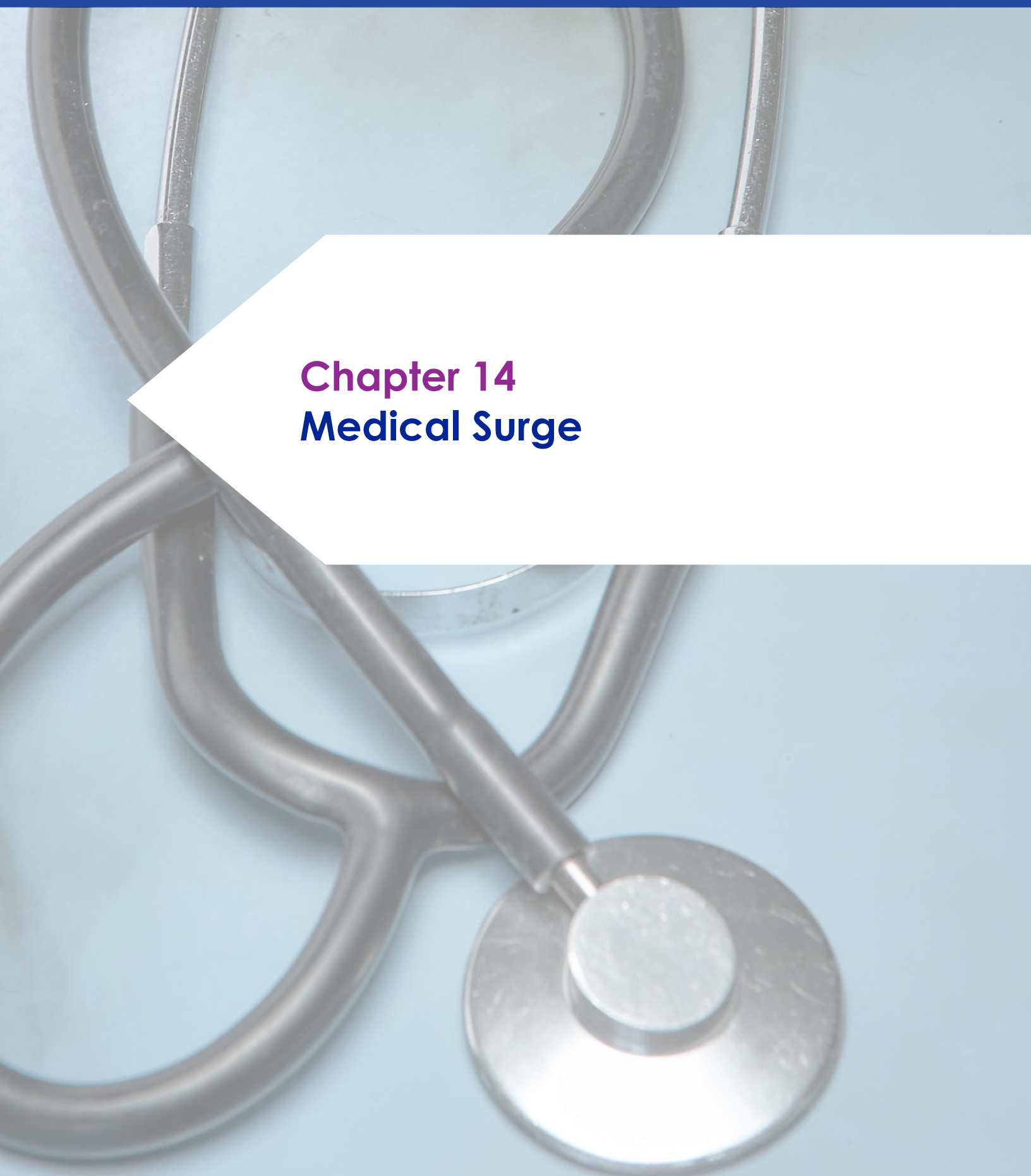

Chapter 14
Medical Surge

Version History

Version #	Date	Notes
0.1	2/4/20222	First Draft submitted to CPR Team
0.2	7/6/2022	Final Draft revised per review by CPR Leadership
0.3	10/10/2022	Final Draft revised per review by CDPH Directorate
0.4	7/24/2023	Final Draft reformatted
0.5	2/23/2024	Final Draft revised per re-review by CPR Leadership
1.0	3/12/2025	Final rebranded

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12. Medical Surge

Public Health Emergency Preparedness and Response Capabilities: Mass Care; Medical Materiel Management and Distribution; Medical Surge.

Related CDPH AAR chapters: Infection Prevention; MAC Group and Scarce Resource Allocation.

In this chapter, some abbreviations may be used interchangeably with their respective full spellings for ease of reading.

Chapter Summary

Overview

This section provides a high-level overview of milestones and activities related to this chapter.

In general, medical surges create an acute need for healthcare beyond what a healthcare delivery system is capable of providing. When medical surges are so overwhelming that capacity is exhausted, hospitals and facilities are forced to implement crisis standards of care. When a facility enters crisis care, normal healthcare operations cannot be maintained and the focus shifts to reducing care to individual patients in order to maximize health outcomes for the entire population.

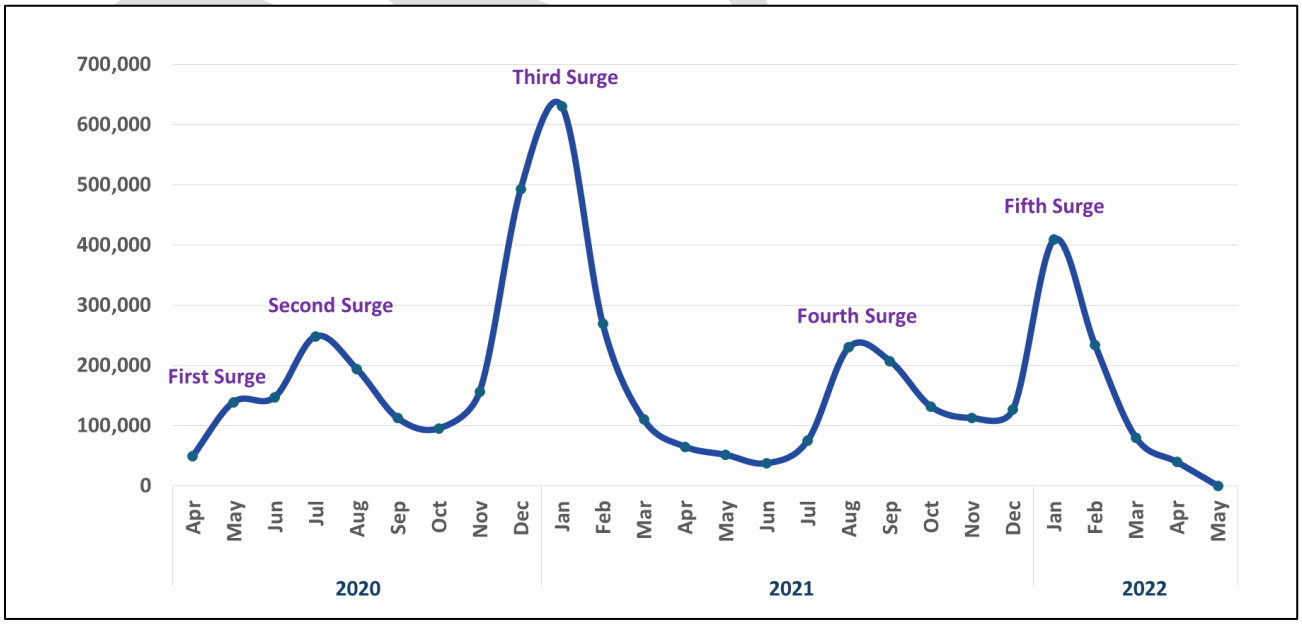
During medical surges, decision-makers must decide how to allocate scarce resources, from care space to staffing and supplies. This discussion of CDPH's medical surge response includes the State's efforts to identify, procure, validate, and distribute vast quantities of PPE, which was incredibly scarce early in the pandemic.

As the number of COVID-19 cases in California rose rapidly in early Spring 2020, the State established the Medical Surge Task Force to prevent excess morbidity and avoid the implementation of crisis care. The Medical Surge Task Force included leaders from CDPH, EMSA, Cal OES, and CalHHS (among others) in what was a whole-of-government response. Based on modeling projections, State leadership estimated in April 2020 that California would need an additional 50,000 hospital beds, which included a hospital surge capacity of 20%. Task Force began working on strategies to increase surge capacity with specific actions in three areas: supplies, space, and staff.

While all of these entities played a role in the medical surge response, certain departments took the lead on distinct work streams. CDPH oversaw medical surge data and reporting; Cal OES managed logistics and supplies including PPE and oxygen; EMSA managed resources and spearheaded patient transfers across the state; California Department of Healthcare Access and Information (HCAI) (formerly OSHPD) helped with oxygen planning and preparedness; and CalHHS led policy and guidance, staffing, and reimbursements. In addition, the Medical Surge Task Force quickly established technical assistance teams, with representatives from these departments, to support skilled nursing and other facilities. Through the technical assistance teams, the State communicated with facilities in crisis to assess and deploy resources rapidly. Consistent with the Task Force's strategic areas, the medical surge operational efforts were grouped into the same major workstreams: supplies, space, and staff.

Throughout the response the task force created key data and metrics and then refined over time to inform the evolving policies on supplies, space, and staff. As time progressed, CDPH established a robust data analytics team that collected, analyzed, and presented data that allowed decision-makers to make evidence-based policy decisions. **Figure 1** depicts California's COVID-19 hospitalizations for 2020, 2021, and 2022, sourced from California's Open Data Portal. Data is available beginning March 2020.

Figure 1, COVID-19 Hospitalizations by Month, March 2020 – May 2022



Response strategies related to staffing and space changed throughout the response as different surges hit different facility types. Strategies related to procuring supplies also changed as supplies like PPE became more abundant; however, procurement challenges continued throughout 2021 due to the global supply-chain issues.

The State's multi-pronged response to the surge, with its focus on supplies, space, and staffing, resulted in an innovative, nimble, and data-driven approach. As one executive summarized, "We did some amazing things to build surge capacity." Many leaders echoed this sentiment: "the facility expansions were pretty amazing" and as a result of "stretching the imagination" about what was possible. Regarding staffing, another leader commented that "at the end of the day, we delivered over 23,000 medical personnel to over 700 facilities, clinics, and sites, and avoided crisis care. That's an immense success."

Timeline and Key Milestones

	2020
Winter 2020	• **January 24:** CDPH activated the Medical and Health Coordination Center (MHCC) for COVID-19 • **January 26**: First two confirmed COVID-19 cases in California • **February and March**: First Strike Team deployments to SNFs and LTCFs
Spring 2020	• **March 4:** Governor declared State of Emergency in California • **March and April:** First Surge (SNF Surge) • **March and April:** Multiple Executive Orders waived licensing and procurement regulations to increase staffing and supplies, and provide additional funding for surges • **March:** Medical Surge Task Force established • **March:** Daily hospital survey initiated • **April:** Daily SNF survey initiated • **April 9:** California estimated an additional 50,000 beds were needed statewide • **April 28:** First Health Corps shift took place
Summer 2020	• **June – August:** Second Surge (Hospital Surge)
Fall 2020	• **November:** Beginning of Winter Surge • **September:** AB 2537 signed into law, requiring hospitals to maintain stockpiles of PPE
	2021

Winter 2020/2021	• **December – February:** Third Surge (Winter Surge) • **December 3:** Regional Stay-at-Home Order triggered by ICU capacity of >15% in counties
Spring 2021	• **March:** Recovery from Winter Surge • **April 1:** AB 2537 went into effect • **April:** First case of the Delta variant detected in California
Summer 2021	• **End of August:** Beginning of Delta Variant Surge • **August 16:** State Public Health Surge Order went into effect, requiring hospitals statewide to accept transfer patients from facilities with limited ICU capacity • **August 16:** Governor's Executive Order N-12-21 extended previous waivers to provide healthcare staffing flexibility
Fall 2021	• **September – November:** Fourth Surge (Delta Variant) • **October – November:** Planning for Omicron surge began, including planning for hospital capacity expansion
	2022
Winter 2021/2022	• **December – February:** Fifth Surge (Omicron Surge) • **January 11:** First Ambulance Patient Offload Time (APOT) team deployment
Spring 2022	• **March 31:** Final APOT team deployment
	2023
Winter 2022/2023	• **February 28:** California's State of Emergency for COVID-19 ended
Spring 2022	• **June 30:** MGHCC deactivated from the COVID-19 pandemic response

First Surge: Spring 2020 SNF Surge

California's first surge in Spring 2020 is referred to by leadership as the "SNF Surge." The focus was on outbreaks and infections at skilled nursing facilities and other congregate care facilities and settings. As the surge began, most SNFs were at 90% capacity and strategies were limited in terms of expanding space to increase bed capacity. With many residents using walkers and wheelchairs, there was not enough space to add beds in rooms while maintaining social distancing. Early attempts to expand facility capacity included re-opening vacant buildings, including former hospitals or other facilities. However, these efforts were not successful as the State found that vacant buildings were in too much disrepair to operationalize. The State also began exploring and developing Alternative Care Sites (ACSs); however, most SNF patients did not

meet the criteria to be discharged to these sites. Ultimately, there were not many places to relocate vulnerable SNF patients during the Spring 2020 surge, and many SNF patients ended up in the hospital or succumbing to COVID-19. As one subject matter expert (SME) put it in hindsight, "we built a lot of capacity that didn't get used in the early days. We should have invested more resources in the staffing side." Throughout this chapter, the term alternative care site(s) will be used interchangeably with its abbreviation.

During this first surge, PPE was extremely scarce at both the state and facility level due to worldwide shortages. CDPH focused on supporting SNFs by providing technical assistance, helping procure and provide PPE in conjunction with Cal OES, providing infection prevention training and education, and providing staffing support using Strike Teams and other federal, state, and contract staffing teams.

Spring 2020 saw fewer hospital patient numbers than anticipated and is sometimes referred to as a "ramp up" for the later, more pronounced surges. However, this first surge gave leadership the opportunity to create and build processes and operations that would be utilized more heavily during later, larger surges.

Early in the response, leadership focused on defining and collecting the data that would drive decision-making around medical surges. This included establishing daily surveys to collect real-time facility data, defining key metrics, and synthesizing PPE data to conduct an inventory of the State's stockpile.

As the response continued, the State's focus shifted to validating and fine-tuning the data, which involved adding or adjusting metrics.

Second Surge: Summer 2020 Hospital Surge

During the Spring 2020 surge, CDPH established a cadence of providing staff, technical support, and strike teams to skilled nursing facilities and congregate care facilities across the state. However, the second surge of Summer 2020, whose impact was felt most in hospitals, caught the State off guard, according to leadership. Hospitals were overwhelmed much more quickly than SNFs—for instance, in a mere 12 hours, a hospital's emergency room could be flooded by 500 patients. The State's visibility into hospitals was not nearly as good as its visibility into SNFs, and as one leader put it, "facilities didn't let us know they were falling down until they were."

Additionally, the tools and support that CDPH provided to SNFs did not initially meet the needs of hospitals. General acute care hospitals (GACHs) required vastly different types of assistance SNFs. CDPH pivoted from the SNF response to the hospital response, which involving expanding hospital capacity, creating new care spaces, and continuing to provide staffing support by engaging more contract agencies. During the Summer 2020, CDPH and its partners built out systems, processes, and tools "operationalizing the system" that would prove vital during the Winter 2020/2021 surge.

CDPH also continued to help procure effective PPE during the second surge. Adequate PPE was still very scarce during the second surge, although more vendors were beginning production. CDPH assisted Cal OES with the State's stockpile by providing technical assistance, procurement support, and validation expertise. Validation teams were responsible for drafting masking guidance, establishing minimum product specifications, and helping ensure that the products purchased were acceptable and met California's quality standards.

During the second surge, the State continued refining key metrics and datapoints by region and by county, and added California-specific data variables to the federal hospital survey. CDPH continued to expand its data analytics teams, who were responsible for collecting, analyzing, adjusting, synthesizing, and distilling the data into dashboards and reports that could be used by policy makers.

Third Surge: Winter 2020/2021 Surge

When the third surge hit, the State was able to rely on capacity that it had developed earlier in the year. Multiple staffing pools were available and many functional ACSs had been established.

Yet the third surge, which occurred over Winter 2020/2021, was the most severe and demanding across the board. It pushed the strategies for medical space, staffing, and supplies to the brink. From early December 2020 to early January 2021, the number of positive cases spiked, hospitals became overwhelmed, and healthcare staff was in incredibly short supply. The most acute period occurred between December 25, 2020 and January 1, 2021.

Over this holiday period, the State had to undertake several extraordinary measures to save lives, including emergency hospital evacuations and increased pay policies to entice contracted staff to work over the holidays. "We

were in deep trouble during that week," one leader noted. "There was no staff to deploy, we were getting desperate calls from counties, and the price for ICU [intensive care unit] nurses escalated to $250 per hour."

During the winter surge, California's alternative care sites, which had not been used as much as anticipated, helped expand hospital capacity by caring for lower-acuity patients, thereby freeing up ICU beds. Several ACSs were pushed to the limit. Yet CDPH and its partners realized that the best approach was to expand capacity within hospitals: "We found that hospitals could do it better if we helped with technical assistance teams, waived requirements, and provided oxygen and equipment."

In the same vein, another leader noted that when it came to medical surge space, "we did not follow some of our plans. You [should] always obviously try to expand existing healthcare facilities as much as possible before you move to building out sites."

From a data perspective, during the Winter 2020/2021, CDPH began collecting metrics related to emergency departments and temporary ICU space. These metrics helped them better track and respond to surges.

The worldwide PPE supply shortage had improved by the third surge, with more supplies and equipment becoming available. Many vendors flooded the market with sub-standard products, overwhelming the PPE validation team, who evaluated every product to maintain the integrity of the State's purchases.

Fourth Surge: Fall 2021 Delta Surge

As the Delta variant medical surge began in late summer and early fall 2021, the State's strategy shifted to recognition of the fact that Californians were weary of restrictions caused by the pandemic and the realization that medical surges could continue for years to come. It had been eighteen months since the first COVID-19 cases were identified in California, and leaders recognized the need to at least partially resume business operations that had been suspended for nearly two years. At all levels, conversations began to occur about if and when the COVID-19 pandemic would become endemic.

Partial resumption of normal operations was made possible by the fact that by the fourth surge, CDPH's medical surge strategies had already been operationalized, and there were processes, systems, and infrastructure in place. CDPH continued to manage and deploy contract staff to facilities, but federal

and state strike teams had largely demobilized. At the same time, CDPH began cost recovery activities, seeking to recoup its staffing costs from facilities.

At this point, most ACSs had either been closed or repurposed, since the earlier expansion of hospital capacity enabled facilities to handle the surge in patient numbers. The worldwide PPE shortage had abated and resource requesting, validation, and purchasing processes had been streamlined. The existence of "back channels" outside established requesting processes remained problematic.

While responding to the fourth surge, CDPH also developed several debriefs, internal assessments, and retrospective analyses in order to apply lessons learned from past surges. Topics of these assessments included the Health Corps volunteer program, internal operations and emergency response structure, and hospital surge operations.

Throughout California's medical surges, CDPH built large data teams that analyzed and standardized data and produced visual dashboards. These dashboards enabled leadership to identify surge trends and make evidence-based policy decisions. As one SME noted, "we developed a really sophisticated technical architecture for dashboards that gives us the ability to visualize what's going on." Technology solutions also helped improve the resource requesting, resource ordering, and staffing deployment processes.

Fifth Surge: Winter 2021/2022 Omicron Surge

California experienced its fifth surge, the Omicron surge, over Winter 2021/22, nearly two years after the start of the pandemic. By this point, the State had well-established processes in place and much more was known about the virus itself, allowing the State to plan for the surge in well in advance. "With Omicron, we had the ability to be proactive," one leader noted. As cases started rising in others part of the world in October and November 2021, the Medical Surge Task Force began planning for California's coming surge, including building out surge beds within hospitals and offering supplies and equipment to facilities. At this point, the worldwide PPE shortage had abated, the State's resource requesting and fulfilment processes had matured. Still, despite this planning, a combination of unique factors—including chronic health care worker staffing shortages, the highly infectious nature of the Omicron variant, and the public's "COVID fatigue"—led to new, unforeseen challenges.

In previous surges, the impact was most acutely felt in hospital facilities when there simply were not enough beds to care for the sick. For instance, in December 2020 when ICU capacities dropped below a threshold, it would trigger a regional Stay-at-Home order. However, during the Omicron surge, ICUs were not heavily burdened (which the State had prepared for). Instead, hospital emergency departments (EDs), known as the "front door," became overwhelmed.

ED visits were already high and staffing was already low as the fifth surge began. The Omicron variant, which was more infectious but less severe than previous variants, led to an unprecedented increase in case numbers and hospitalizations. It was just "values we didn't expect," one expert noted, as "new admissions just shot up tremendously." During the fastest-growing periods of the Omicron surge, new hospital admissions rose by approximately 160% in a week; in contrast, during the fastest-growing periods of the Delta surge, hospital admissions grew by just 60% in a week.

High case numbers were only one of several factors contributing to the new "front door" problem:

- Hospitals went into the surge with lower staffing baseline than previous surges.
- Walk-in ED visits did not decrease and emergency medical services (EMS) transports did not decrease. In previous surges, Californians avoided going to hospitals out of fear, but this was no longer the case during the Omicron surge.

These elements created a bottleneck before patients were admitted into a hospital bed. The resulting bottleneck increased ambulance delays, negatively impacting a key metric referred to as Ambulance Patient Offload Time (APOT), also known colloquially as "wall time."

Whereas ICU capacity was the defining metric during the third surge, APOT became a key metric during the Omicron. Across the State, ambulances lined up waiting to offload their patients, essentially rendering them non-operational. In response, the State created and deployed a new intervention, APOT teams. These teams of paramedics and nurses cared for multiple patients until a hospital bed become available, so ambulances could return into the EMS system.

The Omicron surge also exposed the State's lack of real-time EMS data, which had been hitherto overlooked. While California had spent the previous two

years creating robust hospital and facility data, this infrastructure did not exist for ambulance data. The State quickly developed a manual work-around by requiring regions to report on key ambulance and APOT metrics, which were used to make resource allocation decisions. However, leaders acknowledged that placing this burden on locals in an effort to obtain data that was not available in real-time represented a weakness in the State's response.

Future Surges

Each surge has its own unique characteristics, and different future variants could produce different surges. During the Omicron surge, while case numbers were incredibly high, hospital admissions remained lower. However, if a radically different variant emerged, it could result in a much higher burden for California's health care system.

Despite this inherent unpredictability, at the end of the fifth surge the State was in a very different position than it was at the end of its first surge. "What's different now is we have the data to let us do predictive analytics," one expert noted. In the future, this ability to model and predict case trends—combined with the deployment of existing and new surge interventions—will remain key to helping the State respond effectively to medical surges.

Main Strengths and Successes

This section describes the Main Strengths and Successes, including findings and corrective actions, related to this chapter. Further elaboration and a more detailed discussion of these strengths and successes can be found in the Analysis of Activities section.

1. CDPH collaborated with its partners in innovative ways to procure PPE and other supplies during a time of extreme scarcity.

In the face of worldwide demand for the same scarce supplies, CDPH partnered with Cal OES to successfully acquire products for facilities across the State. Operating under expedited procurement processes enabled by the Governor's Executive Orders, staff in unfamiliar roles "rose to the occasion" to help acquire critical life-saving resources for the State stockpile. The teamwork, collaboration, and effective lines of communication between different accounting, budget, and procurement teams enabled many successful procurements. CDPH teams were "masterminds" at getting contracts executed as well as fostering new relationships with vendors and manufacturers.

Finding/Corrective Action: CDPH has the opportunity to document its emergency contracting and procurements processes for future responses and leverage the documentation to develop training for procurement and redirected staff. *(ID: Med Surge 1)*

2. CDPH, EMSA, Cal OES, and other partners collaborated on innovative solutions to expand capacity at hospitals and create new care spaces at alternative sites.

The complex efforts to increase healthcare capacity by developing alternative care sites and expanding within hospital facilities were largely successful. Expanding existing facilities was not simply a matter of adding more beds; rather, state technical assistance teams walked through facilities one by one, collaborating and developing creative solutions to allow more patients to be treated. These solutions involved waiving licensing and regulatory requirements so that spaces could be modified in non-traditional ways. For example, waivers allowed patient beds to be installed in conference rooms and enabled pediatric ICUs to be converted to adult ICUs. As one leader put it, "the expansions we made

were pretty amazing." Many spoke of the "remarkable" and "incredibly innovative" methods used.

Additionally, Medical Surge Task Force leadership collaborated to create alternative care sites across the state. These sites were designed to care for less ill patients, thus making more hospital beds available for higher acuity patients who needed more intensive care. While ACSs ultimately were not used as much as anticipated, their creation is still considered a success, although leadership recognized later that they may not have been the best use of early resources.

Finding/Corrective Action: CDPH and Medical Surge Task Force partners successfully expanded capacity to accommodate medical surges through a variety of ways, creating novel strategies that can be replicated for future pandemics. *(ID: Med Surge 2)*

See the related finding *Med Surge —10* in this chapter.

3. CDPH and Medical Surge Task Force partners successfully expanded capacity to accommodate medical surges, creating novel strategies that can be replicated for future pandemics. Over 23,000 medical personnel were successfully deployed to California's facilities to provide surge staffing support over the course of the five surges, ultimately helping avoid crisis care.

By Summer 2020, CDPH and its Medical Surge Task Force partners created and operationalized a supplemental staffing system that provided essential support to facilities, preventing the activation of crisis care. The implementation of surge staffing early in the pandemic played an especially critical factor in helping facilities through the Winter 2020/2021 surge.

CDPH developed the capacity to manage complex staffing operations including procurement, deployment, tracking, reporting, and invoicing. The team managed multiple federal, state, volunteer, and contracted staffing pools, deploying different pools simultaneously based on unique facility needs.

Ultimately, CDPH's internal team and its partners successfully deployed over 23,00 personnel (filling over 38,000 deployment requests) to healthcare facilities across California over the five surges. "At the end of

the day, that's the most important metric," one expert noted, calling the staffing strategy an "immense success" that helped the State avoid crisis care.

Finding/Corrective Action: The systems and processes established by CDPH and its partners helped the State deploy thousands of healthcare workers to facilities swiftly and effectively, avoiding the implementation of crisis care. *(ID: Med Surge 3)*

4. Over time, CDPH developed a large and diverse pool of 11 contracted healthcare staffing agencies, expanding the State's options and flexibility when deploying staff. This approach smoothed the workload for both the staffing agencies and State staff, which increased operational effectiveness and bolstered data accuracy.

The growing need for surge staff prompted the State to engage with an increasing number of contract staffing agencies. While this increased the complexity of business operations, having 11 different staffing agencies available to deploy also increased CDPH's options and flexibility. With numerous agencies to choose from, the team was able to spread out staffing deployments among different vendors, instead of relying on one or two. This "level-loading" allowed smaller agencies with more accurate data to provide staffing and also helped the State respond nimbly to facilities' needs with tailored solutions. The deployment team developed strong relationships with each staffing agency, eventually learning who was best suited for each facility type. Through cultivation of these relationships as well as data audits, "we learned who was good at what and were able to act on that."

Finding/Corrective Action: Allocating deployments among 11 staffing agencies so there are fewer deployments per agency can even the workload for both staffing agencies and State staff, which increases operational effectiveness and bolsters data accuracy. *(ID: Med Surge 4)*

5. CDPH resolved early data challenges, including manual processing and lack of adequate data. Facility data, resource/supply data, and staffing data continued to be refined and automated throughout the response, enabling increasingly sophisticated evidence-based decisions.

Early in the response, CDPH manually collected disparate and incomplete data used to inform medical surge strategies. Initially, hospital and SNF surveys were conducted using phone interviews since there was no system in place to easily obtain information about facility or ICU capacity. Over time, due to substantial investments in technology and the creation of multiple data analytics teams CDPH improved data quality, completeness, usability, and automation significantly. State teams defined fields, created visual dashboards, established a centralized data repository, developed predictive analytics, and initiated multiple surveys related to medical surges. New technology and processes were applied to staffing, facility, resource, and supply data, allowing State leadership to better understand, track, and respond to surges. According to one respondent, the "biggest lesson learned was being able to apply data anywhere possible to make it easier for decision-makers."

As CDPH and its partners built these data systems and processes, a great deal of thought and energy was devoted to developing "common ways" to discuss and analyze data and ensuring that public-facing and internal dashboards were connected and reflected the same numbers.

Now, there is an opportunity for retrospective research and analytics, as analytics provide a valuable tool for identifying deficiencies. According to one leader, "We did an exceptional job of creating rich data in order to help California respond. Now we have a trove of information, waiting for analysis. We can go back, look for patterns, and prove or disprove theses."

Finding/Corrective Action: CDPH should maintain the medical surge data and associated technology and initiate retrospective analyses on historical datasets to help identify trends. Additionally, in future pandemics, CDPH should take the time to set expectations with partners early on regarding what details should be tracked regarding State-provided resources. *(ID: Med Surge 5)*

6. California conducted advance planning in preparation for the Omicron surge based on predictive analytics. During this fifth surge, the State applied lessons learned, discarding less successful interventions and responded to unforeseen challenges with new interventions.

The advance planning for Omicron involved the use of predictive analytics and data optimization, and it was largely successful, according to leadership. "All the surge beds were built and staffing resources in place four weeks before we ever saw the surge," one leader noted. Another agreed that "it was the most prepared we'd ever been." During the Omicron surge, California used lessons learned from the most impactful surge interventions. For instance, since previous surges had revealed that ACSs were not that effective in expanding capacity, the State did not use ACSs during Omicron. Likewise, it also did not revive the Health Corps volunteer staffing program. Instead, the State directed its resources to new, unique challenges associated with the Omicron surge, exhibiting its ability to pivot quickly. Unlike previous surges, which overwhelmed hospital ICUs, during Omicron hospital EDs were most impacted. In response to bottlenecks in EDs and long ambulance delays, the State created and deployed a new intervention, APOT teams, to help facilitate patient transfer from the ambulance to the ED. APOT teams were deployed for several months in early 2022 and were ultimately successful at helping facilities relieve bottlenecks and reduce patient offload times. Lastly, the State also created and deployed Mobile Monoclonal Antibody Strike Teams to facilities experiencing outbreaks to administer therapeutics.

Finding/Corrective Action: Continue to conduct advance planning for surges based on predictive analytics. Continue to introduce new interventions as needed, and retire less impactful interventions, in response to evolving needs. Maintain modeling capability so that modeling can be implemented earlier on during the next response. *(ID: Med Surge 6)*

Main Challenges and Lessons Learned

This section describes the Main Challenges and Lessons Learned, including findings and corrective actions, related to this chapter. Further elaboration and a more detailed discussion of these challenges and lessons learned can be found in the Analysis of Activities section.

7. The large numbers of vendors attempting to sell sub-par products to the State necessitated an overwhelming amount of validation work to ensure product safety.

Extreme shortages in markets and exemptions to the State's standard procurement processes prompted a flood of vendors and donors to "come out of the woodwork" wanting to provide PPE to the State. Since there was no pre-qualification process, the CDPH validation team had to evaluate every item submitted. The team found that most vendors were simply not equipped to conduct business with the State, and 99% of the products offered did not meet basic standards or minimum specifications. "We'd open up a shipment, and it would be filled with fakes," as one SME said. In response, newly-established CDPH teams were devoted to evaluating all products "to make sure that what we ended up sending to facilities was safe."

Finding/Corrective Action: The State should implement a pre-qualification process for vendors in order efficiently cull out substandard products, thereby reducing the risk of providing inferior supplies to California facilities. *(ID: Med Surge 7)*

8. It was sometimes difficult for CDPH's technical experts to advise the Logistics and Commodities Task Force on PPE purchases for the State stockpile.

With Cal OES managing the State stockpile and leading PPE procurement and purchasing, the validation teams within CDPH's Occupational Health Branch (OHB) assumed a more technical advisory role based on their familiarity with national and international standards and criteria. These teams, comprised primarily of industrial hygienists, helped set the specifications for what the State should buy, provided consultation on the reasonableness of purchases, and also drafted guidance on the use of face coverings and PPE.

In the beginning, it was challenging to establish a cadence for CDPH to provide technical knowledge to the Cal OES Logistics and Commodities Task force regarding what to purchase. In the future, greater participation of healthcare experts in the purchasing process would be possible even while recognizing the need to rapidly secure products.

Finding/Corrective Action: Include technical experts early in the PPE procurement process and develop a list of minimum requirements for PPE procurement documents. Establish lines of communication between subject matter experts and decision-makers to help ensure the purchase of appropriate products that meet stakeholders' needs. Clarify up front what resources are available from the State, and communicate more effectively with resource recipients that the available resources may not provide a total solution, but will allow them to prioritize existing caches. *(ID: Med Surge 8)*

For a discussion of the prioritization process for distribution of PPE, see the MAC Group and Scarce Resource Allocation chapter in this AAR.

9. The emergence of back channels in the resource requesting process allowed facilities to receive duplicate items, and created confusion and disorganization.

During COVID-19 medical surges and throughout the response, CDPH's usual emergency resource requesting process was not followed. The creation of back channels caused facilities to request and receive supplies and staffing resources directly from individual CDPH programs, deviating from the normal process in which facility requests are submitted through regional groups to CDPH's centralized Medical and Health Coordination Center (MHCC). With the MHCC no longer serving as the central clearinghouse, the State's visibility into the resource requesting process deteriorated. This left the system vulnerable to duplication, with some facilities successfully obtaining resources via multiple avenues. Additionally, the displacement of the MHCC from its centralized role created information-sharing challenges. With resources and staffing deployments flowing through nontraditional processes, not all areas of CDPH had access to the same information, leading to confusion and disorganization.

Finding/Corrective Action: CDPH should require all resources requests and staffing deployments to go through the MHCC. *(ID: Med Surge 9)*

10. To expand medical surge space, increasing capacity within existing hospitals is more effective than building alternative care sites (ACSs) from the ground up.

During the first two surges in Spring and Summer 2020, the State's approach to increasing care space focused on creating ACSs throughout the state. However, these sites were ultimately not used as much as anticipated, due to a variety of factors. Initially, the uniform nature of federal medical stations (the basis for California's sites) was not flexible enough to allow for different regional configurations. Once built, many sites were geographically too far away from hospitals to provide overflow relief, necessitating costly and complex patient transfers. Lastly, many patients did not meet the criteria to receive care at an ACS. Although some ACSs locations provided valuable relief during the Winter 2020/2021 surge, leaders and SMEs agreed that "the better strategy is expanding the hospitals." As one noted, "The more we can build out within the hospital footprint, the better."

Finding/Corrective Action: For future pandemics, the State can devote its energy and resources to expanding capacity within existing facilities early on, as opposed to creating alternative case sites. *(ID: Med Surge 10)*

11. During unprecedented surges and without prior planning, hospitals struggled to develop innovative solutions to expand capacity and required significant State assistance.

As the State technical assistance teams visited hospitals to help identify spaces that could be expanded or repurposed, they found that in general, overwhelmed hospitals struggled develop innovative solutions on their own. Without prior plans in place, expanding capacity in real-time during an unprecedented health care surge was incredibly difficult, and facilities were unable to be innovative in this environment.

Finding/Corrective Action: CDPH could consider requiring hospital emergency mangers to have a "surge space" plan. In addition, CDPH could also document the innovative facility-expansion solutions that it implemented during the COVID-19 pandemic to inform future public health emergencies. *(ID: Med Surge 11)*

12. The Health Corps volunteer program was not as effective as anticipated to source qualified supplemental healthcare staff.

While practical in theory, the Health Corps volunteer program ultimately fell short of expectations and was unable to provide the staffing relief originally anticipated. Issues that hindered the program's success included the complexity of administrative operations and the misalignment between volunteer skills and facility needs. Often, by the time a volunteer was ready to deploy, the facility no longer needed that person. Additionally, Health Corps found itself competing with local reserve corps, inadvertently diverting resources away from local response efforts.

In general, the volunteer program did not provide the supplemental support that was originally anticipated. The process of volunteers picking and choosing shifts and which facilities they wanted to work in did not align with healthcare facility needs for longer shifts over a period of days. The State pivoted and began investing more time and resources into its contract staffing strategy.

However, the Health Corps Program did cover over 4,500 healthcare shifts in over 100 facilities statewide, including SNFs, assisted living facilities, correctional facilities, alternative care sites, and general acute care hospitals. These shifts would have otherwise gone unfilled, leaving facilities short-staffed. Yet the effort that went into program operations would have been better spent on other response activities.

Finding/Corrective Action: The use of a volunteer staffing program to provide surge staffing was not as successful as anticipated. In the future, energy and effort should be devoted to other staffing strategies. *(ID: Med Surge 12)*

13. Deploying thousands of contract staff presented complex operational challenges for both the facilities and the vendors.

As CDPH contracted with more and more staffing agencies, business operations grew increasingly complex due a number of factors. The program team responsible for managing deployments faced challenges from facilities as well as vendors. Some facilities would submit urgent staffing requests on a daily basis as a way to "get into the queue," so CDPH would call each facility every day to "cull out the real staffing issues from the overreported ones." On the other hand, some facilities were reluctant to inform CDPH about staffing needs for fear of citation (especially early in the response) so when those facilities suddenly found themselves short-staffed, the State had little time to react. Additionally, early data challenges limited the State's visibility into facilities.

Working with staffing agencies also presented the deployment team with unique operational challenges. While the team developed strong relationships with these vendors, it was common in the industry for staffing agencies to "overpromise and under-deliver." This contributed to staffing no-shows, delays, and re-deployments. One of the important lessons learned was to "not take what the staffing agencies say at face value," but to ask probing questions and follow up with data audits when possible. Additionally, the lack of sufficient record-keeping at the facility level limited the team's visibility into who was actually showing up to work. Leaders noted that there was a need for greater visibility into facility-level deployments, either through regular audits, a real-time live tracking tool, or some other type of "feedback loop" that helps keep track of where staff are deployed across the state.

As one leader summarized, "usually, when we're talking about resource requests, it means PPE and shipped supplies. But here we're talking about people, and the human element is a different ballgame. It's really hard to check on 500 people per day."

Finding/Corrective Action: In the future, CDPH may anticipate and mitigate the risks associated with managing complex staffing operations, including instituting more regular audits or a tracking tool. *(ID: Med Surge 13)*

14. Some facilities relied on supplemental staffing longer than anticipated or to provide breaks for their existing staff.

Early in the response, CDPH found that it was incredibly hard to extract Strike Teams once they had been deployed to facilities. Strike teams were designed to offer short-term staffing relief up to two weeks; however, once deployed, it became difficult to extract them. As one SME noted, "once we got them there, we couldn't get them out. We had Strike Teams in facilities for up to six weeks, which was a huge problem."

Another unexpected outcome was some facilities' use of contract surge staff for non-surge activities. CDPH learned that facilities were using surge staff not to expand patient capacity, but to provide time off to existing staff. "We didn't expect this outcome, and it contradicted the intent and the effort," one leader noted. CDPH has already incorporated this important lesson learned into its operations and requirements. Currently, if the State provides surge staffing, that staff must be used in surge space and cannot be used in any other space or to give breaks.

Finding/Corrective Action: In future pandemics, the State needs to anticipate and plan for facilities who misuse or become overly dependent on supplemental staffing. *(ID: Med Surge 14)*

15. Recovering the costs for State-deployed surge staff is a difficult and time-consuming accounting operation.

The rapid deployment of surge staff across California was followed in Fall 2020 with the start of a complex accounting and cost recovery operation that is ongoing and will continue for years. The need to deploy staff into overwhelmed facilities as quickly as possible led to the speedy execution of cost-sharing agreements up front, but the process to recover these costs has been slow and challenging. Challenges include lack of data standardization among staffing pools; shared CDPH/EMSA invoicing responsibility; poor record-keeping and timecard validation at the facility level; and lack of audit capabilities. During surge periods, the State had between 3,000 to 10,000 staff deployed across hundreds of facilities from over 10 staffing agencies, each using a different timecard format. "We wouldn't do this without a standardized timesheet again," one leader noted. In addition, facilities had different cost-sharing agreements with the State, which further complicated reimbursement processes.

Finding/Corrective Action: As cost recovery and invoicing efforts continue, the State should continue to improve and refine its cost recovery operations, including developing audit capabilities. In the future, the State can implement standardization requirements for timecard reporting as part of the staff deployment process. *(ID: Med Surge 15)*

16. The lack of State personnel with hospital operations and healthcare emergency management expertise created a gap in the State's response.

The medical surge response suffered from a lack of expertise around certain critical areas, including emergency hospital operations, crisis care planning, and emergency procurement and contracting. While CDPH boasts strong epidemiological and infection prevention teams, the State lacks expertise in hospital operations and healthcare emergency management and it is not clear which department has ownership over these areas. There was a "shoestring staff" around healthcare operations, and one expert noted that these positions seemed to be "inherently not in the response." However, this specific expertise was desperately needed to help operationalize ACSs and the deployment of thousands of surge staff.

Finding/Corrective Action: The State can improve future responses by determining ownership of this function and role, and then hiring personnel skilled in hospital operations and healthcare emergency management. *(ID: Med Surge 16)*

17. CDPH developed its Crisis Care Guidelines quickly and without significant stakeholder input.

CDPH's Crisis Care Guidelines, released in June 2020, were developed hurriedly, without important stakeholder input. Ideally, crisis care guidelines need to be thought through carefully years before any event, since they provide a unique medical and ethical framework based on the allocation of life-saving resources—in crisis care situations, "you're withholding a ventilator from one patient and giving it to another." The development of crisis care guidelines should include input from a variety of stakeholders, including minority, elderly, disabled, and vulnerable populations. These stakeholders should be engaged early on in the process. However, CDPH had to create its crisis care guidelines from scratch in the midst of a pandemic, leaving no time for such public engagement. "We did it absolutely the wrong way," one leader said.

Finding/Corrective Action: CDPH should develop a process to review and improve its crisis care guidelines, including early public input and stakeholder engagement. *(ID: Med Surge 17)*

18. The lack of robust, real-time EMS data hampered the State's ability to respond effectively to ambulance days during the Omicron surge.

During the Omicron surge, hospital ICUs were overwhelmed but rather hospital EDs – the "front door" where the State had not deployed many resources. CDPH and its partners had built out surge beds within facilities, but when confronted with long ambulance offload delays, had to develop a new strike teams in response. However, the lack of real-time Statewide EMS days meant that the leadership team had no visibility into ambulance delays. In order to obtain the data needed to allocate ambulance resources, the State developed a manual work-around that required regions to report out on several key metrics related to ambulance days. This was a time-consuming process that increased the administrative burdens for already-overwhelmed local jurisdictions. EMSA, with input from CDPH, is currently initiating strategic planning efforts to address the lack of real-time EMS data, with the goal of bridging this important gap that was exposed during the Omicron surge.

Finding/Corrective Action: Continue efforts to improve the EMS data infrastructure to provide real-time, Statewide visibility into the EMS system. *(ID: Med Surge 18)*

Analysis of Activities

This section elaborates and provides more detail on the findings, corrective actions, and lessons learned that are presented in the Main Strengths and Successes and the Main Challenges and Lessons Learned sections.

Medical Surge Resources and Supplies

Procured PPE and Other Scarce Supplies During a Worldwide Shortage

- In early 2020, arguably one of the biggest challenges facing the State was the worldwide shortage of PPE. To address this challenge, the State established a Logistics and Commodities Task Force comprised of representatives from key departments including CDPH, EMSA, and Cal OES.
- One of the first tasks required was to figure out how much PPE was in the State and where it was located to create a "common operating picture." This effort was an enormous undertaking given the different systems used by each department. One of the most obvious sources of PPE identified was the State stockpile. However, like the federal government's stockpile, California's stockpile was mostly expired, so the State quickly attempted to obtain waivers from manufacturers to enable the stockpile to be used.
- In addition, the federal government also began allocating and delivering PPE from its stockpile to states, including California. Without warning, the federal government would send "push packages" to expedite delivery, yet the unexpected arrival of supplies created confusion and disrupted timelines, with some staff thinking that the packages were a hoax.
- Supplies from federal and State stockpiles still did not meet California's needs, so CDPH and Cal OES immediately began trying to procure more PPE supplies, including N-95 masks, gloves, gowns, swabs, and pipettes. As one leader noted, "everyone in the country and in the world needed these supplies, so it was a huge undertaking to get enough PPE into the State."
- Procuring PPE and supplies was a joint effort. Cal OES took the lead on contracts and purchasing with CDPH providing technical assistance, product validation, and contracting support. CDPH quickly established a

team to expedite contracts and purchase orders, validate products, and coordinate with Cal OES to avoid duplicate requests and orders. CDPH's responsibility to help provide PPE to medical and healthcare facilities very rapidly expanded to include dentists, schools, and law enforcement, adding additional scope and complexity.

- The supply shortage was exacerbated by price increases, with many orders going to the highest bidder. Subject matter experts spoke of situations where international buyers with ready cash and transportation were able to purchase massive amounts of supplies "right out from underneath us."
- Although the State worked tirelessly to procure supplies as quickly as possible, many facilities entered into contingency planning modes, and, in rare cases, crisis standards of care conditions. "We never ran out of ventilators, but PPE got very thin," one subject matter expert noted. According to another, "we heard some horror stories of workers in facilities using trash bags as gowns."
- In response to the PPE crisis, new legislation was announced to further regulate PPE. The Governor signed SB 275 (2020) and AB 73 (2021) to ensure the State maintains a sufficient stockpile of PPE for future pandemics, wildfires, or other public health emergencies. These bills amended Health and Safety Code, Section 131021, mandating CDPH create guidelines for the procurement, management, and distribution of PPE and coordinate with Cal OES to establish the stockpile. AB 2537, effective April 1, 2021, requires general acute hospitals to create and maintain their own stockpiles of PPE. AB 1217, introduced in February 2021, would have amended existing government code to shift the PPE stockpile responsibility from Cal OES to CDPH, but since it did not pass, the responsibility remains with Cal OES.
- By the Omicron surge occurred, nearly two years into the pandemic, the supply landscape had changed significantly. The PPE crisis had abated and due to the nature of the Omicron variant, fewer patients required ventilation. As a result, PPE and ventilators were not as in-demand. During the Omicron surge, the Medical Surge Task Force was able to meet increased demands for supplies and equipment such as IV poles and pumps.

Quickly Ordered Supplies Through Creative, Expedited Processes

- The need to procure PPE and supplies under demanding market conditions called for innovative approaches, from negotiating directly with manufacturers to speeding up procurement processes. In April 2020, the Governor's Executive Order N-46-20 waived certain statutes and regulations, providing the State with flexibility to negotiate procurements. CDPH's accounting and administrative teams worked in tandem, first creating contracts and purchase orders, then aligning funding and budgets on the back-end.
- Working together, EMSA, CDPH, Cal OES, and DGS agreed on a procurement approach in which goods and services were sourced first and funded later, instead of following the State's usual processes. "It was very helpful to have the paperwork and transactions conducted concurrently," one expert said. Procurements labeled as COVID-19 were fast-tracked: "we'd agree on the need and then find the money later." Throughout the response, at any given time, the State's team was negotiating anywhere from six to twelve COVID-related contracts, ranging from supplies and staffing to leases and construction.
- For further discussion, see the Contracting and Procurement chapter in this AAR.

Verified Quality of Incoming PPE Products

- As the pandemic continued, market conditions changed, with PPE and other supplies becoming increasingly available and a growing number of vendors interested in doing business with the State. With many procurement regulations temporarily suspended, a flood of vendors clamored to offer products to the State, including N-95 masks; however, many vendors offered products that were unacceptable. In addition to vendors trying to sell to the State, California also received a huge influx of donations and offers that also required evaluation.
- Multiple teams were created within CDPH to validate these supplies, with different teams devoted to validating PPE, beds, medical instruments, and other supply categories. Many of these teams reside within CDPH's Occupational Health Branch (OHB), including the PPE Validation Team.
- This team was responsible for writing minimum PPE product criteria and PPE product validation, and working with other State agencies (such as

Cal OES and DGS) to validate and advise on purchases. Yet the volume of sub-standard products made validation inefficient and difficult. As SMEs noted, "There were many vendors, but not many good vendors. We spent a lot of time evaluating a lot of products. At the end, 99% of it was worthless, but we had to evaluate it." Others echoed the overwhelming administrative task of identifying sub-standard or even fraudulent products, for example, N-95 respirators that lacked National Institute of Occupational Safety and Health (NIOSH) certification.

Unanticipated Bifurcation of Emergency Resource Requesting Process

- As medical surges stressed the healthcare delivery system, facilities, desperate for supplies and staffing resources, used any means necessary to obtain PPE and other resources early in the pandemic.
- In normal emergency operations, the State follows California's Standardized Emergency Management System (SEMS). SEMS is the cornerstone of California's emergency response system and the fundamental structure for the response phase of emergency management. In accordance with SEMS, facilities wishing to request resources and supplies submit their requests to their operational areas, regions, or counties, who in turn submit requests to CDPH's Medical and Health Coordination Center (MHCC). More specifically, resource requests are supposed to be funneled through county-level and regional groups, including Regional Disaster Medical Health Specialists (RDMHSs) and Medical Health Operational Coordinators (MHOACs).
- However, facilities scrambling to find scarce resources began reaching out directly to their respective CDPH programs and centers, who would help locate resources for them. This created a back channel that bypassed the usual centralized process, creating confusion and duplication. As one SME noted, "facilities were getting resources twice, and everyone lost track of how much they got."
- This bifurcation applied not just to resources like PPE but staffing as well. Bypassing the MHCC and normal emergency operations was not just limited to the resource requesting process. Many factors contributed to the displacement of the MHCC and the emergence of what many called "two responses."

- By the time that the Omicron surge began in late Fall 2021, the resource requesting processes had changed. The traditional requesting process that goes through the MHCC, RDMHSs, and MHOACs was more streamlined and "working much better during Omicron." The Medical Surge Task Force was also more proactive, and reached out to the RDMHSs with regular reminders to communicate with their MHOACs to ask them what supplies they needed "in order for beds to be operational." EMSA would also inform the RDMHSs of its supply truck delivery schedule.
- For a more detailed discussion, see the Resource Requesting and Public Health Ordering System chapter in this AAR.

Medical Surge Space

Created Alternative Care Sites

- When State leadership estimated in April 2020 that they would need to add 50,000 hospital beds based on modeling projections, they began to implement a variety of space-expansion strategies, including developing alternative care sites. ACSs are designed to care for lower acuity patients, thus making more hospital beds available for higher acuity patients who need more complex and intensive care. ACS services include intravenous fluids, medications, and basic lab testing, but emergency or critical care services are usually not supported at an ACS.
- CDPH collaborated closely with EMSA to establish ACSs modifying the federal medical station (FMS) model to fit California's unique needs. FMSs are rapidly deployable caches of equipment and supplies, but the State found that many of the supplies did not meet the needs of California's diverse regions. For instance, the medical stations were too large for some smaller Northern California jurisdictions who did not want 100 hospital beds in a single location, and as a result some of the stations were divided or split in half. One leader noted, "not everyone ended up needing them in the same configuration, so we had to move them." In the end, most FMS supplies and equipment were repurposed to support California's alternative care sites, which were a joint creation of CDPH and EMSA. This collaboration allowed care sites to be quickly established under EMSA's authority, rather than having CDPH create a new licensing mechanism for these temporary sites that did not fit within its existing facility categories.

- The first ACS was established at Sleep Train arena in Sacramento. At its peak California was operating 10 ACSs across the state in the following counties: Sacramento, Tulare, Orange, Imperial, Los Angeles, San Diego, San Francisco, Contra Costa, Fresno, and Riverside.
- The build-out of ACSs was successful and some of them did have significant usage rates, such as Fairview ACS in Orange County, Porterville ACS in Fresno, and Imperial ACS in Imperial County, which at one point housed 60 patients at a level of care comparable to a GAC hospital. During the Winter 2020/2021 surge, several ACSs were pushed to their limit and helped relieve overflowing hospitals. Sleep Train ACS was also repurposed as a monoclonal antibody administration site for one month, in March 2021.
- However, in general, the alternative care sites were ultimately not used as much as anticipated due to a variety of limiting factors:
  - Skilled nursing facility patients were generally unable to be transferred to alternative care sites. ACSs were not designed to accommodate patients with limited mobility, marked dementia or psychiatric issues, durable medical equipment requirements, or who were prone to wandering—all of which are key characteristics of the SNF population. These attributes significantly limited the number of SNF patients that ACSs could accept, which was problematic during the Spring 2020 SNF surge.
  - During the Summer 2020 Hospital surge, the medical needs of patients being discharged did not always align with the level of care available at the nearest ACS. If a patient needed medical services that the closest ACS did not offer, the alternatives were either to transfer the patient to another ACS or have them remain in the hospital. Moving patients is risky and complex, and it was often easier from an operational perspective to keep them where they were.
  - Geographic limitations also played a role in the utilization of ACSs. While the Sleep Train ACS did treat some patients, due to its distance it was not able to accept as many patient transfers from the Bay Area as initially hoped. It was too far away to relieve pressure on the most impacted facilities.
- The Porterville, Imperial, and Fairview ACS sites went into temporary closure on March 1, 2021. The Sacramento ACS went into temporary

closure on March 31, 2021 and permanent closure in May. By mid-2021, the majority of ACSs across the State transitioned into temporary closure. The retired ACS public dashboard is available here.

- When planning for the Omicron surge in late fall 2021, the State did not consider reopening these ACSs. Instead, it focused on expanding capacity within hospitals and other facilities, applying a key lesson learned from previous surges, namely that while ACSs add more space, they do not necessarily add staff. As one SME noted, "space was never really a problem, except in rural communities that lacked infrastructure." Even in these rural communities, many patients were not transferred to ACSs, but to urban hospitals that offered higher levels of care.
- For additional information on ACSs, see the EMSA AAR.

Hospitals Expanded Their Existing Capacity

- The State found that rather than creating new care sites, the better option was to keep patients in existing facilities and expand capacity within those facilities. This involved repurposing and expanding within hospitals in innovative ways, and building out hospital beds in tents adjacent to hospitals. With less acute patients in adjacent tents, they could still access hospital services but were not occupying ICU beds. Still, the overwhelming preference of hospitals was to increase capacity within their facilities.
- Increasing hospital capacity did not only involve adding beds, but converting and modifying existing settings. For instance, one licensing waiver allowed pediatric ICU beds to be converted to adult ICU beds, and other waivers enabled the creation of isolation rooms and negative pressure rooms. These were monumental accomplishments, given the complexity of care space requirements and building codes.
- Hospitals relied extensively on State technical assistance teams to help them identify creative ways to increase capacity. Leaders from CDPH, EMSA, Cal OES, and OSHPD (now HCAI) visited hospitals and walked through the spaces together with hospital leadership. The teams evaluated areas that could be repurposed to accommodate more patients, such as conference rooms and cafeterias, and brainstormed what types of licensing regulations would need to be waived: "We looked at each space, and each one had different abilities to do different things in different ways. It was a huge variety." Facility by facility, the teams assessed what regulations would need to be waived in order to enable

expansions, developing innovative and creative solutions to expand capacity within hospitals.

- In preparation for the Omicron surge, the leadership team followed its established facility expansion processes, including converting space and building out medical tents in hospital parking lots. The increased use of medical tents during Omicron, instead of ACSs, enabled facilities to care for higher acuity patients.
- One key difference during the Omicron surge was that the State successfully expanded facility space before the peak of the surge in early January 2022 (in contrast to other surges). "It was the same process, we just did it very early," one leader noted. Starting in fall 2021, State leaders began planning for the Omicron surge based on the upwards trends in Omicron cases worldwide. The team proactively reached out to hospitals with the offer to expand their facilities, and added 1,000 beds before the Omicron surge began.

Expanded Hospital Capacity put Unexpected Pressure on Infrastructure and Hospital Operations

- The expansion of hospital capacity to accommodate more patients carried several unforeseen consequences for hospital infrastructure and operations. For instance, on one cold night, having so many hospitalized COVID-positive patients on oxygen caused the gas pipes to freeze at night in several hospitals.
- Overall, respondents felt that the State did a "phenomenal job of mitigating the entire oxygen risk" during the third surge over Winter 2020/2021. However, leaders realized the gravity of the situation in which unpredictably cold temperatures and large numbers of patients on oxygen could cause a hospital's infrastructure to fail. In response, CDPH and EMSA worked with HCAI to develop oxygen failure mitigation strategies. By the Omicron surge of Winter 2021/2022 one year later, these efforts paid off and helped reduce the number of critical oxygen failures. Fewer patients required ventilation, but "after a year's worth of work, hospitals were more on top of those issues," one leader noted.
- The expanded capacity of hospitals also strained operations in unexpected (although less severe) ways. The influx of patients created a ripple effect, impacting all hospital services and operations, from surgeries to food services. In some cases, there were not enough operating room

staff to perform specific emergency surgeries and patients had to be transferred to other facilities. In addition, non-medical services such as dietary, kitchen, and laundry services were also strained, due to higher patient volumes coupled with staffing shortages and worker absenteeism.

When Hospitals Experienced a Surge Beyond their Capacity, EMSA Transferred Their Patients

- Multiple factors contributed to the need for patient transfer, including regional differences, hospital capacity, and the fact that different parts of the State experienced surges at slightly different times. Within the Medical Surge Task Force, EMSA led patient transfers and movement, which was conducted largely by air. At one point, in early Summer 2020, EMSA was flying patients from Southern to Northern California on a daily basis, ultimately transporting 600 patients over six weeks in order to "offload" overwhelmed hospitals. Once recovered, these patients then had to be flown back home. Moving patients between hospitals presented a unique set of operational challenges, including the need to meet transfer-specific PPE requirements. Ultimately, EMSA contracted with a vendor to establish an All Access Transfer Center that functioned as a dispatch center and liaison, connecting hospitals, ambulances, and healthcare workers to provide services and support patient movement.
- While patient transfers were problematic during the first four surges, during the Omicron surge the system became inundated. Leaders noted that the Statewide patient movement plan needs to be strengthened, which will require a better understanding of the factors that prevent or enable patient movement. The patient movement plan is written for a short-term (such as a fire) that requires evacuation of a few hospitals, not a two-year Statewide pandemic. According to SMEs, one of the plan's shortcomings is that there are no guidelines or requirements for hospitals to accept patients. Some hospitals consider a patients' insurance status when considering whether to accept the transfer. "The problem wasn't a lack of having enough ambulances, it was finding a receiving facility that would accept patients who needed transfer," one SME noted. "There were individuals who expired while waiting for transfers to hospitals that could handle their level of care," another commented, noting that it will be critical to understand the root causes of these problems.
- For a further discussion of patient transfers, see the EMSA AAR.

Medical Surge Staffing

Health Corps Staffing Volunteer Program Created

- In March 2020, Governor Newsom announced the creation of the California Health Corps, a volunteer program designed to connect volunteer workers with healthcare facilities in need of supplemental staffing. This volunteer program allowed nurses, medical technical, physicians, paramedics, and other healthcare workers to sign up for volunteer shifts in facilities across the state. The program was housed within EMSA and received over 96,000 initial applications who were screened for eligibility. However, after multiple screening and onboarding processes, only an estimated 860 volunteers were approved to participate—and half of them never signed up for a shift.
- The first Health Corps shift took place in April 2020. Throughout the course of the response, volunteer personnel covered over 4,500 shifts in over 100 facilities across the state. These shifts would otherwise have gone unfilled, leaving facilities short-staffed.
- Ultimately, this volunteer program did not prove to be as effective as envisioned. As one public health leader commented, "We did cover a few thousand shifts, but the volunteer pool was hardly ever used. Once we got people through the intake processes, they either weren't available or eligible for our deployment needs. The project wasn't as successful as we'd hoped it would be." Another noted, "We have learned a lot about contracting for staff as a better option than a volunteer registry."
- The Health Corps program was not used during later surges, including the Omicron surge, given the lessons that had been learned during earlier surges. For instance, the process of volunteers picking and choosing shifts and facilities ultimately did not align with facility needs. Often, by the time a volunteer was ready to deploy, the facility's needs had changed. Health Corps also found itself competing with local reserve corps, which unintentionally siphoned resources away from local response efforts. Ultimately, these earlier experiences led the State to not use Health Corps during the Omicron surge and instead rely on its other contract staffing strategies.
- See the discussion on contract staffing below.

Federal and State Strike Teams Provided Agile Staffing Support in Early Phases

- Federal and state staffing strike teams provided early staffing support beginning March 2020 before the State's focus shifted to contracted staff. Utilization of various Strike Teams had several benefits including their ability to deploy quickly to all regions of the State. Strike Teams would include a combination of medical and administrative personnel, emergency medical technicians, physicians, and/or registered nurses.
- Strike Teams were provided by the U.S. Navy, U.S. Army, U.S. Veterans Administration (VA), U.S. Airforce, California National Guard, and EMSA CAL-MAT. Teams were organized in different ways: by facility type (SNFs, ACSs, or GACHs) served, by region served (Southern or Northern California), or by functional specialty (e.g., ICU, testing, or vaccines). Initially, all teams were focused on skilled nursing facilities since those facilities were the epicenter of the first surge. However, as new training and medical needs arose and SNF surge gave way to the summer Hospital Surge, the capabilities and duties of strike teams were expanded.
- As the pandemic continued and CDPH contracted with increasing numbers of staffing agencies, the need for strike teams declined. In June 2020, the Army, Navy, and VA were deactivated, while CAL-MAT and the California National Guard continued on. Nevertheless, federal and state strike teams played a critical role in providing emergency staffing support very early in the response.

Multi-Agency Coordination Group Allocated Scarce Staffing Resources

- The Multi-Agency Coordination (MAC) Group was established in March 2020 to adjudicate scarce resources, including staffing resources, PPE, and other supplies. Staffing and other scarce resources were adjudicated by the MAC Group from August 2020 to January 2021, and then again in August 2021 for the Delta surge. During the Omicron surge in Winter 2021/2022, the MAC group also adjudicated resources, especially the staffing teams deployed to facilitate transfer care from ambulances to hospitals. The MAC Group only adjudicated resources that were deemed "scarce;" once staffing resources were declared as no longer scarce, they could be processed and fulfilled by CDPH's Deployment Team.
- For further information, see the MAC Group and Scarce Resource Allocation chapter in this AAR.

Waived Licensing Requirements

- As facilities across the state, especially SNFs, struggled to keep pace with up with surges of COVID-19 cases, California began to explore innovative ways to increase health facility capacity by potentially tens of thousands of beds to accommodate projected surges. One method to increase capacity was to waive certain licensing requirements in order to help a facility expand its services to accommodate medical surges. By waiving certain requirements, the State could enable healthcare facilities to shift their operations in order to increase their capacity to provide care. Executive Order N-39-20 (March 30, 2020) enabled CDPH to waive licensing, including staffing requirements.
- CHCQ's policy and legislative branch reviewed statutory and regulatory requirements for 30 facility and provider types and rapidly explored options to waive or modify guidelines for delivering care in more than 11,000 healthcare settings—with the goal of relaxing requirements or providing alternatives to enable facilities to respond quickly to surges. The most commonly waived requirements included training requirements, staffing ratio requirements, requirements related to the use of space, and the ability to expand services:
  - Training waivers – Waivers that provided greater flexibility around training and continuing education requirements.

  - Staffing ratio waivers – Waivers that enabled facilities to temporarily exceed legal patient-to-nurse ratios.
  - Use of space waivers – Waivers that enabled facilities to expand their bed count by adding beds in areas that were not being utilized, such as activity areas and conference rooms, and by repurposing existing spaces in new ways.
  - Expanded services waivers – Waivers that enabled facilities to temporarily provide expanded services or operating hours.

- Of the waivers issued, staffing waivers were the most controversial. Staffing waivers were a "last ditch effort" designed to provide support to facilities since the State was running out of contracted staff to deploy over the Winter 2020/2021 Surge. "It was the last tool in the box," one leader noted: "The premise was, if we can't give staffing resources, how can we encourage hospitals to use resources in a different way that doesn't take us into a crisis situation and tries to provide relief?" Experts indicated that all other options had been exhausted.
- With some facilities requesting staffing waivers while others pushed back against it, the State proceeded to temporarily waive staffing requirements and concluded that it was ultimately "lifesaving" for certain counties. However, many labor unions felt these waivers created unsafe working conditions and as a result staffing ratio waivers were not used during the Delta surge in 2021.
- Additionally, the State also found that increasing staffing ratios was not necessarily an effective way to expand patient capacity. CHCQ monitored facility data, communications, and requests continuously in order to quickly adjust policies and guidance, as well as evaluate data against expected outcomes. Yet the data revealed that facilities were actually treating the same number of patients under staffing waivers and were using the waiver to grant days off to staff. In response, CDPH adjusted course, stipulating that if the State provides surge staffing to a facility, the staff must be used solely for surge, and cannot be used in other spaces or to give breaks.
- As California progressed through various stages of the pandemic, waivers were continually updated to reflect new policies, decisions, and directives. CHCQ communicated and issued these waivers by way of All Facilities Letters (AFLs). Throughout the pandemic, AFLs were issued so that

all facilities across the state had the same permissions without having to individually request waivers on a case-by-case basis. Some facilities requested individual waivers for other alternative care methods, and CHCQ assigned a team to review and approve or deny these individual requests based on an evaluation of their safety.

- In 2020 and 2021 CHCQ issued an unprecedented number of AFLs in response to the rapidly changing situation in California's facilities. The AFL library can be viewed here. On August 16, 2021, Executive Order N-12-21 extended CDPH's authority to suspend licensing requirements until December 31, 2021; this authority had been set to expire on September 30, 2021.

Provided Facilities with Contracted Staff

- In spring of 2020, CDPH leadership began to engage staffing agencies to support healthcare facilities and prepare for future surges. Throughout the response, several staffing contracts were executed to help supplement the Health Corps effort and bolster existing healthcare staff across the state.
- During the Summer Surge of 2020 and especially the Winter 2020/2021 surge, the State utilized contracted staff extensively. As the early focus on increasing space (e.g., bed capacity) shifted to increasing staffing capacity, CDPH created a staffing deployment team responsible for managing the increasingly complex operation. The deployment team created tracking spreadsheets and dashboards to manage different staffing pools, monitor facility needs and track vendors.
- The Winter 2020/2021 surge stressed the State's contracted surge staffing operations. Beginning in December 2020, large waves of supplemental contracted staff coming onboard from staffing agencies caused difficulty with tracking the increased volume. The spike in volume changed the State's staffing deployment operations and also introduced new challenges, as CDPH had to rely on data from multiple staffing agencies that was often incorrect. Additionally, contracted staff were delayed, sometimes did not meet the facilities' needs, or refused to care for COVID-positive patients. "The further we got into it, the more problems there were with no-shows or delays," one leader noted, which further complicated back-end operations.

- Over the critical period between Christmas and New Year's in 2020, the pool of available contractors was small, due to a variety of factors including burnout, unavailability, and desire to return home for the holidays. As a result of the shortage, prices for contractors rose rapidly. The State created package incentive deals and increased hourly wages for contractors in order to recruit healthcare workers over this holiday crisis period, which finally abated in early January 2021.
- However, as the pandemic wore on, staffing shortages in facilities became a chronic problem. This problem was exacerbated during the Omicron surge of Winter 2021/2022. Many facilities experienced ongoing, persistent staffing shortages due to a variety of factors, including healthcare worker COVID-19 fatigue. "There was just a shortage of staffed beds in all facilities, but especially in long-term care facilities," one leader noted. This created a ripple effect that reduced hospital "throughput." With fewer staffed beds, hospitals were not able to discharge their patients to these facilities; therefore, hospitals could not accept as many new patients into their emergency departments.
- Staffing issues during the Omicron surge were also exacerbated by the high cost of contracted staff. During this surge, the State paid for approximately 65% of the contracted staff that it provided, with multiple cost-sharing measures in place. However, some facilities "just couldn't afford the staffing we were providing." Those that could not afford the contracted staff reduced their facility census and intake, reducing the number of available staffed beds.

Created Deployment Team to Manage Increasingly Complex Surge Staffing Operations

- As the demand for staffing grew and multiple staffing agencies were added, CDPH quickly scaled up its internal team to support surge staffing operations. A deployment team was created in early Spring 2020 and tasked with overseeing, managing, and tracking staff deployments statewide. At any given time during a surge, there could be 6 to 8 different staffing pools (e.g., contract staff, volunteer staff, federal Strike Team staff, or state Strike Team staff) deployed simultaneously within California. Managing these deployments was a complex operation with separate processes for resource requesting, allocation, deployment, tracking, invoicing, inter-agency coordination, and reporting.

- There was a steep learning curve for the deployment team associated with learning the staffing industry and coordinating deployments from so many different staffing sources. The standardization and accuracy of data was increasingly problematic, as each agency had its own distinct rosters.
- Despite many logistical hurdles, the team was ultimately successful in deploying over 23,000 medical staff (filling over 38,000 deployment requests) across California to support facilities during the medical surges, including the Omicron surge of Winter 2021/2022.
- During this fifth surge, the deployment team continued to manage the deployment of contracted and other staff to facilities. While the processes were largely the same, the team altered the way that its "staging pool model" was operationalized to be more proactive. Instead of having a certain number of staff deployed daily, the team switched to a weekly delivery of staging nurses and healthcare workers. As one leader explained it, "we needed more consistency. With a weekly delivery of staging nurses, it was a more staggered approach, and it was a pretty effective use of that staff."
- During surge periods, the State had between 3,000 to 10,000 staff deployed across more than 700 facilities, clinics and therapeutic sites from over 10 staffing agencies, each using a different timecard.
- While CDPH was tasked with administering these supplemental staffing contracts, decisions regarding where and when to deploy these staff were sometimes made by other departments, which presented additional challenges.
- For further discussion of surge staffing data, see the Data and Technology section below.

New Strike Teams During Omicron Surge: Deployed Ambulance Support Teams to Help Support Overwhelmed Emergency Departments and Reduce Bottlenecks

- While California conducted extensive planning for the Omicron surge, including creating over 1,000 hospital beds, the Medical Surge Task Force was still faced with unanticipated challenges that demanded new and rapid solutions. Preparations for the Omicron surge focused on increasing resources, including staffing and space, inside of hospital facilities.

However, during the Omicron surge it was the emergency departments—the "front door" of the hospital—that were quickly inundated with patients. As EDs struggled to accommodate the influx of patients, the bottleneck grew: if an ED did not have a bed immediately available, it was delayed in receiving patients. This resulted in ambulances having to wait longer to offload their patients, which prevented them from quickly returning to the community to respond to 911 calls. As one leader explained it, "they weren't able to get back on the road fast enough, so ambulances were just piling up more and more outside of hospitals." In some cases, there could be 10-15 ambulances waiting outside of emergency rooms to deliver the patient into the hospital's care. With such lengthy APOT times, many ambulances were essentially out of service.

- In response, the State quickly developed and deployed interventions focused on supporting the overwhelmed emergency rooms during the Omicron surge of Winter 2021/2022. These interventions included two types of APOT teams, who were deployed from January 11, 2022 until March 31, 2022, to facilitate transfer care for patients from the ambulance to the hospital. One APOT team consisted of 18 clinicians, including ED and medical surge nurses, paramedics, and licensed vocational nurses, that was deployed as a unit to work in shifts. The second APOT team was comprised of only paramedics, who helped transfer patients from the ambulance to the ED and care for them until a hospital bed became available.
- According to SMEs, these teams were well-utilized by hospitals and ultimately helped EDs alleviate bottlenecks and reduce APOT times, also known as "wall time." The State found that the paramedics-only APOT team had a greater impact on reducing "wall time" than the mixed-unit teams, which involved several paramedics working in the ED. When the paramedics were dedicated solely to patient transfers, they were able care for several patients simultaneously, thus enabling ambulances to be released back into the 911 system. "Ambulances were able to be cut loose and not have to wait an hour or more," one SME noted. In February 2022, after learning that facilities preferred having ED nurses instead of medical surge nurses due to their increased familiarity with ED procedures, the State adjusted the composition of its mixed APOT team in response.
- In April 2022, after the APOT deployments had ended, the State administered a program survey to each of the facilities that had utilized

them. Of these facilities, 86% noted a decrease in APOT after the arrival of support staff, with an average decrease of 11 minutes.

- In addition to the APOT teams, the State also offered ambulance strike teams. Unlike APOT teams, which were a novel intervention, ambulance strike teams have been used to decades to evacuate facilities (such as nursing homes and hospitals) during fires and other events. California's ambulance strike teams were comprised of five ambulances offering both basic life support (BLS) and advance life support (ALS), and are intended for urgent interfacility transports. In theory, these teams are supposed to "plug into" existing 911/EMS systems.
- However, during the Omicron surge, this was more challenging than imagined. "The problem with plugging in ambulance strike streams into the local 911 system is that they don't know local protocols or traffic patterns," one leader noted. As a result, these strike teams were assigned to hospitals instead of augmenting the 911 system; the hospitals used the paramedics but did not utilize the ambulances. Ultimately, "they were used in different ways that originally intended," one expert noted.

New Mobile Monoclonal Antibody Strike Teams Were Deployed to Facilities Experiencing Outbreaks During Omicron

- During the Omicron surge, the State developed another new intervention to help facilities experiencing who were experiencing COVID-19 outbreaks. Mobile monoclonal antibody (MAB) strike teams comprised of highly specialized workers who could travel to a facility and administer therapeutics to its COVID-19 positive patients, thereby allowing the patients to stay in the facility and out of the ED. "We wanted to make sure these patients didn't go to the ER. Instead of sending an outbreak to the hospital, we could send a mobile team to the facility," one leader noted.
- The first MAB strike team was created to fulfill a specific facility request, and a second team was added as part of CDPH's fall 2021 preparations for the Omicron surge. The MAB teams were typically deployed to hospitals, SNFs, and retirement homes for three to five days. The MAB strike teams were a successful intervention that "helped significantly" to both treat patients and manage outbreaks.
- The MAB teams were in place as of June 2022, with one team dedicated to Southern California and another to Northern California.

Initiated Large-Scale Cost Recovery, Accounting, and Invoicing Processes

- While the State was able to successfully deploy over 23,000 medical staff to facilities statewide, it also had to establish cost recovery processes. As staff were deployed, CDPH created an elaborate accounting, invoicing, and cost-recovery operation to document cost-sharing agreements. As part of the deployment process, each facility would sign a Memorandum of Understanding (MOU) and agree to its unique cost-sharing agreement. Cost-sharing agreements varied (depending on facility type, bed capacity, and affiliation), with the State either assuming all, part of, or none of the staffing cost. In September 2020, CDPH and EMSA initiated cost recovery efforts and began seeking reimbursements according to the MOUs that had been signed months earlier. As one SME stated, "the main challenge we are still grappling with is the huge accounting operation. Due to adjustments and cost-sharing rates, there is a huge difference between what the State was billed, and what we are recovering." The reconciliation began as a manual process but has become more automated over time. However, at the time of this writing, the State has only collected about 20% of what has been billed to facilities.
- See also the Fiscal Administration chapter in this AAR.

Equity

This section describes equity considerations specific to this chapter.

During crisis situations facilities are forced to prioritize between patients, which necessarily raises the question of equity. There was no formal equity metric related to medical surges during initial COVID-19 response efforts because, as one leader put it, "everyone needed help." However, scarce resources still needed to be prioritized, and the allocation of these resources (including supplies and staffing) was the responsibility of the MAC Group. For further discussion, see the MAC Group and Scarce Resource Allocation chapter in this AAR.

Outside of the MAC Group's allocation of scarce resources, cost equity was a variable that CDPH considered as it signed MOUs with facilities for staffing. Contract staff were the most expensive resource to deploy. When staff salaries escalated in the Winter of 2020/2021, many small hospitals could not afford staffing. The State then developed different cost-sharing measures depending on facility bed size, with large hospitals and health systems assuming all staffing costs ("pass-through pricing"). For smaller and medium-sized facilities, CDPH would assume 25%, 50%, or in some cases 100% of the cost. The cost-sharing tiers were based on facility bed size, but leaders noted that a degree of subjectivity was also required when it came to cost equity.

As one SME noted, "equity in medical surge was associated with cost, and we saved the discounts for those that needed it most." These were usually small facilities or community hospitals that lacked the "deep pockets" of the bigger systems

Data and Technology

This section discusses data and technology specific to this chapter.

Facility Data

Hospital Data: CHA/HHS Survey

- In early 2020, there were no systems established to collect important metrics from hospital facilities, such as number of occupied beds. CDPH had to call hospitals every day in order to compile this data for reporting purposes. However, this process was improved in March 2020 when the U.S. Department of Health and Human Services (HHS) established a daily hospital survey administered by the California Hospital Association (CHA). CDPH relied heavily on the data obtained from this survey. The CHA/HHS survey dictated a daily reporting cadence of approximately 140 metrics, including several California-specific data variables. Over time, some of these variables were fine-tuned and customized. The CHA/HHS survey was critical to informing policy decisions and is still the only source of real-time hospital facility-level data in California.
- The CHA/HHS survey data was used successfully to guide critical policy decisions, especially during the Winter 2020/2021 surge. In early December 2020 the number of ICU beds reported by the survey was a key metric used to set thresholds for the Regional Stay at Home Order. If a region's ICU capacity dropped below 15%, a stay-at-home order was triggered. Furthermore, if a region's ICU availability dropped below 10%, it triggered a mandate for hospitals to accept inter-facility transfers to redistribute patients. With the support of a large team of data analytics personnel, CDPH was able to translate raw data into usable dashboards for leadership to make surge policy decisions.
- Through analysis of the CHA/HHS survey data, CDPH teams identified and refined datapoints that were critical to the response. By summer 2020, CDPH had refined 5-6 key metrics by region and county. In preparation for the Winter 2020 surge, other metrics were added to the survey, such as temporary ICU space.
- CHA/HHS survey data also helped identify strained hospitals that were in need of State intervention. Key metrics were used to create a Hospital Burden Score. When hospitals scored above a certain threshold,

indicating they were at risk of becoming overwhelmed, CDPH contacted them individually to offer State technical assistance or resources.

- By the time the Omicron surge occurred in Winter 2021/2022, the State had optimized its data analysis of hospital metrics and refined the Hospital Burden Score. This allowed leadership to use predictive analytics successfully to anticipate and provide support to hospitals before they were in crisis. As cases started rising in fall 2021, the Med Surge leadership team used the survey data and the Hospital Burden Score to reach out to hospitals with early offers to expand capacity. Unlike previous surges, during Omicron the additional capacity was built out before the surge arrived.
- The CHA/HHS survey is currently the only real-time source of daily operational hospital status. If the survey is discontinued, the State's insight into these important statistics will disappear. SMEs identified this risk, indicating that ownership of the CHA/HHS survey had changed several times at the federal level, and that the survey was not guaranteed to continue. In early summer 2022, the CHA/HHS survey moved to five reporting days per week (instead of seven).
- In addition to the CHA/HHS survey, other data sources used to respond to hospital medical surges included CalREDIE, CAIR2, and data collected from other State facilities. Additionally, HCAI also maintains hospital data; but reporting is not mandatory and thus the data is incomplete.

Skilled Nursing Facility and Other Facility-Level Data

See discussion in the Infection Prevention chapter, Data and Technology section.

Staffing Data

- While multiple staffing pools were available for deployment, managing the data associated with the contracted staffing agencies proved challenging and was primarily a manual process. Each agency had individual rosters and registries. The deployment team developed a shared Excel roster and encouraged staffing agencies to use it in an attempt to streamline and standardize information. For leadership reports, the deployment team created an aggregate Surge Staff Report that summarized all types of staffing data for California. Efforts are underway to convert this Excel-based report to Power BI to enable better data reporting and analysis.
- As the SNF Surge declined in April 2020, the deployment team turned to automating and improving its operations to create "a data-focused process for [staffing] allocation." When it came to contracted surge staffing, CDPH relied on data provided by staffing agencies, which could be inaccurate and incomplete. As the volume of contractors increased, data accuracy generally decreased.
- In 2021, the deployment team conducted two data audits that revealed the prevalence of so-called "aspirational deployments." In aspirational deployments, staffing agencies would commit to providing healthcare workers, only to have those workers never show up at the facility. The data audit also revealed a lack of real-time insight at the facility level, as there was no way to "close the loop" and determine if deployed staff actually showed up at the facility.
- Through these data audits, CDPH was able to identify data discrepancies and apply the information to decisions, such as whether or not to extend vendor contracts. "We applied facts gathered from data audits anywhere possible to make policy decisions easier," one leader noted. Ultimately, contractors with more accurate staffing data were given extended contracts or used more frequently, whereas those with less accurate data were not deployed as often.

Resource and Supply Data

- In the spring of 2020, as the first surge began, the process by which facilities and local health jurisdictions requested resources from the State (from supplies and equipment to staffing resources) was a manual

process. Requestors would submit PDF documents to the MHCC via email, and MHCC staff would then transfer the information into an Excel file for tracking proposes. While this process had worked during prior emergency activations, it was quickly overwhelmed by the enormous volume of resource requests—up to hundreds a day, each with many separate line items. It was difficult for State staff to track requests due to this increased volume, as well as the fact that some entities requested resources directly from CDPH programs, bypassing the MHCC entirely.

- On April 1, 2020, the State launched the Public Health Ordering System (PHOS) ten days after developing it. This system had an immediate and positive impact on the quality of resource and supply data. It streamlined the resource requesting process, increased transparency into the status of requests, and improved the accuracy and feasibility of reporting due to its built-in reporting features.
- Requestors could view the status of their request in PHOS at any time and see where it was in the review process. On the back end, State evaluators and reviewers used the workflow functionality to view, monitor, and make assignments to ensure that the right teams were reviewing the right requests and products. State teams used the system to fill individual requests from facilities as well as review products to replenish the State stockpile. As features were rolled out, Cal OES provided CDPH staff with ongoing training on the PHOS system.
- While the system was an overall success, some SMEs felt that the metrics used to track resource requesting did not always measure what truly mattered. They noted that the most important metric that the State focused on was the number of requests processed, or "throughput." For further discussion, see the Resource Requesting and Public Health Ordering System in this AAR.
- Respondents noted that CDPH spent considerable time reviewing products that did not even meet minimum specifications. Given the focus on throughput, SMEs lacked visibility into how many products they were reviewing actually made it into the hands of healthcare workers. As one SME noted, "at our level, we didn't even know if the work we were doing was helping," which was disheartening.

EMS Data

- The Omicron surge presented a new and unprecedented data challenge. California had spent almost two years building and refining data analytics for hospital and other facilities, but did not address tracking data related to emergency medical services (EMS) systems.
- During the Omicron surge, it became clear that the most urgent problem involved ambulance waiting times, prompting the deployment of APOT teams. However, there was no Statewide data infrastructure or system in place that captured the health of the EMS system in real-time.
- Without this real-time data, leaders lacked visibility into key EMS metrics, such as how many ambulances were backed up across the State. This hampered leadership's ability to make informed decisions about how to allocate the limited number of APOT and ambulance strike teams. Local EMS data currently exists on four different platforms that does not provide a comprehensive, real-time, and Statewide view.
- In response, CDPH and EMSA quickly established Statewide regional coordination calls with local RDMHSs, MHOACs, MHCC, and local EMS agencies to manually gather the needed data. On a daily basis, the regions were asked to report out to the State on nine key data points. These data points including the percentage of hospitals in their region with APOT times over 60 minutes for more than 24 hours, the percentage of EMS field staff on sick leave, and the percentage of operational ambulances not in operation due to staff sickness.
- In retrospect, not having this EMS system infrastructure in place significantly hindered the California response. With the establishment of the coordination calls, one leader noted "we increased locals' administrative burden and manhours in order to try to get the data we needed to allocate resources." In order to report out on these metrics, the regions "were hand-calculating data, and it didn't go well."
- These coordination calls continued for approximately eight weeks. Initially the group met three times per week; this frequency was reduced to twice and then once per week. While these meetings were "jarring" for the parties, it was something that had to be done to allocate EMS resources during the Omicron surge.

- The discrepancies between hospital data and EMS data—in terms of data access, data quality, and data comprehensiveness—is partially a structural problem, according to SMEs. While CDPH oversees over the majority of hospital facilities in California, everything considered "pre-facility" falls under EMSA's authority. Historically, there has been separation between these two jurisdictions. According to one leader, "we hadn't thought about the ambulance piece as being part of medical facility throughout because they are so separated."
- During the early surges, pandemic patterns reinforced this structural separation. At that time, Californians were largely avoiding going to the hospital out of fear of contracting COVID-19. In response, the State "focused on medical facility throughput, but we completely ignored the ambulance side. It wasn't the largest issue in the first surges because people weren't going to the hospital."
- However, during the Omicron surge, it was precisely this "pre-facility" EMS system that was overwhelmed. As one leader commented, Omicron exposed the "bifurcation" between CDPH-led and EMSA-led authorities.
- Strategic planning efforts between EMSA and CDPH were underway in the summer of 2022. As part of those efforts, the State plans to explore options to improve its EMS data infrastructure, as well as strengthen the connection between traditionally separate jurisdictions.

Communications

This section describes communications specific to this chapter.

External

- CDPH teams were in constant communication with facilities, hospitals, counties, local public health officers, MHOACs, RDHMSs, and local deployment agencies to help respond throughout the medical surges. Local representatives were instrumental in making connections between the State and facilities.
- Different regularly-scheduled meetings and office hours were held for different stakeholder groups, such as health officers, GACH facilities, SNF facilities, LTCF providers, and the California Hospital Association. CDPH currently holds All-Facility calls three times per week, with approximately 1,000 attendees per week. During these scheduled meetings, CDPH would provide updates and information and give stakeholders the opportunity to ask questions.
- In addition, during each of the surges, State technical assistance teams held weekly, biweekly, or daily calls with regions, counties, and hospital representatives to provide information and gather feedback. These meetings benefitted the entire State by ensuring that everyone was in one room to hear the same information and then respond quickly.
- Keeping two-way lines of communication open was a necessity. The increased communication and accessibility allowed State leaders to "keep our finger on the pulse" of what was going on in California's healthcare facilities.

Internal

- California's medical surges required CDPH to establish and strengthen newlines of communication to its State and Medical Surge Task Force partners. At the highest level, every morning CDPH leaders would participate in daily report-outs at the State's Unified Command Group (UCG) at the State Operations Center (SOC).
- Additionally, weekly calls were established with CalHHS, EMSA, Cal OES, other Task Force partners, and various technical assistance teams. At one

point, there were multiple internal medical surge teams meeting on a daily—and sometimes hourly—basis.

- As one leader noted, "the siloes that existed before have been completely broken down. There are now pathways to have positive conversations in a timely manner." In particular, the communication between CDPH and EMSA has improved drastically.
- SMEs agreed that these new communication channels between different departments and agencies need to be continued in the future. However, communications between the Logistics and Commodities Task Force and CDPH's PPE validation team were not as strong as they could have been. While CDPH's experts tried to advise on products early in the purchasing process, these efforts were not always successful since they were often only included late in the process. Without a strong link between the Logistics and Commodities Task Force and CDPH, it was difficult to align purchases with stakeholder needs, given the extreme market conditions and the limitations of State purchasing processes.

Workplan

This section is designed to be used as a workplan for future pandemics.

Definitions:

- **Phase**: The phase of the response in which the major tasks should be conducted (Planning; Initial start-up, Ongoing operations, or Close-out).
- **Major Tasks:** The tasks and activities that have to be conducted as part of the public health emergency response to a respiratory pandemic.
- **Success Criteria:** Criteria used to assess whether a task has been achieved successfully.
- **Considerations Based on COVID-19 Response:** Things to consider, including pitfalls, risks, and lessons learned, based on the COVID-19 response.

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Planning	Revise and improve crisis care guidelines	• Crisis care guidelines are comprehensive, thorough, and the result of engagement with the public and with diverse stakeholder groups and communities. • Guidelines include strategies about how to prevent going into crisis care.	• Consider forming an advisory committee. • Solicit input from minority, elderly, disabled, and other communities. • Due to California's size and diversity, crisis standards may vary for different types of hospitals in different regions.	• Med Surge 17	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			• Refer to the New York State, Florida, and Louisiana guidelines, which SMEs identified as models. NY's document was identified by subject matter experts as exemplary.		
Initial start-up	Form cross-departmental Task Forces	• Establishment of a Medical Surge Task Force to oversee surge mitigation strategies. • Establishment of a Logistics and Commodities Task Force to oversee procurement of scarce supplies.	• Key departments: CDPH, EMSA, Cal OES. • Develop technical assistance teams within the Task Forces that can provide direct assistance to facilities. • Ensure that two-way communication channels between Task Forces and other areas of CDPH to avoid silos.	• Med Surge 1, 2, 3	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Initial start-Up	Expand facility capacity to accommodate medical surges	• Successful expansion of capacity to accommodate medical surges and relieve pressure on the healthcare delivery system.	• Use a Modeling Team early on to create projections of how many extra beds will be needed (e.g., COVID-19 estimate was additional 50,000 in early surge). • Build out care space within existing facilities as opposed to creating alternative care sites from scratch. • Include SNF and LTC facilities as well as hospitals and recognize that adding space in these other facility types requires different strategies.	• Med Surge 2, 10, 11	
Initial start-up; Ongoing operations	Obtain Executive Orders that facilitate innovative,	• Waiving certain requirements allows CDPH to provide facilities with innovation tools and solutions	• Anticipate and plan for healthcare worker resistance to certain waivers,	• Infection Prevention 5	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
	flexible solutions	to expand facility capacity. • Issuing waivers via AFL to all facilities increases communication efficiency.	such as changes to staffing ratios. • Monitor data for any unexpected consequences of waiving requirements.		
Initial start-up; Ongoing operations	Establish and improve data reporting cadences for facilities and systems	• Leadership has access to timely, accurate, and high-quality data to make decisions. • Ability to use predictive analytics. • Creation of a real-time, Statewide EMS data infrastructure. • Daily surveys are easy for facilities to understand and complete. • Survey fields and variables are easy to modify.	• Lack of real-time Statewide EMS data hampered the response during the Omicron surge. • Establish desired metrics but understand that the metrics needed may evolve over the response. • Continue or re-establish daily reporting requirements for hospitals and SNFs. • Identify facility types that were unable to report on a daily basis (e.g., DSS-licensed facilities) and	• Med Surge 5, 18	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			make a plan to establish. • Consider integrating individual case-level data with aggregate facility-level data for a more comprehensive picture.		
Ongoing operations	Apply lessons learned from previous surge interventions based on data	• Leadership can introduce surge new interventions and archive less impactful interventions.	• Surges driven by different variants may require different interventions. • During the fifth surge, the following interventions were not used: ACSs and Health Corps. • New interventions introduced during the fifth surge: APOT Strike Teams; Mobile MAB Strike teams.	• Med Surge 6	
Initial start-up; Ongoing operations	Develop and deploy multiple staffing pools to facilities	• The State can deploy supplemental staff to facilities rapidly	• Develop diverse staffing pools, including state,	• Med Surge 3, 4, 12, 14	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
		to provide support during medical surges. • The State can deploy staff from different staffing pools depending on individual facility need.	federal, and contract staff. • To the extent possible, implement standardized timecards. • Avoid using a volunteer staffing program. • Anticipate that facilities may use supplemental staff longer than expected and/or in unintended ways		
Initial start-up; Ongoing operations	Establish processes to source and provide supplies and equipment to facilities	• The State stockpile is regularly replenished with PPE, oxygen, ventilators, and other equipment and supplies. • Supplies are validated to be safe and meet minimum product specifications. • Facilities running low on PPE can obtain sufficient,	• Implement minimum product specifications to ensure integrity of products. • Involve technical product experts early in the purchase/vetting process. • Centralize resource requesting process (e.g.,	• Med Surge 7,8,9	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
		high-quality PPE from the State stockpile. • Supply staging enables the efficient movement of PPE across the State.	through the MHCC). • Be prepared for facilities to reach out to CDPH programs or contacts directly and develop a plan to redirect them to the MHCC. • Develop and communicate consistent PPE supply staging and resource requesting processes.		
Initial start-up; Ongoing operations	Initiate staffing cost-recovery operations	• The State is reimbursed for all eligible costs according to executed MOUS and agreements entered into with facilities.	• Develop the necessary accounting processes required to support a complex, time-consuming cost recovery operation. • Variables that increase the complexity of staffing cost	• Med Surge 15	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			recovery: contracting with multiple staffing agencies; establishing multiple cost-sharing tiers with facilities.		
Initial start-up; Ongoing operations	Establish adequate internal operations teams	• CDPH has a diverse group of internal teams to adequately support its medical surge response operations.	• Identify and document the teams that were created during the COVID-19 response (e.g., Deployment Team, PPE Validation Team, etc.). • Anticipate that staffing processes will be a complex operation for both the State and facilities. • Identify additional CDPH resource needs for ongoing operations (e.g., via BCP process). • To the extent possible, continue normal or	• Med Surge 13, 16	

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			reduced business operations to avoid facing a backlog when the surge response ends.		