Rural Health and COVID-19

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Introduction

According to the U.S. Census Bureau, approximately 60 million Americans live in rural areas, defined here as "sparsely populated, have low housing density, and are far from urban centers."[1] Many rural communities are experiencing increases in COVID-19 cases and similar challenges as are urban areas, but rural healthcare systems also face unique considerations compared to their urban counterparts. Workforce and other resource shortages, socioeconomic factors that compound resident health risks, and other public health issues often complicate the ability to plan for and respond to natural and human-caused emergencies in rural areas.

For a variety of reasons (e.g., revenue pressure, patient population with more complex medical issues, and recruitment and retention challenges), many rural hospitals are facing financial crises and are on the brink of closure. One study found that hospitals in Tennessee, Oklahoma, Mississippi, Alabama, and Kansas face particularly high risks of closure (O'Brien 2020). In the last decade alone, 128 rural hospitals have closed.[2] An additional 453 hospitals were identified as vulnerable to closure based on a model developed by the Chartis Center for Rural Health.[3]

Accessing healthcare can be challenging for residents of rural areas.[4] This can be due to one or a combination of factors, including financial challenges, the need to travel long distances to facilities, communication challenges (e.g., geography/location, language barriers, inconsistent access to internet service), and lack of trust in the healthcare system to receive quality care. Workforce shortages and insurance challenges compound these barriers.

As of July 2020, the Rural Policy Research Institute at the University of Iowa's College of Public Health found that 9.8% of COVID-19 cases and 6.6% of COVID-19 deaths were in rural counties.[5] Similarly, this interactive article, published April 8, 2020 in the *New York Times* graphically displays how rural areas have been affected by the spread of COVID-19 since February 20, 2020. The authors note that "more than two-thirds of rural counties have confirmed at least one case."

This resource provides an overview of the challenges faced by rural areas specific to COVID-19. This resource is intended to help hospital and health system emergency planners as well as state and local public health emergency planners better understand the challenges their communities may face. The challenges are grouped into two main categories: those specific to healthcare facilities, and those related to at-risk residents. Proposed solutions or mitigation steps for meeting each challenge are also provided. Access the COVID-19 Healthcare Resilience Working Group's Rural Healthcare Surge Readiness portal for more information.

COVID-19 Challenges Specific to Rural Healthcare Facilities

Limited Financial Resources

Almost 50% of rural hospitals operate at a loss. Much like metropolitan area healthcare systems, rural healthcare systems have delayed elective procedures in response to the COVID-19 pandemic, which traditionally provide a significant amount of annual revenue. In fact, outpatient services at rural hospitals account for an estimated median of 71% of the hospital's revenue.[6]

Rural healthcare systems operate on thin profit margins and most do not have sufficient cash on hand to cover operating costs. The median number of days all-rural hospitals (combined Critical Access hospitals, Rural and Community Hospitals) can operate with cash on hand is 33 days.[7]

Potential Mitigation Actions
- To assist the rural healthcare system during this challenging time, on May 1, 2020 the U.S. Department of Health and Human Services announced [$10 billion rural distribution](). These funds will go to support rural acute care general hospitals and Critical Access Hospitals (CAHs), Rural Health Clinics (RHCs), and Community Health Centers.[8]
- Access the COVID-19 Healthcare Resilience Working Group's [Rural Healthcare Surge Readiness portal]() for more information.

Limited Human Resources

Rural hospitals have less staff in the facility and in the immediate area to draw from if there is a need for staff to quarantine or patient surge overwhelms the facility. Exposure to one COVID-19 patient may create an insurmountable gap in staffing that cannot be backfilled as quickly or easily as a larger healthcare system could.[9] A small number of severe cases could quickly overwhelm a hospital's resources. In some areas of the country, residents of metropolitan areas are spending time in rural areas to reduce exposure and socially isolate, but this can add a significant burden to area healthcare services.

Many rural hospitals use staff that come from outside of their communities. In some cases, these staff may travel across state lines or be contracted through agencies that can either no longer supply them or the staff may be subject to quarantine or other restrictions. Planning for the potential absence of these staff is important.

Emergency Medical Services (EMS) systems in rural communities are often staffed by volunteers with multiple jobs. The physical distance, topography, and volunteer nature of rural/frontier EMS all provide challenges during a pandemic. EMS staffing may be inadequate, usual critical care ground and air services may have restrictions on transporting COVID-19 patients, and frequency of transports from affected communities may require mutual aid and potentially state assistance.

Data management and communications is also a challenge for many rural healthcare facilities. The communications infrastructure is fragile, and IT systems in facilities may not be able to be altered quickly to provide additional data points for mandated data reporting. Often, there are simply not enough

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human resources available to care for patients and manage the data reporting requirements placed on healthcare facilities during a public health emergency, particularly on weekends.

Potential Mitigation Actions

- Working through healthcare coalitions, the State, or in partnership with other facilities can help increase purchasing power and ensure needs are met.
- Working with other hospitals and pooling resources in relative proximity to identify and use a central facility for the treatment of COVID-19 patients may help ease some of the capacity issues.[10] Referral planning and a regional plan for inpatient resource utilization can help ensure a consistent standard of care and transfer expectations within the region.
- Exploring options of adding outpatient providers, nursing assistants, EMS personnel / volunteer firefighters, National Guard, Medical Reserve Corps, and other providers to augment the nursing staff and provide basic care and support to nurses while they concentrate on patient assessment and medical management has the potential to allow a much higher volume of patients to be cared for. Adjusting workload to minimize non-essential charting and other duties can also help free up provider time.
    - Pre-identifying and developing agreements with just-in-time staffing firms, other healthcare facilities in the area, and community organizations may help as a mitigation measure.
- Developing a standard list of essential elements of information from each facility early in a response is helpful to set expectations and limiting communication to facilities to the established local incident command chain of communication would limit multiple requests for the same information to the same facility.
- Access the COVID-19 Healthcare Resilience Working Group's Rural Healthcare Surge Readiness portal for more information.

Space, Equipment, and Location Challenges

Healthcare facilities in rural areas have limited bed capacity, equipment, and personal protective equipment (PPE) needed to combat COVID-19. One hospital in rural Louisiana recently explained how they responded to a surge of critically ill patients with limited resources by renting, borrowing, and converting other equipment to ventilators and re-engineering hospital access and flow to facilitate visitor and staff screening.[11] Intensive or critical care is a particularly scarce resource. In total, rural hospitals have 6,309 Intensive Care Unit (ICU) beds, or approximately one for every 9,500 residents of rural areas.[12]

Some rural hospitals provide limited intensive care and cardiac care. The providers that staff these units may be comfortable, with appropriate remote support, keeping or accepting patients that need a broader range of intensive care than they usually provide. Discussion about the potential expansion of services and limits of services (e.g. dialysis) is critical to assuring that the facility can address the needs of intensive care patients that either tertiary centers are too full to accept or need to offload that have stabilized and do not require complex multi-organ system support.

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Potential Mitigation Actions

- Critical access hospitals often have associated long-term care facilities, which may enable them to accept and provide seamless care for hospital COVID-19 discharges or receive COVID-19 patient transfers from separate long-term care facilities when they cannot safely care for or cohort them. In many cases, these discharged patients no longer pose an infectious risk to providers or other inpatients.
- Access the COVID-19 Healthcare Resilience Working Group's Rural Healthcare Surge Readiness portal for more information on resources and space.

Patient Load-Balancing

Rural outbreaks have severely overloaded local hospitals in several communities. Close coordination with the State, healthcare coalitions, and receiving facilities, as well as EMS services (particularly ground and air critical care transport services that may not commonly be used) is important to ensure that there is a plan for load-balancing between and among facilities. This usually involves referral of critical care patients but could also involve distributing medical or surgical patients among multiple facilities to equalize impact.

Hospital census in rural areas is seldom high, unless a COVID-19 surge is directly affecting the facility. The potential for the hospital to serve as a relief valve for larger facilities to decompress medical or surgical beds is high – but sometimes the distances and need for EMS resources to accomplish this makes it difficult to justify. Critical access hospitals may have licensed "swing beds" that could allow them to take hospital discharges from larger facilities and continue hospital care, transitioning to skilled nursing care when the patient's condition allows. This can also provide a seamless transition for reimbursement from hospital to skilled nursing. Because of low hospital census, the hospital may be positioned to take on patients for extended ventilator weaning – particularly since beds for this purpose are in short supply. With appropriate nurse orientation and training and remote telemedicine support from pulmonary / critical care providers rural hospitals can play a key role opening up intensive care beds in larger facilities

Rural hospitals often have emergency department volumes that are low enough that substantial surge capacity exists and may be better able to absorb increased demand that, from a percentage standpoint, would be impossible in a larger facility. Some rural hospitals have extensive procedural and other space that can lend itself to alternate care sites on the hospital campus. Whenever possible, if alternate care sites are needed they should be located on a healthcare facility campus so that care is delivered in a healthcare-designed environment and ideally, that patients can be moved quickly to emergency or inpatient care if they deteriorate. Planning for alternate care sites at hospitals is far preferred to planning sites in the community at locations such as arenas and hotels.

Potential Mitigation Actions

- Establish a medical operations coordination cell within healthcare coalitions and at the State-level to coordinate distribution of patients to and from rural hospitals.
- Have a transportation plan in place to facilitate load-balancing patient movement.

Medical Supplies and Testing

While large healthcare systems may have the staff and money to work outside of the traditional supply chain and acquire PPE and other medical supplies directly from the producers, most rural hospitals and healthcare systems more than likely would not have these resources and experience different challenges in acquiring supplies.[13]

Sustained use of PPE and patient surge cause a higher burn rate for all medical supplies. However, as rural health systems already operate on thin margins with limited just-in-time resupply, using additional funds to acquire more supplies may not be financially viable.[14]

Rural hospitals may also have a limited supply of COVID-19 testing kits or may be missing components necessary to complete the testing (e.g., nasal swabs, viral transfer media, and reagents). In some cases, test results may not be available for seven days or longer. Without quick testing, symptomatic patients are being treated as presumed positive, increasing the use of PPE supplies even further.[15]

Potential Mitigation Actions
- Collaborating with other rural hospitals to source medical supply vendors and share equipment may be necessary and helpful.[16]
- Partnering with other healthcare facilities for larger purchasing power may help increase the priority of shipments to rural communities.
- Creating regional 'hubs' for rural testing may be a potential solution if each remote hospital cannot get access to rapid testing. Alternatively, working with larger healthcare systems that do in-house testing to assure rapid sample transport and processing may be an alternative compared to using national commercial laboratories.
- Using telehealth to screen patients prior to arrival may reduce the use of PPE and ease surge.
- Access the COVID-19 Healthcare Resilience Working Group's Rural Healthcare Surge Readiness portal for more information on supplies.

Telehealth

COVID-19 has accelerated the use of telehealth in many ways. Telehealth can be a useful tool in rural areas to provide patient triage, pre- and post-operative visits, and remote patient monitoring. The Rural Healthcare Surge Readiness portal highlights telehealth resources as part of their surge readiness page. The U.S. Department of Health and Human Services (HHS) launched the HHS Telehealth Website to provide information for both patients and providers on telehealth programs.

While telehealth supports healthcare in rural areas, many areas still lack broadband internet or wireless bandwidth to support video capabilities. While the Federal Communications Commission (FCC) has expanded previously reserved wireless ranges in rural areas to support increased bandwidth usage, many people still do not have technology to support it. The FCC found that as recently as 2018, 18 million Americans lacked physical access to minimal broadband internet connections.[17] Another study found that as of 2019, only 69.3% of rural areas have access to high-speed broadband internet and only

71% owed a smartphone.[18] The FCC recently provided telecommunication companies with temporary access to unused wireless broadband spectrum to support the increased demand on wireless services related to COVID-19.[19]

Expansion of telemedicine services during the COVID-19 pandemic offers the potential for force-multipliers for rural providers to decrease their clinic services and even some urgent care volumes as well as provide specialist support to the local emergency and inpatient providers.

Potential Mitigation Actions

- Many telecommunications service providers have increased data on existing customer wireless plans and have temporarily increased broadband access.
- Schedule home health visits with telehealth components to connect rural patients to providers.
- Establish or enhance consultation programs with specialty providers to minimize travel, patient contacts, and consult on current inpatients.

Challenges for At-Risk Populations in Rural Communities

Rural communities have diverse populations, some with characteristics that put them at more risk of illness than others. Residents in rural areas tend to have higher comorbidities which makes them even more vulnerable to COVID-19. Prevention, mitigation, and early identification are key steps to outbreak management; identifying these populations and working with public health officials to put mitigation measures in place is critical.

Food Insecurity

Food insecurity affects residents in many rural communities. This insecurity is amplified with schools out of session through fall 2020 and compounded by delays in the food supply chain. [20] In many parts of the U.S., food banks are receiving fewer donations due, in part, to many residents being out of work for several weeks (or months), or being afraid to shop or bring their donations to these locations for fear of contracting the novel coronavirus.[21] Though not unique to rural communities, these challenges are exacerbated by the distance between communities and food banks and the added transportation issues.

Potential Mitigation Actions
- Advertising to encourage continued food donation and increasing access to donation centers or drives (while maintaining appropriate social distancing) is one practice employed in some communities.
- Many schools have worked with their state education departments and the U.S. Department of Agriculture to provide school lunches to families in need, through drive through and other pick-up mechanisms.

Older Americans

According to U.S. Census data more than 20% of Americans 65 and older live in rural areas. Thirty-three states have a higher concentration of older Americans in rural areas, and in Arkansas, Maine,

Mississippi, Vermont, and West Virginia, more than half of the older population lives in rural areas.[22] Importantly, older age has been identified as a risk factor for severe disease and death from COVID-19. Also, older adults are more likely to have one or more chronic illnesses that may mask some of the more common symptoms of COVID-19 leading to delays in seeking treatment.[23] Long-term care facilities have experienced severe outbreaks and are a key driver of deaths due to the high risk population.

Potential Mitigation Actions

- Providers who care for older populations should conduct outreach to educate their patients on COVID-19 risk factors and social distancing
- Providers should also encourage their older patients to continue seeking care for chronic medical conditions to avoid any exacerbation. This may require additional outreach activities or telemedicine activities.
- Long-term care facilities should implement infection control procedures within their facilities.
- Long-term care facilities in rural areas should partner with local medical providers and hospitals to ensure plans for management of COVID-19 patients are in place including when to transfer to the hospital.

People with Substance Use Disorders

People who live in rural areas and are addicted to legal and illegal substances (e.g., alcohol, tobacco, methamphetamine, and opioids) are also likely to have relatively limited access to prevention/treatment assistance and be at higher risk for adverse outcomes.[24]

People with substance use disorders may also have lung damage or other physical injuries associated with abuse that puts them at greater risk for severe infection due to COVID-19.

Persons in recovery may experience relapse as programs available prior to COVID-19 may be unavailable or less accessible due to social distancing. Stay-at-home orders may contribute to feelings of isolation and literally prevent residents from accessing traditional treatment.[25]

Furthermore, mental and behavioral health problems can present or be exacerbated during this time and access to clinicians is limited in rural areas.

Potential Mitigation Actions

- The use of telehealth in treating addiction, such as for opioid use, has advanced quickly in response to COVID-19 and has been expanded to support other behavioral health issues.[26]

Transient Workers and Unique Working Conditions

While rural communities have fewer densely populated areas, essential facilities, such as meat packing plants, may be primary sources of employment. Some of these facilities have recently been COVID-19 hotspots.[27] Such facilities have many of the CDC categorized exposure factors that contribute to these outbreaks, including: distance between workers (minimal); duration of contact (prolonged); and type of contact (close, with shared tools, workstations, and the like).[28]

Many rural areas are also home to farming and migrant workers, who have been significantly affected by COVID-19 outbreaks due to the close quarters they work in and the congregate nature of their living spaces. Migrant workers may be afraid to seek care and may live in crowded conditions.[29,30]

Potential Mitigation Actions

- CDC has issued guidance for these facilities and many states produced additional, separate guidance that addresses social distancing in the workplace, housing, and healthcare for the workers in these facilities.
- Close partnership with advocacy groups, employers, and public health is needed so when the hospital recognizes positive cases within a group, actions to enhance testing and social distancing can be rapidly implemented and prevent further cases and potential strain on the healthcare system.

Tribal Communities

Some tribal communities have experienced a relatively high rate of COVID-19 cases. As of August 17, 2020, for example, the Navajo Nation reported 10,977 positive cases.[31] While there are stay-at home orders in place, water is sourced from areas central to the community and far away from residences on some tribal lands. Some people may have to travel more than 50 miles from home to collect drinking water, get groceries, and do their laundry.[32] According to the 2018 Broadband Deployment Report, only 64.6% of tribal communities have access to high-speed broadband internet.[33]

Potential Mitigation Actions

- In May 2020, the U.S. Department of Health and Human Services announced $500 Million distribution to tribal hospitals, clinics, and urban health centers to support their COVID-19 response.[34]
- To help residents from the Zuni tribe and Navajo Nation with accessing telehealth services, the Federal Communications Commission recently granted use of unassigned wireless spectrum. [35]
- Look into staff augmentation options from federal, state, and other local sources and non-governmental organizations.
- Ensure that information and resources are provided to emphasize social distancing, disinfection, and hand hygiene practices in community locations, such as wells and grocery stores.

Conclusion

Critical access and other smaller, rural hospitals face multiple challenges during daily operations. COVID-19 has magnified some of the issues facing these facilities. At the same time, these facilities offer critical resources to their communities and may offer space and services that are in significant demand across their State. Substantial differences in opportunities exist when these hospitals are part of a larger hospital system that includes tertiary care centers versus when they are independent or part of a system of other rural facilities. Close collaboration with the area healthcare coalition as well as the state hospital association and public health departments can ensure that the facility is supported and can also support the ongoing response.

Additional Resources

[COVID-19: Challenges and its Consequences for Rural Health Care in India](#). Public Health in Practice.

[COVID-19 Resources for Rural Health](#)

[Health Resources and Services Administration. COVID-19 Frequently Asked Questions - Federal Office of Rural Health Policy](#)

[HHS Telehealth Website](#)

[Rural Emergency Medical Communications Demonstration Project](#)

[Rural Health Information Hub: Rural Healthcare Surge Readiness](#)

[Rural Health Information Hub: Rural Response to COVID-19](#)

[The Impact of COVID-19 on Small and Rural Hospitals](#)

[Update for Rural Partners and Communities on the Coronavirus Disease 2019 (COVID-19) Response](#)

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