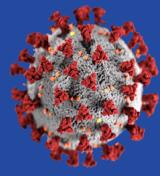


A photograph of a warehouse interior. In the foreground, a worker is operating an orange forklift, moving a large white-palletized load. The background shows tall blue shelving units filled with various boxes and packages. A large, semi-transparent white arrow shape points from the top left towards the center of the page, containing the chapter title.
Chapter 27
Logistics, Distribution, and
Warehousing

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Version History

Version #	Date	Notes
0.1	12/19/2023	First Draft submitted to CPR team
0.2	1/23/2024	Final Draft revised per Expert Review
0.3	1/30/2024	Final Draft revised per CPR Leadership

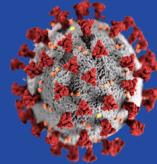
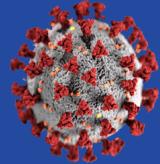


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27. Logistics, Distribution, and Warehousing

Public Health Emergency Preparedness and Response Capabilities: Medical Materiel Management and Distribution.

Related CDPH AAR Chapters: Resource Requesting and the Public Health Ordering System; MAC Group and Scarce Resource Allocation; Medical Surge; Vaccines; Therapeutics.

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

Chapter Summary

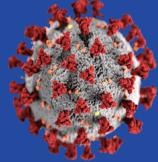
Overview

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

Throughout the pandemic, CDPH's Receiving, Storing, Staging (RSS) warehouse played a critical role in distributing an unprecedented volume of essential supplies. In total, through November 2023, the RSS warehouse received into inventory 437.6 million units and shipped out 260.5 million units to over 10,000 unique locations. This inventory encompassed a vast array of items, known as medical countermeasures (MCM) that included personal protective equipment (PPE), COVID-19 testing kits, medical supplies, pharmaceuticals, and cold chain equipment. Each product had unique storage and packaging requirements.

Initially, CDPH planned to distribute these supplies to the 61 Local Health Jurisdictions (LHJs), which would then redistribute the items to healthcare providers in their jurisdictions. However, it quickly became evident most LHJs lacked the capabilities to receive, store, and ship such a large volume of inventory. Consequently, CDPH shifted its strategy to directly distribute the resources to healthcare providers, which exponentially increased the number of shipping locations.

The challenge of distributing to this large base of customers led CDPH to expand its shipping strategies. CDPH improved its transportation capabilities by partnering with additional commercial trucking companies, gaining access to a diverse fleet of climate-controlled vehicles of multiple size and capacity to deliver supplies to locations statewide. In addition, a shipping contract with



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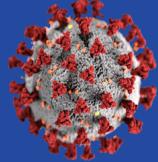
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United Parcel Service (UPS), arranged by the California Governor's Office of Emergency Services (Cal OES), vastly improved CDPH's small parcel shipping capabilities. In February 2023, CDPH stopped using UPS and started small parcel shipping with FedEx.

When the RSS warehouse began receiving MCMs that required refrigeration, the warehouse team was well-prepared. A year before the pandemic, CDPH had updated its cold chain management plan to include procedures for receiving and distributing MCMs requiring cold storage. The team followed the procedures successfully for storing and transporting the COVID-19 testing transport media and therapeutics that needed refrigeration. However, the State had never dealt with the storage and handling of MCMs at ultra-low temperatures required for vaccines. Leveraging the updated plan, CDPH successfully purchased and positioned ultra-low cold chain equipment across the State.

The pandemic also revealed challenges in CDPH's storage capacity and inventory management. The RSS warehouse often reached maximum storage capacity, stressing the need for more climate-controlled storage space. Moreover, CDPH's inventory management system was inadequate for optimal tracking and reporting, a vital function given CDPH's responsibility for accurate inventory status reporting to the Governor's office and multiple task force teams.

In response to these challenges, CDPH is in the process of acquiring a new supply chain management solution. This system is expected to offer numerous benefits, including real-time inventory tracking, improved efficiency in purchasing, better distribution processes, and reduced errors. It aims to provide comprehensive tracking throughout the supply chain, ensuring regulatory compliance and minimizing risks associated with unauthorized or expired products. This upgrade is crucial for the warehouse's ability to respond effectively to future emergencies.



Main Strengths and Successes

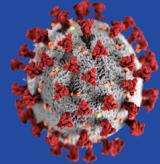
This section describes the Main Strengths and Successes, including findings and corrective actions, related to this chapter. Further elaboration and a more detailed discussion of these strengths and successes can be found in the Analysis of Activities section.

1. CDPH's Emergency Pharmaceutical and Warehouse Section successfully handled an unprecedented volume of inventory and swiftly adjusted RSS strategies as circumstances evolved.

From the beginning of the pandemic through November 2023, the RSS warehouse distributed an extraordinary volume of essential supplies totaling 260.5 million units, including PPE, COVID-19 testing supplies, medical supplies, pharmaceuticals, and cold chain transport equipment to over 10,000 unique locations. Initially, CDPH planned to distribute inventory to just the 61 LHJs. However, it became evident early on that the LHJs lacked the capacity to receive, store, and then redistribute the massive volume of supplies to their jurisdictions. In response, CDPH adjusted its strategy and distributed orders directly to healthcare providers, schools, community organizations, other public partners and stakeholders.

Also, CDPH had standing contracts in place to use large trucks to ship mass quantities of inventory to the LHJs, but when the number of customers substantially increased to include healthcare providers, CDPH expanded its transportation capabilities to include transport vehicles and vans to ship smaller quantities to more locations. In addition, Cal OES provided valuable assistance by helping CDPH secure a shipping contract with UPS, significantly boosting CDPH's small parcel shipping capabilities.

It was critical to store medical supplies and pharmaceuticals at a consistent temperature. When the RSS warehouse experienced power outages and a malfunctioning ventilation system, the team arranged refrigerated trucks to relocate the entire inventory of the warehouse. The RSS warehouse team demonstrated remarkable adaptability in navigating these changing circumstances to ensure the efficient distribution of supplies to the local entities.



Finding/Corrective Action: CDPH successfully deployed a variety of strategies to accommodate fluctuating conditions, which can be replicated for future pandemics. (*ID: Logistics, Distribution, and Warehousing 1*)

2. CDPH successfully navigated cold chain storage and handling requirements using its updated Medical Countermeasures Plan.

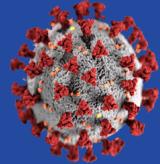
When the RSS warehouse began receiving MCMs that required refrigeration, the team was well-prepared. A year before the pandemic, CDPH had updated its cold chain management plan to include procedures for receiving and distributing MCMs requiring refrigeration. The team followed the procedures successfully for storing and transporting the COVID-19 testing transport media and therapeutics.

However, the State had never stored and handled MCMs at ultra-low temperatures required for vaccines. Using the updated plan, CDPH successfully purchased and positioned ultra-low temperature cold chain equipment across the State prior to the arrival of the first vaccines in December 2020. Using emergency purchasing authority, CDPH acquired cold storage equipment including freezers, transport containers, and data loggers for counties who needed them as well as other State entities, including prisons and hospitals. CDPH staff stress tested the MCM Plan through the COVID-19 response and became “cold chain specialists” in the use of refrigerated and frozen containers, trailers, box trucks, and cold chain shipping containers, according to one SME. Consequently, when mpox vaccines arrived in mid-2022 and required cold storage, cold chain assets were already staged, and the team was well prepared to support distribution.

Finding/Corrective Action: CDPH should incorporate lessons learned from the COVID-19 response for cold chain management to update the MCM Plan and other emergency preparedness documentation. (*ID: Logistics, Distribution, and Warehousing 2*)

3. CDPH partnered with commercial trucking companies, significantly increasing its statewide transport capabilities.

CDPH significantly improved its transportation capabilities by partnering with several commercial trucking companies. This collaboration



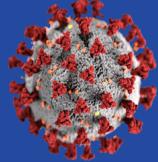
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provided access to additional climate-controlled vehicles, essential for maintaining supplies at the correct temperatures while in transit. The need for such vehicles was particularly critical when traveling through the Central Valley, where temperatures can soar from spring through the fall seasons. Normally, these trucks would be used to transport agricultural products during the summer and fall months. However, the pandemic led to a shutdown of the trucking industry, making these vehicles available for CDPH's use. This unique situation enabled CDPH to access most of the trucks needed, an opportunity that might not have been possible during other, smaller public health emergencies. SMEs expressed concern that this scenario cannot be repeated in future activations. They highlighted the importance of establishing multiple master transport agreements in advance. Such preparations would improve CDPH's ability to quickly mobilize a diverse fleet of vehicles to efficiently distribute a large volume of supplies across the State in future public health emergencies.

Finding/Corrective Action: CDPH has the opportunity to establish master agreements with transportation partners in advance of future pandemics to enhance the ability to stand up and scale transportation capabilities as needed. (*ID: Logistics, Distribution, and Warehousing 3*)



Main Challenges and Lessons Learned

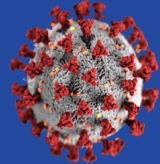
This section describes the Main Challenges and Lessons Learned, including findings and corrective actions, related to this chapter. Further elaboration and a more detailed discussion of these challenges and lessons learned can be found in the Analysis of Activities section.

4. CDPH is working with the federal government's Strategic National Stockpile to address communication and coordination issues encountered during the pandemic.

The Administration for Strategic Planning and Response (ASPR) manages the Strategic National Stockpile (SNS), a critical resource from which the federal government distributes medical countermeasure supplies directly to the states. Throughout most of the pandemic, there was a significant communication gap between the SNS and the RSS warehouse. These communication lapses significantly impacted warehouse operations, impeding the ability to adequately manage storage space. This occurred because the Warehouse team lacked critical information about incoming SNS shipments, such as the contents, quantities, and anticipated arrival times. To overcome these issues, the RSS warehouse team proactively began discussions with the SNS, which are ongoing as of November 2023, to improve distribution to the State and local entities. These discussions primarily focused on improving communication and overall efficiency. One strategy being considered is for the SNS to provide advanced shipping notices, which would enable warehouse staff to better prepare for deliveries and manage storage space more effectively. Another proposed solution is for the SNS to use its distribution network to send supplies directly to local entities, improving the efficiency of the supply chain.

Finding/Corrective Action: CDPH has the opportunity to continue discussions with the SNS and jointly develop a plan that ensures efficient distribution of SNS supplies to statewide locations. (ID: Logistics, Distribution, and Warehousing 4)

5. The RSS warehouse faced significant operational challenges when various State response entities purchased supplies that were shipped to the warehouse.

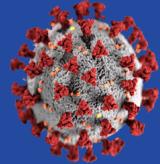


The RSS warehouse experienced communication and coordination challenges when State entities purchased pandemic supplies that were delivered to the warehouse. Purchasers included the Logistics and Commodities, Vaccine, Therapeutics, and Testing task forces as well as the State's Emergency Procurement Officer. These entities rarely notified the warehouse team when critical purchasing decisions were made that impacted warehouse operations. Although two warehouse representatives participated in the Vaccine Task Force all-hands meetings, there was no discussion of planned purchases of vaccine ancillary supplies. The limited coordination with the task forces posed significant challenges for the warehouse team to plan and secure adequate storage space for the incoming inventory. SMEs voiced the need for an executive-level, strategic view of what items are being procured, their purpose and intended use, and anticipated utilization rates. They suggested designating a liaison in all task forces to promote discussion about the purchasing impacts on the RSS warehouse, including the projected inflow and outflow of inventory and anticipated storage capacity. This would provide better visibility to the warehouse team of what is planned, what is ordered, and when shipments are expected to arrive.

Finding/Corrective Action: For future pandemics, CDPH should designate a logistics and distribution liaison to each task force making purchasing decisions to strengthen inventory planning and management consistently across all workstreams. (*ID: Logistics, Distribution, and Warehousing 5*)

6. CDPH needs to determine its warehouse storage needs for future public health emergencies.

CDPH manages the distribution of medical supplies and pharmaceuticals that require storage at specific temperature levels. These items are stored in the climate-controlled RSS warehouse—the only one operated by the State. During the first few months of the pandemic, CDPH primarily received, stored, and shipped out PPE. However, in mid-2020, when CDPH also started shipping out testing kits and testing transport media (which required refrigeration), staff found there was insufficient climate-controlled warehouse storage space to



house the inventory. Consequently, at the end of 2020 Cal OES leased six warehouses from UPS to store PPE inventory.

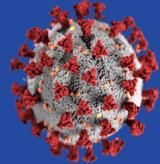
Despite this expansion, climate-controlled storage space remained a challenge. The warehouse had to accommodate not only testing supplies but also a diverse range of additional items such as ultra-cold storage equipment for vaccines, vaccine ancillary supplies, and therapeutic drugs. This influx of additional inventory frequently pushed the warehouse to its maximum capacity, raising concerns about the possibility of having to reject incoming deliveries. This situation highlighted the need for more MCM and pharmaceutical specific climate-controlled storage space, according to several SMEs.

To determine how much additional storage space is necessary in the future, CDPH will also need to consider recent legislation that requires CDPH, in coordination with Cal OES, to establish a stockpile of PPE to support a 90-day emergency. A Personal Protective Equipment Advisory Committee will make recommendations for the amount of each type of PPE required, the geographical distribution of PPE, and the policies and funding required to establish a PPE stockpile. As of November 2023, the Committee had not yet been established nor funding appropriated to establish the stockpile. Consequently, CDPH does not yet have the input available to comprehensively assess its storage needs.

Finding/Corrective Action: CDPH should conduct a comprehensive analysis of its climate-controlled storage needs and its capacity to comply with statutory requirements to maintain a PPE stockpile. Taking into account the future recommendations from the Personal Protective Equipment Advisory Committee for the State's PPE stockpile, CDPH can then develop a long-term plan to optimize its storage capabilities. (ID: Logistics, Distribution, and Warehousing 6)

7. CDPH does not have an adequate inventory management system to track the receipt, storage, and distribution of critical pharmaceuticals, medical supplies, and equipment.

Between March 2020 and December 2021, the RSS warehouse used two different inventory management systems simultaneously, each serving distinct purposes. Reconciling data between the two systems proved difficult and often resulted in inaccurate inventory records. Recognizing



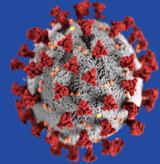
these issues, CDPH converted to a single inventory management system provided by Cal OES in December 2021. This transition brought its own set of challenges according to SMEs, and the new system did not meet CDPH's operational needs, requiring the vendor to continually make enhancements to the software. Given CDPH's responsibility to accurately report the State's inventory status, and the reliance of many entities on this data, the need for precise and up-to-date inventory information is critical.

In response to these difficulties experienced during the pandemic, CDPH is now moving through the project approval lifecycle process for the Receiving, Storing, and Staging Warehouse Supply Chain Management Solution. When implemented, this solution is expected to provide several advantages: real-time tracking of inventory levels, improved efficiency in purchasing and procurement, better distribution and delivery processes, and a reduction in errors and discrepancies. Such improvements are vital to ensure that the warehouse can respond quickly and effectively to emergencies, distributing essential supplies where needed. Additionally, the new system is envisioned to provide comprehensive tracking and monitoring of the entire supply chain, from purchase through delivery. This capability is essential to ensure compliance with regulatory standards and to minimize the risk of unauthorized, recalled, or expired products entering the supply chain.

Finding/Corrective Action: CDPH should continue to pursue a new supply chain management system to improve efficiency and better support warehouse operations and inventory management. (*ID Logistics, Distribution, and Warehousing 7*)

8. Rotational staffing at the CDPH warehouse created a continuous need to recruit and train redirected staff.

During the pandemic CDPH faced significant challenges staffing the warehouse. Initially, CDPH planned to supplement the team by redirecting approximately 50 staff from other State-operated warehouses, but these warehouses were already operating at full capacity and could not lose their personnel through redirection. Consequently, to fill the staffing void, CDPH relied on internal redirections using a rotational approach. But this approach proved to be less than



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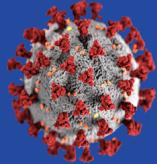
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ideal due to the significant and ongoing training required to onboard new personnel as staff rotated on and off the team.

Since the rotational staffing model proved inadequate for the demands of warehouse operations, SMEs expressed the need for a comprehensive, long-term, trained, emergency response staffing plan. A significant gap identified during the pandemic was insufficient administrative and fiscal support staff, which are essential for addressing and resolving immediate issues within the warehouse. To remedy this, SMEs recommended expanding the Center for Preparedness and Response's (CPR) Emergency Pharmaceutical and Warehouse Section (EPaWS). Such an expansion would entail forming a larger, permanent core team that includes roles in administrative and fiscal support. Moreover, they proposed integrating opportunities for career growth within this framework. This strategy aims to develop a more robust and skilled workforce, better equipped to handle the challenges of MCM planning and distribution, and emergency warehouse operations.

Finding/Corrective Action: CDPH has the opportunity to plan for and establish a permanent core warehouse team that includes administrative and fiscal support and provides opportunities for career advancement. (ID: Logistics, Distribution, and Warehousing 8)



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.

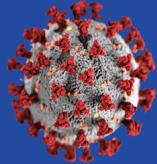
Receiving, Storing, Staging

Logistics and Commodities Task Force Mobilized

- In response to extraordinary supply chain disruptions and complex logistics requirements resulting from the COVID-19 response, Cal OES mobilized the Logistics and Commodities Task Force (L&C Task Force) in March 2020. The L&C Task Force's mission was to synchronize all logistics efforts across the State to support local governments during the COVID-19 emergency. Led by Cal OES and the California Department of General Services (DGS), additional L&C Task Force participants included CDPH, the California Emergency Medical Services Authority (EMSA), the California Military Department (CMD), the California Department of Social Services (CDSS), and other State departments, as deemed necessary.
- The L&C Task Force implemented strategies to acquire, store, and deploy PPE, medical equipment, testing supplies, and other commodities to mitigate the severe supply chain issues the State experienced during the pandemic. Competing with the worldwide demand for the same scarce supplies, L&C Task Force members collaborated to procure critical resources for the State's stockpile. For further discussion of the L&C Task Force's role in securing PPE, refer to the Medical Surge chapter of this AAR.
- At the beginning of the pandemic, when the L&C Task Force initially convened, its members did not possess a full understanding of each State department's capabilities or business practices. One of its first tasks was to define each department's scope and responsibilities. As time went on, the group developed keen situational awareness and became "a great task force," operating as a unified command group according to one SME. Due to its effectiveness, Cal OES decided to keep the L&C Task Force functioning after the COVID-19 public health emergency to continue operations.

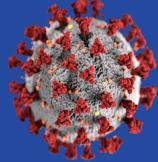
Receiving, Storing, and Staging Warehouse Activated

- CDPH's role in logistics is to manage the receipt, storage, staging, and distribution of medical countermeasures, which includes biologic



products, drugs, and devices, such as diagnostic tests and PPE. The Administration for Strategic Preparedness and Response (ASPR) oversees the Strategic National Stockpile (SNS) of MCMs needed to protect the American public in the event of a public health emergency severe enough to cause local supplies to run out. Once federal, State, and local entities agree that SNS resources are needed, the federal government delivers these supplies to the State.

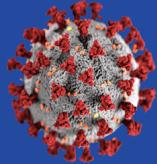
- Since 2005, CDPH has maintained the *Operational Plan and Procedures for Receiving and Distributing Medical Countermeasures* (Operational Plan), which is regularly modified and updated based on actual public health events. On March 3, 2020, CDPH activated its Operational Plan to address the COVID-19 public health emergency. This included deploying staff to the existing RSS warehouse to manage and distribute incoming MCMs.
- Located in Yolo County, the RSS warehouse stores and distributes temperature-controlled medical supplies and pharmaceuticals during public health emergencies and disasters. This warehouse serves as a central location for the emergency response efforts and provides critical medical supplies to healthcare providers and first responders. It is funded by the ASPR Healthcare Preparedness Program (HPP) and CDC Public Health Emergency Preparedness (PHEP) Cooperative Agreements, which support public health departments and healthcare facilities to build and strengthen their abilities to effectively respond to public health emergencies. To receive PHEP funding, the State maintains storage space to receive inventory from the federal government and redistribute it to the LHJs. When activated during an emergency, the RSS warehouse operates within the Incident Command System (ICS) structure to fulfill resource requests.
- CDPH follows a formal resource requesting process for local entities or jurisdictions who need State assistance in obtaining MCMs. The process, as outlined in California's Standardized Emergency Management System (SEMS), requires that local entities (e.g., hospitals and other facilities) follow a chain of approval in order for costs to be eligible for reimbursement. The process also ensures that, in accordance with mutual aid principles, local resources are exhausted first before requests are submitted to the State. SEMS consists of five organizational levels to make a request. At each level of the chain (e.g., county level, regional level), attempts are made to locate resources; if they cannot be located, the request is forwarded to the next level until it reaches the State. Once public health and medical



resource requests are sent to the State level, they are processed and fulfilled by the Operations Team in CDPH's Medical and Health Coordination Center (MHCC). Once the MHCC Operations Team processes the request, it is sent to CDPH's RSS warehouse team for fulfillment (or directed to EMSA for EMSA-provided resources). For further discussion on resource requesting, see the Resource Requesting and Public Health Ordering System chapter in this AAR.

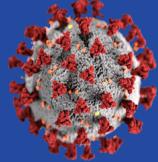
Personal Protective Equipment Initial Priority

- When the RSS warehouse activated in March 2020, the primary objective was to distribute PPE as quickly as possible. Except for a significant supply of respirators and masks, there were limited quantities of other PPE in the warehouse. Prior to the pandemic CDPH had stockpiled 52 million respirators and masks from medical caches procured in the early 2000's for overall emergency preparedness, including pandemics. However, since their shelf life had expired, CDPH planned to destroy them in 2020. However, with the arrival of the COVID-19 pandemic, the FDA approved the expired stockpile to be put back into circulation. This allowed the warehouse staff to distribute critically needed respirators for many months.
- The limited quantities of other PPE that CDPH had in stock at the beginning of the pandemic were rapidly depleted. By mid- March 2020, the RSS warehouse started to receive PPE inventory from the SNS, Federal Emergency Management Agency (FEMA), and purchases made by the various task forces. The warehouse staff was not prepared to receive and process all the different types of PPE and associated stock keeping units (commonly known as SKUs) that uniquely identify the product for tracking and distribution. The warehouse was staffed with just 5-6 people who were challenged to keep up with managing the "sheer volume" of incoming inventory within normal business hours, according to SMEs. Consequently, CDPH increased the hours of operation and ran the warehouse 14-16 hours a day, seven days a week for over six months. By the end of 2020, the warehouse had shipped out 65 million units of PPE.
- Further complicating the process was the limited communication between the SNS and the RSS warehouse about incoming inventory. Similarly, other entities procuring inventory on behalf of the State often did not inform RSS staff about the purchases that would be delivered to the warehouse. This lack of coordination meant that warehouse staff were often unaware of what quantity to expect and when incoming shipments would arrive. As one SME recalled, in late March 2020, on one day alone, 35 trucks arrived unexpectedly, and staff had to "just stay open and keep



offloading until we couldn't take it anymore." Another SME recalled that "we had no idea what our throughput would be with the ebbs and flows—and when it flowed it really flowed."

- RSS warehouse staff often received incoming inventory from foreign countries for which the bill of lading (which describes the type and quantity of product delivered) was written in a foreign language. RSS warehouse staff used Google Translate to interpret the bill of lading and determine the nature of the products that had just arrived. Supplies coming from foreign countries could not be utilized until they were reviewed by CDPH clinical experts and approved by the California Department of Industrial Relations, Division of Occupational Safety and Health, commonly known as Cal OSHA. Consequently, the products remained in inventory until deemed suitable for use. For items like surgical gowns, specific guidelines dictated when and in what situations they could be used. As a result, RSS warehouse staff created, printed, and distributed inserts outlining the rules and restrictions for each type of product. This process often led to an accumulation of excess inventory beyond what was necessary.
- The RSS warehouse team initially intended to distribute inventory to the 61 LHJs, who would then ship products to the healthcare providers in their jurisdictions, per the procedures outlined in CDPH's Operational Plan. However, according to SMEs the Operational Plan "did not survive first contact," and "quickly fell apart" because most LHJs did not have the capacity to receive, store, and redistribute the volume of requested PPE. Consequently, by April 2020 CDPH decided to ship PPE directly to healthcare providers, which exponentially increased the workload from handling 61 LHJ locations by adding over 2,500 unique healthcare provider locations.
- As part of the original Operational Plan, CDPH had also intended to use large trucks to ship MCMs to the 61 LHJs. However, when the base of customers increased to include healthcare providers and other public and private stakeholders, the RSS warehouse team expanded capabilities with a multi-pronged approach. First, CDPH added smaller vehicles and vans to ship smaller quantities to more locations. Second, Cal OES assisted by obtaining a shipping contract with UPS. To streamline processing, UPS supplied label makers for CDPH's use to package the products, which UPS then shipped. As a result, the partnership with UPS significantly increased CDPH's small parcel shipping capability, which allowed CDPH to ship out nearly 1,000 parcels per day. Finally, CDPH augmented its transport

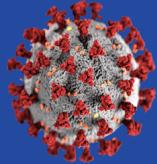


capabilities by contracting with several commercial trucking companies. Typically, these trucks would have been in high demand for agricultural purposes during the summer and fall of 2020. However, as one SME noted the pandemic effectively “shut down” the trucking industry. As a result, CDPH secured a majority of the trucks it required, a solution that may not be feasible during other public health emergencies.

- In mid-summer 2020, the RSS warehouse began receiving and shipping COVID-19 testing kits and associated supplies. However, it soon became evident that the warehouse lacked the physical storage space required to effectively manage both the PPE and testing supplies concurrently. Recognizing this logistical challenge, Cal OES took proactive measures by entering into lease agreements for six UPS warehouses. Subsequently, the reception, storage, and shipment of PPE transitioned to these leased facilities. By the time of the transition at the end of 2020, the RSS warehouse had shipped approximately 84 million units of PPE.
- During the COVID-19 pandemic, the Governor signed SB 275 (Chapter 301, Statutes of 2020) and AB 73 (Chapter 322, Statutes of 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. The new laws also created a Personal Protective Equipment Advisory Committee to make recommendations to CDPH and Cal OES on the guidelines and the amount of each type of PPE required to support a 90-day emergency, the geographical distribution of PPE, and the policies and funding required to establish a PPE stockpile. As of November 2023, the Committee had not yet been established nor had the Legislature appropriated funding for the PPE stockpile.

Distribution of COVID-19 Test Kits and Testing Supplies

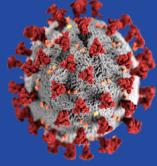
- In mid-summer 2020, the RSS warehouse began receiving test kits and supplies that needed to be distributed to testing site locations across the State. The warehouse was responsible for distributing rapid antigen test kits and polymerase chain reaction (PCR) test kits, which included associated supplies such as swabs and test tubes. Historically, the SNS did not stockpile test kits or testing supplies, so the State procured most of this inventory with FEMA also supplying some testing provisions.



- The Testing Task Force procured the test kits and testing supplies, while the RSS warehouse stored and distributed these items. However, there was a notable lack of effective communication and coordination between these two entities. According to SMEs, warehouse staff were not included in the Testing Task Force's planning meetings where important decisions were being made that had a significant impact on warehouse operations. For example, the Testing Task Force procured a master contract for 100 million test kits, of which 5-10 million kits were delivered to the warehouse each month. This posed a challenge for the warehouse because its storage capacity was insufficient to accommodate this amount of inventory when the monthly distribution rate to the local agencies was considerably lower. Furthermore, the warehouse staff said they encountered several issues with the testing supplies the Task Force procured. They found that the test tubes arrived in varying configurations and some lacked swabs. Consequently, thousands of test tubes remained unused and eventually expired in 2022, necessitating their disposal. This situation prompted the staff to reevaluate how to manage the storage space to also accommodate the unwanted and expired inventory.
- RSS warehouse staff could only ship testing supplies to sites approved to perform COVID-19 tests. Those sites that were not approved could apply for a Clinical Laboratory Improvement Amendment (CLIA) waiver, which is a certificate that authorizes the site to perform simple point of care (POC) tests. The Centers for Medicare and Medicaid Services administers these waivers to ensure the accuracy, reliability, and reporting of patient tests and results. When the warehouse started shipping testing supplies, “none of the staff knew what a CLIA waiver was,” according to one SME. Sites that wanted to receive test kits and supplies started calling the RSS warehouse and the staff had to “explain what CLIA was and how to get it.” Eventually, the warehouse team directed these inquiries to the Operations Team in CDPH’s Medical and Health Coordination Center. For further discussion of CLIA, refer to the Testing chapter in this AAR.

Test Kit Transport Media Needed Cold Storage

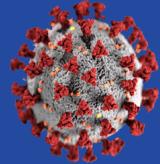
- RSS warehouse staff did not have experience handling test transport media, which is a solution used to preserve specimens after collection so they can be transported and analyzed in a lab. Only after the transport media started to arrive at the warehouse did they learn, from reading the material’s package insert, that the transport media required refrigerated storage. This necessitated warehouse staff to quickly find and procure refrigeration equipment.



- Addressing these refrigeration needs proved challenging. The 40-foot long, refrigerated shipping containers, known as Conex boxes, required electricity for temperature control at 28 degrees. The containers barely fit through the warehouse doors and consumed valuable storage space that could no longer be utilized to house other inventory. Then, staff discovered the warehouse's electrical configuration was inadequate to accommodate the containers' 480-volt marine electrical connection, which required modification of the warehouse electrical system and the Conex plugs so that the containers could operate with warehouse power.
- As the only public health climate-controlled warehouse operated by the State, the RSS warehouse maintains backup plans to ensure continual temperature control. Staff activated these backup plans in mid-summer 2020 when the warehouse experienced a major power outage and subsequently, the breakdown of the heating, ventilation, and air conditioning (HVAC) system. The warehouse was left without power when a critical circuit breaker in the master panel failed and staff could not find a replacement. While the power was out, Cal OES assisted by bringing in generators to provide power. This required coordination with the California Highway Patrol to provide 24-hour surveillance to protect the generators. Then, it took two weeks to fix the circuit breaker, during which time staff had to "hot wire a generator to the master circuit breaker to power the warehouse," recalled one SME.
- Subsequently, at the peak of the summer's hot weather, the HVAC stopped working. This caused staff to bring in refrigerated trucks to which they moved - inventory of the warehouse. SMEs reported that the backup plans to acquire generators and refrigerated trucks "worked well" and Cal OES support was "exceptional" during this challenging situation.
- From March 2020 through November 2023, the RSS warehouse received 289.6 million units of testing supplies and shipped 182 million of those units to local entities.

Cold Chain Equipment Distributed for Vaccines

- When COVID-19 vaccines became available in late 2020, each manufacturer's product had different cold storage requirements. Fortunately, a year before the pandemic, CDPH had updated its Receive, Stage and Store Cold Chain Management Plan as an annex to the Operational Plan and Procedures for Receiving and Distributing Medical Countermeasures. One SME explained that "when we made this decision" to update the cold chain management plan, "we had no idea how

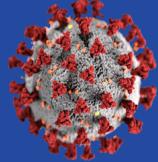


important it was about to become.” The updated plan contained information on how to effectively maintain cold chain requirements for frozen MCMs, which informed the warehouse team what would be needed to support vaccine distribution. Furthermore, SMEs reported that addressing the temperature control challenges of the testing transport media early in the pandemic helped build their expertise in cold chain management.

- To implement the updated cold chain management plan, CDPH used its emergency purchasing authority to acquire cold storage equipment, including transport containers, data loggers, and dry ice. It also successfully purchased several hundred refrigerators, freezers and transport containers for LHJs, prisons, state hospitals, and developmental facilities. Two staff from the warehouse team were assigned to the Vaccine Task Force to manage logistics and staging of the cold chain equipment. For further discussion of the challenges and lessons learned with vaccine logistics and distribution, refer to the Vaccines chapter of this AAR.
- Since vaccines were shipped directly from the manufacturers to the healthcare providers, the RSS warehouse had a limited role in vaccine distribution. The warehouse became the backup site for cold chain storage should “something go wrong” with a vaccine shipment, according to a SME. Also, during the five months FEMA operated two COVID-19 vaccination sites in Oakland and Los Angeles in 2021, the Emergency Pharmaceutical and Warehouse Section provided pharmacy support.
- The RSS warehouse team accumulated vast experience with cold chain management during the pandemic and have become “cold chain specialists in support of pharmacy and testing supplies,” according to one SME. Consequently, when mpox vaccines arrived in mid-2022 and required cold storage, cold chain assets were already in place and the team was well prepared to support distribution.

COVID-19 Therapeutics Shipped to Providers

- A therapeutic, hydroxychloroquine, that was initially thought to be effective for COVID-19 received an Emergency Use Authorization (EUA) on March 28, 2020. CDPH acquired supplies of hydroxychloroquine in anticipation of distribution, which required storage in the RSS warehouse. However, when the EUA was revoked soon after in June 2020, CDPH continued to store its hydroxychloroquine stockpile in the warehouse for



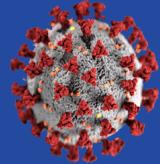
quite a while until the federal government accepted the supply back prior to the arrival of newly authorized therapeutics in summer 2021.

- When the antiviral treatment Veklury (remdesivir), obtained an EUA in May 2020, the U.S. Department of Health and Human Services, Administration for Strategic Preparedness and Response (HHS/ASPR) purchased the national supply from the manufacturer for allocation to the states. CDPH placed orders on behalf of the local jurisdictions for the third-party distributor, AmerisourceBergen, to process and ship the order. The State's role in managing allocations of Veklury was relatively brief. With the drug's commercialization in October 2020, the State's involvement in allocation and ordering diminished, and in February 2021, stopped altogether when HHS/ASPR ceased control of the national supply. LHJs and health care providers could then order Veklury directly from the third-party distributor, AmerisourceBergen.
- From late summer 2021 through November 2023, the federal government purchased the national supply of two oral antiviral therapeutic treatments, Paxlovid and Lagevrio, which were allocated to the States. The RSS warehouse frequently received and stored the unclaimed county allocated inventory of these products and shipped them out to healthcare providers upon request. According to SMEs, this process operated smoothly without any receiving or shipping issues. Over this time, the RSS warehouse shipped out nearly 2.95 million pharmaceuticals. For further discussion of therapeutics logistics and distribution, refer to the Therapeutics chapter in this AAR.

Inventory Management

CDPH Used the Federal Inventory Management System

- Early in the pandemic, CDPH faced challenges in effectively managing its inventory of MCM supplies received from the Strategic National Stockpile (SNS). CDPH began the COVID-19 response using the CDC's Inventory Management and Tracking System (IMATS), a secure web-based application designed to assist state and local public health agencies in managing inventory from the SNS. IMATS was labor intensive as compared to many commercial systems and could not communicate directly with other software due to federal government security concerns.
- IMATS enabled CDPH to track inventory received, monitor reorder thresholds, and support warehouse operations. However, IMATS could not feed the Governor's COVID-19 dashboard, which served as the official

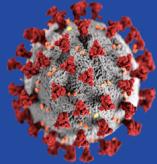


count of inventory levels across all State agencies and warehouses. Without this connection, staff spent considerable effort to compile and maintain spreadsheets to transfer the data needed for the dashboard.

- The Public Health Ordering System (PHOS) was used to submit and approve resource requests for fulfillment from the RSS warehouse. However, warehouse staff did not use PHOS for inventory management because it did not integrate or communicate with IMATS. Rather, when the MHCC approved a resource request in PHOS, the MHCC operations team emailed a PDF printout of the order to the RSS warehouse. Then warehouse staff manually input the information into IMATS.

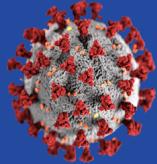
State Utilized United Parcel Service Inventory Management System

- Because the State needed a more robust inventory management system, the Governor's Office and Cal OES explored available options that could be quickly implemented and used across multiple State agencies. The State decided to contract with UPS and use their existing inventory management system. However, implementing the UPS system presented some challenges. While the UPS system offered certain advantages, such as integration with the COVID-19 dashboard and the ability to track PPE and test kits, it did not support the management of pharmaceutical inventory. This deficiency stemmed from the system's inability to track lot numbers and product expiration dates. Consequently, the CDPH RSS warehouse staff continued to use the IMATS and the UPS system simultaneously to manage warehouse operations.
- Having to maintain two inventory management systems to monitor warehouse functions created "so many issues," according to one SME. The UPS system was so cumbersome that CDPH dedicated staff to "become UPS experts," just to learn, understand, and maintain the system. Also, staff had to reconcile inventory counts between the two systems, which significantly increased workload. To manage this workload effectively, CDPH assigned separate full-time teams to support each system. To help mitigate the situation, staff from the National Guard rotated in every few months to supplement the teams.
- CDPH ceased using the UPS inventory management system in December 2021 when the State's contract with UPS ended.



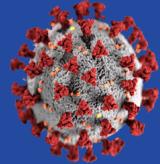
CDPH Implemented New Asset Management System

- In spring 2021, CDPH began to address its future inventory management needs since its contract with UPS was expiring at the end of 2021. During this time, Cal OES stepped in and offered to fund a new solution that could benefit both CDPH and EMSA. Subsequently, Cal OES made the decision to implement an asset management system known as NEXGEN. Initially, the plan was for all three agencies to utilize NEXGEN, which would have provided a real-time statewide view of the State's inventory. However, in practice, only CDPH ended up using the system. This divergence from the original plan occurred due to a variety of challenges encountered during implementation. After an initial period of use, Cal OES ultimately transitioned to LifeScience Logistics, a system utilized by the SNS. Meanwhile, EMSA reverted to using Google spreadsheets for its inventory management needs. This shift in approaches was driven by the specific operational needs and challenges of each agency.
- CDPH implemented NEXGEN, in part, because it offered several useful features. First, it integrated with the COVID-19 dashboard, which allowed CDPH to maintain just one system for managing and reporting inventory, rather than operating two systems. Second, an application programming interface (API) allowed the Public Health Ordering System (PHOS) to send data to NEXGEN. As a result, when the MHCC approved an order request in PHOS, it immediately populated in NEXGEN. This significantly decreased the amount of time the RSS warehouse team devoted to order processing. The operations team at MHCC continues to email order information in PDF format, which the warehouse staff uses to reconcile orders. Regrettably, two-way communication between the NEXGEN and PHOS does not exist, preventing PHOS from receiving information back on order processing. Consequently, PHOS users are unable to track the status of their resource request orders within the PHOS system.
- While some user acceptance testing took place prior to NEXGEN's launch, several SMEs reported that CDPH users were not adequately prepared for the transition from the UPS system to NEXGEN in December 2021. The urgency of the transition was driven by the expiration of the UPS contract, necessitating a hard cutoff. However, CDPH users had not fully familiarized themselves with NEXGEN's workflow at that point. As a result, they had to continue using IMATS in parallel with NEXGEN for several months while users adapted to the new workflows.
- From the beginning, users experienced challenges using NEXGEN. RSS warehouse staff routinely met with Cal OES and NEXGEN representatives



to resolve issues with the system. A fundamental issue is that NEXGEN is an asset-based inventory management system, which tracks the various parts used to assemble an item, such as the parts of a truck or generator. In contrast, CDPH manages its inventory in units (e.g., masks, gowns, respirators, etc.), which may require the tracking of expiration dates, lot numbers, and national drug codes (NDC). Since the system was designed for asset-based rather than unit-based inventory management, NEXGEN's workflows do not adequately meet CDPH's business needs. Consequently, staff encountered problems moving orders through the workflows, often finding that the system either "under-picked" or "over-picked" inventory, according to one SME.

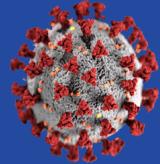
- Another issue involves users' limited ability to fix or customize features within the system. As one SME explained, there is "not a lot of flexibility for the user to rectify issues." Anytime CDPH needs to change a feature, such as changes to workflows, reports, or performance metrics, CDPH submits a ticket for NEXGEN to make the change. Furthermore, users cannot correct orders. To make a correction, CDPH must request NEXGEN to cancel the order so that the MHCC can resubmit it. The workload became so extensive that the RSS warehouse dedicated an employee to work full-time on fixes to NEXGEN, submitting approximately 700 trouble tickets since the system was implemented.
- With the implementation of NEXGEN, CDPH gained the ability to access and manage its inventory data, which was previously owned by the federal government (through IMATS) and by UPS for their respective systems. NEXGEN allowed CDPH to directly download, manipulate, and analyze its data, eliminating the cumbersome task of compiling and maintaining spreadsheets for the COVID-19 dashboard. This enhancement significantly expanded the department's analytical capabilities. Consequently, in early 2023, the RSS warehouse hired a dedicated staff member specializing in data and analytics. This individual's role is to construct data models, conduct forecasting, and create visual representations for data driven decision-making.



RSS Warehouse Staffing

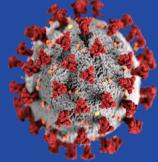
Warehouse Team Augmented with Redirected Staff

- The RSS warehouse experienced significant staffing challenges throughout the pandemic. Originally, with just six employees assigned to the warehouse, CDPH intended to supplement the team with redirected staff from other State-operated warehouses. However, all State warehouses were already operating at full capacity, resulting in a scarcity of trained warehouse personnel. Several SMEs pointed out that CDPH could only redirect a limited number of staff before other warehousing efforts were impacted due to a lack of qualified staff. Due to the situation, the pool of knowledgeable warehouse staff was “non-existent,” according to a SME.
- To adequately handle the volume of incoming and outgoing inventory, CDPH recognized the need to increase the warehouse team by about 50 staff. To do so, CDPH redirected staff primarily from its internal operations on a rotational basis. But it was not a simple task to “just staff up,” according to one SME, because the redirected staff needed training. The redirected staff needed to learn the specific tasks that had to be performed to take in specific types of inventory, stage it, and prepare it for transport. Just as the redirected staff became proficient in their roles, they would rotate back to their original positions, leading to the continuous need for training new staff members. Consequently, the rotational approach to staffing proved suboptimal due to the significant and ongoing training demands required to onboard new personnel. Eventually, CDPH shifted to using temporary hires and the National Guard to augment the warehouse team. CDPH also engaged trucking companies to provide contract workers that supported warehouse operations.
- The RSS warehouse team also faced significant challenges finding staff qualified and motivated to work in-person at the warehouse. Operating the warehouse for extended hours, seven days a week, for months was described by several SMEs as “overwhelming.” This intensity was exacerbated by frequent last-minute requests to start work at unconventional hours, such as 11:00 pm, to expedite shipments. These demanding conditions led to notable burnout among the team.
- Complicating matters further, the State's remote working environment made it difficult to find individuals willing to physically report to the warehouse. Gaining cooperation from CDPH supervisors outside the emergency response field proved to be a significant hurdle, resulting in



the warehouse team initially depending on the Center for Preparedness and Response supervisors to temporarily reassign their staff to warehouse duties. It was only after the issue was escalated and recognized as a priority by leadership that a more systematic approach could be implemented. This shift in strategy facilitated the redirection and integration of staff into the warehouse team, moving away from a reliance on voluntary participation to a more structured redirected staffing model.

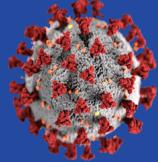
- Since the rotational staffing model did not effectively support warehouse operations, SMEs expressed the need for a long-term emergency response staffing plan. One notable deficiency during the pandemic was the lack of administrative and fiscal support staff to address and resolve issues “on the ground” at the warehouse. SMEs also suggested expanding the CPR Warehouse Branch by establishing a larger, permanent core team including fiscal support roles and Emergency Services Coordinators (ESC) and Senior ESCs to fill administrative roles. Additionally, they suggested creating opportunities within this structure for career growth to foster a more robust and skilled workforce.
- For a discussion of how the redirection process was operationalized, see the Human Resources Administration chapter in this AAR.
- For further perspectives on redirections, see the Effects on Staff chapter in this AAR.



Technology

This section describes technology specific to this chapter.

- As discussed above, from March 2020 through December 2021, the RSS warehouse used two systems simultaneously to support warehouse operations. The Inventory Management and Tracking System (IMATS), owned by the federal government allowed staff to track inventory shipped from the Strategic National Stockpile. The other system, owned by UPS, was used to feed the COVID-19 dashboard and track the State's purchased inventory. However, it did not provide the functionality to track pharmaceutical lot numbers or product expiration dates. Reconciling information between the two systems was cumbersome and time consuming.
- In December 2021, CDPH partnered with Cal OES to use its existing asset management system, known as NEXGEN. Staff experienced significant challenges in the transition to NEXGEN and with using the system to support ongoing operations. Several SMEs recalled that “so many of the problems at the warehouse” stemmed from the inadequate inventory management systems. Since so many entities rely on the data, it needs to be “accurate and real-time” to show inventory levels and movement, one SME noted.
- NEXGEN is owned by Cal OES, who funds CDPH’s usage of the system. Since Cal OES has since moved on to utilize another asset management system, Cal OES informed CDPH that it will no longer fund its use. Consequently, CDPH conducted a business analysis and is preparing a project proposal for a new solution to meet its supply chain management (SCM) needs.
- By implementing a new SCM solution, CDPH envisions it will benefit from real-time visibility of inventory levels, streamlined purchasing and procurement processes, optimized distribution and delivery, and reduced errors and discrepancies. This will ensure that the warehouse can quickly and effectively respond to emergencies and provide critical supplies to those in need. The solution will also provide the warehouse with the ability to track and monitor the entire supply chain, from procurement to delivery, to ensure compliance with regulatory requirements and to mitigate the risk of unauthorized, recalled, and expired products entering the supply chain.



Communications

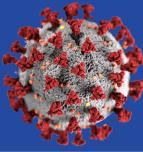
This section describes communications specific to this chapter.

External

- As discussed earlier, throughout most of the pandemic, there was limited communication between the Strategic National Stockpile (SNS) team and the RSS warehouse. This lack of communication had significant consequences. There were instances when the warehouse team did not know what had been shipped, the quantities, or when it was expected to arrive. To improve this situation, the RSS warehouse team initiated discussions with the SNS to find ways to enhance the ordering and distribution process to the State and local entities. As of November 2023, these discussions are ongoing. One of the key areas they are focusing on is improving communication and increasing efficiency. Some of the ideas they explored include having the SNS provide advanced shipping notices so that the warehouse can plan for and manage storage space more effectively. Another idea is for the SNS to use their distributor to ship directly to local entities. In addition, the warehouse team conducted a survey with the LHJs to gather information about their logistics capabilities, including the availability of loading docks, equipment, security measures, lighting, and other operational features.
- Throughout the response CDPH frequently communicated with Cal OES to coordinate on the State's stockpile and to address warehouse needs. Refer to the Analysis of Activities section of this chapter for further discussion of coordination with Cal OES.

Internal

- As discussed earlier, there were multiple entities making purchases on the State's behalf that were delivered to the RSS warehouse for subsequent distribution, which included the Logistics and Commodities, Vaccines, Therapeutics, and Testing task forces as well as the State's Emergency Procurement Officer. However, very little communication occurred between these entities and the warehouse team. This made it difficult for the team to plan for and arrange sufficient storage space for incoming inventory. When they were stocked over capacity, staff feared they may have to turn trucks away. When the warehouse team started to inform the task forces that this might become an eventuality, task force members started to reach out to the warehouse team at the time of purchase and communications improved.



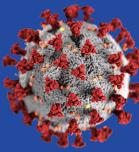
Workplan

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.
- **Finding ID:** The ID(s) from the related Finding/Corrective Action (where applicable).
- **Lead:** The lead person(s) responsible for task completion.

Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Planning, Initial Start- up, Ongoing Operations	Revise and improve Medical Countermeasures (MCM), Operational Plan, and Cold Chain Annex	<ul style="list-style-type: none">• Operational Plan documents strategies to rapidly move large volumes of inventory to local entities.	<ul style="list-style-type: none">• Engage with the SNS to explore options for moving inventory from the national stockpile to the local level.• Establish master agreements with transportation partners to scale up as needed.	<ul style="list-style-type: none">• Logistics, Distribution, and Warehousing 1, 2, 3, 4	

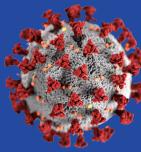


CDPH COVID-19 After Action Report

Chapter 27 – Logistics, Distribution, and Warehousing

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Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Planning, Initial Start- Up, Ongoing Operations	Maintain the State's MCM stockpile with items needed for a statewide response	<ul style="list-style-type: none">The State has adequate supplies and equipment in its stockpile.The State and its partners can access items as they are needed.	<ul style="list-style-type: none">Involve medical specialists in assessing incoming inventory for suitability and alignment with ordering specifications.Survey LHJs for stock on hand and supply needs.	<ul style="list-style-type: none">Logistics, Distribution, and Warehousing 1, 2	
Planning, Initial Start- Up, Ongoing Operations	Provide cold chain expertise, technical guidance, and equipment/supplies	<ul style="list-style-type: none">CDPH can rapidly procure and position cold chain equipment and supplies.	<ul style="list-style-type: none">Engage with CDC and drug manufacturers to understand cold chain requirements.Survey LHJs to establish cold chain equipment needs and associated ancillary supplies.Identify other State departments that will need CDPH to provide cold	<ul style="list-style-type: none">Logistics, Distribution, and Warehousing 1, 2	

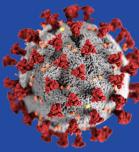


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Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Planning, Initial Start- Up, Ongoing Operations	Designate logistics and distribution representation on task forces that make purchasing decisions	<ul style="list-style-type: none">Task forces and workstreams can address the logistics, distribution, and warehousing needs of the response.	<ul style="list-style-type: none">Implement coordination and communications channels among the various task forces and workstreams.Educate task forces and workstream staff on logistics and distribution perspectives to promote effective two-way communication.	<ul style="list-style-type: none">Logistics, Distribution, and Warehousing 5, 8	
Planning, Initial Start- Up, Ongoing Operations	Maintain an agile technology system with the ability to ramp up quickly	<ul style="list-style-type: none">System can scale up and down to accommodate changing volumes.Data reporting is accurate and timely.System is flexible and can integrate with other tools.	<ul style="list-style-type: none">Invest in supply chain management (SCM) system to track inventory from purchase through delivery.Implement two-way communication with the Public Health Ordering	<ul style="list-style-type: none">Logistics, Distribution, and Warehousing 7, 8	

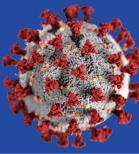


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Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			<p>System and SCM system.</p> <ul style="list-style-type: none">• Train CPR Warehouse Branch staff in the new SCM system.		
Planning, Initial Start- Up, Ongoing Operations	Expand and staff the RSS warehouse team	<ul style="list-style-type: none">• Warehouse team can expand and contract to meet inventory needs.	<ul style="list-style-type: none">• Increase team size.• Recruit staff with warehousing experience.• Train new staff on the SCM system.• Develop a system to continue identifying and training staff from other branches, divisions who are interested in warehouse operations.• Designate a data analyst to build data models for forecasting and visualizations for decision-making.	<ul style="list-style-type: none">• Logistics, Distribution, and Warehousing 7, 8	



CDPH COVID-19 After Action Report

Chapter 27 – Logistics, Distribution, and Warehousing

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Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Planning, Initial Start- Up, Ongoing Operations	Increase warehouse storage space	<ul style="list-style-type: none">• State has sufficient storage space for its stockpile.• State can effectively manage the inflow and outflow of inventory.	<ul style="list-style-type: none">• Explore public and private sector options for storing large volumes of supplies waiting for distribution.• Conduct a comprehensive analysis of storage space needs.• Develop long-term plans to meet storage needs.	<ul style="list-style-type: none">• Logistics, Distribution, and Warehousing 6	