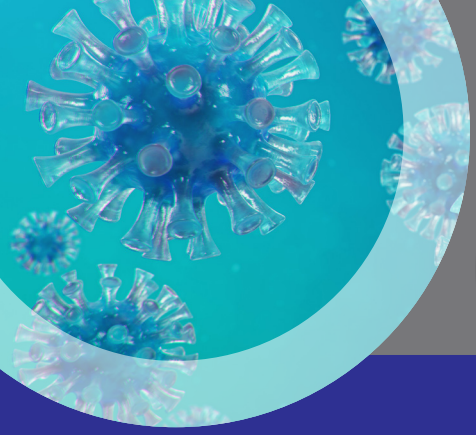

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c|h|a Colorado Hospital Association

Colorado Hospitals' and Health Systems' Response to COVID-19

Our Report to Colorado

Introduction

The COVID-19 pandemic was a challenge unlike anything Colorado's hospitals and health systems have faced in the modern era. Hospitals are prepared to handle nearly any disaster that comes their way – from natural disasters like wildfires and floods, to multi-patient traumas, to infectious diseases and medical mysteries. Yet this constantly evolving pandemic found ways to test even the most experienced and effective health care systems.

An "after action report" (AAR) is a critical analysis of a past event and often happens to assess what worked or what was challenging in a system's response to an event. The AAR for Colorado hospitals' response to COVID-19 is underway and will take months to complete. As a first step, CHA reviewed its member hospitals' and health systems' overall response to COVID-19, and many of the items that worked well rose to the surface.

In the very earliest days of the pandemic, the Association believed a well-coordinated response across state agencies, public health, and the health care delivery system would ensure access to care for all Coloradans and protect the health care system to minimize the number of people who would die from this virus.

Colorado succeeded on both counts. While the threat of overwhelming the health care system loomed several times over the past two years, the health care system, and hospitals in particular, were not overrun. Colorado did not experience some of the catastrophic situations seen in other states, such as hospitals activating patient crisis standards of care to ration needed health care resources. This report outlines, at a high level, the top reasons Colorado's health care system fared well.

Colorado hospitals intentionally sought advice from other states who had responded to the virus early on and seized the benefit of their experience. Situations where this made an impact were the early management of personal protective equipment (PPE) and the creation of the Combined Hospital Transfer Center. These two examples highlight how Colorado navigated this crisis differently and effectively using the lessons learned from other states.

As noted in *Colorado's Next Chapter: Our Roadmap to Moving Forward* Colorado ranked 10th lowest in the country for deaths per 100,000, and 14th lowest for cases per 100,000 over the course of the pandemic. This, combined with the preservation of care within Colorado, are key markers of success. Health care providers, Colorado health officials, and the Polis administration will continue to keep a careful eye on the virus and its trajectory with the goal of managing COVID-19 as an endemic disease.

Throughout the pandemic, Colorado's hospitals and health systems have worked collaboratively to tackle the many challenges the state faced, all to care for patients and communities and to ensure that the health system would not be overwhelmed. Hospitals and their health care workers mourn the Coloradans that died during this pandemic and recognize the toll that the last two years has taken on Colorado's communities and the health care workforce. But it is important to also recognize some of the components that worked well during this response, to learn from and utilize again as Colorado looks to move forward.

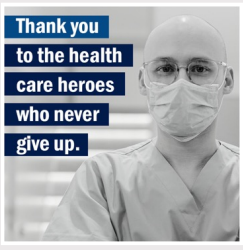
ONE | Colorado Health Care Workers Embodied Heroism

The health care workforce responded heroically to the pandemic and every subsequent challenge that came along with it. Caring for patients with a novel, unknown viral illness required clinicians to put themselves at risk for exposure to the illness.

The health care workers who took on that risk to serve patients also had to find ways to deal with the added anxiety of putting their loved ones at risk when they returned home. Health care workers resorted to staying in hotels for extended periods of time, changing in their garages before entering the house to immediately shower after a shift, and even renting RVs that they parked outside of their homes so that they could be close to their families while continuing to isolate out of caution.

Adding to the difficult burden of facing the unknown day after day was the fact that the personal protective equipment (PPE) that these health care heroes rely on for their daily work was extremely scarce in the earliest days of the pandemic. In settings where PPE should be plentiful, health care workers conserved and reused disposable masks, they sanitized face shields that are designed to be discarded after a single use, and they even sterilized and reused disposable gowns. Hospitals established intricate conservation programs and meticulously tracked utilization and supply of gowns, gloves, and other essential supplies.

Like the health care workers they employ, hospitals demonstrated flexibility that was crucial to the COVID-19 response. In partnership with state leaders, Colorado hospitals were able to use a Crisis Standards of Care (CSC) model for staffing to mitigate workforce shortages. This meant hospitals could redeploy staff to serve in areas where staff were desperately needed, even though it may be outside of an employee's traditional role. The ability to flex staffing models ensured that hospitals could meet the demands for acute care during the worst surges. The CSC for staffing were deactivated on Feb. 17, 2022.



"Not all heroes wear capes, ours wear scrubs."

CLICK HERE **to see more Colorado health care superheroes, as honored by their peers.**

As the pandemic raged on, many health care workers understandably grew fatigued, experiencing trauma caused by witnessing the loss of lives, enduring undue criticism, and lacking the energy to properly care for themselves. Staffing became the direst challenge facing hospitals and health systems. To address those concerns, Colorado hospitals implemented a number of new programs and benefits to care for their workforce, such as wage increases and bonuses, education benefits like tuition reimbursement, and wellness and mental health resources.

Health care workers continued to be the heroes they were in the early days of the pandemic – long after the messages of profound gratitude had stopped – because communities and patients needed their care. These heroes demonstrated the deep sense of commitment to patients; modeled the infection prevention practices that the public was asked to embrace for the first time, such as masking and hand hygiene; and served as beacons of hope for Coloradans through their own resiliency.

TWO | PPE Conservation and Management Preserved Care Capacity

In the early weeks of the pandemic, Colorado hospitals and health systems learned from other communities and states that had experienced significant outbreaks prior to the outbreaks in Colorado. Hospitals learned the key lesson of preserving PPE as much as possible because the PPE "burn rate," or use rate, was significant even as the supply chain became limited and unreliable. As one of the three S's that determines capacity (i.e., supplies, space, and staff), adequate PPE for staff was a critical element of Colorado hospitals' ability to provide care.

One of the pieces of advice Colorado heard was to *"preserve every piece of PPE you have now, even if you don't have COVID cases yet, because you're going to need it later."*

Hospital and health systems quickly responded to the recommendation to preserve PPE by creating and implementing PPE conservation policies and practices. This included practices such as wearing masks for longer periods of time or across shifts, returning PPE at the end of a shift so it could be sterilized for reuse, and limiting the number and types of staff that entered a patient's room. The federal government even supplied "re-sterilizing" equipment, known as the Battelle sterilization system, for N95 masks; Colorado had two such re-processors, one located on the Front Range and one on the Western Slope.

When PPE supplies ran low in the early months of the pandemic, communities supported their hospitals in multiple ways. Sewing circles dedicated to producing hospital PPE arose, with volunteers who sewed masks and gowns for health care workers at their local hospitals; others used community groups to collect N95 masks from other businesses; others started PPE drives to collect thousands of pieces of PPE.

CHA also worked diligently to provide PPE to hospitals in rural Colorado, relying on partnerships with local vendors, Project C.U.R.E, and Angel Flight West, to create, procure, and deliver more than 2,280 boxes of PPE.

Colorado secured PPE directly from overseas manufacturers during the early days of the pandemic. Through the combined efforts of Governor Polis' innovation task force, public/private partnerships, and the work of the state Emergency Operations Center, Colorado secured millions of masks, face shields, and gowns.

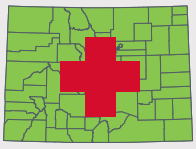
The Colorado Department of Public Health and Environment (CDPHE) activated CSC for PPE on April 7, 2020, recognizing the unstable supply chain and shortages throughout the state. This allowed hospitals and other health care facilities to utilize the conservation methods noted above. Because of the outstanding work in Colorado to flatten the curve of the initial Alpha surge, efforts by health care organizations to conserve PPE, and the ramp up of the supply chain, those crisis standards were deactivated by June 30, 2020. Hospitals learned well from that early challenge of managing their PPE supply, and Colorado never reactivated the CSC for PPE.

"We would not have been able to keep our staff and patients safe without all of the generous support of CHA and Angel Flight."

"Rural hospitals are the end of the supply chain with needs that go beyond just during the COVID crisis. This filled in the gap of whether a hospital was closing or not, and workers getting what they needed."

100+
flights

2,280
boxes of PPE



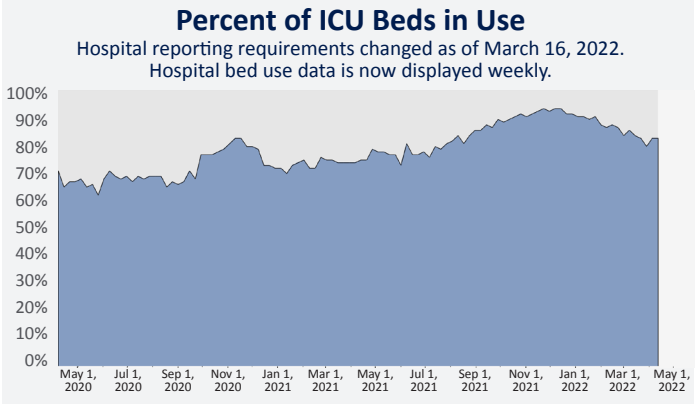
32
rural Colorado hospitals served

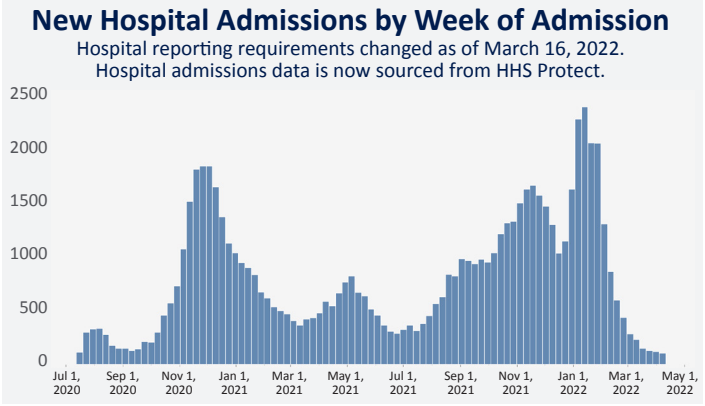
THREE | Capacity Management Kept Hospital Doors Open

In the earliest days of the pandemic, health care providers and the State Emergency Operations Center focused on the number of beds or "space." In addition to counting ventilators, hospitals also counted beds, including intensive care unit (ICU) beds, as well as spaces that could transition into additional units. The emergency preparedness plans of every hospital include surge capacity plans; however, most plans prepare for sudden influx of a sizable number of patients with a short length of stay in the hospital. As more became known about COVID-19, hospitals quickly adapted those plans to manage a prolonged increase in patients with longer lengths of stay.

Because of the novelty of COVID-19, the understanding of the illness it causes increased rapidly and changed frequently, which required hospitals to constantly change plans. Seasoned hospital administrators, collaborating with clinical leaders and emergency preparedness professionals, identified areas within their hospitals that could be turned into additional beds, ICUs, and areas that could be repurposed into COVID-19 care units. Hospitals converted rooms that could provide heightened infection prevention protocols (e.g., adding negative pressure rooms), added outside tent capacity to manage patient flow into the hospital or its emergency department, procured additional equipment and staff to add these beds, and more.

CHA and its member hospitals and health systems worked closely with the state to add capacity management tools, including reporting patient volumes and regular bed availability in the state's tool, EMResource. This information was also shared publicly starting in the spring of 2020, after recognizing the public's need to better understand the challenges facing the health system.





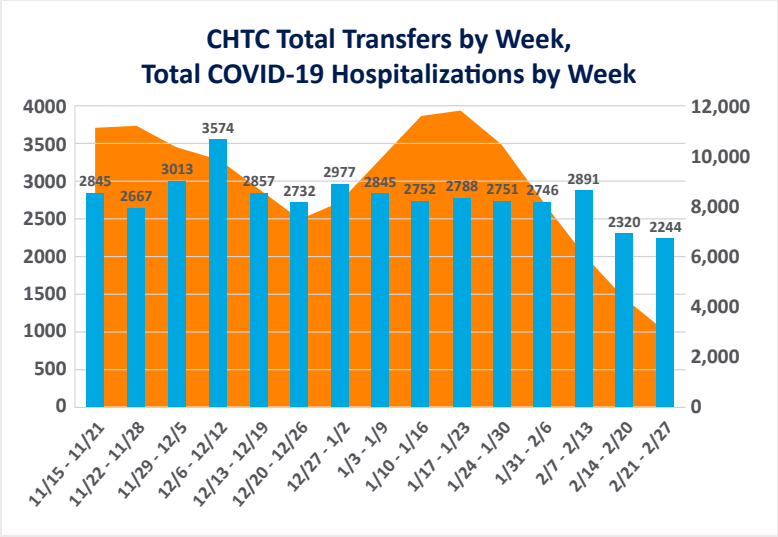
As the pandemic continued, hospitals and health systems had to stack additional measures to manage capacity on an hour-by-hour basis. Those measures included:

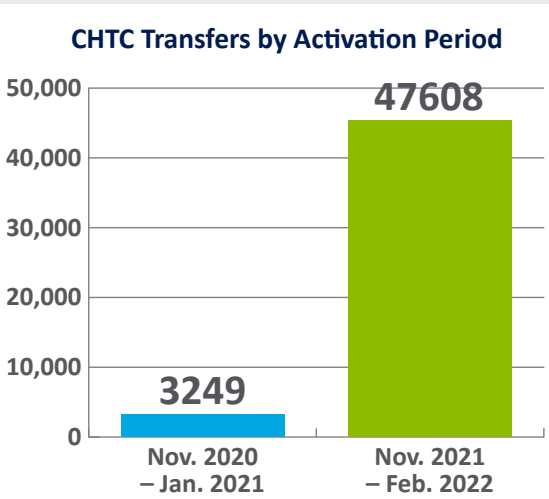
- Managing scheduled procedures to conserve space, staff, and PPE
- Improving patient throughout, so that patients who were ready to be discharged could be moved to an appropriate level of care, such as a long-term care or skilled nursing facility, freeing up a hospital bed for another patient
- Transferring patients to a hospital with available space and the appropriate level of care (most often through the Combined Hospital Transfer Center)
- Placing an emergency department (ED) on "ED divert" status, which asks ambulance providers to take patients to another nearby facility until a hospital can free up space in its ED for new patients
- Changing traditional staffing models or asking staff to work additional shifts to help cover surge areas and an influx in patients

FOUR | The Combined Hospital Transfer Center Maximized Resources Across the State

"If we had some formal way of transferring patients, we could have taken advantage of all of the resources in our state" **was all Colorado needed to hear from other states with earlier outbreaks in order to recognize the opportunity it had to stand up a statewide transfer center.**

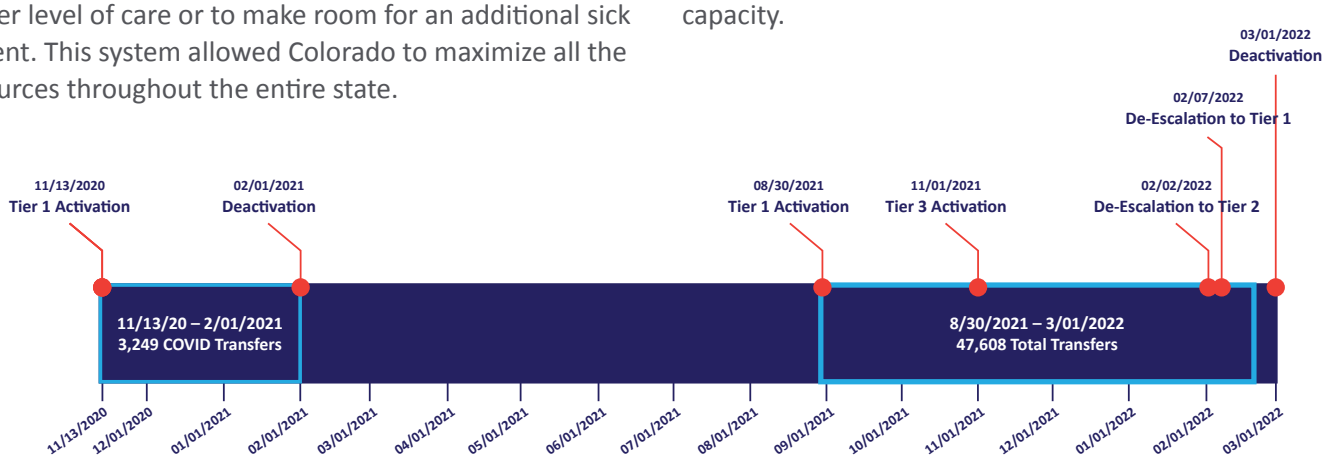
The Combined Hospital Transfer Center (CHTC) was a collaboration of every hospital and health system in the state, with the aim of using every bed and resource available, as needed, when capacity challenges became a reality. The CHTC was activated twice during the COVID-19 pandemic, once in 2020-21 during the most severe Alpha surge, and once in 2021-22 during the Delta and Omicron surges.





The CHTC was an essential tool during the COVID-19 surges, allowing for bi-directional transfers of patients to ensure that every patient who presented at a hospital could receive care in a timely way and at the right level. As the pandemic evolved, the transfer center expanded beyond the transfer of COVID-19 patients and transferred patients with other medical conditions and needed a higher level of care or to make room for an additional sick patient. This system allowed Colorado to maximize all the resources throughout the entire state.

The CHTC required a commitment from every hospital in the state and significant investment by the health systems, as their transfer center leads directed and managed the activities of the CHTC during each activation. Those transfer center leaders worked collaboratively – at times meeting multiple times each day every day of the week – to manage patient transfer needs and maximize hospital capacity.



FIVE | Experienced Hospital Leadership and High-Functioning Organizations Led the Response

Colorado has been fortunate as a growing state with a desirable quality of life, to have recruited and retained experienced hospital administrative and clinical leaders.

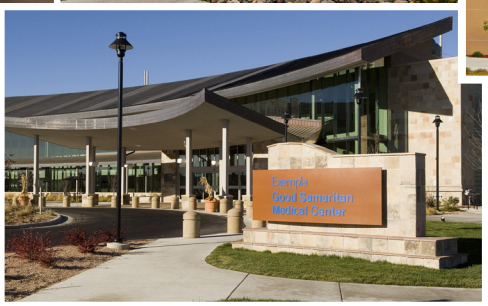
Colorado hospitals activated their incident command centers at the very beginning of the pandemic. In addition to managing regular hospital operations, these command teams also enacted their emergency and surge capacity plans. These command centers operated 24/7 as COVID-19 began to accelerate. Each incident command team included various members of the hospital's team, including clinical and nursing leaders, patient safety and quality improvement leaders, infection preventionists, communications, and administration. Utilizing this team-based approach to the crisis helped ensure hospitals were considering every angle and were poised to manage the challenges that continued to emerge.

Experienced leaders, using the Hospital Incident Command Systems model, or HICS, had to assess their three S's – supplies, space, and staff. A fourth "S" was added to account for spending, the money spent or that would have to be spent to ensure Coloradans had access to care and that hospitals could help their communities with additional services like testing and vaccination clinics.

Rural Colorado, which has its own unique hospital landscape, is also home to experienced health care leaders. In fact, in a time when many states are losing rural hospitals, Colorado has not had a hospital closure since the early 1980s – a testament to seasoned leadership.

With the increased global demand for supplies like PPE and some medications, rural hospitals quickly found themselves at the end of the supply chain early in the pandemic. This spurred Colorado's rural hospitals to develop creative workarounds to source many of the necessary items, and at the same time worked alongside their local public health agency to provide information to their community during a time when information was changing every hour.

Colorado's hospitals administrators served as an important conduit from the frontlines to the State Emergency Operations Center, with regular calls with the Governor to discuss hospitals' current state and immediate needs.



SIX | Clinical Leader Collaboration Drove Exceptional Patient Care

One of the most significant steps that helped Colorado improve clinical care and share best practices for this novel virus was that the physician leaders of the state's large health systems began meeting daily to discuss their learnings about COVID-19 patient care. These huddles changed the course of patient care daily, as COVID-19 patient care evolved rapidly. Traditionally, changes in care practices follow significant research and time, but in the case of this pandemic, patient care practices changed week to week. COVID-19 patients in Colorado had the benefit of the daily learnings of its largest health system clinical leaders, and it made a difference. Ventilator management, patient positioning, and medications administered all changed throughout the course of the early pandemic.

These same leaders documented their clinical work and published a review – Physician Executives Guide a Successful COVID-19 Response in Colorado – showing that patient care improved quickly over the course of the early pandemic. Patients spent less time on ventilators, their length of stay declined, and overall ICU-level care utilization was reduced.

The group has continued to meet through the course of the pandemic and has served in an advisory capacity to public health officials and state leaders. The continued convening and sharing among medical leaders played a significant role in Colorado's lower mortality rate compared to the national rate.

CHA, in partnership with clinical leaders from Colorado's health systems, hosted educational sessions to share best practices for clinical care, learned from parts of the state that experienced earlier surges of COVID-19. Those sessions covered critical issues, including the assessment and triage of COVID-19 patients, ongoing monitoring of the COVID-19 patient and indicators of worsening illness, and considerations for discharge of the recovering COVID-19 inpatient.

> ***"The collective goal was to bring the major health systems together to identify issues, share best practices, align on difficult decisions, and provide guidance when there was either no guidance or rapidly changing guidance on how to address these unprecedented challenges."***

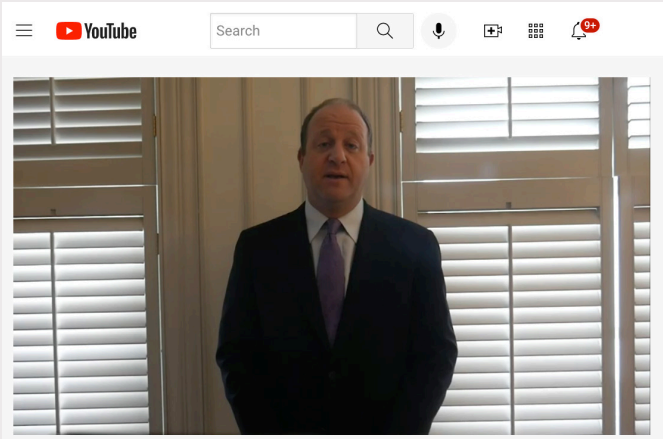
These physician executives also communicated with State Emergency Operations Center, regularly talking with the state's Incident Commander and the state's Chief Medical Officer about clinical care. This provided critical on-the-ground insight from Colorado's hospitals, beyond the numbers, to help guide the state's actions.

SEVEN | State Partnership Strengthened the Response and Success

Colorado benefited from the partnership between hospitals and leaders at every level and across many departments of the state administration. The state's Incident Commander had prior clinical experience both in a rural clinic setting and in administration in a large urban hospital. In addition to having relationships within the health care system, his experiences provided him with insight into hospital and clinic operations. This was especially valuable during the initial stages of the pandemic when circumstances changed every hour, and little was known about the virus. The state was a critical partner to hospitals as communities needed testing supplies, as communities needed PPE and ventilators, and then when the state received the first doses of the vaccine.

Early in the response, the State Emergency Operations Center invited CHA to provide a liaison to between the two organizations. This allowed continuous communications and collaboration between the state and hospitals, conveying information about the work undertaken by the state in response to the needs of the hospitals. This partnership produced many effective elements of the state's response, including reporting hospital capacity and COVID-19 patient data; securing and distributing additional PPE, testing and vaccine supply, and staffing; and coordinating key communications efforts (e.g., vaccination rollout).

Through its Joint Information Center (JIC), the state held frequent (sometimes daily) press briefings to inform Coloradans about the virus and the state's response. On many occasions state officials cited the hard work of hospitals and their dedicated health care workers in providing care.



Polis - Thank You Hospitals

CHA also had a representative on the Governor's Expert Emergency Epidemic Response Committee (GEEERC), led by CDPHE's Chief Medical Officer. The GEEERC created the CSC plan specific to COVID-19 and determined when to recommend activating certain components of that plan, like CSC for PPE and CSC for staffing.

CHA and hospitals and health systems had existing relationships with Colorado's regional Healthcare Coalitions (HCCs), which helped to solidify situational awareness throughout the pandemic for all. As CHA, the HCCs, or hospitals gained information, it was shared across the state and response partners within the HCCs, including EMS, public health, and emergency management.

EIGHT | Colorado Hospitals Prioritized Community Needs

Before the first COVID-19 patient in Colorado was even diagnosed, hospitals had already begun to prepare – setting up and running some of the first community testing sites in the state and convening with the state to discuss the immediate next steps. That preparation and commitment to serving their communities' needs continued throughout the pandemic and to this day, even as the state moves to an endemic response.

The Clinical Heroes in Colorado Hospitals Have:

- Cared for **60K+** COVID-19 patients
- Provided **1M+** COVID-19 tests
- Vaccinated **800K** community members

During the first two years of the pandemic, hospitals provided more than a million COVID-19 tests to community members. This included running testing operations out of the hospital facilities as well as assisting the state in mass testing events and providing access to testing at other outpatient facilities and community sites.

Providers in hospitals also stepped up to develop and run clinical trials to find new and better treatments for COVID-19 patients. Not only did providers work to develop more effective treatment plans for hospitalized patients, like proning and heated oxygen therapy, these efforts were instrumental in the development of convalescent plasma, monoclonal antibodies (mAb), and new forms of antivirals that could be used to combat COVID-19 infections.

Colorado hospitals and health systems provided new treatment options to patients with mild to moderate symptoms who were eligible to receive mAb. Hospitals partnered with state officials to receive shipments of mAb and repurposed outpatient clinics and other care locations to provide infusions to their communities.

Hospitals were also instrumental in the clinical trials for COVID-19 vaccine trials, enrolling hundreds of community members to assist in the efforts to create a life-saving vaccine. Once the vaccines received federal approval, hospitals created community vaccination clinics and provided hundreds of thousands of vaccine doses to members of their communities. Like testing, hospitals offered vaccine clinics within the hospitals, but also partnered with the state to provide staff and resources for mass vaccination clinics and aided at other outpatient and community vaccination sites.

NINE | Hospitals Embraced the Need for Continuous Improvement

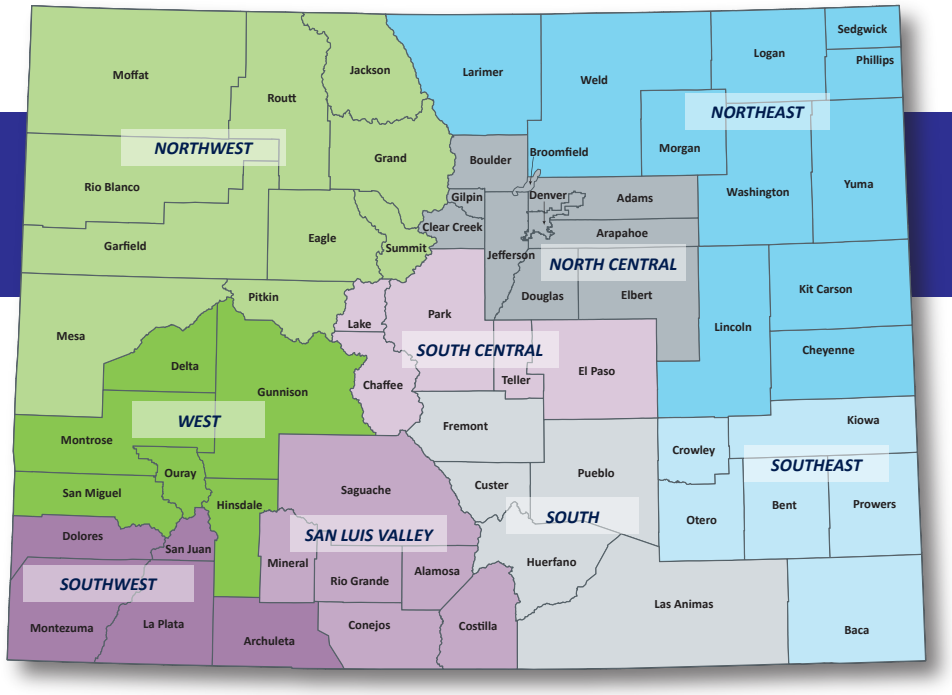
In order to keep improving the pandemic response, Colorado hospitals and health systems undertook an interim action report and improvement plan (IAR/IP) process in the summer of 2020. This process offers hospitals an opportunity to review what aspects of the pandemic response were going well and to identify areas that could improve as the response continued. CHA conducted IARs with every hospital in the state, broken down by the nine All-Hazards Regions, and developed an executive summary with the top learnings that were common among all regions.

Colorado hospitals train and prepare for every emergency imaginable, and this preparedness is what allowed hospitals to mount such a strong response effort early on. The learning from the IAR/IP process not only informed what hospitals did to continue responding to COVID-19 but will be used to inform how hospitals respond to viral outbreaks and pandemics in the future.

Additionally, as already mentioned, Colorado intentionally connected with state hospital associations in areas with outbreaks early in the pandemic. These connections allowed Colorado to get a "head start," both in preserving PPE and being ready to transfer patients when necessary. Colorado also connected rural hospital leaders as they were identifying creative ways to reengineer their facilities. As an example, hospitals were able to share how they were retrofitting patient rooms to add negative air pressure capabilities.

Clinical staff also attended a statewide COVID-19 Grand Rounds series on both caring for patients and the use of CSC in November 2020. Physicians from hospitals that had experienced surges previously shared their learning with clinical colleagues from across the state to better prepare them for their own eventual COVID-19 patient surges. This statewide collaboration resulted in many patients being able to receive care close to home, rather than be transferred to other facilities.

Colorado's nine all-hazards homeland security regions



TEN | Coloradans Did Their Part

Colorado – like most states – had many messengers asking for various forms of help in managing COVID-19 by controlling and limiting the spread of the virus. Colorado's governor embarked on months of media briefings to reach as many Coloradans as possible. Public health officials, clinicians, and other health care providers were often asked to help provide reliable, clinically proven guidance to steer behaviors of Coloradans throughout the various stages of the pandemic. In many cases, even patients and their families helped drive awareness through testimonies and interviews with media.

The result of these collaborative efforts was a strong vaccination rate that contributed to Colorado becoming one of the first states in the country to transition from pandemic to endemic COVID-19.

As trusted experts in their communities, Colorado hospitals were leaders in this large-scale effort to inform and advise the public at every turn as the pandemic evolved over time. Additionally, hospitals had a vested interest in alerting the public about the threat to capacity and the consequences of hospitals becoming overrun. When Colorado hospitals called upon the public to limit the spread of the virus and protect hospital capacity, Coloradans stepped up to answer the call – every time.

Colorado Vaccination Data

Nearly 4 million
people fully immunized

More than 10.5 million
doses administered

Almost 2,000
total vaccine providers

Despite exhaustion from relentless surges of the virus, the citizens of Colorado showed their willingness to protect their neighbors and support their hospitals and health care workers, not only by getting vaccinated but by adhering to the four Ws: Wear a mask, Wash your hands, Watch your distance, and Wait until it's safer to go out.

Since the early days of the pandemic, Coloradans have been asked to do their part time and time again – to protect themselves, their neighbors, their loved ones, and the health care heroes and hospitals who serve their communities – and time and time again, they did.