2006376
- 163 Hancock SC. Perspective: An inside look at a rural hospital preparing for the wave. *KLC Journal*. <https://klcjourn.com/inside-rural-hospital-covid-19/>. Published April 6, 2020.
- 164 Supplitt J. Kings' Daughter Medical Center: Meeting the Challenge of COVID-19. <https://soundcloud.com/advancinghealth/kings-daughter-medical-center-meeting-the-challenge-of-covid-19>
- 165 Levisohn A, Higgins E. States Address Provider Shortages to Meet the Health Care Demands of the Pandemic. National Academy for State Health Policy. Published April 6, 2020. <https://www.nashp.org/states-address-provider-shortages-to-meet-the-health-care-demands-of-the-pandemic/>
- 166 Spetz J. There Are Not Nearly Enough Nurses To Handle The Surge Of Coronavirus Patients: Here's How To Close the Gap Quickly. *Health Affairs Blog*. Published March 31, 2020. [https://www.healthaffairs.org/do/10.1377/hblog20200327.714037/full/?utm\\_medium=social&utm\\_source=twitter&utm\\_campaign=Blogcovid19&](https://www.healthaffairs.org/do/10.1377/hblog20200327.714037/full/?utm_medium=social&utm_source=twitter&utm_campaign=Blogcovid19&)
- 167 Blake N, Stevenson K, England D. H1N1 pandemic: life span considerations. *AACN Adv Crit Care*. 2009;20(4):334-341. doi:10.1097/NCI.0b013e3181bcb6ab
- 168 Employee Wellness Pod Nourishes and Nurtures Health Care Workers. [https://www.aha.org/other-resources/2020-04-14-employee-wellness-pod-nourishes-and-nurtures-health-care-workers?utm\\_source=newsletter&utm\\_medium=email&utm\\_content=04142020%2Dat%2Dmemnonfed&utm\\_campaign=aha%2Dtoday](https://www.aha.org/other-resources/2020-04-14-employee-wellness-pod-nourishes-and-nurtures-health-care-workers?utm_source=newsletter&utm_medium=email&utm_content=04142020%2Dat%2Dmemnonfed&utm_campaign=aha%2Dtoday)
- 169 Trustees Share Heartfelt Messages with Rural Hospital Staff. American Hospital Association. [https://www.aha.org/other-resources/2020-04-16-trustees-share-heartfelt-messages-rural-hospital-staff?utm\\_source=newsletter&utm\\_medium=email&utm\\_content=04162020%2Dat%2Dmemnonfed&utm\\_campaign=aha%2Dtoday](https://www.aha.org/other-resources/2020-04-16-trustees-share-heartfelt-messages-rural-hospital-staff?utm_source=newsletter&utm_medium=email&utm_content=04162020%2Dat%2Dmemnonfed&utm_campaign=aha%2Dtoday)
- 170 Rural Recruitment Reimagined Workshop Presents the "Safe Sites" Model. *RHIHub*. <https://www.ruralhealthinfo.org/project-examples/1080>
- 171 New Surgo Analysis Identifies Highly Vulnerable Rural Communities as COVID-19 Testing Deserts. Surgo Foundation; 2020. [http://surgofoundation.org/latest-news/2020/6/22/new-surgo-analysis-identifies-highly-vulnerable-rural-communities-as-covid-19-testing-deserts?utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=newsletter\\_axiosvitals&stream=top](http://surgofoundation.org/latest-news/2020/6/22/new-surgo-analysis-identifies-highly-vulnerable-rural-communities-as-covid-19-testing-deserts?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosvitals&stream=top)
- 172 Souch JM, Cossman JS. A Commentary on Rural-Urban Disparities in COVID-19 Testing Rates per 100,000 and Risk Factors. *J Rural Health*. Published online 2020.
- 173 Thompson DL, Baumbach J, Jungk J, Sewell CM, Smelser C, Landen M. Does outpatient laboratory testing represent influenza burden and distribution in a rural state? *Influenza Other Respir Viruses*. 2013;7(5):686-693. doi:10.1111/irv.12097
- 174 KSB Hospital Response for Coronavirus (COVID-19). American Hospital Association [https://www.aha.org/system/files/media/file/2020/04/ksb-hospital-response-for-coronavirus-covid-19-rural-case-study\\_2.pdf](https://www.aha.org/system/files/media/file/2020/04/ksb-hospital-response-for-coronavirus-covid-19-rural-case-study_2.pdf)
- 175 Rural Test & Trace Toolkit: RT3. *VashonBePrepared* <https://vashonbeprepared.org/testing>
- 176 Appa A, Chamie G, Sawyer A, et al. SARS-CoV-2 PCR and antibody testing for an entire rural community: methods and feasibility of high-throughput testing procedures. *medRxiv*. Published online 2020.
- 177 Mandal S, Tatti KM, Woods-Stout D, et al. Pertussis Pseudo-outbreak linked to specimens contaminated by Bordetella pertussis DNA From clinic surfaces. *Pediatrics*. 2012;129(2):e424-430. doi:10.1542/peds.2011-1710
- 178 Moon S afroj, Scoglio C. Contact Tracing Evaluation for COVID-19 Transmission during the Reopening Phase in a Rural College Town. *medRxiv*. Published online January 1, 2020:2020.06.24.20139204. doi:10.1101/2020.06.24.20139204

# References *continued*

- <sup>179</sup> Rentsch CT, Kidwai-Khan F, Tate JP, et al. Covid-19 by Race and Ethnicity: A National Cohort Study of 6 Million United States Veterans. *MedRxiv Prepr Serv Health Sci*. Published online May 18, 2020 doi:10.1101/2020.05.12.20099135
- <sup>180</sup> Khan S, McCabe M, Krefman A, et al. A County-Level Susceptibility Index and Coronavirus Disease 2019 Mortality in the United States: A Socioecological Study. *medRxiv*. Published online January 1, 2020:2020.07.04.20146084. doi:10.1101/2020.07.04.20146084
- <sup>181</sup> COVID-19 Pandemic Vulnerability Index. National Institute of Environmental Health Sciences <https://covid19pvi.niehs.nih.gov/>
- <sup>182</sup> State-Level Data Is Hiding Coronavirus Hot Spots in Less Urban Areas – Including Many in the South. University of Chicago <https://spatial.uchicago.edu/content/state-level-data-hiding-coronavirus-hot-spots-less-urban-areas%E2%80%94including-many-south>
- <sup>183</sup> Peters DJ. Community Susceptibility and Resiliency to COVID-19 Across the Rural-Urban Continuum in the United States. *J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc*. 2020;36(3):446-456. doi:10.1111/jrh.12477
- <sup>184</sup> Wesner JS, Van Peursem D, Flores J, Lio Y, Wesner C. Forecasting hospitalizations due to COVID-19 in South Dakota, USA. *medRxiv*. Published online January 1, 2020:2020.07.22.20160184. doi:10.1101/2020.07.22.20160184
- <sup>185</sup> Rohan A. New coronavirus symptom tracker launches to improve disease tracking in rural communities across Deep South. *UAB News*. <https://www.uab.edu/news/campus/item/11211-new-coronavirus-symptom-tracker-launches-to-improve-disease-tracking-in-rural-communities-across-deep-south>. Published April 1, 2020.
- <sup>186</sup> WSU Scientists develop COVID-19 tracking tool for rural areas. *NBC KNDO*. [https://www.nbcrightnow.com/coronavirus/wsu-scientists-develop-covid-19-tracking-tool-for-rural-areas/article\\_72c4aca8-d1bf-11ea-a664-53f022162b25.html](https://www.nbcrightnow.com/coronavirus/wsu-scientists-develop-covid-19-tracking-tool-for-rural-areas/article_72c4aca8-d1bf-11ea-a664-53f022162b25.html). Published July 29, 2020.
- <sup>187</sup> COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. <https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
- <sup>188</sup> COVID Survey — The Larry A. Green Center. Accessed September 4, 2020. <https://www.green-center.org/covid-survey>
- <sup>189</sup> Heart4Heroes Corona Country.; 2020. <https://www.youtube.com/watch?v=0-FrrAYfy0Q>
- <sup>190</sup> COVID-19 Provider Surveys. Cecil G. Sheps Center for Health Services Research. <https://www.shepscenter.unc.edu/2020/05/26/covid-19-provider-surveys/>
- <sup>191</sup> Coronavirus (COVID-19) Pandemic: Personal Protective Equipment Preservation Best Practices. FEMA [https://content.govdelivery.com/attachments/USDHS/2020/04/13/file\\_attachments/1426411/FEMA\\_FactSheet\\_COVID19\\_Best%20PracticesPPEPreservation\\_20200412%20EA%20cleared.pdf](https://content.govdelivery.com/attachments/USDHS/2020/04/13/file_attachments/1426411/FEMA_FactSheet_COVID19_Best%20PracticesPPEPreservation_20200412%20EA%20cleared.pdf)
- <sup>192</sup> Support our Medical Heroes on the Front Line. <https://heart4heroes.org/>
- <sup>193</sup> WNC Primary Care COVID Impact and Assessment Survey. Mountain Area Health Education Center <https://pub.mahec.net/sites/pages/covidsurvey>
- <sup>194</sup> Rural Hospital Shifts Operations in Anticipation of COVID-19 Surge. American Hospital Association <https://www.aha.org/system/files/media/file/2020/04/rural-hospital-shifts-operations-in-anticipation-of-covid-19-surge-kings-daughters-medical-center-case-study.pdf>
- <sup>195</sup> Strategies for Optimizing the Supply of N95 Respirators. CDC. [https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Frespirator-supply-strategies.html](https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Frespirator-supply-strategies.html)
- <sup>196</sup> Haby MM, Chapman E, Clark R, Barreto J, Reveiz L, Lavis JN. What are the best methodologies for rapid reviews of the research evidence for evidence-informed decision making in health policy and practice: a rapid review. *Health Res Policy Syst*. 2016;14(1):83.
- <sup>197</sup> Abou-Setta AM, Jeyaraman M, Attia A, et al. Methods for developing evidence reviews in short periods of time: a scoping review. *PloS One*. 2016;11(12):e0165903.
- <sup>198</sup> Steps that Rural Hospitals Can Be Taking to Prepare for Impact of the COVID-19 Pandemic. Center for Optimizing Rural Health. Published March 19, 2020. <https://www.optimizingruralhealth.org/steps-that-rural-hospitals-can-be-taking-to-prepare-for-impact-of-the-covid-19-pandemic/>
- <sup>199</sup> Sample Questions for NAFC Member Organizations to Consider When Resuming In-Person Visits During or Post COVID-19. National Association of Free and Charitable Clinics; 2020:8. [www.nafcclinics.org](http://www.nafcclinics.org)
- <sup>200</sup> Coronavirus Scenario Planning: 12 Situations Hospital Leaders Should Prepare For.; 2020. <https://www.advisory.com/-/media/Advisory-com/Research/HCAB/Resources/2020/Coronavirus-scenario-planning-HCAB-2020.pdf>