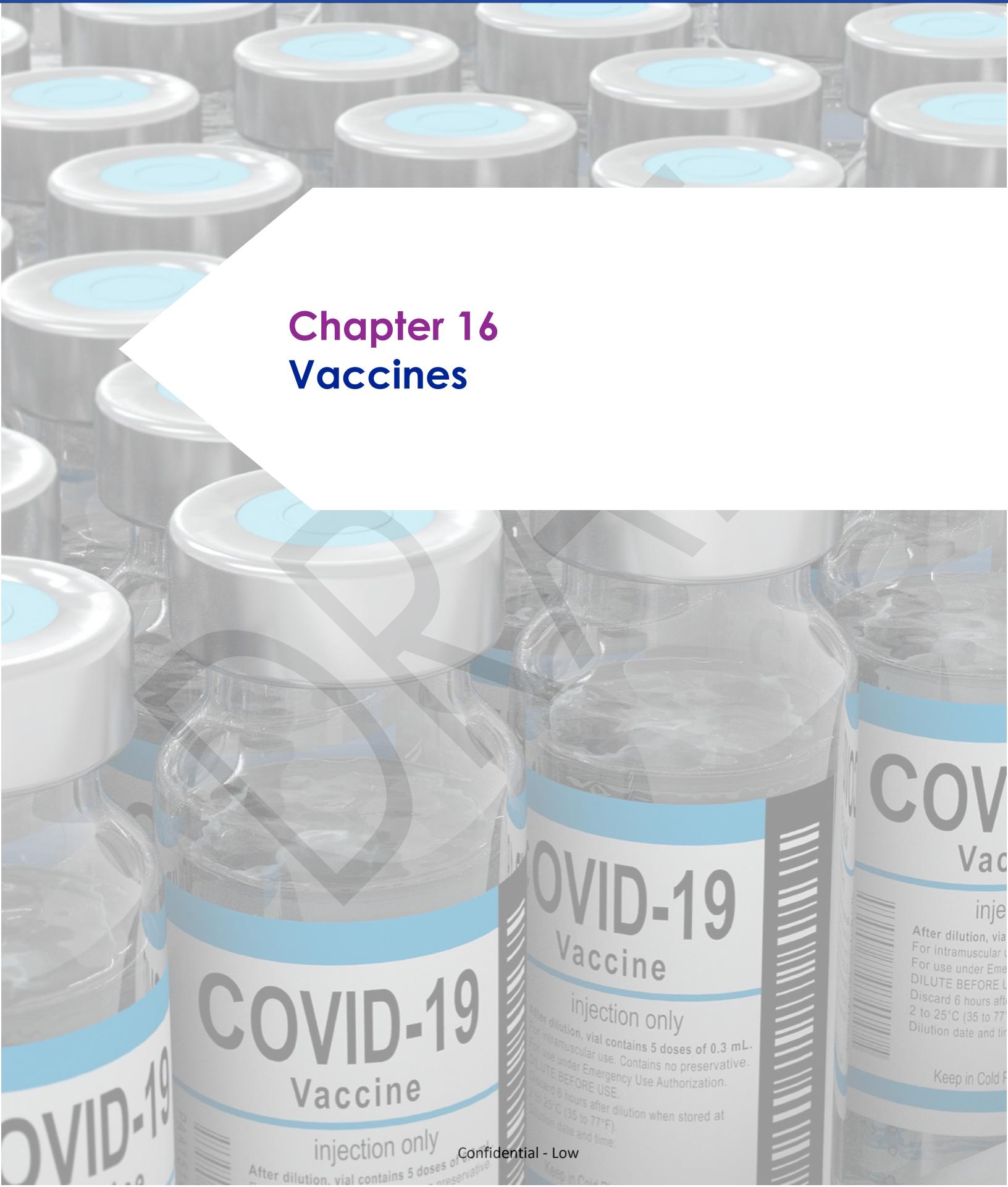


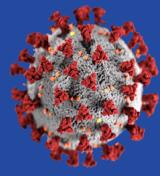
## CDPH COVID-19 After Action Report

### Chapter 16 – Vaccines

## Chapter 16

# Vaccines





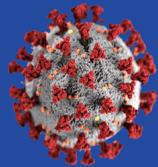
## CDPH COVID-19 After Action Report

### Chapter 16 – Vaccines

## Version History

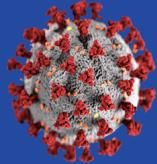
Version #	Date	Notes
0.1	2/6/2023	First Draft submitted to CDPH EPO team for review
0.2	3/13/2023	Final Draft revised per review by CDPH EPO team
0.3	5/24/2023	Final Draft revised per review by CDPH Directorate
0.4	6/16/2023	Final Draft revised per review by CDPH Directorate
0.5	2/1/2024	Final Draft revised per Expert Review
1.0	1/15/2025	Final rebranded

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## CDPH COVID-19 After Action Report

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# 16. Vaccines

Public Health Emergency Preparedness and Response Capabilities: Community Preparedness; Medical Countermeasure Dispensing and Administration.

Related CDPH AAR Chapters: Public Communications; Enterprise Technology.

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

## Chapter Summary

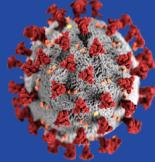
### Overview

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

The California Department of Public Health (CDPH) has substantial experience leading pandemic response efforts, including the State's H1N1 response in 2009. CDPH drew on this extensive experience to plan and prepare for California's statewide COVID-19 vaccination program, which was guided by the principles of safety, efficacy, efficiency, and equity. As a pandemic, COVID-19 put the entire population at risk, most of whom were eventually recommended for immunization. This was the first time that the federal government provided vaccines for an entire population, regardless of insurance coverage, which the State was responsible for administering. Consequently, the response required an unprecedented statewide vaccination campaign. The State of California "had never been so involved with vaccines," according to one leader, and "this was a whole-of-government response."

Consequently, California had to scale up vaccination capabilities rapidly to enlist providers, identify vaccination facilities, procure supplies, and determine allocation, ordering, and distribution methods. This also involved the development of policies and guidance for vaccination, while simultaneously protecting those who were waiting to get vaccinated or could not be vaccinated due to contraindications.

The State also developed extensive, innovative public communication strategies to encourage all Californians to get vaccinated and to counter vaccine hesitancy and misinformation. CDPH's vaccine education, outreach, and public communications efforts were designed to educate the public about the safety



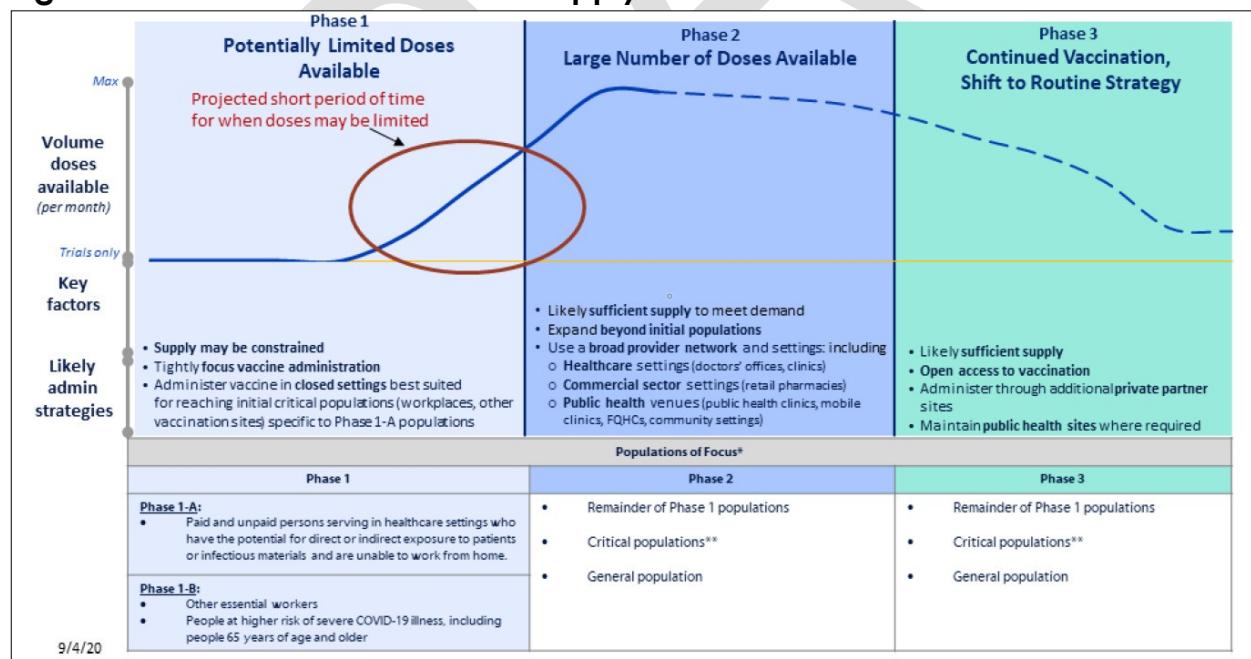
## CDPH COVID-19 After Action Report

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and efficacy of vaccines and to reach traditionally under-served populations and communities. In addition, the State launched the Statewide Vaccinate All 58 (VA58) campaign to disseminate accurate, relevant, and timely information on COVID-19 vaccines to the public, vaccine providers, local health jurisdictions (LHJs), and elected officials. (Public communications are discussed in the Public Communications chapter in this AAR. The VA58 campaign conducted its own evaluation and therefore is not addressed in this report.)

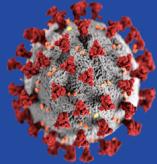
California's COVID-19 vaccine planning efforts were informed by the CDC's three-phased approach, which was released in Fall 2020 as depicted in [see Figure 1](#). During Phase 1, vaccine supply was limited and eligibility restricted to critical populations. As more supply became available in Phase 2, eligibility could be expanded to broader sectors of the population. In Phase 3, once vaccine supply was sufficient, eligibility included most Californians aged 12 and older. In the subsequent phase 4, younger children became eligible for COVID-19 vaccines. Additional booster doses were recommended first for immunocompromised populations and then for those who had already received their primary doses.

**Figure 1: Initial Phases of Vaccine Supply and Demand**



Source: CDC COVID-19 Vaccination Program Interim Playbook (September 2020)

Over the course of the pandemic, CDPH's planning and response activities evolved to address these changes in supply and demand, including changes to



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support the expansion of vaccine eligibility to children, the roll-out of boosters, and the administration of third doses to the immunocompromised.

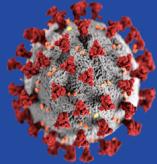
#### **Phase 1: Planning, Arrival, and Initial Scarcity of Vaccine (April 2020 – January 2021)**

Beginning in April 2020 and prior to the arrival of COVID-19 vaccines, the Governor's Office, the California Health and Human Services Agency (CalHHS), and CDPH began vaccination program planning. These efforts included planning for vaccine allocation, ordering, logistics, and administration, with the awareness that initially, vaccine supplies would be scarce and demand high. By Fall 2020, the CDC had published an Interim Playbook for the national COVID-19 Vaccination Program that contained information and guidance for States. The CDC required each State to submit its own vaccination plan to CDC for review. California submitted its [State of California COVID-19 Vaccination Plan](#) in October 2020, an effort that was led by CDPH with input from Cal OES.

To address the critical need to prioritize and distribute scarce vaccines, CDPH established the State's COVID-19 Drafting Guidelines Workgroup, which developed early allocation frameworks. The State's leadership also was concerned about the public's potential vaccine hesitancy, given that COVID-19 vaccines had been developed, tested, and manufactured in an accelerated timeframe. To address potential hesitancy, California established and led the Western States Scientific Review Workgroup (that included Oregon, Washington, and Nevada) to review the safety and efficacy of COVID-19 vaccines authorized for use by the U.S. Food and Drug Administration. This Workgroup confirmed the vaccines' safety and helped to promote public confidence in California's vaccine implementation efforts.

As the planning advanced, CDPH established a Vaccine Task Force, many working groups, and multiple teams to plan and execute State's COVID-19 vaccination program. The efforts included coordination and communication with the LHJs and providers to prepare for the arrival of the initial batch of vaccines. Efforts focused on enumerating populations so that the initial doses could be allocated to prioritized populations in healthcare settings, essential workers, and the elderly at higher risk for COVID-19.

Another important aspect of planning included the procurement and positioning of cold chain equipment and ancillary supplies, in recognition of the fact that the coming COVID-19 vaccines had unique storage requirements—in particular, the Pfizer vaccine was distributed in large quantities of 1,170 doses



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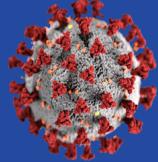
and would need to be stored at “ultra-low” temperatures (-80° Celsius to -60° Celsius), which increased the complexity of distribution. In preparation, CDPH surveyed LHJs to assess their capabilities for refrigerated, frozen, and ultra-low temperature storage and handling. Additionally, CDPH purchased additional freezers and cold storage equipment and worked closely with clinics, hospitals, LHJs, and other facilities to ensure equipment was available and distributed across the State.

CDC required interested providers to enroll in the COVID-19 vaccine program, sign a provider agreement, and report administration and inventory data within certain time limits. Mandatory data reporting was not common practice for other types of immunizations. Historically reporting of immunizations by California providers was typically voluntary. In contrast, CDC contractually required providers to report the number of COVID-19 doses administered to the immunization registry. To support the COVID-19 vaccine program, CDPH and its vendors enhanced existing systems and built new systems for provider enrollment, vaccine allocation, ordering, distribution, administration, and reporting. These activities included building myCAvax, a new Statewide vaccine management system, and enhancing CAIR2, the existing Statewide immunization registry. Technology teams continued to build and configure new functionality during the initial and subsequent phases of vaccine administration.

The first COVID-19 vaccine (manufactured by Pfizer) was authorized for emergency use on December 11, 2020 and soon began arriving in California. The second vaccine (manufactured by Moderna) was authorized one week later on December 19, 2020. The initial roll-out of these vaccines coincided with the winter holidays and the largest surge in COVID-19 cases the State had faced to date. This impeded the LHJs and providers’ ability to quickly ramp up their vaccine administration efforts.

Concurrent with the arrival of COVID-19 vaccines in California, the State launched the VA58 campaign. The campaign’s public communications focused on equitably vaccinating all Californians and increasing the State’s overall COVID-19 vaccination rate. In addition, the campaign’s provider communications included weekly webinars and weekly office hours, which continued throughout the pandemic, to provide up-to-date information and to address LHJs and providers’ questions and concerns.

Early in the vaccine roll-out, in January 2020, the federal government established the Federal Pharmacy Partnership for Long-Term Care (LTC) Program. Through this program, two nationwide pharmacies administered



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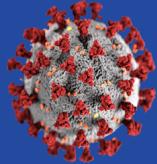
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vaccines to the priority population of residents and staff in more than 16,000 LTC facilities in California. CDPH had not anticipated having to support this program, but quickly pivoted to identify and provide technical assistance to the LTC facilities. Nearly all LTC facilities participated in the federal program, with the exception of facilities in one California county. Los Angeles County decided to opt out due to concerns about the federal program's lengthy timeline for vaccine administration. CDPH also provided substantial technical assistance to the participating pharmacies in order to meet the federal government's implementation timeline. This impacted the State's already-scarce vaccine supply, as a portion had to be redirected for use in LTC facilities.

Unlike some states that had mandatory reporting in place prior to the pandemic, California does not require providers to report on vaccine administration. This created challenges for the State to bring on a large number of providers in a short period of time. As the COVID-19 vaccination campaign commenced, national attention focused on each state's progress toward immunizing its population. In the national news media, states were ranked by the percentage of doses administered in relation to the amount shipped. Based on data available at the time, California's percentage of doses administered appeared lower in comparison to other states. However, the percentage of doses administered was being under-reported due to data system limitations, inaccurate information submitted by providers, and the inability to track vaccine doses delivered to LHJs that were subsequently transferred to providers. Since CDPH could not accurately identify how many doses were administered, this led to the perception that California's vaccination program was struggling, and that the State had received vaccines but was not administering them quickly enough.

### **Phase 2: Vaccine Program Accelerates and TPA Engaged to Manage Provider Network Management (February 2021 – May 2021)**

In February 2021, in order to try to accelerate the administration of doses, State leadership decided to engage a Third-Party Administrator (TPA) to manage the network of vaccine providers and to determine gaps in the provider network. The TPA was tasked to enroll providers, support the state's vaccine allocation efforts, and improve the quality of data. The Governor's Office selected Blue Shield of California as the TPA. In addition, oversight for the vaccine effort transitioned from CalHHS and CDPH to the California Government Operations Agency (GovOps).



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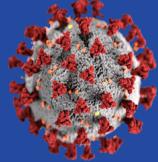
Since providers previously had not been required to report their vaccination administration data, initially CDPH did not have adequate information to make policy decisions, determine allocations, or track the administration of doses.

One of the TPA's first initiatives was to improve the quality and timeliness of data reporting. The TPA brought in a Data Strike Team, comprised of vendors and consultants, for intensive provider outreach and troubleshooting to help providers submit doses to the immunization registry and offer support to those who were struggling with this requirement.

Due to the urgency of the roll-out, there was a missed opportunity to fully vet the TPA's implementation activities, which impacted CDPH programs and the LHJs. The TPA revised many processes established by the Vaccine Task Force and workstream teams. These changes not only impacted the CDPH teams, but the LHJs and the providers as well. For example, the TPA changed the provider enrollment process by enrolling providers into its system and signing additional agreements for providers that had already been onboarded through myCAvax. This caused concerns at the local level and required CDPH to function as a liaison between the LHJs and the TPA to create the provider network in each jurisdiction. In addition, the TPA instituted a "top down" allocation approach in which the TPA determined allocations to providers rather than the previous "bottom up" approach to make allocations based on each local jurisdiction's identified needs. This "top down" approach favored large providers over smaller ones. While this new approach was intended to decrease the stockpile of doses, it proved challenging for both LHJs and multi-county health systems (MCEs) to administer their allocations and ensure there was ample supply for second doses. This also led to a marked increase in shipping incidents with providers refusing shipments they did not order.

In addition to developing myCAvax in December and January during Phase 1, with substantial support from GovOps and the California Department of Technology, the State concentrated resources to develop other key vaccine systems including My Turn and the Digital Vaccine Record. The new My Turn system allowed the public to schedule their appointments and providers to manage their clinics and report their confidential patient administration data. Additionally, My Turn was also used as an innovative public health communications tool to send text messages to targeted audiences notifying them when they were eligible to get vaccinated.

As vaccines became more abundant, the State, in association with its federal and local partners, expanded its capabilities to administer vaccines. Another



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federal program, the Federal Retail Pharmacy Program, launched in February 2021 and continued throughout the pandemic to provide vaccines in large retail pharmacies. In addition, two mass State-run vaccination sites in Oakland and Los Angeles, offered drive-through and walk-in vaccinations to thousands of Californians during their two months of operations. These sites were run by FEMA and Cal OES, with CDPH providing pharmacy and technical support.

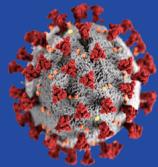
In March 2021, the State announced its vaccine equity metric (VEM) and its intention to set aside 40% of vaccine doses for the most impacted communities, given the disproportionate impact of COVID-19 on Californians. The VEM was based on the Healthy Places Index (HPI), a composite measure of socioeconomic opportunity that predicts life expectancy and compares community conditions that shape health across the State. Data showed 40% of COVID-19 cases and deaths had occurred in the lowest HPI quartile. The rate of infections for households making less than \$40,000 per year was more than double that of households with an income of \$120,000 or more.<sup>1</sup> Using vaccine administration data to identify “vaccine deserts” and equity gaps, CDPH partnered with LHJs and Community-Based Organizations (CBOs) to offer convenient vaccination clinics at temporary sites via mobile vans, pop-clinics, and school-located vaccination events.

Also in March 2021, the State launched the “Let’s Get to Immunity” public communications and education campaign to promote COVID-19 vaccine acceptance. This campaign emphasized the safety and effectiveness of COVID-19 vaccines and highlighted their role in ending the pandemic. Advertisements and social media messages ran in multiple languages and were targeted to reach communities that were hardest hit by COVID-19. In addition, CDPH developed COVID-19 communication toolkits for the LHJs to use in their local communities.

In late Spring 2021, the Pfizer vaccine was authorized for Californians between 12-15 years of age. Consequently, CDPH focused on enrolling pediatric providers who could reach this population into its vaccination program, building on the existing provider network in its Vaccines for Children (VFC) program. CDPH also offered incentives to encourage pediatric provider enrollment and to

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<sup>1</sup> Governor's Press Office, [California Leads with Public Health and Vaccine Equity to Safely and Sustainably Reopen](#), March 4, 2021.



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broaden vaccine access through extended clinic hours. CDPH partnered with a non-profit organization to offer two additional rounds of grants to help providers offset their vaccination clinic start-up and administrative costs.

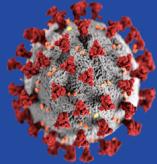
By May 2021, the quality of provider data had improved, in large part due to the Data Strike Team's efforts and the enhanced functionality in California's vaccine systems for providers to report their patient administration data. CDPH's dedicated vaccine data equity team analyzed, monitored, and communicated this data so that State and local partners could create new equity initiatives geared to vulnerable, disadvantaged, and hard-to-reach populations. Capturing and analyzing data elements such as race, ethnicity, and zip code allowed CDPH and LHJs to assess and adjust their equity initiatives to provide vaccination outreach specific to individual communities. They focused on enumerating disadvantaged populations at the county level and eventually to the neighborhood level, using the HPI.

### **Phase 3: Vaccine Supply Increases, Demand Decreases, and the TPA Phases Out (June 2021 – August 2021)**

At this point, three different vaccines, Pfizer, Moderna, and Johnson and Johnson, were available in increased supplies, and the provider network had been expanded significantly. By June 2021, over 41 million doses had been administered. By July 2021 CDPH resumed, from the TPA and GovOps, the day-to-day operations and oversight of the COVID-19 vaccine program, in partnership with the LHJs.

The Vaccine Task Force and workstream teams streamlined processes to make it easier for providers to enroll and order their vaccine supply. System enhancements allowed providers to manage their inventory through an online marketplace so that those with excess or expiring inventory could exchange with others who needed additional supply. Additionally, CDPH engaged a distributor (referred to as the Third-Party Redistributor) to deliver small-dose orders directly to providers, at their request. These ordering and distribution mechanisms continued throughout the remainder of the pandemic, which allowed LHJs and providers to have the optimal amount of inventory on hand to address each community's needs.

In addition, starting at the beginning of this phase and continuing for the remainder of the pandemic, CDPH deployed equity-focused initiatives with the LHJs. Instead of mass vaccination events that were emphasized earlier in the pandemic, the strategies used in this phase focused on generating demand at



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the neighborhood level with small scale events. CDPH started an additional initiative, the EFO Regional Discussions initiative, to build on existing efforts in the counties not meeting the State's vaccination equity goals. Data-driven vaccination strategies helped LHJs administer their local programs according to their communities' unique needs. Public communications strategies were tailored to these equity-focused initiatives and also focused on combatting mis- and dis-information about vaccines.

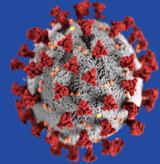
During this phase, the State deployed the "Vax for the Win" campaign, a lottery for those who had received their first dose to win cash and vacation prizes. Concurrently, the Governor's Office sponsored the "You Call the Shot" incentive campaign to give gift cards that could be redeemed when recipients received their second vaccination dose.

### **Phase 4: Expansion of Pediatric Eligibility, Rollout of Vaccine Boosters and a Third Dose for the Immunocompromised (September 2021 to January 2023)**

In late summer 2021, the Vaccine Task Force workstreams began planning for the arrival of vaccines for those 12 and under, COVID-19 vaccine boosters, and a third dose for the immunocompromised. While Pfizer had received authorization for those aged 12 – 15 years in May 2021, it was only in late October 2021 that the Pfizer vaccine was authorized for children aged 5 – 11 years. For the youngest age group, 6 months – 4 years, Pfizer did not receive authorization until June 2022. Furthermore, Moderna did not receive authorization for its entire pediatric age group (6 months to 17 years) until June 2022. Concurrent with the pediatric eligibility expansion, the primary vaccine series boosters became available in September 2021 and the bivalent boosters in August 2022.

By September 2021, the LHJs and providers had scaled back their vaccination operations due to declining demand. Furthermore, the federal government had ceased sponsoring mass vaccination clinics or providing other supplemental vaccination staffing resources. CDPH surveyed the LHJs to gauge their readiness for a potential increase in new demand. In addition, contractors to CDPH conducted extensive data modeling, which resulted in estimates that indicated that an increase in pediatric vaccinations and adult boosters might exceed providers' ability to inoculate.

Consequently, CDPH conducted extensive outreach to the LHJs, large pharmacies, and enrolled providers to encourage them to increase resources to



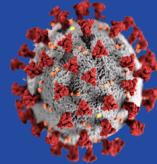
## CDPH COVID-19 After Action Report

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accommodate the anticipated demand. In addition, the CDPH Local Coordination Team met with the LHJs individually to help them plan and prepare. Since the federal government did not continue the Federal Partnership Program for Long Term Care for boosters, CDPH prepared resource materials and leveraged its Public Call Center to reach out to over 14,000 LTC facilities to refer them to vaccination resources.

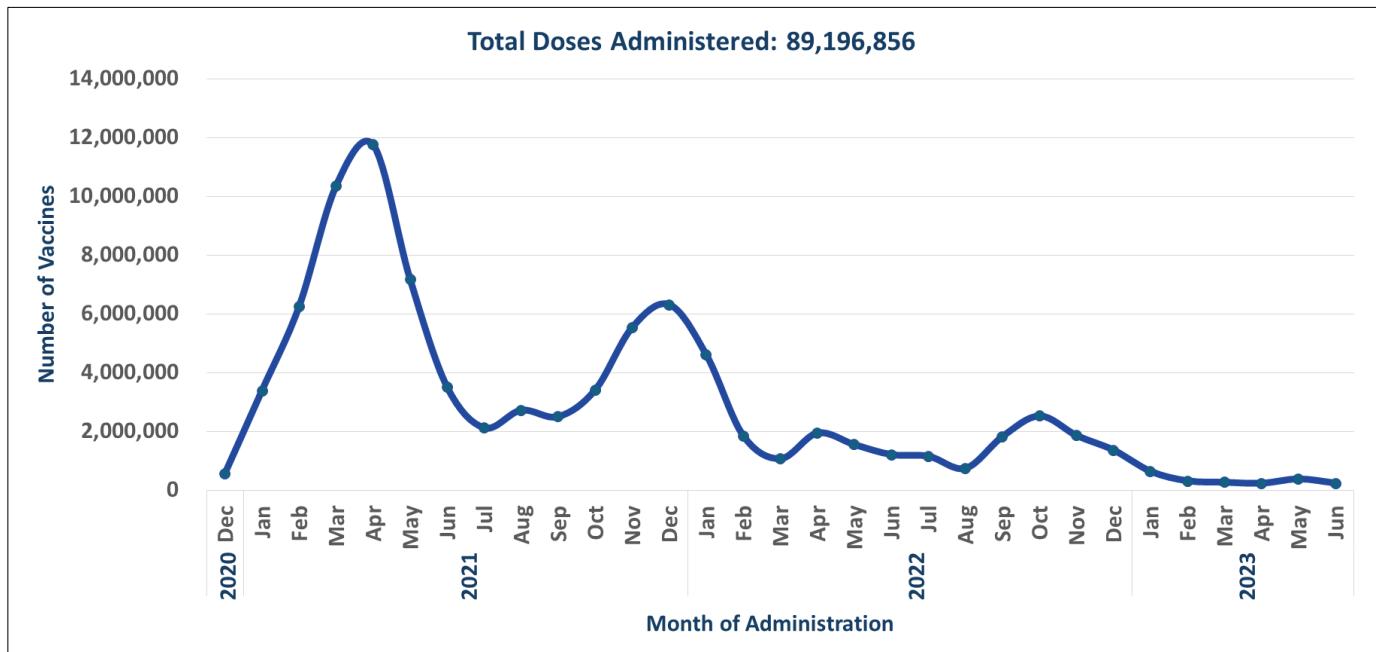
During this phase, public communications focused on vaccinations for children and booster doses for those already vaccinated. VA58 launched the “Family and Kids Campaign” in April and May of 2022 to increase awareness about the availability, safety, and efficacy of vaccines and boosters for children and families. In partnership with community-based organizations and pediatric medical providers, VA58 sponsored events offering free vaccinations and vaccine education to local communities.

This planning and outreach were successful. While there were intermittent delays to obtain a pediatric vaccine or booster, the close roll-out of the new emergency use authorizations for pediatric and booster doses did not cause widespread delays for Californians. As of December 2022, CDPH was ordering, tracking, and providing technical guidance on thirteen different COVID-19 vaccines and over 87,785,000 vaccine doses had been administered, as depicted in **Figure 2**. By June of 2023, nearly 90 million vaccine doses had been administered statewide.

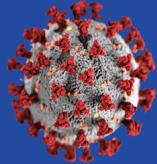


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Figure 2: Doses Administered by Month: December 2020 – June 2023



Source: Vaccine Task Force

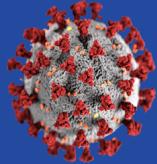


# CDPH COVID-19 After Action Report

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### Timeline and Key Milestones

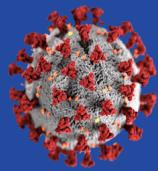
2020	
<b>Spring 2020</b>	<ul style="list-style-type: none"><li>• <b>April:</b> Planning initiated for COVID-19 vaccination program</li></ul>
<b>Summer 2020</b>	<ul style="list-style-type: none"><li>• <b>August:</b> COVID-19 Vaccine Task Force established</li><li>• <b>August:</b> Blueprint for a Safer Economy issued</li></ul>
<b>Fall 2020</b>	<ul style="list-style-type: none"><li>• <b>October:</b> California Vaccination Plan submitted to CDC</li><li>• <b>October:</b> Vaccine Workgroups established</li><li>• <b>October:</b> Western States Scientific Safety Review Workgroup began meeting</li></ul>
2021	
<b>Winter 2020/2021</b>	<ul style="list-style-type: none"><li>• <b>November:</b> Drafting Guidelines Workgroup began meeting</li><li>• <b>November:</b> Community Vaccine Advisory Committee members selected</li><li>• <b>December:</b> Pfizer received EUA for ages 16 and older</li><li>• <b>December:</b> Moderna received EUA for ages 18 and older</li><li>• <b>December:</b> First vaccine dose administered in California</li><li>• <b>December:</b> Vaccinate ALL 58 campaign launched</li><li>• <b>December:</b> CAIR2 (immunization registry) augmented by message broker software</li><li>• <b>December:</b> LHJs submitted vaccination plans to CDPH</li><li>• <b>December:</b> Phase 1A: healthcare workers and long-term care residents eligible for vaccination</li><li>• <b>January:</b> Phase 1B, Tier 1: essential workers eligible for vaccination</li><li>• <b>January:</b> myCAvax (vaccine management and ordering system) launched</li><li>• <b>January:</b> My Turn (public-facing vaccine scheduling system) launched</li><li>• <b>January:</b> State COVID-19 Data Dashboard launched</li><li>• <b>January:</b> Data Strike Team launched</li><li>• <b>January – February:</b> Data Strike Team conducted data cleanup</li><li>• <b>February:</b> My Turn – Clinic released for LHJs and providers</li><li>• <b>February:</b> Two mass vaccination sites launched in Los Angeles and Oakland</li><li>• <b>February:</b> Janssen (Johnson and Johnson vaccine) received EUA for ages 18 and older</li><li>• <b>February:</b> Third-Party Administrator contract signed</li></ul>



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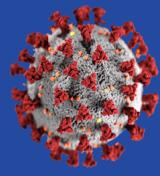
<b>Spring 2021</b>	<ul style="list-style-type: none"><li>• <b>March:</b> Single statewide vaccine eligibility standards established</li><li>• <b>March:</b> My Turn.ca.gov and Vaccines.gov become main sources to sign up for appointments</li><li>• <b>March:</b> Third-Party Administrator took over management for Statewide vaccine network</li><li>• <b>March:</b> Let's Get to Immunity media campaign launched</li><li>• <b>March – May:</b> Functionality and improvements continue to be released for new COVID-19 systems</li><li>• <b>April:</b> Phase II began and vaccine eligibility expanded to all Californians aged 16 and older</li><li>• <b>April:</b> CDPH reported that 50% of population aged 16+ have received one dose</li><li>• <b>April:</b> In-Home Vaccination services launched</li><li>• <b>April:</b> FDA and CDC paused J &amp; J vaccine to study cases of rare blood clots; resumes one week later</li><li>• <b>May:</b> Pfizer received EUA for ages 12-15 years</li><li>• <b>May:</b> Vax for the Win incentive campaign launched</li><li>• <b>May:</b> Vaccine Equity Campaign launched</li></ul>
<b>Summer 2021</b>	<ul style="list-style-type: none"><li>• <b>June:</b> Digital COVID Vaccine Record (DCVR) launched</li><li>• <b>June:</b> Marketplace feature in myCAvax launched</li><li>• <b>August:</b> Equity Focused Outreach initiated</li><li>• <b>August:</b> Third-Party Redistributor started small dose Pfizer deliveries to providers</li><li>• <b>August:</b> Emergency waiver allowed dentists and podiatrists to administer vaccines</li><li>• <b>August:</b> Pfizer received full approval for ages 18 and older; now known as Comirnaty</li></ul>
<b>Fall 2021</b>	<ul style="list-style-type: none"><li>• <b>September:</b> Pfizer and Moderna received EUA for boosters to older and immunocompromised populations</li><li>• <b>October:</b> Pfizer received EUA for ages 5-11</li><li>• <b>November:</b> Pfizer and Moderna received EUA for boosters to those 18 and older</li></ul>



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2022	
Winter 2021/22	<ul style="list-style-type: none"><li>• <b>December:</b> 62 million doses administered at one-year anniversary</li><li>• <b>December:</b> First case of Omicron variant detected in California</li><li>• <b>January:</b> Moderna received full approval for ages 18 and older; tradename now is Spikevax</li><li>• <b>January:</b> Pfizer received EUA for booster for ages 12 -15 and immuno-compromised ages 5-11</li><li>• <b>February:</b> Transition to the SMARTER Plan</li><li>• <b>February:</b> 80% of population aged 12+ are fully vaccinated</li></ul>
Spring 2022	<ul style="list-style-type: none"><li>• <b>March:</b> Pfizer and Moderna received EUA for second boosters to older and immunocompromised populations</li><li>• <b>March:</b> Equity-Focused Outreach Regional Discussions began</li><li>• <b>May:</b> KidsVaxGrant1.0 launched</li><li>• <b>May:</b> FDA limited use of J &amp; J vaccine to individuals 18 years or older for whom other vaccines are not accessible or clinically appropriate</li><li>• <b>May:</b> Pfizer received EUA for first booster to ages 5-11</li><li>• <b>June:</b> Pfizer received EUA for first booster to ages 6 months – 4 years</li><li>• <b>June:</b> Moderna received EUA for first booster to ages 6 months – 17 years</li></ul>
Summer 2022	<ul style="list-style-type: none"><li>• <b>June:</b> Pfizer received EUA for children under 5 years; Moderna received EUA for children under 6 years</li><li>• <b>July:</b> Novavax received EUA for 12 years and older</li><li>• <b>July:</b> CDPH IZB consolidated all its COVID-19 vaccine guidance into a <i>Provider Operation Manual</i></li><li>• <b>August:</b> KidsVaxGrant2.0 launched</li><li>• <b>August:</b> Pfizer received EUA for bivalent booster for 12 years and older</li><li>• <b>August:</b> Moderna received EUA for bivalent booster for 18 years and older</li></ul>
Fall 2022	<ul style="list-style-type: none"><li>• <b>October:</b> Pfizer received EUA for bivalent booster for children as young as 5 years</li><li>• <b>October:</b> Moderna received EUA for children as young as 6 years</li></ul>
2023	
Winter 2022/2023	<ul style="list-style-type: none"><li>• <b>December:</b> Pfizer and Moderna received EUA for bivalent boosters for children as young as 6 months</li><li>• <b>January:</b> Third-Party Redistributor began small dose Moderna deliveries to providers</li></ul>

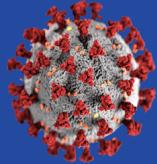


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	<ul style="list-style-type: none"><li>• <b>February 28:</b> California's State of Emergency for COVID-19 ended</li></ul>
<b>Summer 2023</b>	<ul style="list-style-type: none"><li>• <b>June 30:</b> CDPH's Medical and Health Coordination Center (MHCC) deactivated from the COVID-19 pandemic response</li></ul>

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## CDPH COVID-19 After Action Report

### Chapter 16 – Vaccines

## 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.

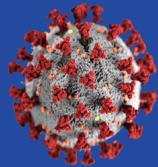
### **1. CDPH successfully led California's comprehensive COVID-19 vaccination effort to administer nearly 90 million doses by June 2023 and prevent hundreds of thousands of deaths.**

CDPH effectively led the State's response to the COVID-19 pandemic, leveraging its significant experience from managing the H1N1 pandemic in 2009. The COVID-19 pandemic posed a significant risk to the entire population, leading to recommendations for widespread vaccination. This situation marked the first time that the federal government supplied vaccines to the entire population, irrespective of insurance coverage. The State, tasked with administering COVID-19 vaccines, successfully orchestrated an extensive, unprecedented vaccination campaign across the State. To achieve this, CDPH rapidly expanded its vaccination infrastructure. This expansion included upgrading and developing new information systems, creating and disseminating policies and guidance, enlisting healthcare providers, setting up vaccination sites, securing essential supplies, and formulating strategies for vaccine allocation, ordering, and distribution. CDPH, collaborating with its local and State partners, adapted to the constantly changing situation and emerging science to efficiently administer nearly 90 million vaccine doses by the end of June 2023. This monumental effort significantly contributed to preventing hundreds of thousands of deaths in California.

Finding/Corrective Action: CDPH implemented a comprehensive vaccination campaign that can be leveraged for future pandemics. (ID: Vaccines 1)

### **2. CDPH's innovative use of the Vaccine Equity Metric to reach disproportionately impacted communities increased vaccinations in populations most at risk for contracting COVID-19.**

California was the first state in the nation to use a Vaccine Equity Metric to help increase vaccinations in communities that had been hardest-hit



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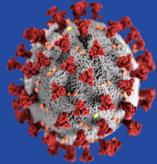
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by the pandemic. Using the Health Places Index (HPI), which uses local demographic, health, social, and economic factors to predict life expectancy and to compare community conditions, CDPH allocated vaccine doses to communities likely to have higher rates of infection, hospitalizations, and deaths. CDPH closely monitored the data to identify vaccine inequities and develop responsive strategies, including increasing allocations to certain zip codes, expanding provider networks in disadvantaged areas, broadening access to vaccines, and conducting targeted outreach activities. SMEs agreed that California's use of the vaccine equity metric was a groundbreaking milestone that established the State as a leader in its commitment to vaccine equity.

Finding/Corrective Action: The State successfully utilized the Vaccine Equity Metric to inform policy decisions and strategies that promoted equity in vaccine administration. CDPH should leverage lessons learned to incorporate equity metrics in its pandemic planning to ensure this approach can be replicated in the future. (ID: Vaccines 2)

### **3. The Vaccine Task Force, guided by highly experienced leads with subject matter expertise, identified solutions and marshalled resources to proactively address issues.**

In July 2020, California established the Governor's COVID-19 Vaccine Task Force (VTF). CDPH assumed a leadership role in this Task Force and designated experienced, executive-level leaders, from across State government, to lead its various workstreams. Many key participants had key roles in the State's H1N1 pandemic response in 2009 and were seasoned public health leaders with the capacity to build programs. The Task Force focused on expanding CDPH's existing vaccination program, housed in its Immunization Branch, into an incident command system (ICS) structure with additional leadership and staff. As the Task Force workstreams (including vaccine administration, distribution, and others) were established, the Task Force identified needs for more support and used expedited procurement processes to quickly bring in additional resources to develop processes, build technology, and implement the program. One Task Force member noted that "all of government got behind the response" with a sense of urgency, and that requests from the Task Force to CDPH programs, other State departments, and CalHHS were responded to quickly.



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Finding/Corrective Action: The State successfully established a Vaccine Task Force to identify process, tools, and support needs, quickly obtain resources, and direct workstreams, creating a model that can be replicated in the future. (ID: Vaccines 3)

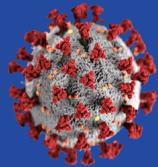
#### **4. Scientific experts participating on Working Groups provided valuable input and recommendations that informed policy decisions and the vaccine allocation framework.**

The Vaccine Task Force relied heavily on two scientific working groups (established by the State) to provide recommendations to CDPH, the Task Force, and State leadership. The Drafting Guidelines Workgroup, comprised of experts in many fields (including immunization, geriatrics, and ethics) provided recommendations on how to prioritize vaccine allocations during times of scarcity. As information about the vaccines evolved, this group met under tight deadlines to develop defensible, equitable criteria for vaccine prioritization in California. Another equally critical group, the Western States Scientific Safety Review Workgroup, was comprised of expert physician-scientists. This group met extensively to review the federal emergency use authorizations for specific vaccines prior to recommending their use in California, and its input “shaped CDPH leadership’s understanding of vaccine safety,” according to one SME. Ultimately, the Vaccine Task Force and State leadership were able to rely on these scientific groups to provide valuable, timely expertise on sensitive topics. In the words of one leader, “having scientific advisors was critical.”

Finding/Corrective Action: In future pandemic responses, CDPH should form similar scientific advisory groups comprised of experts to provide input on vaccine safety, policy, planning, and implementation. (ID: Vaccines 4)

#### **5. Broad community representation on the Community Vaccine Advisory Committee provided insights on how to reach, influence, and engage with disproportionately impacted populations on vaccines.**

California established the Community Vaccine Advisory Committee (CVAC), comprised of approximately 77 member organizations, representing diverse constituencies, such as tribes, unions, senior advocates, faith-based organizations, and others. Their role was to



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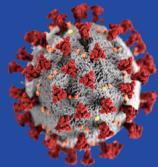
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provide input to the Vaccine Task Force, including input on equitable vaccine allocation and distribution and how to best communicate with their respective communities. The CVAC met 15 times in a very compressed timeframe from late 2020 through mid-2021, and provided input during the meetings as well as hundreds of pages of written public comments to the Vaccine Task Force. One SME noted that it was “amazing because we never had collaboration between community and government like that before.” Another leader noted that the CVAC was “a way to get as much input from people on the ground as possible.” While the CVAC was focused just on the State’s vaccination program, for future responses leaders felt “we should have community engagement for the whole of the response.”

Finding/Corrective Action: The Community Vaccine Advisory Committee offers a successful model for community engagement that can be replicated for future pandemic responses and other response areas (e.g., testing). (ID: Vaccines 5)

#### **6. CDPH strengthened its relationships with the LHJs by listening to their concerns and addressing their individual needs.**

Prior to the pandemic, CDPH had a well-established relationship with the LHJs through its existing public health preparedness and immunization programs. However, it quickly became clear that tighter and more robust coordination was necessary. In March 2020, CDPH created the Local Coordination Team to work closely with county health officials and provide support for local response efforts, including outbreaks. Over Winter 2020/2021 as the COVID-19 vaccination program was initiated, LHJs played an increasingly key role in provider enrollment and vaccine allocation and needed to be kept up to date on rapidly evolving information. During the period when the TPA was engaged, the Local Coordination Team became a key conduit of information between CDPH and the LHJs and strove to listen to local concerns and elevate information to leadership. According to one SME, “we constantly worked with LHJs, listened to their feedback on how to be most equitable, and pivoted to meet their needs.” CDPH developed robust two-way communication channels, and over time it became the team’s “first mindset” was to include LHJ in discussions and decisions early on. One leader noted that while CDPH had good relationships with LHJs before the pandemic, this relationship has deepened and broadened through



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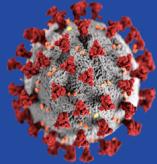
the response: “We were really in it together and partnered together. This will help us moving forward and will improve our work even when we are not in a pandemic.”

Finding/Corrective Action: CDPH strengthened relationships with the LHJs through the establishment of a Local Coordination Team related to multiple aspects of the pandemic response, and which strove to listen to, understand, and respond to unique local needs and concerns. (ID: Vaccines 6)

#### 7. A Data Strike Team was created to address initial vaccination data quality challenges.

Several weeks into the State’s COVID-19 vaccination program, it became clear that vaccination administration data was inaccurate and not aligned with ordering and shipment data. This was due to a number of reasons. First, it was challenging for providers, many of whom were new, to meet the mandatory reporting requirements associated with the program. Some providers failed to report their data in a timely manner, others lacked the appropriate system accounts, and others used incorrect IDs. Additionally, the centralized reporting used by large providers such as MCEs and national pharmacy chains, who submitted their data in bulk, created the impression that all of their vaccinations were being administered in one or two locations instead of multiple locations statewide. Lastly, CDPH had limited systems and processes to track vaccine transfers, which was occurring but were not being reported. One of the TPA’s first initiatives was to address data quality issues with a consultant Data Strike Team. The team called thousands of providers, tracked down those who were not reporting, and helped them create accounts and use the proper IDs to report their vaccination data. The data strike team also influenced providers to use My Turn and were able to “engage small providers that had not been reporting to CAIR2 before.”

Finding/Corrective Action: In future responses, CDPH can initiate provider outreach, education, and support activities earlier to help them better comply with new reporting requirements, and establish a dedicated team devoted to helping providers with data issues as needed. (ID: Vaccines 7)



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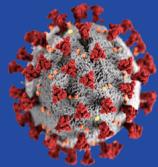
#### 8. CDPH promoted vaccine equity using innovative, data-driven strategies to identify and address equity gaps.

In March 2021, in recognition of the disproportionate impact of COVID-19 on Californians, the State established a vaccine equity metric and innovative, data-driven strategies, including allocating millions of additional doses to the lowest quartiles as measured by the Health Places Index (HPI). These strategies were developed and monitored using detailed race, ethnicity, and occupational data from the new vaccine scheduling system, My Turn, which allowed CDPH to analyze vaccine equity trends with more granularity. To analyze the data, CDPH established a team of 5 epidemiologists dedicated to analyzing and reporting on vaccine equity data, as well as communicating vaccine data trends and gaps to LHJs, providers, leadership, and CDPH programs. Based on the data, CDPH and its partners were able to develop “hyper-local” strategies focused on serving under-resourced communities, communities in HPI1 and HPI2 quartiles, and communities with vaccination rates below the Statewide average. This involved engaging small providers, community-based organizations, and “peer ambassadors” to influence the unvaccinated to attend neighborhood events. California’s data-driven commitment to vaccine equity was innovative. SME noted that “we made equity urgent and operationalized it in an urgent way. This had not been done before at this scale.” Another leader noted that equity has been “the guiding light” of California’s COVID-19 vaccination program.

Finding/Corrective Action: CDPH developed a successful data-driven model to address vaccine equity, and this approach should be incorporated earlier on in future responses. (ID: Vaccines 8)

#### 9. CDPH partnered with IT system vendors and the California Department of Technology to implement many new technology systems with record speed, and continued to make enhancements throughout the response to meet the program’s changing needs.

In partnership with CDT, CDPH procured, implemented, and enhanced numerous systems under tight timeframes, including myCAvax, My Turn, CAIR2, and the Digital Vaccine Record. New functionality ensured data was imported into the State’s immunization registry, gave LHJs data



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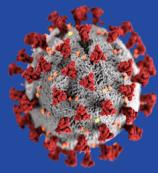
sources they could access themselves, and furnished LHJs and providers with tools for ordering and managing vaccine administration.

Additionally, key systems interfaced with providers' electronic records, provided the public with a way to find vaccination locations and make appointments, and produced easily accessible electronic vaccination records. Empowered by leadership and working "side-by-side" with the California Department of Technology under the additional flexibility offered under the public health emergency, staff reported they were "able to move quickly" to get contracts in place, in contrast to the standard procedures before the public health emergency. CDPH staff attributed much of the success to its vendors, who "were true partners; they worked through the night and pivoted a lot as demands were placed on them."

Finding/Corrective Action: CDPH successfully worked with CDT and the State leaders to procure, implement, and enhance technology systems to support the State's COVID-19 vaccination program. CDPH should leverage this success to embrace agile development and deployment of systems and tools for future pandemics. (ID: Vaccines 9)

#### **10. CDPH established robust communication channels and processes for disseminating information quickly and effectively to LHJs and providers.**

Several teams contributed to communications with LHJs and providers. While the LHJ Coordination Team interacted with individual LHJs concerning their unique issues and questions, the Partner Communications team developed messaging that was disseminated simultaneously to all LHJs and COVID-19 vaccine providers. This required "lots of back-end work" with CDPH SMEs who developed messaging and consultants who coordinated, planned, and facilitated its distribution. The Immunization Branch's (IZB's) existing immunization website ([eziz.org](http://eziz.org)) proved to be a useful way to quickly disseminate information to providers, while CDPH established a dedicated SharePoint site for LHJs. Additional communications channels included a listserv messaging system, weekly webinars, office hours, emails, and provider FAQs. LHJs and providers reported very high satisfaction rates with the well-attended weekly webinars. CDPH also established a Provider Call Center to provide technical assistance on vaccination administration and technology questions. To ensure consistent messaging, the Partner



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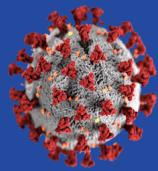
Communications team coordinated with the Provider Call Center to ensure questions were addressed and the answers aligned.

Finding/Corrective Action: CDPH can leverage the communication channels and processes it created for future pandemics, staffed with sufficient resources that are trained and ready to execute. (ID: Vaccines 10)

### **11. The State implemented innovative public communications strategies to educate Californians about the safety and efficacy of vaccines, combat vaccine hesitancy and misinformation, and encourage individuals to get vaccinated.**

When vaccines began arriving in California in later December 2020, there was great interest from the public and the media on the Statewide COVID-19 vaccination campaign. Initially, public vaccines communications were handled by CDPH's Office of Communications along with other COVID-19 related messaging on masking, social distancing, and other topics. To increase resources for strategic and extensive communications on vaccine safety and efficacy and to counter vaccine hesitancy and misinformation, the Governor's Office launched the new Vaccinate All 58 (VA58) campaign, which was affiliated with the Vaccine Task Force and devoted solely to the topic of COVID-19 vaccines. The VA58 campaign implemented many innovative marketing and public communications strategies (including the "Let's Get to Immunity" and the "Family and Children" campaigns), established new communications channels via social media, and built relationships with community-based and other organizations to deliver messages to hard-to-reach communities and promote vaccine equity. In addition to the VA58 campaign, the State and CDPH provided vaccine-related information to the public via its websites ([covid19.ca.gov](https://covid19.ca.gov) and [cdph.ca.gov](https://cdph.ca.gov)), and CDPH's Office of Public Communications developed COVID-19 communications toolkits for LHJs to use in their local communities. To reach Californians with technology limitations, CDPH's Public Call Center was established to answer calls from the public on all COVID-19 related topics, including vaccines.

For a more detailed discussion of public communications activities, refer to the Public Communications chapter and the Public Call Center chapter in this AAR.



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For a more detailed discussion of the VA58 communications activities, refer to the VA58 Evaluation Report.

Finding/Corrective Action: The State's public communications strategy for vaccines, including its innovative VA58 campaign, provides a model to be used in future pandemics. (ID: Vaccines 11)

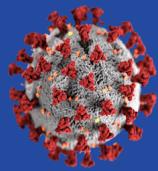
#### **12. In partnership with its vendors, CDPH established a dedicated provider call center to assist providers with their COVID-19 vaccination program questions.**

In late 2020 and early 2021, CDPH experienced a large increase in call volume regarding COVID-19 vaccines that overwhelmed the limited IZB staffing. Consequently, CDPH leadership contracted with its public call center vendors to establish a dedicated provider call center. Within two weeks, the backlog of provider questions was resolved. Due to ongoing improvements one SME noted that the provider call center in January 2021 and the provider call center in April 2021 “looked like two different organizations.”

The provider call center faced several challenges, including provider confusion over the multiple State call centers and helpdesks, as well as the use of redirected State staff in a remote environment. In response, management conducted daily check-ins with staff to find solutions to recurring and/or difficult questions. Eventually, the team instituted an escalation system so that the more difficult questions were elevated to more experienced staff. As time went on, the team was able to anticipate call volume, call length, and email volume, which allowed them to utilize resources more effectively. One SME noted that “we are now answering calls and questions with no delays, providing excellent customer service, and utilizing technologies that we will continue in the future.”

Finding/Corrective Action: Early on in the State's vaccination program, CDPH recognized the need for and quickly implemented a dedicated provider call center, and can leverage this model in future pandemic responses. (ID: Vaccines 12)

#### **13. Two grant programs, CalVaxGrant and KidsVaxGrant, increased provider enrollment by supporting small practice and pediatric providers.**



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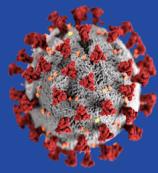
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To support small practice providers, CDPH partnered with Physicians for a Healthy California (PHC) to launch the CalVaxGrant program, which offered providers financial resources to help offset the costs of administering COVID-19 vaccines in their communities. Of the 2,790 grants awarded, 58% of the sites were reflected in health equity zip codes. CalVaxGrant awardees reported in a survey that 53% became vaccinators specifically because of CalVaxGrant and 81% awardees say they would remain COVID-19 community vaccinators. CDPH also offered incentives to encourage pediatric provider enrollment and to broaden vaccine access at existing locales. CDPH partnered again with PHC to offer two rounds of KidsVaxGrants to providers. The first round targeted existing providers in the Vaccine for Children (VFC) program to incentivize them to enroll as a COVID-19 provider. CDPH staff report these after these grants, enrollment reached “about 65% of VFC providers.” However, some smaller providers resisted enrolling in another program and indicated to CDPH they would have liked to become a COVID-19 provider if it had been included as part of the VFC program.

Finding/Corrective Action: To support providers in setting up vaccination clinics and encourage provider enrollment, CDPH should continue to provide grant assistance if supported by evaluation of past programs. CDPH should consider a streamlined enrollment process for providers already enrolled in an existing immunization program, such as the VFC, to reduce the administrative burden for applying to an additional program. (ID: Vaccines 13)

#### **14. CDPH successfully navigated new cold chain storage and handling requirements using its updated Medical Countermeasures Plan, which guided the planning and positioning of cold chain equipment prior to the vaccines' arrival.**

The State had never before managed the storage and handling of vaccines at ultra-low temperatures. Fortunately, a year before the pandemic, CDPH updated its Medical Countermeasures Plan (MCM) to include procedures for receiving and distributing vaccines requiring cold chain management. Leveraging this updated plan, CDPH successfully purchased and positioned 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



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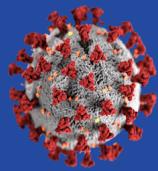
freezers, transport containers, and data loggers for counties who needed them as well as other State entities, including prisons, hospitals, and developmental facilities. CDPH staff have been able to stress test the MCM plan through the COVID-19 response. According to SMEs, CDPH has become “adept in the use of refrigerated and frozen containers, trailers, box trucks, and cold chain shipping containers.”

Finding/Corrective Action: CDPH should incorporate lessons learned from the COVID-19 response for cold chain management in update to the MCM and other emergency preparedness documentation. (ID: Vaccines 14)

#### **15. As vaccines became more abundant, CDPH revised the allocation, ordering, and distribution processes so that LHJs could administer their vaccine programs according to their needs and capabilities.**

As provider management transitioned from CDPH to the TPA and then back to CDPH, the vaccine allocation and ordering processes changed several times. When CDPH reassumed oversight of these functions in Spring 2021, CDPH surveyed providers and learned that providers were frustrated by the tedious enrollment and approval process and the lack of transparency in how vaccines were allocated. At this point, vaccines were in abundant supply, handling and storage had become easier, and order sizes (which had previously been too large for some smaller providers) had decreased to 100 doses. Consequently, in May 2021, CDPH began making process improvements, which included streamlining allocations to a simplified order-based process and implementing earlier plans to allow providers to place smaller orders of less than 100 doses. It also established the Vaccine Marketplace within myCAvax, which enabled providers to exchange excess vaccine doses with other providers who were in need of more doses. A few months later, CDPH engaged a third-party redistributor to facilitate distribution of small-sized orders placed in myCAvax. With these changes, each LHJ could better administer its vaccine program to fit its needs and capabilities, while providers could now order and receive doses in both large and small quantities.

Finding/Corrective Action: After trying various different models, the State successfully implemented streamlined vaccine allocation, ordering, and



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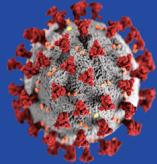
distribution processes that are flexible enough to allow LHJs to administer their program in alignment with their unique needs and to meet providers' supply and demand needs. (ID: Vaccines 15)

#### **16. CDPH partnered with other State departments and contractors to provide supplemental vaccine staffing resources that allowed LHJs to expand their vaccination capabilities.**

In the early phases of the vaccination program, where strategies focused on mass vaccination clinics, LHJs who wanted to hold mass clinics in their counties were sometimes unable to find enough vaccinators to staff the clinics. In response, CDPH contracted with third-party vendors to provide vaccinators, and then developed a process for LHJs to request vaccinators and support staff for vaccination clinics. These supplemental vaccine resources were sometimes scarce, with many counties requesting vaccinators to staff their clinics. In order to equitably distribute the staffing resources, CDPH established a Multi-Agency Coordination (MAC) group in partnership with Cal OES and EMSA. The MAC Group processed requests for vaccinator staffing resources during times of scarcity. Using the established California Public Health and Medical resource requesting process, the LHJs submitted their requests to the MAC Group via their Medical Health Operational Area Coordinator, which then adjudicated the appropriate resources to deploy. Once supplemental staffing was no longer scarce, LHJs would submit requests to be filled without adjudication. Ultimately, the State developed a “flexible and adaptable model that could accommodate a variety of needs,” according to one SME. With many different staffing options available, LHJs were able to “get creative and do outreach events,” including holding mass vaccination clinics that would otherwise have not been possible.

Finding/Corrective Action: In the future, the State can leverage this supplemental staffing model, and anticipate and plan for the fact that vaccinators will be in high demand early on in any large-scale vaccination program. Furthermore, CDPH has the opportunity to encourage LHJs and providers to plan for and train supplemental staff for future pandemics. (ID: Vaccines 16)

For a more detailed discussion of the MAC Group, see the MAC Group and Scarce Resource Allocation chapter in this AAR.



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#### 17. To expand vaccine access for disadvantaged populations

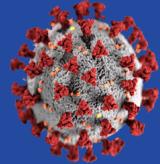
**CDPH deployed innovative strategies, such as in-home vaccination services, transportation to mass vaccination events, mobile vans, pop-up clinics, and school-located vaccination events.**

CDPH provided non-traditional services to reach thousands of Californians who would not have otherwise had access to vaccines. This included serving individuals with limited mobility by providing either vaccinations in their homes or transportation to vaccination clinics. Additionally, CDPH contracted with specialized vendors to offer vaccinations in targeted neighborhoods via mobile vans, pop-up clinics, and school-located events. These unique services made it easy and convenient to get vaccinated, and CDPH worked with the LHJs to identify the appropriate locations and clinic type needed. To support these clinics, CDPH also provided interpreter resources to meet the community needs. In addition, the VA58 campaign provided supplemental “wraparound services” to engage local community-based organizations to do additional promotion to increase awareness. One SME noted that “promotion was the key,” which included phone banks, digital ads, and event signage. At the events, incentives such as free giveaways and food trucks also helped to motivate people to take part in vaccination events.

Finding/Corrective Action: CDPH and its partners expanded vaccine capacity through a variety of ways, creating novel strategies that promoted vaccine access specific to each LHJ’s needs. (ID: Vaccines 17)

#### 18. CDPH supported two federal mass-vaccination sites in Oakland and Los Angeles, which were established quickly and distributed thousands of doses per day.

In February 2021, in coordination with Cal OES, CDPH assisted with the establishment of two FEMA/Cal OES mass vaccination sites in Oakland and Los Angeles. CDPH was requested to create and execute pharmacy plans for both sites, while Cal OES and its federal partners handled infrastructure and operations. CDPH’s tasks included hiring and training staff, positioning cold chain equipment, moving vaccines from the central pharmacy to the front line, and working with its technology



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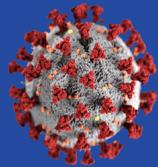
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contractors to configure My Turn to schedule appointments (which required real-time user acceptance testing as the public started scheduling their appointments). It was difficult to accomplish these tasks in a short timeframe. An additional challenge was hiring adequate staffing, with medical credentials, for the sites. As one SME noted, “CDPH is not staffed to run pharmacy operations. We don’t have the pharmacists, nurses, doctors, clinicians that you would expect. We had to hire a lot of staff to make it work.” In general, despite some glitches in pharmacy operations at the sites, SMEs agreed that CDPH rose to the occasion given the circumstances and that ultimately, “the mission was successful.” For the duration of the sites’ operation, up to 8,000 to 9,000 individuals were vaccinated per day at each site.

Finding/Corrective Action: CDPH should engage with Cal OES in pre-planning for the logistical and clinical aspects of pharmacy operations at mass vaccination sites. (ID: Vaccines 18)

#### **19. CDPH supported the Federal Pharmacy Partnership for Long-Term Program by coordinating with multiple State agencies, engaging with participating pharmacies, and developing guidance on vaccination administration.**

In early 2021, the Federal Pharmacy Partnership for Long-Term Care (LTC) Program engaged two nationwide pharmacies to administer vaccines to LTC residents and staff. These pharmacies were responsible for end-to-end vaccine management, including cold chain management, on-site vaccinations, and reporting. However, while this was a federal program, the vaccines had to be supplied by states. This was a significant challenge, since at the time doses were incredibly scarce and allocations for this program had to be factored into the Statewide allocation and prioritization framework. In addition to this challenge, CDPH also provided technical assistance and consultation with the pharmacies on short notice. Since California has many licensing designations for congregate living settings that did not match the federal designation of a “long-term care facility,” CDPH and its partners helped identify the specific facility types and enroll the more than 16,000 congregate living facilities into the program. To accomplish this, the Vaccine Task Force created a LTC Facilities Workgroup comprised of representatives from CDPH, the Department of Aging, the Department of Developmental Services, the Department of Social Services, the



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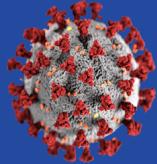
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Department of Health Care Services, and numerous LTC-affiliated associations. Additionally, for this first-of-its-kind program, CDPH provided substantial technical assistance to the pharmacies to help them navigate the different types and numbers of congregate facilities in the state. Further, since the two pharmacies had limited LTC experience, CDPH met extensively with them to share guidance. For instance, since the vaccine needed to be administered in facilities during the Winter Surge of 2021/2022, CDPH developed guidance on how pharmacy personnel could administer vaccines in “yellow zones” to residents that had been exposed but not yet known to test positive for COVID-19.

Finding/Corrective Action: The State has the opportunity to maintain and/or reconvene the LTC Facilities Workgroup to coordinate implementation of future federal programs in California’s long-term care and other congregate care facilities. (ID: Vaccines 19)

### **20. When the Federal Pharmacy Partnership for LTC Program ended, CDPH deployed resources in creative ways to administer booster shots to LTCF residents.**

When the Federal Pharmacy Partnership for LTC Program ended in early April 2021, it became clear that LTC facilities would need assistance when COVID-19 booster shots became available. Consequently, in Fall 2021, the CDPH pharmacy team filled this gap by “creatively using resources we had in lieu of the federal program.” Specifically, CDPH leveraged its Public Call Center, with assistance from the CDPH pharmacy team and DSS representatives, to conduct outreach to LTC facilities to determine if they needed assistance administering vaccine boosters. This included over 26,000 calls to contact over 14,000 facilities. The purpose of the calls was to link the LTC facilities that needed assistance with vaccinator resources through their LHJ or a retail pharmacy. If a facility was unable to obtain assistance through these sources, then the call center connected them to CDPH’s Outbreak Response Team (ORT), which had been previously deployed for testing, to deliver mobile vaccinations to the facility. It took about 2 months of planning to prepare the ORT to administer boosters and required extensive “collaboration across State agencies to make this a priority.” Eventually, the implementation was a success and the ORT was deployed to 33 facilities across the State to provide boosters.



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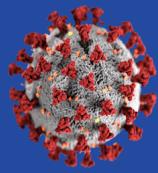
Finding/Corrective Action: Once the federal pharmacy program ended, CDPH successfully leveraged its Public Call Center to conduct extensive outreach to LTC facilities to link them to their LHJ or a retail pharmacy for vaccination assistance. LTC facilities that were otherwise unable to obtain assistance were referred to the CDPH Outbreak Response Team to administer boosters to the State's most vulnerable population in long-term care and other congregate care facilities. (ID: Vaccines 20)

#### **21. Two large-scale incentive programs to encourage vaccination, Vax for the Win and You Call the Shot, were implemented quickly by a multi-agency team.**

At the direction of the State leadership, CDPH collaborated with the Gov Ops Agency, California State Lottery, and others to quickly design and implement two incentive programs to encourage Californians to get vaccinated during a time of falling vaccinations rates. The "Vax for the Win" program gave away cash prizes and vacations via a lottery, and the "You Call the Shot" program gave away \$50 gift cards. Since the State had never implemented an incentive program like this, the team had to determine the process, data extractions, and logistics within three weeks. CDPH collaborated with the California State Lottery to ensure a fair lottery process, contracted with a gift card vendor, and collaborated with legal teams to ensure compliance with data privacy laws. The team, according to SMEs, was high-performing, very responsive, and empowered by leadership to "get the job done." One leader commented that the "team put in a lot of creativity to make it work," and hoped this kind of momentum "could be carried forward throughout state operations." Ultimately, these incentive programs helped stabilize and slow down the decline of the State's vaccination rate, which had been falling.

Finding/Corrective Action: The new vaccine incentive programs developed by the State should be thoroughly evaluated, along with other models attempted nationwide throughout the pandemic. Led by high-performing teams, these programs can be implemented quickly to encourage the public to get vaccinated. (ID: Vaccines 21)

#### **22. CDPH's emergency contracting authority was essential to quickly implement the vaccine program.**



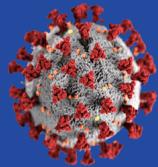
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Operating under the expedited procurement processes enabled by the Governor's Executive Orders, CDPH was able to contract with vendors for diverse vaccine-related goods and services, including technology, consulting, subject matter expertise, provider call center infrastructure, supplemental staffing, mobile vans and pop-up clinic operators, ancillary supplies, and cold chain equipment. Many SMEs attested to how streamlined it was to obtain vendor resources, which could sometimes be attained in a matter of days instead of months. CDPH staff and leaders agreed that maintaining this authority in emergencies is critical to the public health response. However, they expressed concern about potential legislation that could limit the powers of emergency orders, which would hinder the department's future response efforts.

Finding/Corrective Action: CDPH has the opportunity to document its emergency contracting and procurement processes used for all its vaccine-related needs. The documentation could be used to support the continuation of emergency procurement authority, if needed. (ID: Vaccines 22)

See the related finding Med Surge – 1 in the Medical Surge chapter in this AAR.



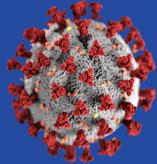
## Main Challenges and Lessons Learned

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.

### **23. When demand for vaccines was high and supply was extremely low, the State developed a nuanced prioritization and allocation framework, which was challenging to operationalize**

From late December 2020 through mid-March 2021, demand for vaccine doses was high and supply was incredibly limited. In this unique environment, it was challenging for the State and CDPH to develop equitable vaccine prioritization frameworks and then allocate doses based on those frameworks. This complex prioritization process involved several Vaccine Task Force workgroups, who adapted national guidance to California's populations, developed detailed prioritization frameworks for who was eligible and when (based on age, occupation, and other factors), considered public input on prioritization via a community advisory process, and finalized recommended guidelines. Following the recommendations, other work groups were responsible for allocating California's weekly supply to the appropriate phases and tiers. This entailed creating a complicated, multi-step allocation process that took into consideration each LHJs' percentage of the current priority population. CDPH strove to communicate the allocations with as much transparency as possible and set expectations given the general limited vaccine supply, yet inevitably some LHJs were surprised to learn that they were receiving far less vaccine than they anticipated. In general, there was much pressure and scrutiny on the entire prioritization and allocation processes, which were technical and not easy to operationalize or communicate. In April 2021, when most of California's population became eligible, the painstaking work associated with prioritizing and allocating extremely limited vaccine doses concluded.

Finding/Corrective Action: CDPH should create a playbook for how to develop and communicate federal and State vaccine prioritization and allocation strategies during times of vaccine scarcity. (ID: Vaccines 23)



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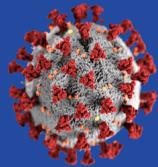
#### **24. The Third-Party Administrator's approach and decisions impacted many of the vaccine-related workstreams, slowed provider enrollment, and disenfranchised some of the LHJs.**

In January 2021, State leadership engaged a third-party administrator (TPA) to accelerate vaccine administration through increasing provider enrollment and allocating scarce vaccine. The TPA utilized a different management style than the Vaccine Task Force, established different priorities, and did not integrate all of their activities into the workstream functions. The TPA instituted many changes to the vaccination program, including changing the program's allocation model as well as the provider enrollment process. In general, these changes faced resistance by the LHJs and providers as it created confusion and some re-work. The TPA required providers to sign a separate contract in addition to the CDC agreement, as well as commit to certain performance requirements, including using My Turn. CDPH staff recalled that "this scared a lot of providers off" and new enrollments slowed to a trickle, while CDPH spent time re-enrolling providers to meet the new requirements that it had previously enrolled.

LHJs were not as involved in the revised provider enrollment process, even though they had the knowledge and existing relationships with the providers in their jurisdictions. Many LHJs felt they were being treated as one of the thousands of COVID-19 vaccine providers rather than a public health partner, and some refused to sign the TPA contract. CDPH SMEs agreed that "we angered our primary stakeholders," in addition to creating large amounts of duplicate work. "Ultimately...it didn't get us a lot further," one leader noted. When the TPA transitioned out several months later, CDPH devoted considerable effort to regain the LHJs' trust, refocusing enrollment on increasing the number of small and pediatric providers, and creating a simplified order-based allocation process.

Finding/Corrective Action: For future pandemics, the State should rely on its public health experts, in partnership with LHJs, to determine appropriate strategies and solutions for vaccine administration. (ID: Vaccines 24)

#### **25. Roles and responsibilities were not clearly defined for the many different state agency contributors working on the State's**



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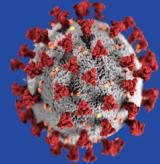
#### **COVID-19 vaccination program, which caused coordination and communication challenges across teams.**

Many different entities contributed to the State's COVID-19 vaccination program, including the Governor's Office, CalHHS, GovOps, the Vaccine Task Force, the VA58 campaign, and numerous CDPH programs. One leader commented that the vaccine campaign "was so big of an endeavor and things changed so quickly, that the coordination and communication was not fast enough and that caused confusion." Ultimately, the lack of a statewide organizational chart, defined roles and responsibilities, and clear communication channels led to siloed workstreams and some duplication of effort. Sometimes, teams would begin work on a new initiative only to "bump into others that were already doing it." For example, there were separate communications teams established for public communications and Vaccinate All 58, and then later another communications team for therapeutics. Additionally, a number of teams, including the Office of Health Equity, focused on different aspects of vaccine equity. According to one SME, "it was not easy to get everyone coordinated regarding who was making decisions and doing outreach."

Finding/Corrective Action: The State should document the roles and responsibilities for the COVID-19 vaccine program at all levels and develop supporting documentation, including a retrospective organizational chart, that defines the reporting relationships and coordination mechanisms. (ID: Vaccines 25)

#### **26. The Provider Enrollment Team required additional resources and new automation to address the high volume of provider applications.**

When CDC instituted a novel requirement for providers to enroll in the COVID-19 program, IZB did not have sufficient personnel or the technology infrastructure to review and approve thousands of ensuing applications. Initially, the small team of 2 to 3 CDPH staff could not keep up with the volume of provider applications. Staff built a dashboard that showed the growing backlog in applications requiring review, which proved the need for additional support. The Vaccine Task Force facilitated getting additional resources, including redirected staff from within and outside the department. Even after growing to 40 staff, the



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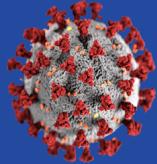
team could not keep up due to the manual verification of the enrollees' medical credentials and licenses. The implementation of myCAvax introduced several efficiencies to the enrollment process, including automatically matching providers' information against state licensing board data, which allowed staff to process applications more efficiently. As one staff member put it, "automation saved us because there was no way we could handle the massive volume of work and we would not have been able to get through it." This highlights the need to continue to support vaccine management systems that can be easily modified to handle automated enrollments for future pandemics.

Finding/Corrective Action: CDPH has the opportunity to develop a more robust staffing plan to handle any future surges in provider applications. (ID: Vaccines 26)

#### **27. Clinicians were not always involved in the purchasing specifications of clinical supplies, which led to purchases of needles and syringes that were not usable in a clinic setting.**

In addition to purchasing cold chain equipment such as freezers and data loggers for county and State facilities, the State also purchased additional ancillary supplies including needles and syringes. While the CDC provided some ancillary supplies, such as needles and syringes to administer the vaccine, sometimes packages arrived damaged or contained insufficient quantities. Consequently, CDPH ordered supplies as backup in case of shortfalls. The Governor's emergency proclamation made it easier for CDPH to procure supplies, it was not always clear who was responsible for ordering what. Sometimes the State Purchasing Officer coordinated purchases through the Department of General Services, and other times CDPH would. This limited coordination—and the fact that clinicians were not included in the specifications of some purchasing decisions—resulted in the purchase of needles and syringes that were sometimes not usable in vaccination clinics. SMEs indicated the need for better coordination and the involvement of medical specialists in purchasing clinical supplies to ensure appropriate needles and syringes are correctly specified in the purchasing documents.

Finding/Corrective Action: In the future, the State should involve a medical specialist in development of specifications to ensure the utility



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and safety of clinical supplies and equipment that are purchased. (ID: Vaccines 27)

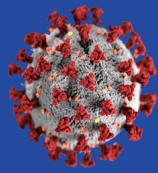
#### **28. Pharmacy programs' partners reported volume and location of doses to federal systems, but administration data to the State's immunization registry, which made it difficult to determine who was vaccinated by facility/location.**

The pharmacies participating in the Federal Retail Pharmacy Program reported the number and location of doses on hand in the CDC system, and they reported their administration data to the State's CAIR2 registry. Because the federal and state systems are not integrated, it was difficult for CDPH to determine the accuracy of the pharmacy administration data. It was even more problematic for the Federal Pharmacy Partnership for LTC Program. These pharmacies also reported vaccine location in the CDC system and who was vaccinated in CAIR2. Consequently, it was impossible to determine which people had been vaccinated by a facility. For the pharmacy teams deployed to the LTC facilities, a SME indicated "it was hard to track doses from day to day. Because they were making so many rounds, they had no way to know who was left to vaccinate." CDPH staff attempted to work with CDC system administrators to develop a different data view to cross match with the CAIR2 system, but could not make it work during the short time of the program's existence.

Finding/Corrective Action: For future pandemics, CDPH should coordinate with CDC system administrators on methods to cross-match data for tracking and explore ways to integrate state and federal systems. (ID: Vaccines 28)

#### **29. Pharmacy operations at mass vaccination sites did not include sufficient experienced clinical and pharmacy staff to address the risk of vaccine wastage and incorrect dosing.**

Cal OES collaborated with the federal government to establish two mass vaccination sites in Oakland and Los Angeles in February 2021. One week prior to the sites opening, CDPH was asked to create a pharmacy plan, position equipment at the two sites, and create procedures to transport vaccines to the sites. According to one SME, "there was no playbook for how to do this." CDPH accomplished these supporting tasks but was not asked to manage pharmacy operations at either site.



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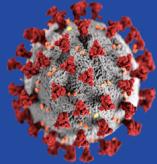
At the Oakland site, the pharmacy was managed by a nurse, rather than a clinical pharmacist with experience in vaccine handling and storage. This led to vaccine wastage and underdosing. Subsequently, CDPH pharmacists embedded in the pharmacy at both sites to help improve operations. In addition, a CDPH executive was sent to represent public health at Oakland's incident command headquarters. SMEs noted that these initial problems would not have occurred if a pharmacist, specifically one with expertise in running a large hospital pharmacy, had been involved. According to one SME, special knowledge was required on how to handle reconstitutions and prepare doses to be given in a large clinic setting.

Finding/Corrective Action: CDPH should coordinate with Cal OES in advance to plan mass vaccination pharmacy operations, including proper staffing and vaccine storage and handling, to mitigate vaccine wastage. (ID: Vaccines 29)

#### **30. Mobile vans and pop-up clinics helped meet high demand for vaccinations, but were expensive to operate, especially as demand diminished.**

Mobile and pop-up clinics were a key part of the State's continuous strategy to reach traditionally underserved or hard-to-reach populations. However, these clinics became expensive to run when demand waned, costing hundreds of dollars per dose administered. The CDPH team noted that when "there was high demand and low supply of vaccine, the clinics made sense. But when demand decreased it was harder to justify." The team found it challenging to quickly make adjustments to their operations based on declining demand for vaccines. One SME questioned how to determine "the point of diminishing returns" for the program and wondering, as demand of the program's services waned, if the responsibility to "meet people where they are" should remain with the State or with LHDs. According to one SME, "answers to these philosophical policy questions were never put in place."

Finding/Corrective Action: CDPH has the opportunity to analyze historical data and conduct a cost-benefit analysis to determine when the level of demand merits utilization of mobile units and pop-up clinics. (ID: Vaccines 30)



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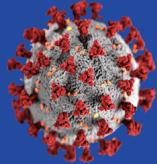
#### **31. The process to confirm eligibility for in-home vaccination services created duplication of effort for CDPH and the LHJs and delays in scheduling appointments.**

The State implemented in-home vaccination services to offer vaccines to Californians with limited mobility and/or fragile health. Those who needed in-home services could make the request in My Turn or contact the CDPH Public Call Center for assistance. However, fulfilling these requests proved problematic. While some of the LHJs already provided in-home vaccinations with their existing programs and services, they had not been involved in the program design. Consequently, not all LHJs fully embraced the program. Furthermore, the program's workflow was complex. Staff reported there was a high degree of duplication of effort as the CDPH Public Call Center first confirmed the person's eligibility. Since the LHJs could not access their own data to see who wanted services, the call center agent emailed the information to the LHJ. Then the caller had to wait for the LHJ to call them back, within 30 days, only to repeat the confirmation process in order to schedule an appointment. Ultimately, some Californians had to wait several weeks to schedule an appointment and receive service.

Finding/Corrective Action: For programs and services that are implemented at the local level, CDPH should design them in collaboration and coordination with the LHJs to ensure processes are streamlined and align with the LHJs' existing workflows. (ID: Vaccines 31)

#### **32. For the vaccine incentive program, it was a challenge to convince winners to redeem their prizes due to a lack of awareness and other barriers to redemption.**

Since the Lottery and gift card giveaways incentive programs ("Vax for the Win" and "You Call the Shot") were implemented within three weeks, this left little time to promote the programs and create public awareness. As a result, the team found it difficult to give away some of the cash prizes and overcome winners' disbelief. According to one SME, "there were a lot of radio ads out there, but people didn't think it was real." It was even harder to give away the vacations, as 2 of the 6 went unclaimed. Some SMEs felt that the vacations were "too complicated" due to the tax implications and that the public was more excited about the cash prizes.



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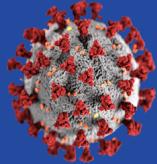
For the “You Call the Shot” gift card giveaways, CDPH collaborated with the LHJs to market the incentive program. However, the process for Californians to redeem their gift cards was also complicated and proved to be a significant barrier. Individuals had to wait until they had received their second dose and then proactively redeem the card online. In contrast, many LHJs had established similar local programs that gave away gift cards after individuals received their first dose. This approach made it much easier for people to obtain their reward. Ultimately, even though CDPH sent out frequent reminders, only 37% of those eligible claimed their gift card.

Finding/Corrective Action: For future pandemics, the evidence of the cost effectiveness incentive programs in California and elsewhere should be reviewed to guide future efforts. Any future programs should be promoted well in advance to raise public awareness, redemption processes should be simplified to reduce barriers, and CDPH should coordinate with LHJs to align concurrent incentive programs. (ID: Vaccines 32)

### **33. It was challenging to roll-out an interim vaccine management system (PrepMod/COVIDReadi) while simultaneously building its replacement (myCAvax) in an accelerated time period.**

While the State initially planned for LHJs to use PrepMod/COVIDReadi to help manage their vaccination program, it soon became apparent that this tool would not suffice. In a short period of time, CDPH procured and began implementing a new Statewide vaccine management system, myCAvax, to replace the interim PrepMod/COVIDReadi solution.

However, with the impending arrival of vaccines in December 2020, the need for system functionalities was immediate. As a result, from mid-January to mid-February 2021, provider enrollment was processed in myCAvax and vaccine ordering in PrepMod/COVIDReadi. This situation was temporary but not ideal. According to staff, “we were building a system while we were using it and it was very hard to manage both.” Even with a well-resourced, dedicated team, there was a small, core group of about 5 CDPH subject matter experts who were consequential to decisions and needed to be in every meeting. One SME said “we really struggled with the core group’s bandwidth as we built out the specs for myCAvax,” and “there was the potential to realize too late that critical components might be missed.”



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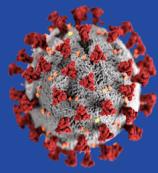
Finding/Corrective Action: For future pandemics, CDPH has the opportunity to plan for and enhance its newly built robust, scalable systems to address changing needs in order to avoid building a system while using it. Expand the core group of subject matter experts to include LHJ input, so it is not relying on a handful of internal SMEs to determine all of the business requirements. (ID: Vaccines 33)

#### **34. Despite the Data Strike Team that was deployed to clean-up provider data, CDPH still faces obstacles to collecting complete vaccination administration data.**

Numerous SMEs acknowledged the importance of quality data to the State's COVID-19 vaccination program. However, existing systems that had been "underfunded for twenty years," in the words of one SME, could not initially collect the granular administration data that State leadership was requesting. To help improve vaccination data quality and timeliness, the State developed multiple interventions. This included bringing in a Data Strike Team (as part of the TPA effort) to help clean up provider data, configuring My Turn to capture detailed race, ethnicity, and occupational data, and requiring providers to use My Turn. Despite these improvements, CDPH still faces multiple challenges related to the completeness of its vaccination administration data. While My Turn can collect detailed race and ethnicity data, there is still a large percentage of individuals in the "unknown" category. Moreover, while My Turn provides more detailed race and ethnicity data fields (e.g., Filipino or Chinese), ultimately these are rolled up into the broader, aggregated categories available in CAIR2, which only offers the federally mandated minimum fields (e.g., Asian). Lastly, My Turn cannot capture vaccine administration data from temporary clinics, such as mobile vans, pop-up clinics, and school-located events.

Finding/Corrective Action: CDPH can identify and work towards implementing additional enhancements that would make its vaccination administration data more complete, including identifying legislative, technical, or administrative actions needed. Increased input of complete records into CAIR2 will reduce future data gaps. (ID: Vaccines 34)

#### **35. CAIR2 improvements were challenging because some viewed CAIR2 as the COVID-19 registry, rather than the State's**



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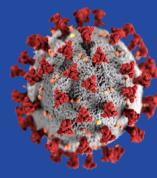
#### **immunization registry that had been in place for more than 20 years.**

The State's immunization registry (CAIR2) has been in place for more than 20 years and serves as the system of report for all required immunizations. In order to support the increased COVID-19 data volumes, CDT and vendor technology teams were brought on to help augment the registry. While these State and vendors resources were helpful, they did not all necessarily understand how decisions made for COVID-19 processing would impact other major system functions or programs who relied on them. According to one SME, not all staff were familiar with the system's complexity and "some lost sight of the fact that it's an ongoing functional registry." Consequently, changes were made to the registry that prompted the need for later corrections and updates to CAIR2's non-COVID-19 functionality.

Finding/Corrective Action: For future pandemics, relevant vendors and State staff should be educated on the structure of CAIR2 so they can avoid unintended harm from changes made to the registry. (ID: Vaccines 35)

#### **36. CDPH experienced persistent staffing challenges, including redirected staff that were not suited for their placement, contractor churn, and employee burnout.**

While the Vaccine Task Force successfully obtained needed resources from both within and outside CDPH to support the response, utilizing redirected staff proved challenging. Redirected staff were sometimes placed in positions that they were not suited for, especially those with no previous customer service experience who were placed in call center positions. Further, some redirected staff, especially those that did not volunteer for the assignment, simply did not want to participate. This made it exceptionally difficult to train and motivate these temporary staff, because just as someone was trained up to speed, they would leave and new staff would need to be retrained. When the TPA came on, many additional contractor resources also arrived. The new people coming on were trained by people who were burned out. While the additional redirected staff and contractor resources were desperately needed, the constant turnover caused a cycle of training and re-training which further contributed to CDPH staff burnout.

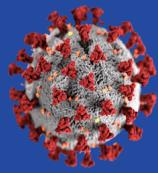


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Finding/Corrective Action: CDPH has the opportunity to anticipate and plan for pandemic staffing challenges for its workstreams, including identifying staffing plans in advance, setting protocols regarding potential redirections, creating training plans for supplemental and redirected staff, planning for backlogs, and identifying staffing leads. (ID: Vaccines 36)

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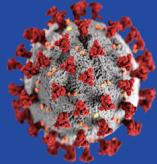
## **Analysis of Activities**

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.

### **Vaccine Planning, Policy, and Guidance**

#### **CDPH formed a COVID-19 Vaccine Task Force to lead the Vaccine Response**

- California's early COVID-19 vaccination program planning efforts began in April 2020 with the establishment of the COVID-19 Vaccine Steering Committee within CDPH. The Committee, which was comprised of many SMEs from the CDPH Immunization Branch (IZB) and the Emergency Preparedness Office (EPO), included individuals who had successfully led the State's H1N1 response efforts in 2009. These experts took on many leadership and consulting roles within the COVID-19 response to ensure that the overall vaccine effort was guided by the principles of safety, efficacy, efficiency, and equity. The vaccine planning efforts and response approach were detailed in the California COVID-19 Vaccine Plan, Interim Draft, which was submitted to the CDC in October 2020.
- In July 2020, CDPH leadership expanded the capacity and scope of the planning efforts to form the California Governor's COVID-19 Vaccine Task Force. Task Force leads possessed the expertise, experience, and ability to make policy recommendations and lead teams. Most leads were drawn from CDPH and members included retired annuitants, former employees, contractors, and leaders from other State departments.
- CDPH utilized the National Academy for Science, Engineering, and Medicine (NASEM) [playbook](#), the [CDC COVID Vaccination Program Interim Playbook](#), and lessons learned from CDPH's response to H1N1 to identify the Task Force workstreams. Initially, 9 workstreams were created to oversee the following functional areas: 1) allocation framework, 2) vaccine administration, 3) logistics, 4) information management, 5) oversight and budget, 6) legal and regulatory, 7) communication, 8) enhanced flu, and 9) State Plan efforts.
- In October 2020, the Vaccine Task Force developed the first version of the Vaccine Task Force Strategic Management Plan. This was an internal



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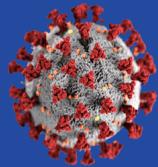
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planning document intended to guide the Task Force's activities and included targeted objectives. During this time, there was little known about candidate COVID-19 vaccines, including when they would be available, their efficacy in critical populations, the effect of comorbidities, and the degree of public acceptance. Consequently, CDPH continued to revise the plan as more information became available about potential vaccines, timing, efficacy, and national guidance for allocation and administration. The draft plan was revised many times, with the last draft issued on December 17, 2020.

- Through January 2021, the Vaccine Task Force was responsible for overseeing the vaccine response and reporting progress to leadership. However, the Task Force's authority temporarily decreased in February 2021 when the TPA was brought on board by State leadership in an effort to enroll more providers, equitably allocate vaccines, and increase vaccination rates.
- The role of the TPA was unclear to some Task Force members, who reported not knowing who was reporting to whom or how key policy decisions were being made. Some SMEs noted that the TPA's parallel operations created functional siloes, and some members were "out of the loop" and felt that they "were operating on an island of its own." Eventually, coordination improved between the TPA and the Task Force.
- After the TPA phased out late Spring 2020, the Vaccine Task Force resumed its authority and continued to plan for new phases of the State's COVID-19 vaccination program. These included planning for initial booster shots and pediatric vaccinations. As the vaccination program evolved, CDPH adjusted, added, or removed workstreams to meet changing needs. By August 2021, the Vaccine Task Force consolidated into four primary workstreams: 1) vaccine operations; 2) vaccine management solutions and technical infrastructure; 3) logistics; and 4) communications.

### Drafting Guidelines Workgroup Established to Prioritize Scarce Vaccine Allocations

- In October 2020, knowing that the arrival of the first COVID-19 vaccines was just several months away, CDPH created the State's COVID-19 Drafting Guidelines Workgroup. This Workgroup, which included experts on immunization, ethics, and health equity, was tasked with developing

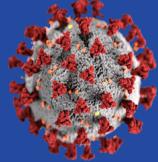


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California-specific guidance for the prioritization and allocation of COVID-19 vaccines in an environment of limited vaccine supply.

- The Workgroup considered national guidance from many sources, including the Centers for Disease Control (CDC), the CDC Advisory Committee on Immunization Practices, and the National Academies of Sciences, Engineering, and Medicine (NASEM). The Workgroup balanced this guidance with California's specific interests, incorporating equity as a guiding principle. The Workgroup recommended a phased approach, with certain populations prioritized for vaccinations by phase and tier. For instance, the first populations included in Phase 1a were health care workers and residents of congregate care facilities. Phase 1b populations included essential workers with risk of occupational exposure to COVID-19 in the education and childcare, emergency services, and food and agriculture sectors. In carefully developing recommendations about who could receive one of the extremely limited vaccine doses, the Workshop also considered public feedback on proposed recommendations provided via the Community Vaccine Advisory Committee (discussed further below). Ultimately, according to one SME, the Workgroup's recommendations "helped strengthen support and rationale for decisions made with scarce resources during a challenging time."
- However, when the Workgroup was initially formed, its authority and processes, were not well-defined. The expectation was not initially communicated that the Workgroup's role was advisory in nature, and that State leadership would ultimately decide on vaccine allocation policy. Consequently, some Workgroup members became frustrated when their recommendations were not implemented. Sometimes they were asked to explain policy decisions which differed from the recommendations of the Workgroup.
- The Workgroup found it challenging to develop [prioritization guidelines for allocations](#) that were applicable statewide given the fact that vaccine supply and demand dynamics differed among local jurisdictions. For instance, one leader noted that when vaccine supply started to increase, demand in rural communities was lower, thus allowing LHJs time to expand their operations to provide more access. However, "in urban areas where demand was higher, expanding would have completely overwhelmed them." This proved to be a delicate balance to strike. In addition, some local health officers were being lobbied by local elected



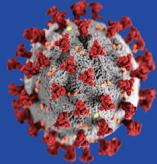
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officials. Consequently, the Workgroup had to develop equitable criteria for vaccine prioritization that was defensible in an atmosphere of differing demands at the local level. The Workgroup disbanded in March 2021 when vaccine eligibility opened up to the general adult population.

### Scientific Safety Workgroup Convened to Promote Public Confidence in Vaccine Safety

- The Federal government launched the “Operation Warp Speed” initiative in May 2020 to expedite approval and production of COVID-19 vaccines. At the time, the U.S. Food and Drug Administration (FDA) announced that a vaccine would need to be at least 50% effective to obtain regulatory approval. In California, State leadership was concerned about the public’s potential hesitancy regarding vaccines that had been developed, tested, and manufactured in an accelerated manner. In response, the State decided to convene a workgroup of scientific experts to conduct an additional level of review prior to authorizing vaccines in California.
- In October 2020, the Governor named a group of nationally recognized immunization and public health experts to the State’s COVID-19 Scientific Safety Review Workgroup. A short time later, Washington, Oregon and Nevada joined this group, providing their own expert representatives. The group was renamed the Western States Scientific Safety Review Workgroup (WSSRW).
- This group independently reviewed the safety and efficacy of any COVID-19 vaccine authorized for emergency use by the FDA. The group monitored the vaccine candidate trials, reviewed evidence, and provided recommendations to the four western states to ensure safety and maintain public confidence in vaccine implementation efforts. Some of the members also participated in national FDA and CDC committees and were thus able to share their expertise with the WSSRW.
- The WSSRW met frequently and on short notice to develop recommendations quickly. The cadence followed the federal review cycle. Typically, the FDA would meet to approve the vaccine, the CDC would meet immediately after to issue guidelines, and the WSSRW would meet the night of the CDC meeting, to discuss its recommendation(s). The WSSRW then prepared a statement that was issued by State leadership the following week. Lastly, the western states’ Governors issued a joint



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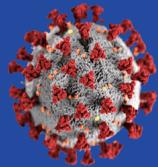
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statement to endorse the vaccine. The purpose of this highly compressed timeline was to get newly-approved vaccines into the arms of the public as soon as possible.

- As trusted experts, WSSSRW members were often asked by the media to comment on policy challenges the State was facing. According to one leader, “having scientific advisors was critical. When these experts left the meeting, they became the voice” for the State. Because they were “sitting at the table, they appreciated how challenging it was and became an extension of our voice to explain to the public why California was doing things the way it was.”
- The success of the WSSSRW workgroup led to creation of a similar workgroup for Mpox, another infectious disease that emerged in mid-2022. In the words of one leader, convening an advisory committee is a best practice that “we should absolutely do” for future pandemic responses: “we need a team of people who can defend the policy.”

### Community Vaccine Advisory Committee Provided Input on how to Engage Diverse Constituencies

- In November 2020, the Governor announced the creation of the Community Vaccine Advisory Committee (CVAC). The CVAC was established to provide community input on vaccine prioritization, vaccine equity, communications, and other vaccine-related topics. The California Surgeon General and the State’s Epidemiologist served as the co-chairs. The member organizations (77 in total) represented diverse communities throughout California, including tribes, unions, fire fighters, senior advocates, rural California hospitals, community clinics, and medical and behavioral health, education, corrections, businesses, and faith-based organizations. The CVAC established a bi-directional communication channel between the State and leaders within historically under-represented communities and interest groups.
- CDPH engaged a consulting firm to facilitate, coordinate, manage logistics, and support the CVAC. The Committee met 15 times from November 2020 through June 2021, with each meeting require extensive preparation and planning. CDPH used a YouTube channel live-stream the meetings. The meeting summaries, presentations, and public comments were posted on a [CVAC webpage](#), hosted on the CDPH website.



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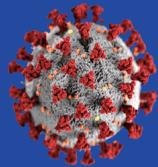
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- While the CVAC provided a space for diverse representatives of various communities to collectively inform the State's vaccine planning and deployment, it was sometimes challenging to keep the CVAC up to date on the rapidly changing dynamics of the vaccine supply.
- On occasion CVAC members would communicate information back to their stakeholders, only to learn that this information had recently changed as a result of State policy decisions. As one member noted, "CVAC members were not notified about major changes until after they were publicly announced" (such as contracting with the Third-Party Administrator).
- When the Committee wrapped up its activities in June 2021, CDPH conducted an [evaluation](#). Some members expressed a need for more clarity about the role, influence, and scope of the CVAC. One CVAC member reflected that "members were unclear about follow-up on CVAC recommendations and their role in communicating to their community members and community-based organizations." Another member noted feeling "as though the advice and feedback from CVAC did not lead to vaccine policy changes." However, members acknowledged the advisory role of the Committee and the difficulty in balancing competing interests.

## Local Health Jurisdiction Coordination

### CDPH Created a Team to Coordinate and Collaborate with the Local Health Jurisdictions

- California's local health jurisdictions (LHJs) employ local immunization and pandemic flu coordinators with strong connections to local healthcare vaccine providers. The 61 LHJs, which include the 58 California counties and the three cities of Berkeley, Long Beach, and Pasadena, differ in structure and whether they provide direct patient care services or public health services. Each LHJ is overseen by a local health officer. Even before the pandemic, most, but not all, LHJs offered some form of vaccine administration: many offer yearly mass vaccination influenza clinics while others partner with other providers to offer vaccinations in their jurisdictions.
- While CDPH already had relationships with the LHJs, the pandemic prompted even closer collaboration and the development of innovative

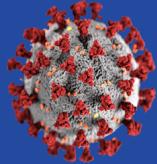


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programs around vaccines. During the COVID-19 pandemic, CDPH's Immunization Branch (IZB) and Emergency Preparedness Office (EPO) served as the primary LHJ liaisons and were in frequent contact with local officials to provide technical support, ensure a cohesive vaccination response, and centralize efforts.

- In March 2020 CDPH created a new COVID-19 Local Coordination Team to specifically coordinate with local agency health officials. While initially established to help respond to local COVID-19 outbreaks, the team's duties expanded to foster coordination on the County Data Monitoring Program, maintain the county contact list, and implement the vaccination effort. The team became a critical "highly trafficked intersection" of information and "was the hub to triage questions," one team member noted. According to a CDPH SME, local agencies have indicated that the team should continue after the pandemic is over.
- The Local Coordination Team served as the liaison between the TPA and the LHJs and facilitated the submission of LHJ's vaccine equity plans, as well as their county transition plans, which documented the transition to the TPA network, and submission of their county transition plans to the TPA network and their equity plans. According to one SME, "we were the connectors across the response because the relationships with the locals that had already been built before the vaccine helped run a messy process more smoothly." However, the addition of the Local Coordination Team was an overlay on existing communication channels in CDPH on immunization issues, sometimes complicating communications.
- There were multiple stakeholders involved in LHJ coordination efforts in addition to the Local Coordination Team including CalHHS, GovOps, the Vaccine Task Force, various other CDPH teams and programs, the VA58 campaign team, and contractors. These groups all played different roles in the vaccine program implementation, with different and changing timeframes. However, there was no single organizational chart that clearly defined the stakeholder roles and responsibilities for the local agencies.
- Additionally, while many of these stakeholders possessed a CDPH email address, it was unclear to the locals if the individuals contacting them were CDPH staff, redirected staff from other State agencies, or contractors. This was a source of repeated confusion to local health officers who continually asked the LHJ Coordination Team to clarify who was reaching out to them with requests. This was also a problem when the



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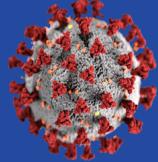
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TPA or other contractors with CDPH email address contacted LHJs or other external partners.

- It was challenging to communicate consistently with all of the LHJs. Multiple CDPH teams were interacting with different levels within the LHJs so the local health officers and LHJ staff were not receiving the same information. As one CDPH staff member noted, “we had no idea who was calling the LHJs.” With multiple State teams contacting LHJs with different information and requests this sometimes “made us look disorganized.”
- Consequently, the Local Coordination Team found that it was not adequate to send information just to the local health officers and expect them to disseminate the information down to their LHJ staff. The team designated a CDPH coordinator to engage with each LHJ at multiple levels within the organization. Using a bi-directional communications approach, locals had the opportunity to receive updates from the CDPH coordinator, ask questions, and provide their individual input. According to one SME, “we improved our communications with LHJs” in part by developing this two-way “feedback loop” between a single focal point within CDPH and the local agencies.
- The State developed a greater awareness of the unique context of each local jurisdiction. This included a better understand of local political dynamics, and how elected officials and communities shaped vaccine implementation at the local level. Some CDPH SMEs were “surprised” by the complexity of local politics, which caused some local officials to receive death threats and resign. Ultimately, the State’s understanding of local needs deepened as a result of the intense vaccine and pandemic response coordination. Things that seemed “simple” at the State level were often “more complex” for LHJs, according to one SME. One leader noted that “we had good relationships with the local coordinators before, but it broadened and we had a better understanding of the LHJs’ needs.”

### LHJs Played a Critical Role to Implement the Vaccine Program and Focus on Equity

- From December 2020 to February 2021, LHJs played a key role in enrolling California providers into the COVID-19 vaccine program and then allocating vaccines to them. The LHJs pre-screened potential COVID-19 vaccine providers according to criteria and guidance provided by CDPH

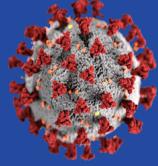


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and CDC. CDPH would then approve requests from LHJs to add new providers to the network.

- Providers were required to sign CDC documents agreeing to the provisions and requirements of the COVID-19 vaccination program. The TPA required providers, including LHJs, to sign a separate contract. This created concerns at the local level because LHJs felt that they were being treated as a provider, rather than as a partner with a broader role in local public health. As one SME explained, this “added to the angst” and “created hard feelings with the LHJs who had worked so hard to ramp up for the vaccine roll-out.” Of the 61 jurisdictions, 13 LHJs chose not to sign the contract. Many locals voiced their concerns to CDPH leadership and expressed their frustration by the added layer of the TPA.
- In May 2021, when vaccine supply exceeded demand, the TPA started to demobilize. At this point, CDPH and the LHJs “regrouped, pulled together, and got laser-focused on equity.” CDPH coordinated different layers of government to address equity needs that included examining data specific to each jurisdiction and tailoring strategies to reach the hardest hit and traditionally underserved populations. CDPH designated resources to “operationalize equity in an urgent way.”
- CDPH and the LHJs partnered on many different vaccine equity initiatives. CDPH started the Vaccine Equity Campaign in May 2021 to build on existing local efforts for the lowest 25% HPI quartile areas and in the most disadvantaged communities. The HPI is a composite measure of socioeconomic opportunity applied to census tracts that includes 25 individual indicators across economic, social, education, transportation, housing, environmental and neighborhood sectors. The effort focused on the 13 counties where the vaccination rate was below the Statewide average. The campaign provided philanthropic incentives, such as school supplies, food, and money (gift cards) to encourage individuals to get vaccinated. Designated “ground-game coordinators” prioritized implementation based on feedback from the LHJs. Instead of the mass vaccination events that were emphasized in early 2021, mobile and pop-up providers administered hundreds of doses per event at convenient sites. These included schools, churches, malls, and grocery stores, and were designed to lower the barriers to vaccination by offering easy access in terms of language access, hours, and walk-in availability.



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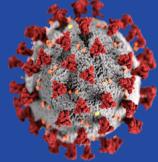
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- Beginning in August 2021, CDPH collaborated with the LHJs on the Equity Focused Outreach initiative that targeted 20 counties within the 120 zip codes with the highest unvaccinated Black and LatinX population, both in the largest absolute number and the lowest vaccination rates. This initiative had a “hyper-local focus” on generating demand for vaccines at the neighborhood level, with communications focused at the census-tract level and small-scale events (e.g., dozens of doses per event). CDPH relied on engagement with small providers (including pediatric providers), community-based organizations, and “peer ambassadors,” such as friends and family members who could influence the unvaccinated to attend events.
- In March 2022, CDPH initiated the Equity Focused Outreach Regional Discussions to build on existing local efforts in the 22 counties not meeting the State’s vaccination equity goals for the different vaccination percentage targets by HPI quartiles, by population groups, and by race and/or ethnicity. CDPH held regional meetings in Southern California, the Bay Area, Greater Sacramento, Northern California, and San Joaquin Valley and also engaged with individual LHJs to identify opportunities to reduce barriers to vaccination, specifically among pediatric providers. Through this collaboration, CDPH was able to identify LHJs’ challenges, which then could develop solutions to their concerns, such as reducing vaccine wastage or addressing the administrative burdens to manage a clinic or conduct daily reporting.
- For additional discussions of LHJ involvement in different aspects of the COVID-19 vaccination program, see the workstream-specific sections in this chapter.
- For further discussion of vaccination equity initiatives, see the Equity section in this chapter.

## Vaccine Provider Enrollment and Engagement

### Initial High Volume of Provider Enrollment Applications

- Vaccine provider recruitment was primarily undertaken by each LHJ, given their local knowledge of the provider community, existing relationships, and established partnerships. Vaccine providers included large health systems with facilities in more than one county (known as multi-county entities, or MCEs) and single jurisdiction providers, such as

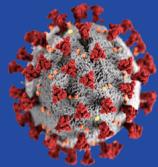


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doctors' offices, private and public health clinics, mobile clinics, and Federally Qualified Health Clinics (FQHCs).

- CDPH worked directly with MCEs who were interested in becoming vaccine providers, because they provided services in locations that spanned multiple local jurisdictions and were well suited for reaching the critical populations during the initial phase of the pandemic. These MCEs were required to meet the same criteria as single-jurisdictional providers, such as the ability to meet critical infrastructure, storage and handling, and reporting requirements. All providers had to agree to report doses administered within 24 hours.
- To enroll in the State's COVID-19 vaccination program, providers were required to agree to the terms and conditions and sign the [CDC COVID-19 Vaccination Program Provider Agreement](#). Providers also had to meet a number of requirements, such as provide their credentials and medical license numbers, complete required trainings, provide population information, and acknowledge clinical and storage capacity. Additionally, in order to meet the 24-hour reporting requirements, providers also had to possess verified accounts with the State's immunization registry, CAIR2 (or, in the case of San Joaquin and San Diego, RIDE and SDIR, respectively).
- CDPH based its provider application on the CDC provider agreement requirements. However, the CDC agreement only required providers to acknowledge their storage capacity rather than verify their actual storage and handling capabilities. CDPH adopted this provision even though it was looser than existing protocols. As one SME noted, "because of pressure to approve providers, we did not use the stringent storage and handling criteria that we have in place for Vaccines for Children (VFC) providers." CDPH staff reported that, in retrospect, they should have configured the ability to upload pictures of the storage and temperature monitoring equipment to myCAvax, as that would have provided a method to verify capabilities during the application process and prevent providers that did not have the proper equipment from enrolling. Another complicating factor was that some providers wanted to be approved into the program before they invested in cold storage equipment and hired staff.
- CDPH planned for providers to enroll in the vaccination program using myCAvax, the State's new vaccine management IT system. However, the

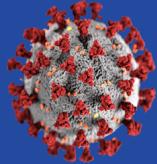


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new system was still in development when providers needed to start enrolling in November 2020. As a temporary measure, CDPH quickly configured and rebranded an existing application (PrepMod) as PrepMod/COVIDReadi to bridge the gap until myCAvax was able to accept enrollments.

- CDPH utilized a tiered approach to enroll groups of providers per CDC guidelines. Initially enrollment was limited to acute care facilities, qualified healthcare centers, and LHJs. Even though the pool of providers was limited, the small CDPH team of 2 to 3 people could not keep up with the workload to process provider enrollment approvals. Once providers started enrolling, considerable CDPH staff time was required to verify medical licenses, since the PrepMod/COVIDReadi system did not have this functionality.
- Staff built a dashboard early on to track provider enrollment and it illustrated the accruing backlog in enrollment processing. For example, during the week of December 23, 2020, 3,000 providers had applied, but only 1,300 had been approved. According to one SME, the dashboard was “helpful but anxiety inducing because everyone wanted to know why we didn’t have more enrollment.” Soon thereafter, the Vaccine Task Force was able to redirect staff to help with provider enrollment processing.
- Even though the team grew to 40, staff still struggled to process the incoming applications quickly because of the requirement to verify medical credentials manually and the pre-requisite to have a CAIR2 account. A large portion of enrolling providers were new to providing immunizations and needed help with establishing CAIR2 accounts. CDPH teams had to wait for the CAIR2 account to be established and there was often significant back and forth between providers and the CDPH CAIR2 team. Over time, CDPH developed processes to review enrollments and moved the data into a large spreadsheet that everyone could work on. One SME recalled opening “the spreadsheet at 11:00pm and 20 people would be working on it. People were doing what they could to help with provider enrollment.” With the additional staff and implementation of these manual processes, the team was able to process approximately 500-700 approvals per week during January and early February 2021. By mid-February 2021, the team had processed approximately 5,000 provider approvals.



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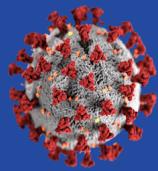
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#### New IT System Helped Streamline Provider Enrollment

- In mid-January 2021, myCAvax was ready to accept provider enrollments and CDPH migrated from PrepMod/COVIDReadi to the new system. This was a significant effort that involved transitioning accounts and training CDPH staff and providers on the new system that was developed in record time. Since myCAvax did not have all the intended functionality at launch, enhancements continued to be added.
- The new system introduced several efficiencies to the enrollment process. The system did not allow providers to create a myCAvax account without an already-established CAIR2 account, which eliminated delays associated with CAIR2 account set-up. Also, the system automatically validated enrollment information against current state licensing board data, replacing a manual process. Providers who did not possess active, valid licenses were flagged by the system and were not allowed to move forward in the enrollment process. In addition, the integration of DocuSign to capture electronic signatures provided greater quality assurance. These automated features allowed staff to process approvals more efficiently, especially once all providers (not just those serving high-priority populations such as long-term care facility residents) could enroll in the program.
- After processing the initial surge of enrollments, CDPH staff also had to develop new protocols for disenrollment, which took up a considerable amount of time. Providers chose to leave the vaccination program for a number of reasons. Some providers left voluntarily because they lost interest or found the daily inventory reporting requirements onerous. But CDPH could also remove providers for not meeting performance expectations. For example, if the provider stopped reporting, did not provide information to the Quality Assurance team about storage and handling, or did not order vaccine in the previous 6 months, CDPH placed the provider's account on hold. The workload associated with un-enrolling providers from the vaccination program added complexity to the team's regular enrollment work.

#### CDPH Encouraged Pediatric and VFC Providers to Enroll

- In May 2021, vaccine eligibility was expanded to Californians aged 12-15 years. Recognizing that this age group might require different provider types, CDPH pivoted to pediatric provider enrollment and focused on the

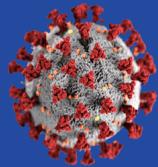


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provider network in the existing Vaccines for Children program. Providers in the VFC program were already established as providers of standard pediatric immunizations. One leader commented that this shift was “very proactive” in order to build capacity to serve the newly eligible population and that “we were doing far more to reach out to VFC safety net providers and other pediatric providers to get ready for the vaccine’s arrival.” Overall, the provider enrollment team did more outreach to answer questions, hosted webinars with different partners, answered questions on storage and handling, and worked closely with the provider call center.

- CDPH’s outreach to pediatric practices, temporary clinic providers, and schools included information on some of the nuances of implementing the vaccine program for the pediatric age group as opposed to the adult population. For example, minors need the consent of a parent or legal guardian to receive the COVID-19 vaccine, while an emancipated minor may consent for themselves. CDPH designed a pediatric consent form to accommodate the different types of approvers, such as a divorced parent, single parent, or legal guardian to give their consent. Ancillary supplies were another consideration for providers as smaller needles were required than what were used for adults.
- In Summer 2021, the redirected staff that had comprised most of the provider enrollment team returned to their original jobs and CDPH contracted with a vendor to perform this function. The primary effort also shifted from new account enrollment to account maintenance. As of January 2023, there are approximately 9,000 enrolled adult or pediatric providers.
- Starting in August 2021, CDPH began conducting the CDC-mandated quality assurance site visits in order to assess compliance to storage and handling requirements, billing requirements, and vaccine administration procedures. In addition, the health educators conducting the site visits also provided technical support to help providers adhere to program requirements.
- As new vaccines were authorized for emergency use and age group eligibility expanded, CDPH developed innovative strategies and grant programs to encourage more providers to enroll—especially those providers serving specific populations. A new strategy involved offering grants for specific provider types to encourage their enrollment. For



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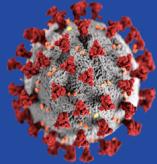
instance, in July 2021 CDPH partnered with Physicians for a Healthy California (PHC) to launch the new CalVaxGrant program to support small practice providers who lacked the resources of large providers. This program offered providers financial resources to help offset the costs of administering COVID-19 vaccines in their communities, including expenses incurred for staffing, training, and technology. Of the 2,790 grants awarded, 58% were to sites located in targeted health equity zip codes. CalVaxGrant awardees reported in a survey that 53% became vaccinators specifically because of CalVaxGrant and 81% awardees say they would remain COVID-19 community vaccinators.

- CDPH also offered incentives to encourage existing VFC providers to enroll in the COVID-19 vaccine program. In the summer 2022, CDPH partnered with PHC to offer KidsVaxGrants to VFC providers. VFC providers were eligible to receive \$10,000 to start offering COVID-19 vaccine and \$15,000 to extend their clinic hours to better serve the needs of working families. The initial success of these grants prompted CDPH and PHC to offer another round of grants ([KidsVaxGrant](#) 2.0) that offered similar incentives to all providers serving pediatric populations in late summer and fall 2022.

CDPH staff report that under these grants “we saw steady enrollment to about 65% of VFC providers,” which represented the larger-sized providers, in terms of staffing and clinic space. The remaining providers were much smaller with limited staffing, and in general found that the administrative requirements for participating in the COVID-19 program too onerous. One SME reported that the smaller providers “tended to resist enrolling in another program and using another system” and “would rather have had the COVID-19 vaccine included as part of the VFC program.”

### CDPH Established Provider Call Center to Offer Support and Answer Questions

- As provider enrollment began in late 2020 and early 2021, there were still many unknowns regarding vaccine eligibility, allocation, ordering, storage, handling, and administration. Providers called IZB with numerous questions that the State struggled to answer as it propped up the program. According to one SME, “having to answer questions with no answers is the most significant memory for me during that time.” Management had to quickly determine the most frequently-asked



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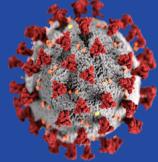
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questions, develop answers, and then train staff to disseminate this information.

- Initially, IZB staff answered provider calls. It was difficult to gauge staffing needs as it could take as long as 20 minutes to handle a call. The growing number of emails and calls began to overwhelm IZB staff and a backlog of unanswered provider questions began to increase. IZB initially redirected staff from the CAIR2 helpdesk to answer calls, but this created delays for providers who needed assistance in establishing CAIR2 accounts. In 2020, CAIR2 helpdesk staff processed 11,680 immunization requests, but that volume jumped to 96,000 in 2021, when “more than 10% of the State’s providers were calling with questions,” according to one SME. The CAIR2 helpdesk was quickly overwhelmed as well.
- In January 2021, CDPH expanded the scope of the COVID-19 public call center vendor to also establish a provider call center. By using the same vendor and infrastructure, the backlog was resolved within two weeks. Several SMEs noted the key to success was the increased staffing and “the public-private partnerships” between private vendors and State teams.

#### Challenges with the Provider Call Center

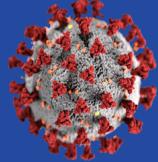
- While contractors helped launch the provider call center, redirected State staff were assigned to answer the calls from providers. The “redirects” did not necessarily possess the customer service experience, clinical skill set, or enthusiasm to enroll providers needed for this role. One manager noted that “it was difficult to integrate the call center redirects into the IZB team and train them.” This led to IZB staff burnout as they not only had to complete their existing workload, but also had to concurrently train new redirected staff as they rotated on to the team.
- Another challenge was the remote work environment. In an environment where information was changing rapidly and agents were not located at a central location, management had to find ways to provide the latest information to all call center staff. To help everyone stay on the same page, leadership established daily check-in meetings and assigned individuals to maintain training and resource materials with up-to-date information. Despite these challenges, the team stepped up” and “supported each other, understanding that we all needed information we didn’t always have.”



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- Another complicating factor to working remotely was the equipment needed for call center agents. Some agents used their own technology, while others used State computers and headsets, which led to a “mish-mash of technology,” as one manager noted. State-issued computers were often too slow to support call center work and prone to glitches, but there was a long waiting list within CDPH to obtain State-issued equipment.
- The existence of two call centers—one for the public and one for providers—initially created some confusion. Large numbers of public residents began calling the provider call center; likewise, many providers started calling the public call center. Updating the call center menu options and unpublishing the provider call center number from public websites helped direct calls more appropriately, because at certain times the smaller provider call center was at risk of being overwhelmed by public inquiries.
- Providers used myCAvax for vaccine ordering and My Turn Clinic for setting up clinics. As new versions of myCAvax and My Turn were released, each new module required its own distinct customer support. In addition to the provider call center, providers could contact other additional sources for assistance, including the CAIR2 helpdesk (staffed by CDPH), the myCAvax helpdesk (staffed by Accenture), the My Turn helpdesk (staffed by Accenture), and the TPA helpdesk (staffed by Blue Shield). Having so many different call centers and support teams was helpful but also confusing for providers.
- There was also an influx of additional consultants and contractors. Some of these contractors worked for short periods of time on one team before rotating to another team. This churn contributed to CDPH staff burnout, as they continually trained new contractor staff as they rotated on to the help desk teams.
- When the TPA started managing the provider network, it caused confusion for the providers because they did not necessarily understand the TPA’s role versus the State’s role or where to direct their inquiries (e.g., to the provider call center or one of the help desks). Subsequently, the three support teams (CDPH, TPA, and Accenture) developed a matrix that specified the roles, responsibilities, and topics for each team and help desk. A SME explained that “we did this so that everyone got on the same page” because while CDPH was responsible for vaccine ordering policy,



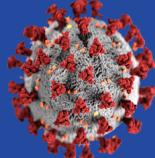
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vaccine storage policy, and fulfilling vaccine orders, registration to become a vaccine provider was handled by the TPA. CDPH created a workflow with complex call routing option designed to help callers access the information they needed. These options included not only the public and provider call center lines, but also connections to the various other helpdesks and ticketing systems.

### CDPH Established a Partner Communications & Engagement Team to Support LHJs and Providers

- CDPH recognized that LHJs and providers would have many questions about the State's vaccination program and began planning communications for these partners in April 2020, well in advance of the start of the program in December 2020. IZB leveraged its experience with the existing Vaccines for Children program to develop the training, job aids, and other resource materials. IZB also developed a listserv messaging system, [website](#), social media strategy, and held separate weekly webinars for LHJs and providers.
- It soon became clear that effective partner communications would take considerably more effort than existing IZB staff could handle. Consequently, CDPH established the Partner Communications team in December 2020 with consultant assistance and embedded this team within the Vaccine Task Force. The Partner Communications team, which communicates with all LHJs simultaneously, worked closely with the LHJ Coordination team, which conducts individual outreach to LHJs.
- One of the first tasks of the Partner Communications team was to create a process to address and answer providers' questions, of which there were "thousands," according to one SME. They initially documented the questions in MS Excel and established a process to obtain answers and approvals from the relevant SMEs prior to disseminating the messages. According to the team, SMEs who were tasked with answering specific questions "were so collaborative and would try to provide answers as soon as possible." The team also created a [FAQs](#) document for providers based on frequently-asked questions and answers, which was posted online and updated weekly. Over time, the original spreadsheet was replaced by a content repository in MS SharePoint, which was searchable and more user-friendly. Through the end of 2022, the provider call center relied on the content repository to develop call scripts and answer

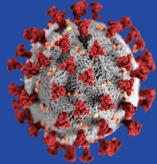


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specific provider questions. The FAQs continue to be updated weekly as of March 2023.

- When the TPA began managing the provider network in February 2021, Partner Communications became challenging. It was difficult to understand the TPA's complex enrollment process, which, according to one SME, "made it more challenging for providers to enroll in the program." Furthermore, it was hard to determine which entity, either CDPH or the TPA, had the decision-making authority or final approval for communications or from whom to obtain the information that the providers were asking for. Once the TPA phased out, however, Partner Communications team members could go directly to the CDPH subject matter experts for answers.
- In March 2021, the Partner Communications team was embedded into the Vaccinate All 58 (VA58) campaign. As a result, the team now reported to both CDPH and VA58 leadership. Initially, this "made work a bit confusing with different workstreams and different bosses, and created layers of approvals," one team member noted. Consequently, the team clarified approval processes for messaging as it integrated into the VA58 team.
- The Partner Communications team found it challenging to determine which vaccine metrics to report out. One SME commented that we were "bombarded with vaccination uptake data based on gender, ethnicity, income, age, location, and by brand of vaccine" from different systems. Confronted with multiple data sets that varied slightly, the team had to filter through the data to determine what to use and make decisions on how to present it in a meaningful and consistent way.
- As vaccine eligibility changed or a new vaccine product was authorized for emergency use, the Partner Communications team had to quickly convey changes, recommendations, and guidance to LHJs and providers. Over time, the team developed consistent processes to produce, obtain approvals from the appropriate CDPH SME to ensure consistency in messaging, and disseminate new or revised content for its communication channels (websites, webinars, FAQs, and email blasts). The webinars, which are still ongoing, run like a "well-oiled machine" and are rated highly by the hundreds of attendees.



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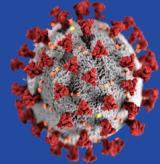
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- In May 2021, with demand decreasing and supply becoming more abundant, CDC changed its guidance and urged providers to “take every opportunity to vaccinate every eligible person,” according to the guidance document. CDC told providers they could use as little as one dose from a multi-dose vial and discard the rest. This represented a significant shift from earlier in the year, when, in efforts to maximize scarce vaccines, providers were encouraged to not waste a single dose. This caused a corresponding shift in communications to ensure providers understood the guidance and administered doses accordingly. According to one SME, providers had difficulty “shifting their mindset” from the previous guidance of administering every dose in a vial, to vaccinating a single patient even if it meant wasting the remaining doses in the vial.
- In July 2021, Partner Communications started the Medical Professionals Program / Crucial Conversations webinar series to boost the confidence of healthcare clinicians in talking with their patients about the vaccine. The goal was to equip health care providers with techniques to proactively talk with their patients about the merits of getting vaccinated. One SME explained that “this peer-to-peer opportunity was really useful for attendees to get up-to-date data and communication strategies for talking to patients.” Feedback from attendees indicated that they felt far more confident about having these conversations with patients after participating in a Crucial Conversation webinar.
- In July 2022, the VA58 public communications, community outreach, and external affairs workstreams moved from CDPH to the newly formed Office of Community Partnerships and Strategic Communications (OCPSC) within the Governor’s Office of Planning and Research (OPR). The Partner Communications workstream remained within CDPH.
- The VA58 Campaign, which reported to the Governor’s Office, conducted its own evaluation and, therefore a retrospective of its activities is not included in this AAR.

## Vaccine Allocation and Ordering

### Allocation and Ordering Adjustments Based on Vaccine Supply

- The federal government had communicated in 2020 that the supply of vaccine would initially be limited. Knowing that doses would initially be

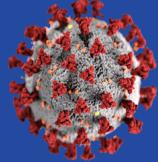


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limited to specific populations (such as health care workers), one leader explained that their “earliest moves were to devise systems to order vaccine and enumerate the eligible populations.” In preparation, CDPH familiarized itself with the CDC system (Tiberius) requirements for allocation, distribution, and administration data as well as considered its own potential vaccine administration solutions. Ultimately, CDPH decided to use an interim solution (CalVax) for initial vaccine ordering while its more robust solution (myCAvax) was still being developed.

- The Vaccine Task Force created an allocation framework workstream that included data analysis and scenario planning. In fall 2020, the Allocation Workgroup focused its efforts on enumerating populations, including all healthcare workers, critical infrastructure personnel, and other vulnerable populations that would likely be eligible to receive early vaccine doses. To support more detailed scenario planning efforts, they also created granular datasets with demographic and population information that were shared with the LHJs to assist with allocation planning. These datasets were used to model potential vaccine allocation scenarios based on variables such as vaccine supply and vaccine demand.
- At the beginning of the vaccine roll-out, in late December 2020, the State established an allocation process to accommodate the size and complexity of California's population and the large amount of vaccine providers. The allocation process involved multiple levels. Whereas smaller states received requests for vaccine directly from providers, California relied heavily on LHJs to help validate and approve orders from providers. First, the federal government allocated vaccines to California and other states. Next, California allocated vaccines concurrently to LHJs and Multi-County Entities (MCE), larger health systems with locations in multiple counties. Then, the LHJs allocated vaccine directly to enrolled providers, based on CDPH's allocation framework and guiding policies. Once COVID-19 vaccine providers submitted order requests, the LHJs reviewed and approved orders and forwarded them to CDPH for processing. Finally, CDPH submitted these orders to the CDC, who authorized them for fulfillment from the vaccine manufacturers. The timeframe for this complex process was just a few days.
- In the early months of the vaccination program, due to general vaccine scarcity, the weekly allocation of doses from the federal government to all states were far less than what states had ordered. CDPH had to determine

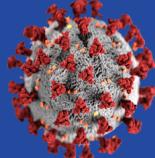


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how to re-allocate the limited supply it received to the LHJs and the MCEs. CDPH developed an allocation spreadsheet that displayed each county and MCE's total priority population (e.g., Tier 1A priority population of LTCF residents and healthcare workers) and the percentage of each county's share of its priority population relative to the statewide total. The spreadsheet was shared with the LHJs and MCEs in CDPH's weekly allocation emails. In addition, CDPH explained this allocation process in its weekly LHJ and provider webinars, and emphasized that vaccine supplies were very limited in an effort to modulate expectations. One leader commented that "we needed to be very transparent with the limited supply we were allocating."

- Despite these efforts to communicate as transparently as possible, when the LHJs and MCEs saw their weekly allocations and realized they had received fewer vaccines doses than they had ordered, many felt short-changed and dissatisfied. They were concerned about having an ample supply of vaccine to administer second doses while they continued administering first doses. This reflected the fact that not all counties fully understood how their allocations were calculated and apportioned. They raised their concerns to CDPH, and consequently CDPH staff spent considerable time fielding inquiries, communicating the calculation formula, and setting expectations around the limited vaccine availability. These challenges were specific to the environment of vaccine scarcity, in which demand for vaccine doses was high but supply was incredibly limited.
- During the first phase of vaccine administration, Pfizer initially provided 6 doses per vial with 975 vials to a box, then transitioned to 5 doses per vial with 1,170 doses per box. The Moderna vaccine shipped in coolers that held 1,000 doses. For both the Pfizer and Moderna vaccines, this quantity was more than some small providers needed, which required some counties to breakup packages and redistribute quantities of vaccine to minimize wastage. This challenge continued until the manufacturers reduced the number of doses in an order and CDPH implemented a planned, long-intended small-dose ordering process through contracting with a third-party redistributor in late Spring 2021.
- When the TPA was brought on board in February 2021 to expand the provider network, the allocation process changed. Initially, the TPA requested all existing enrolled providers to sign a contract with the TPA to

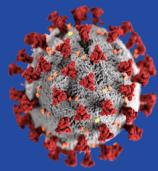


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be considered “in-network.” Once the existing providers signed the network contract, the TPA planned to eventually provide direct allocations only to in-network providers. However, as one SME noted, “the TPA never got all the contracts in place,” so enrollment never transitioned completely from the existing enrolled providers to all “in-network” providers. The enrolled providers who signed the TPA contract were considered “in-network.” The LHJs made direct allocations to the remaining “non-network” providers already enrolled with CDPH.

- In addition to instituting the network contract requirement, the TPA changed the allocation approach to a “push model,” a top-down approach in which the TPA determined allocations to providers based on populations in zip codes with the lowest HPI scores. This replaced the bottom-up approach that CDPH and the LHJs established to make allocations based on each local jurisdiction’s identified needs. The TPA requested the LHJs fill out weekly surveys to inform the TPA’s allocation decisions. Surveys included data points such as inventory on hand and inventory needed. However, LHJs were not satisfied with this process: according to one SME, LHJs spent a great deal of time filling out surveys for allocations, only to find that when allocations came in “they didn’t seem to match the survey inputs.”
- CDPH staff and its IT system consultants began work on the substantial number of process and system changes to support the “push model.” However, as one manager noted, when the TPA tried the “push model” many providers did not receive the quantities (either more or less) they needed, and subsequently abandoned the allocation approach. As one SME explained, “the push model never came to fruition,” and most of the system configurations that had been built to support it were never turned on.
- In late Spring 2021, CDPH conducted a provider survey to obtain feedback on the vaccine program and the allocation processes changes instituted by the TPA. Survey results indicated that LHJs were frustrated by a tedious enrollment and approval process and a lack of transparency in vaccine allocations.
- By July 2021, after the TPA had phased out and vaccine supplies increased, CDPH transitioned to a simplified order-based allocation process and added small order functionality to myCAvax. Each LHJ could now administer the vaccine program to fit its needs and capabilities and



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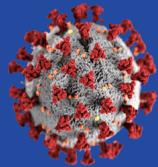
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providers could now directly order doses in small allotments (instead of needing their order being approved by their respective LHJs). Since by this point, the vaccine supply had shifted from scarcity to abundance, “providers felt they no longer had to hoard the vaccine” according to one SME. Another remarked on the mindset shift that took place with providers the mindset was “I know if I place an order now or wait to next week, I can have my needs met.”

## Vaccine Logistics and Distribution

### Emphasis on Building Cold Chain Management Capacity

- In Fall 2020, the CDC indicated in its [interim playbook for COVID-19 vaccinations](#) that the COVID-19 vaccines would be temperature-sensitive and have unique storage and handling requirements ranging from “refrigerated” (2° Celsius to 8° Celsius) to “frozen” (-50° Celsius to -15° Celsius) to “ultra-cold” or “ultra-low” (-90° Celsius to -60° Celsius). This information enabled CDPH and its partners to start planning how to meet these requirements, especially the “ultra-cold” requirement, which was unusual and harder to meet. The State began planning how to maintain the “cold chain” as vaccines were transported from the manufacturers to administration sites in order to prevent vaccine spoilage.
- Many groups collaborated on these topics. The Vaccine Task Force’s logistics team (which had been created in summer 2020) was responsible for vaccine inventory management, logistics, and distribution. This team identified supply needs for ancillary items not shipped with the vaccines such as from sharps containers and ultra-low-temperature (ULT) freezers. The team also identified the need for transport containers and data loggers to help maintain the cold chain.
- In October 2020, CDPH surveyed LHJs and hospitals to assess their existing cold chain capacities for refrigerated, frozen and ULT vaccines. Information collected included storage volumes and the availability of temperature monitoring and transport equipment. While many responding jurisdictions had some capacity to handle refrigerated vaccines, very few had the ability to meet storage and handling requirements for ultra-low temperatures. Approximately half of the responding LHJs indicated that they planned to obtain additional cold chain storage equipment, such as

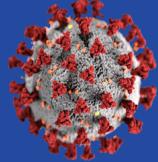


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ULT freezers. The State also made plans to purchase extra ULT freezers as a back-up.

- A year before the pandemic, CDPH had updated its Medical Countermeasures Plan, which one SME indicated had previously been “weak” on cold chain management. CDPH had staff conferred with equipment manufacturers on best practices for cold chain management to revise the plan and improve the State’s capabilities. The updated plan contained information on how to effectively maintain cold chain requirements for frozen medical countermeasures, including vaccines. CDPH staff reported that the plan informed the logistics team what would be needed to support vaccine distribution.
- Another aspect of the logistics team’s planning efforts included obtaining detailed storage and handling information directly from the vaccine manufacturers. Each vaccine had different requirements. Pfizer’s vaccine had novel ultra cold chain requirements, while Moderna’s vaccine had more traditional storage temperatures. When Pfizer and Moderna vaccines were first released in December 2020, they each had a shelf life of up to six months given optimal storage temperatures. Johnson & Johnson’s single-dose COVID-19 vaccine, approved for use in February 2021, had a shelf life of up to three months. All doses had to be used before they expired or they needed to be discarded.
- Per the cold chain management plan before vaccines arrived, CDPH used emergency purchasing authorization to acquire cold storage equipment, such as transport containers, data loggers, and dry ice. However, since other states were attempting to purchase the same items simultaneously, SMEs noted that in “hindsight we should have ordered a week or two sooner.” By the time Pfizer distributed its vaccine, the State had enough supporting transport containers and data loggers. It had also successfully purchased several hundred freezers and storage units for prisons, state hospitals, and developmental facilities.
- This was a complex technical environment to navigate. CDPH staff reported that due to being in an emergency environment and some regulations had been temporarily waived, “we were able to break through former boundaries and talk to companies.” This enabled CDPH staff to consult with CDC and Pfizer, who became “wonderful partners,” prior to FDA approval of the vaccine. CDPH established positive



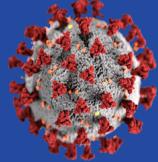
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relationships and were able to receive quick answers on technical vaccine questions, which helped the State better prepare.

#### Distributing the Vaccines Required Complex Logistics

- Distribution of the vaccine began in December 2020. Pfizer distributed its own vaccine, while Moderna utilized McKesson for distribution. National shipping companies, including UPS, FedEx, and DHL, transported the vaccine, maintaining cold-chain requirements during transport. For the first shipment of vaccines, LHJs received the vaccine doses and redistributed them to providers in their jurisdictions. The MCEs received their vaccine doses and redistributed them to locations within their organization. Subsequent distributions were shipped directly from manufacturers to providers.
- The CDC purchased ancillary supplies, such as needles and syringes, to distribute to providers who were administering COVID-19 vaccines. These were shipped separately from vaccine doses. With the CDC purchasing and shipping supplies in such large quantities, quality control issues affected some shipments to providers. Consequently, California procured backup ancillary supplies in case providers received defective CDC items, with both CDPH and DGS both making purchases. However, the State experienced similar quality control challenges in its orders, such as the purchase of needles that were incorrectly sized or the wrong type. This was due in part that those administering the vaccines, such as pharmacists, were not involved in purchase decisions. As one SME explained “a clinician would have been able to identify the [correct] safety need. We needed coordination and to make sure clinicians were involved in clinical orders.”
- Vaccine redistribution occurred most often in specific contexts: when providers need orders smaller than the minimum order size or for when large organizations (such as MCEs) receive their orders at a central depot before redistributing out to specific clinic locations. California providers experienced both of these scenarios, which prompted CDPH to develop vaccine redistribution procedures. In the first phase of California's vaccination program, the minimum order, which was over 1,000 doses, was a much greater quantity that some providers could use. Consequently, CDPH identified the need for some providers to break up orders and redistribute doses to other counties and providers.



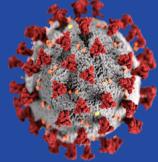
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- Redistributing vaccines, especially those with ultra-low temperature requirements, requires planning, proper equipment, and adherence to transport protocols to prevent vaccine spoilage. Due to this complexity, CDPH did not routinely authorize redistribution requests. In order to redistribute vaccine doses, providers needed to apply for approval, which involved signing the CDC's Supplemental COVID-19 Redistribution Agreement. Providers also had to confirm they would adhere to California's Redistribution Vaccine Management Plan, as well as demonstrate adequate cold chain management capabilities. Only after CDPH granted approval were providers authorized to redistribute vaccine doses.

### CDPH Created Additional Tools to Meet Providers' Supply Needs

- Starting in April 2021, the TPA's changes in allocation methodology to the "push" model, which coincided with a decline in demand, created a large oversupply of vaccine. This occurred because the vaccine was only distributed to the "in-network" providers who had signed the TPA contract, without accounting for their inventory on hand or throughput. Consequently, many small and large providers, including MCEs, started to receive more vaccine doses than they requested or needed. According to one SME, there was so much oversupply that many doses expired before providers could use them: "Nobody anticipated the decline in demand. We ended up wasting more than we would have." This situation might have been avoided if the supply had been distributed to all providers, both "in-network" and "out-of-network," based on each local jurisdiction's unique supply and demand needs, according to another SME.
- CDPH created a new online Vaccine Marketplace in May 2021 so that enrolled providers could request and exchange vaccine doses with each other directly and more efficiently. Previously, providers needed to submit redistribution requests to CDPH using manual spreadsheets. The Vaccine Marketplace, which was a new feature built into myCAvax, allowed providers to post their excess vaccine inventory as well as request short-dated vaccine doses (e.g., doses that were about to expire) from other providers. Although the State has no way to track how many of the requested doses were actually transferred for use by another provider, according to one SME, providers were very happy with this functionality.



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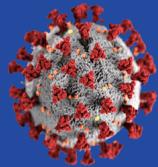
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CDPH subsequently expanded the Vaccine Marketplace to include the Mpoxy vaccine as well.

- The provider call center played an important role to help connect LHJs and providers who needed vaccine doses with those who had excess inventory. Call center agents screened providers for their ability to safely transfer and store vaccine doses, as well as provided information and resources to facilitate vaccine marketplace matches between providers. In addition, CDPH used its existing courier service for testing (Mobile Med) to transport vaccines exchanged through the Marketplace across counties. The provider call center helped LHJs and providers arrange the courier services.
- By late summer, Pfizer offered a new packaging option of 100 doses, in addition to its larger size 450-dose and 1,170-dose packages that could be ordered directly by providers. This small-sized option was intended to increase the availability of vaccines to smaller providers in more rural areas and decrease the number of wasted doses. When Pfizer began offering this reduced order size in August 2021, CDPH concluded lengthy plans to engage a Third-Party Redistributor, AmerisourceBergen, to facilitate distribution of smaller vaccine orders, a minimum order of 5 vials with the dosage varying by the Pfizer product, to those LHJs who wanted it. While some counties remained centralized in their vaccine distribution approach, most chose to use the redistributor to create small orders. Using the redistributor helped LHJs reduce their on-hand inventory, which minimized the administrative burden of inventory monitoring and the potential for vaccine wastage, at their distribution centers. Providers also benefited from this service since they were able to have small order of vaccine doses delivered directly to them, as opposed to centralized distribution through the LHJ. In January 2023, CDPH anticipates the redistributor will begin distributing small orders, with a minimum order of 5 vials comprised of either 25 adult doses or 50 pediatric doses, of Moderna.

## Vaccine Administration

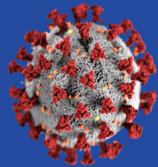
### CDPH Provided Supplemental Staffing to Expand Local Vaccination Capabilities



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- Early on in State's COVID-19 vaccination program, when doses began arriving in California in December 2020, many LHJs turned to the State with resource requests for vaccinators and clinic support staff.
- Several entities provided staffing resources, including the California National Guard (CNG), the Emergency Medical Services Authority (EMSA), private contractors, and the California Health Corps, a volunteer program designed to connect volunteers with providers in need of supplemental staffing. This volunteer program allowed nurses, medical technicians, physicians, paramedics, and other healthcare workers to sign up for volunteer shifts across the state. For additional discussion of Health Corps, see the Medical Surge chapter in this AAR. The vaccine staffing resources provided by private contractors included vaccinators as well as administrative, security, and data entry support. Vaccine staffing requests were managed by the Vaccine Staffing Deployment Team (whereas other types of staffing resources were handled by different teams).
- Vaccine staffing resource requests submitted to the State were processed by the Multi-Agency Coordination (MAC) group, comprised of leadership teams from CDPH, EMSA, and Cal OES. Within the MAC Group, the Vaccine Staff Deployment Team adjudicated vaccine-related staffing resources. As LHJs submitted staffing requests, the team determined how to best fulfill requests based on a number of different variables, including event type, location, and staffing type.
- LHJs submitted resources requests through the Medical Health Coordination Center (MHCC) and CDPH then routed these to the MAC Group. The State also implemented a technology solution built on the Salesforce platform to expedite this process. One team member noted that they had to build extensive “coordination and communication mechanisms using Salesforce” due to the complex coordination required with different stakeholders (including local, regional, and State teams) to determine the appropriate resources to deploy for vaccination events. For additional information see the MAC Group and Scarce Resource Allocation chapter and the Resource Requesting and the Public Health Ordering System chapter in this AAR.
- SMEs commented that “flexibility was crucial” and that the State was able to provide many different vaccination staffing resources to LHJs, even to those that were geographically remote. According to one SME, “we were able to serve all areas of the state, and the number of vaccinators



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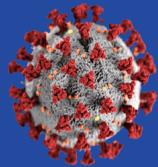
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deployed and the number of sites served was a huge success.” From January 2021 through January 2023, the State deployed over 7,800 vaccinators to 197 vaccination sites.

- Ultimately, the State-provided supplemental staffing resources allowed the LHJs to expand their vaccination activities beyond their existing capabilities. LHJs were able to “plug in” these staffing resources into their existing work structures and processes, which resulted in a successful hybrid model. In the words of one SME, one of the reasons the program was helpful was because it was a balance between “‘do it all yourself’ and “we’ll do it all for you.”
- Beginning in March 2021, vaccine staffing was no longer considered a scarce resource. The Vaccine Staffing Deployment Team phased out and CDPH’s two-person vaccine staffing team was able to meet all subsequent requests with its existing staffing contracts. At this point in the vaccination program, public demand for COVID-19 vaccines began to wane and State and local strategies began to shift towards finding ways to incentive people to get vaccinated. By December 2021, vaccine staffing deployment operations had been absorbed into the existing processes and systems within CDPH. LHJs and providers could also recruit volunteers to support vaccination events in three distinct roles—directors to administer clinics’ volunteers needs such as screening and scheduling, medical licensees to administer vaccines, and general support for the clinic. CDPH configured functionality in My Turn to support volunteer management for shift scheduling, communications, workflow, and reporting.

### Clinical Vaccine Safety Information Provided to Leadership, LHJs, and Providers

- Within CDPH, the IZB Vaccine Clinical team provided expertise and guidance on the clinical aspects of the COVID-19 vaccination program, such as dosage volumes and timing between doses, co-administration with other immunizations, side effects and adverse reactions, vaccine safety and vaccine efficacy. Their work intersected with the planning, logistical, and vaccine administration workstreams.
- The team participated in FDA and CDC meetings to stay up-to-date on vaccine clinical considerations, communicate guidance, and help answer questions. The clinical team developed a “systematic approach

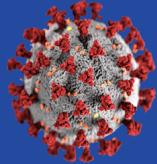


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to updating clinical communication, digesting it, and sharing it out." The clinical team established a successful process to receive the latest clinical information, understand it, and disseminate it to State and local audiences in terms that non-clinicians could understand.

- During weekly LHJ and provider webinars, team members presented vaccine clinical updates. The clinical team also created and monitored a dedicated e-mail box to provide LHJs and CDPH staff with clinical expertise.
- Traditionally, vaccine safety surveillance and monitoring begins at the federal level. CDC sends data for the team to aggregate internally for leadership. Team members remarked that "federal systems worked very well in surveillance of adverse events" for being, "unprecedented in depth, breadth, and speed of information." Early on in the pandemic, the system was tested by several potential adverse allergic reactions to a specific lot of Moderna vaccine in a mass immunization site in San Diego. The team served as the liaison between CDC and the LHJ for coordination and communication to carry out a small investigation that included the CDC, local experts, and the Western States Scientific Safety Review Workgroup. The investigation found that none of the individuals suffered life threatening events following administration of the vaccine. Subsequently, the Workgroup recommended that vaccine administration could resume in the four western states to maximize COVID-19 vaccination efforts.
- In April 2021, several cases of thrombosis with thrombocytopenia syndrome (TTS) were reported by those who had received the J & J vaccine. The CDC and FDA requested that providers report cases to the CDC/FDA Vaccine Adverse Event Reporting System (VAERS). CDPH set up a parallel reporting system, for which providers also notified their LHJ within one day of a detected TTS case and the LHJ then reported the case to CDPH. This allowed CDPH to monitor cases and make sure cases were reported to the national system.
- In May 2021, CDC investigated reports of myocarditis and pericarditis in young adults and adolescents after receipt of mRNA COVID-19 vaccines. Since this time, providers have reported cases to VAERS. The team monitors the data and prepares monthly reports for CDPH leadership that compares California with other states in terms of cardiac cases.

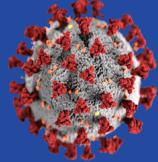


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#### Two Federal / Cal OES Sites Established to Provide Mass Vaccinations

- COVID-19 vaccines were also made available at two vaccination sites, sponsored by the Federal Emergency Management Agency, run by Cal OES and supported by CDPH. These two sites—in Oakland and Los Angeles—opened in early February 2021 and completed operations under the FEMA/Cal OES umbrella in mid-April 2021. The two sites then continued to operate for a short period of time by the LHJs.
- Cal OES provided the logistical planning and setup of both sites, including traffic control and food services. One week prior to launching both sites, Cal OES asked CDPH to provide pharmacy support. One SME noted that there was “no playbook for this.” Over the course of the week, CDPH created a pharmacy plan, recruited and trained staff, obtained cold chain shipping containers, positioned equipment, and transported vaccine doses to the sites. According to one SME, CDPH “is not staffed to run pharmacy operations” and “doesn’t have the pharmacists, nurses, doctors that you would expect” to operate a clinic pharmacy. Consequently, it was a challenge to hire and train clinical staff in a short period of time. Another SME reflected that CDPH could “have been brought in a lot earlier. They [Cal OES] didn’t bring in each LHJ until later and they should have been brought early too.”
- During the first week of each sites’ operations, only 2,000-3,000 vaccine doses were administered a day, but this ramped up quickly to maximum capacity in the second week to 8,000-9,000 doses per day at each site.
- To improve equity, outreach was conducted with community leaders who helped with advertising the sites. In addition, fully-equipped strike teams provided field immunizations via mobile clinics to further reach underserved communities and neighborhoods, focusing on sites where people congregated such as faith-based organizations, food banks, and senior centers. The Oakland site arranged for ride share companies to transport people.
- In Los Angeles, the site was overseen by a trained army unit, with a unified command group, that set up the infrastructure, including backup generators, and ensured proper handling and storage. Department of Defense medical personnel administered the vaccines. In contrast, the Oakland site was run by a number of collaborating stakeholders. The National Guard was only used for traffic management and did not

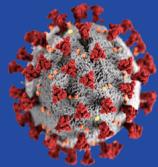


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participate in vaccine administration. Rather, at least 20 organizations supported the site, including staff from various state agencies, such as the Department of Forestry and Fire Protection (CalFIRE) and the California Department of Transportation (Caltrans). In addition to the Coliseum, other smaller sites were set up in Contra Costa and Alameda counties, including an ambulatory walk-in center and multiple community centers, to which Oakland supplied the vaccine doses.

- Unlike the Los Angeles site, the Oakland site was staffed by many State agencies, complicating coordination and communications., SMEs noted that during the early days of the site's operations, pharmacy operations were bifurcated as nurses "were mixing the vaccines on one side," while pharmacists and other nurses "handled storage and inventory management on the other side." Also, both sides reported to a nurse rather than a pharmacist, which is an atypical setup in a clinic pharmacy. This led to several incidents that deviated from standard vaccine protocols. In one instance, according to SMEs, local staff did not follow cold chain procedures, resulting in wasted doses. Another incident involved some wastage of vaccine doses by pre-loading too many syringes. SMEs noted that these incidents most likely would not have happened if there had been an expert pharmacist with expertise in running a large hospital pharmacy designated to oversee reconstitutions and preparing doses.
- Also at the Oakland site, an inexperienced physician manager instituted a filling policy which resulted in the underdosing of thousands of individuals. Initial hiring of experienced leadership could have avoided such problems. In hindsight the site should have "replicated a pharmacy with operational characteristics that specialize in preparing and storing vaccines."
- As a result of these incidents, CDPH sent staff to embed with and advise the pharmacy group at both sites. In addition to deploying pharmacists to both sites, CDPH sent an executive to provide high-level leadership at the Oakland incident command level. While these changes helped improve site operations and there were no other deviations from protocols, several SMEs noted in the future, if CDPH has a jurisdictional role to play (e.g., such as pharmacy operations) it should be included early on in planning and management discussions.

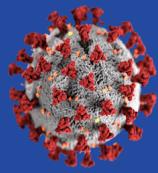


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#### Federal Retail Pharmacy Program Increased Public Access to Vaccines

- CDPH and its partners also had to stay abreast of vaccines doses arriving in the State through the Federal Retail Pharmacy Program. The federal government initiated this program in February 2021 to provide direct allocation of vaccines to large retail pharmacy partners, which offered another avenue for Californians to get vaccinated. The CDC worked with the State to select initial pharmacy partners for California, and partners were selected based on their number of stores, their ability to reach populations most at risk for severe illness from COVID-19, and alignment with California's vaccination plan. One SME explained that the CDPH pharmacy team "put a lot of work into an assessment of partner capacity to meet volume and coverage needs, which set the groundwork for the program and its success."
- CVS and RiteAid were selected as the first two partners in the Federal Retail Pharmacy Program. The following month, in March 2021, the program expanded to 7 more partners, including Albertsons, Walgreens, Safeway, and others. Three of these pharmacy partners were long-term care (LTC) specific pharmacy groups that provided vaccinations at LTC facilities. The LTC-specific pharmacy groups received federal doses and then allocated them to their member pharmacies who then provided vaccinations to LTC facilities. These vaccines earmarked for LTC facilities were not tracked by CDPH. The Federal Long-Term Care Pharmacy Program, which is described in the next section, represented a different program.
- The CDPH Pharmacy and LTC team worked with the pharmacy partners to coordinate on the vaccine program, disseminate information, and share toolkits. Each day, pharmacy partners reported to CDC the number of doses ordered by store location in CDC's VTrcks and the number on hand in CDC's Vaccine Finder. In addition, the pharmacy reported CDC-defined data elements related to vaccine administration to the State's CAIR2 registry. Because of these separate reporting streams, SMEs indicated it was not clear to the CDPH team where the doses were located and it was difficult to determine the accuracy of the administration data. The SMEs indicated that data reporting issues continue.

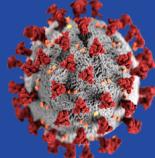


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#### Federal Pharmacy Partnership for Long-Term Care Program Offered Vaccinations to Priority Groups

- During the first phase of California's vaccination program, which was defined by vaccine scarcity, long-term care facility (LTCF) residents and residents of other congregate care facilities were one of the first priority groups eligible for vaccination. Healthcare workers and caregivers who worked in these facilities were also included in the first priority group. To facilitate vaccinations of the LTCF population and staff, the CDC partnered with two pharmacies (CVS and Walgreens), to offer on-site COVID-19 vaccinations. At skilled nursing facilities, pharmacists in protective gear went room-to-room to vaccinate residents who wanted to be inoculated. At congregate living facilities where residents were more mobile, vaccination clinics were held in the facility. The pharmacies provided end-to-end management of the COVID-19 vaccination process, including cold chain management, on-site vaccinations, and reporting requirements. CDPH's pharmacy team, which included a medical officer and pharmacist, partnered with the CDC to help manage the program's logistics and operations, and the planning work took place in November and December 2020.
- CDC's definition of LTC facilities included skilled nursing facilities, assisted living facilities and "other" facilities, which prompted the need for the State to determine which types of facilities in California could enroll in this program. Since California does not have a facility licensing designation specifically called "assisted living," the CDC definition did not directly match California's numerous types of congregate living settings, which are overseen and licensed by different State agencies depending on facility type. The State has approximately 16,000 congregate care facilities, which range from skilled nursing facilities (SNFs) to assisted living facilities to adult day care centers and other facility types. SNFs are medical facilities and often have the staff, infrastructure, and capacity to administer vaccines. In contrast, assisted living facilities can be small (e.g., 6 beds), do not have medical staff, and had to rely on external entities to vaccinate residents.
- The Vaccine Task Force established a Long-Term Care Facility (LTCF) Workgroup, which included representatives from the State's various licensing entities and other stakeholders in the congregate care landscape to help coordinate the program's implementation. In addition

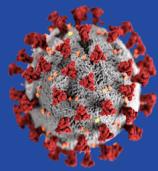


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to CDPH, the Workgroup included the California Department of Aging (CDA), the California Department of Developmental Services (DDS), the California Department of Social Services (DSS), and the California Department of Health Care Services (DHCS). It also included representatives from numerous LTC-affiliated associations. The Workgroup met several times to share information and coordinate efforts to ensure each department provided consistent guidance to its designated LTC facilities on vaccination administration to residents and staff. One SME noted that this coordination was a “key component” to successful implementation of the program.

- By mid-December 2020, nearly all LTC facilities in California had signed up for the program. These included SNFs, assisted living facilities, continuing care residential communities, adult family homes, and other facility types. Los Angeles County decided to opt out due to concerns that the federal program’s timeline was too lengthy and, consequently, no LTC facilities in Los Angeles County participated in the federal program. Los Angeles County had to enroll its facilities in myCAvax.
- Because CVS and Walgreens had little prior LTC experience, it was “important to develop and share as much guidance from CDPH and the licensing agencies as possible,” according to one SME. The CDPH pharmacy team held “intensive” meetings with the pharmacies and LTC representatives, and found that “the key to success was to be able to get stakeholders to engage with us really early.”
- When the Federal Pharmacy Partnership for LTC Program launched in late December 2020, it was during the winter surge in COVID-19 cases. This made it even more logistically challenging to vaccinate residents and staff in facilities that were closed and/or experiencing outbreaks of COVID-19. Many meetings were held to determine what public health guidance was needed to enable pharmacy partners to enter closed facilities. To help address these challenges, CDPH leveraged its existing Healthcare-Associated Infections (HAI) Program, which resides within the Center for Health Care Quality (CHCQ). The HAI program oversees the prevention, surveillance, and reporting of healthcare-associated infections.
- To supplement the federal program and expeditiously administer doses, the HAI team worked with the Workgroup, the pharmacies, and facilities to develop options on how to vaccinate in facilities experiencing



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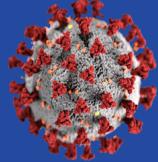
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COVID-19 outbreaks. This included developing guidance on “yellow zone vaccinations.” Yellow zones were specially designated areas in a facility where residents who had been exposed but not known to be positive for COVID-19 (either due to a pending test result or a negative test result while still within the incubation period) could be vaccinated.

- As vaccinations got underway, technology and reporting challenges emerged. Pharmacies reported data in two separate data sets that were not integrated. Pharmacies tracked locations in the CDC Tiberius system, while individual vaccination records were reported to the State’s CAIR2 registry. According to SMEs, this “made it nearly impossible to determine which people had been vaccinated in which facilities.” CDPH staff met with CDC system administrators in an attempt to find a way to match the datasets, but this was unsuccessful.
- The Federal Pharmacy Partnership for LTC Program ended in early April 2021. By this time, the two pharmacies successfully conducted vaccinations in 785 skilled nursing facilities and 11,883 assisted living facilities.

### In-Home Vaccinations and Transportation Services Provided to People with Limited Mobility

- In April 2021 the State began exploring how to offer vaccines to a difficult-to-reach segment of the population: Californians with limited mobility and/or fragile health. The State developed two innovative methods to reach this population: 1) in-home vaccination services and 2) transportation services to vaccine appointments. The program was launched in April 2021. California residents who needed an in-home vaccination due to limited mobility or fragile health or who needed transportation to a vaccine provider could make the request in My Turn or contact the CDPH Public Call Center for assistance.
- However, fulfilling these requests proved problematic due to a number of reasons. While LHJs were responsible for providing the in-home vaccinations via their existing programs and services, they had not been involved in the program design. Consequently, not all LHJs embraced the program. At the start of the program, LHJs were told that if they did not have sufficient resources, they could request a “vaccine ambulance strike team” to vaccinate homebound patients via the Medical Health Operational Area Coordination Program (MHOAC). However, one SME



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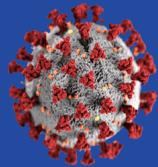
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indicated that “it is unclear if any LHJs ever needed to make that request.”

- The program’s workflow was complex. After requesting transportation or in-home vaccination services, Public Call Center agents determined the requestor’s eligibility and then emailed the information to the appropriate LHJ. LHJ staff then contacted the requestor to confirm eligibility and schedule the in-home vaccination. As one SME noted, “there were a lot of intermediate steps” and the entire process could take several weeks for in-home vaccination services. Over time, CDPH coordinated with the LHJs to streamline and improve the program.
- CDPH built a dashboard to monitor the program’s key performance indicators, including number and type of service requests. However, there was initially no feedback loop for the LHJs to report back to CDPH, and as a result the “number of appointments and people vaccinated was not as accurate as it could be.” Eventually CDPH added a process for LHJs to report on program usages on a monthly basis, but many LHJs, who were already stretched thin, struggled to submit information in a timely manner.
- As COVID-19 vaccines became more routine and readily available for homebound Californians, demand for these services diminished. The number of requests for services peaked in November 2021 and slowed to a trickle by July 2022. By this time, many LHJs requested to end the program, because it was challenging for staff to manage given the decreasing demand. According to one SME, some LHJs were reluctant to act as the “concierge service” to requestors who did not always meet homebound criteria. Additionally, with many local staff returning to their pre-pandemic roles, resources to keep the program running were limited. As a result of these factors, CDPH ended the program in August 2022.

### Mobile and Pop-up Clinics Expanded the Number of Vaccination Locations

- Beginning in the Spring 2021, as the State focused on increasing the number of vaccination sites in disadvantaged communities, mobile and pop-up sites became increasingly important. These solutions were utilized when an LHJ wanted to outsource operations to a third-party partner or be matched to a healthcare provider, and knew the basic site-level details, such as the address and estimated volume of vaccinations. Community-based organizations (CBOs), faith-based organizations (FBOs),

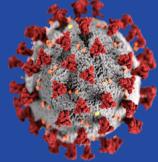


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employers, and schools could also request mobile or pop-up vaccination sites and supplies. The mobile clinic was a self-contained medical unit that could move between locations and administer up to 100 doses per day. The pop-up clinic could be set up and disassembled at a fixed indoor (e.g., inside a school) or outdoor (e.g., on a parking lot) site to serve at least 100 doses or more per day.

- CDPH used an intake form, developed in SurveyMonkey, to collect interest for mobile and pop-up sites from different types of entities (e.g., LHJs, CBOs, FBOs, employers, schools). In determining the clinic provider, CDPH first turned to the LHJ to assist in finding a provider. If the LHJ could not find a provider to run the clinic, CDPH attempted to match the request to a local provider or, as a final resort, deployed one of its contracted vendors to run vaccination clinics. The State contracted with various vendors including Snap Nurse for mobile van services and Optum and Color for pop-up clinics.
- When using contracted vaccination vendors, SMEs reported that it took “a lot of support to stand up this function” to create new processes, tools and tracking methods. This included a new process to match providers to requests, a process to inform LHJs of scheduled events in their jurisdictions, guidance documents, request forms, and tracking spreadsheets. The clinics proved to be so popular that CDPH was challenged to keep up with requests in a timely manner, until more resources were diverted to help process the requests.
- For pop-up and mobile vaccine clinics, the providers (whether the LHJ-identified provider or a contracted vendor) were responsible for staffing, while the LHJs were responsible to provide the vaccine doses. This dynamic created operational and logistical challenges. Early on when vaccine supply was limited, LHJs were reluctant to give up their scarce doses for events that they did not fully control. Furthermore, because they were supplying vaccines, some LHJs felt they should be able to supervise the vendors and providers. In retrospect, SMEs noted, it would have been helpful to have more clearly delineated roles and responsibilities: “we should have briefed the LHJs on what the vendors were doing and what we needed the LHJs to do.”
- The team looked for ways to increase attendance and focused on a “hyper-local strategy” to offer mobile and pop-up clinics in neighborhoods that would otherwise not have had access to vaccines.



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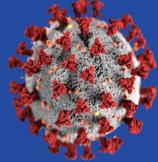
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The team scheduled events within walking distance where people gathered, including schools, churches, and markets. As one SME noted, “we were definitely responsive to what we were hearing on the ground. We kept hearing what the community needed and offered resources.” For example, when CBOs indicated that language interpreter services were needed, CDPH offered them.

- Additionally, the VA58 campaign offered supplemental services to support the mobile and pop-up clinics. These supplemental services included outgoing phone banks, digital ads, and on-site food trucks to provide food to those getting vaccinated. The campaign provided additional promotional support to make sure communities were aware of the clinics and to encourage participation. The team noted that signage and radio promotions “worked well and was needed. VA58 created these, which was important in the promotion of sites.”
- CDPH staff conducted a cost analysis of mobile and pop-up clinics and determined it cost hundreds of dollars to administer a single vaccine. The CDPH team noted that when “there was high demand and low supply of vaccine, the clinics made sense. But when demand decreased it was harder to justify.” The team found it challenging to make adjustments to their operations based on declining demand for vaccines. One SME questioned how to determine “the point of diminishing returns” for the program and wondering if, as demand the program’s services waned, if the responsibility for providing these services should remain with the State or with LHJs.

### CDPH Simultaneously Orchestrated the Rollout of Vaccine Boosters, Under 12 Pediatric Initial Series, and a Third Dose for the Immunocompromised

- In August 2021 the Vaccine Task Force workstreams began planning for the arrival of COVID-19 vaccine boosters, vaccine for those 12 and under, and a third dose for the immunocompromised. [The COVID-19 Vaccine Action Plan](#) was published in September 2021.
- CDPH surveyed the LHJs to gauge their readiness and capacity to administer boosters. Boosters were first authorized for those 65 and over followed by those aged 12 to 64.
- By this time, the LHJs and providers had scaled back their vaccination operations. Unlike during the initial series of vaccinations, the federal



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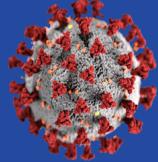
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government was not sponsoring mass vaccination clinics or providing other vaccination staffing resources to augment California's capacity.

- Consultants to the State conducted extensive supply and demand modeling that suggested the possibility there could be more demand for vaccinations than provider capacity to inoculate. Modelers also anticipated that provider capacity could be constrained due to the three events (vaccine boosters, under 12 pediatric initial series, and a third dose for the immunocompromised) all occurring between September and December 2021.
- CalHHS and CDPH conducted extensive outreach to the LHJs, large pharmacies, and enrolled providers to encourage them to increase resources to accommodate the anticipated demand. In addition, the CDPH Local Coordination Team met with LHJs individually to help them plan and prepare.
- Similar to the rollout of the initial vaccine series, CDPH determined and extensively communicated the expanded eligibility criteria to the LHJs, providers, and the public.
- Meanwhile, CDPH initiated system updates in myCAvax, My Turn, CAIR2, and the DVR to accommodate boosters, expanded pediatrics, and a third dose for the immunocompromised.
- This planning appeared to have paid off. While there were pockets of extended wait times to obtain a booster, the close rollout of the three new vaccine authorizations did not cause widespread or prevalent delays in obtaining a booster shot.

### CDPH Supported LTC Facilities to Administer Vaccine Boosters

- When booster doses became available around October 2021, CDC held discussions about instituting a Federal Pharmacy Partnership for LTC Program 2.0, but the CDC ultimately decided not to repeat the program. Consequently, in the Fall 2021 the CDPH pharmacy team stepped in to address the LTC facilities' needs. During the booster phase, one team member reflected that "we creatively used resources we had in lieu of the federal program."
- The pharmacy team published a [LTCF COVID-19 Vaccine Toolkit](#) for all congregate care facilities. This toolkit provided a comprehensive list of federal, state, and local vaccination resources. To best identify those



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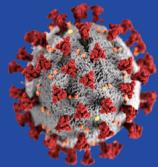
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facilities in need of assistance, the team conducted outreach through direct calls and email. The CDPH Public Call Center agents, the CDPH pharmacy team, and DSS representatives made over 26,000 calls to contact over 14,000 facilities statewide. The outreach linked the facilities with their LHJ or retail pharmacy for assistance with vaccination administration, but could request State assistance if all other available resources had been exhausted.

- CDPH tasked its Outbreak Response Team (ORT), which specialized in rapid resource deployment, to provide mobile vaccinations to those facilities that were unable to obtain assistance from their LHJ or retail pharmacies. One SME noted that it was a “challenge and success to try and figure out how to use resources that weren’t created for vaccinating small groups in facilities.”

### School-Located Vaccination Clinics Administered Vaccines to Children as Young as Age 5 and Their Families

- For pediatric vaccinations, the State built on experience in California and other states with school-located immunization over many years to reach California’s youngest populations. This experience suggested that working more closely with schools and supporting school-located vaccination clinics were the best strategies for improving vaccination rates in young people, particularly young people of color and those living in HPI Q1 and Q2 quartile zip codes. Based on this information, the Governor’s Office requested a schools-focused vaccination initiative. CDPH designed and executed the School-Located Vaccination (SLV) Campaign, which leveraged the experience and process for the mobile and pop-up clinics.
- The SLV campaign launched in November 2021 as part of a State-coordinated effort to support school-located vaccination events to make COVID-19 vaccines more accessible to students as young as age 5 and their families. CDPH coordinated COVID-19 vaccination events at interested schools in partnership with mobile vendors, including OptumServe, Mobile Med, and Color. These events were either open to students only or included families and community members, depending on the host site’s preference. Additionally, some sites offered influenza vaccines if available. Ultimately, 182 school sites from 36 school districts participated from 17 different local health jurisdictions; CDPH arranged

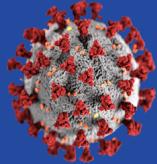


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371 vaccine events where 13,549 vaccine doses were administered. The program ended in July 2022.

- Working with schools in this capacity presented new challenges, and, according to one SME, there was a “learning curve on how and when to communicate with schools.” Since the timing to distribute marketing materials is crucial to the event’s success, “they should be sent to school sites at least 2 weeks prior to the event.” With insights from the California Department of Education, CDPH learned that it was best to direct all communication to the school district and local education agency staff. Also, having a designated CDPH team to manage communication and coordination was helpful. CDPH provided support by sharing marketing materials that other schools had used, identifying schools for food truck deployment, and identifying schools for additional media support. The team found that incentives, especially food trucks, increased participation at the SLV events.
- In general, the host school was responsible for marketing the event. The CDPH team created tools and messages for the school to send out, including a CDPH-generated URL or QR code pre-registration link that participants would use to pre-register in My Turn. Sometimes these links were not created until shortly before the event, which meant the school could not distribute the marketing materials in a timely manner. Initially, sometimes the links did not work or contained errors, which is why a SME noted that it is important to “clarify how event links will be checked for functionality and accuracy and by whom.” Eventually, the team streamlined the process to create a single URL for all age groups and events.
- Participation in school-located vaccination clinics waned over time with higher participation occurring at events scheduled shortly after the pediatric age group’s vaccine authorization date. After the initiative ended in July 2022, CDPH conducted an evaluation of the SLV events. Survey responses indicated that “overall the host sites were appreciative of the resource and opportunity for their community. The vendor staff was seen as professional, friendly, and helpful, especially when parents or host site had any questions.” The feedback included ideas for potential improvements, including sending out marketing materials earlier, hiring more multilingual staff, and providing more flexible clinic operations hours for students.



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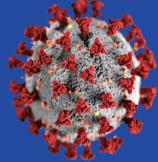
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- For a discussion of the Safe Schools for All program, see the Policy Development and Guidance chapter in this AAR.

## Vaccine Incentives

### Vax for the Win Campaign Offered Cash Prizes and Vacations

- As vaccine supply grew and demand began to fall, the State recognized the need for a new strategy. In May 2021, in order to generate demand for vaccinations the State created an incentive program. Known as the “Vax for the Win” campaign, the State conducted a randomized lottery for 15 persons to win \$50,000 each, ten people to win \$1.5 million each, and a final drawing for six individuals to win vacations to popular California destinations including Anaheim, San Diego, and San Francisco. The vacation giveaway was intended to remind residents to revisit the State’s landmarks when the state reopened.
- The State had never conducted this type of campaign and had just 3 weeks to develop and implement it. CDPH staff met with California State Lottery and Gov Ops Agency representatives to devise a plan, determine how to extract data from the immunization registry (CAIR2), de-identify it, and provide it to the Lottery so they could draw names. The team created trackers, processes, and call scripts over a weekend; “we set up everything up to when the Governor drew the balls on camera.”
- To make sure that all eligible individuals were included, the team worked to ensure the accuracy of the datasets. CAIR2 data was used to determine eligibility and individuals who had received their first dose of a COVID-19 vaccine were automatically entered to win. However, not all vaccinated Californians were represented in the registry, and the team worked hard to enumerate these “non-traditional submitters,” which included individuals who had received federal doses that were not submitted to the California registry. The team worked with the U.S. Department of Veterans Affairs to obtain veterans’ data and ensure that all eligible Californians, including those who were undocumented, had a chance to win.
- There were many privacy considerations. The program team worked with CDPH’s Office of Legal Services to ensure adherence to privacy requirements and data-use requirements. The team also worked with the CDPH data warehouse administrators to de-identify data and have it



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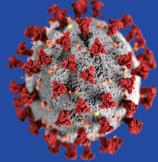
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validated by a contractor before it was passed on to the lottery. According to one SME, “everything was documented to ensure a fair lottery,” and CDPH also asked the California Department of Tax and Fee Administration (CDTFA) to conduct an audit of the processes they had put in place.

- To promote the campaign, the State relied primarily on radio ads. However, when it came to contacting winners, the team ran into challenges. Many winners would not answer their phones, and when they did, many initially “didn’t think it was real.” Eventually, CDPH was able to locate all 25 monetary winners and distribute their cash awards. However, the vacation winners proved more challenging and 2 of the 6 vacation packages were never claimed. According to one SME, people were more excited about the cash prizes, but the dream vacations “were too complicated,” due to the tax implications for the winner.
- “Vax for the Win” was an important experiment, but its effectiveness is difficult to evaluate. One SME noted that many jurisdictions nationwide implemented different vaccine incentive programs, which should be evaluated along with the State’s programs, to determine the most effective models to deploy for future pandemics.

#### You Call the Shot Campaign Issued Gift Cards

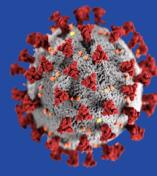
- As part of the “Vax for the Win” initiative, the Governor’s Office also sponsored the “You Call the Shot” incentive campaign, which gave away \$50 gift cards to eligible Californians who received their first COVID-19 dose between May 27 and July 18, 2021. “You Call the Shot” was not a lottery program but was designed to encourage the remaining unvaccinated individuals to get vaccinated. After receiving both shots, recipients received a code and link to redeem their virtual gift card online.
- Concurrent with the development of “Vax for the Win,” CDPH had three weeks to implement the gift card giveaway. This involved identifying a company that could contract with the State, supply a large number of gift cards, and provide a variety of card types (e.g., gas, grocery, and ATM) that recipients could redeem statewide. CDPH contracted with Blackhawk Network and structured the arrangement so that any excess funds for non-redeemed cards would revert back to the State.



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- The team encountered several data challenges during implementation of “You Call the Shot.” When the team examined the CAIR2 data, they discovered approximately 400,000 records without personal contact information, giving them no way to contact those individuals who were eligible for a gift card. A data strike team helped with data clean-up as part of the Digital Vaccination Record data remediation efforts, which reduced the number of records without contact information to 120,000 records.
- Another data challenge involved what data would be exchanged with the gift card vendor, since legally, information about eligible Californians could not be shared due to HIPPA privacy laws. Consequently, the vendor and CDPH collaborated on a validation process that could maintain patient privacy. The vendor issued the individual redemption codes and sent the file to CDPH to manage the redemption process. CDPH then sent the unique code to the recipients, who would then enter the code for redemption. Due to a file preparation glitch, a small number of Californians received multiple gift card codes. The public call center supported customers with their redemption issues and questions, including handling inquiries in multiple languages.
- To communicate with recipients, the team used both email and SMS alerts, as well as mailers with e-codes for eligible individuals who did not have an email or mobile phone on file. CDPH sent reminders at periodic intervals, encouraging Californians to get vaccinated, complete their full vaccine series, and redeem their gift card. While CDPH anticipated that people would “flock to redeem the cards,” this was not the case. Almost 2 million people received vaccinations during the gift card eligibility period, of which 36.9% claimed their gift cards.
- In retrospect, SMEs pointed out several obstacles that contributed to this low redemption rate. First, many recipients did not respond to CDPH’s “nudge process of reminders,” which required them to proactively enter the redemption code once they had received their second dose. Moreover, many LHJs had simultaneously designed their own incentive gift card programs where Californians could receive a card immediately after obtaining their first vaccine.
- After the conclusion of the “You Call the Shot” program, the team attempted to evaluate its effectiveness, but did not find a robust way to do so, since it ran concurrently with the lottery draws and it was not



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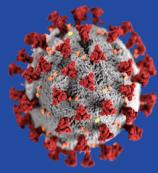
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possible to distinguish each initiative's direct impact on vaccination rates. However, anecdotal evidence suggests that vaccination rates, which had been declining quickly, might have slowed in their decline during the time both programs were active."

#### Vaccine Fiscal and Legal Considerations

- See the Fiscal Administration and the Legal Administration chapters in this AAR.

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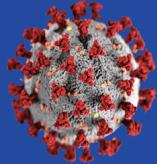


# Equity

This section describes equity considerations specific to this chapter.

## CDPH Established Innovative Vaccine Equity Policies

- When vaccines arrived in California in December 2020, the supply was insufficient to immunize all the eligible population that wanted vaccination. The Drafting Guidelines Workgroup focused on developing fair, equitable, and evidence-based guidelines that prioritized those who should be offered the vaccine initially until the capacity to manufacture and administer the vaccine increased. In the initial phase, CDPH worked with the LHJs on strategies to reach the CDC-defined eligible populations. This included enumerating eligible populations (e.g., health care workers or farm workers) by county and including that data in early allocation decisions.
- As vaccine supply became more abundant, CDPH focused on strategies for prioritizing allocations, broadening access to vaccines, and conducting outreach to communities at greatest risk for COVID-19. This included expanding the provider network in healthcare, retail pharmacies, and public health settings that could administer vaccines to the broadest swath of the population.
- In early March 2021, [the State announced](#) that it would set aside 40% of vaccine doses for the hardest-hit communities and established the Vaccine Equity Metric (VEM) to help increase vaccinations in those communities. This approach inaugurated a “laser focus on equity” in recognition of the fact that certain communities, such as low-income, Black, Latino, and Pacific Islander, were disproportionately impacted by COVID-19 with higher rates of infection, hospitalizations, and deaths. As of March 2021, 40% percent of COVID-19 cases and deaths had occurred in the lowest quartile of the Healthy Places Index (HPI), which provides overall scores and data that predict life expectancy and compares community conditions that shape health across the State. This index explores local factors that predict life expectancy and compares community conditions across the state. ZIP codes range from less healthy community conditions in Quartile 1 to more healthy community conditions in Quartile 4. The Vaccine Equity Metric is tied to the four HPI quartiles and combines HPI with CDPH-derived scores.



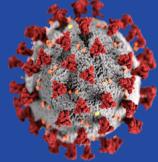
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- SMEs agreed that California's establishment of this vaccine equity metric was groundbreaking and innovative. "We were the first State to do that, and it was huge and a game changer" one SME commented, emphasizing California's genuine investment in and commitment to vaccine equity. Another commented that "it was a landmark milestone" that increased the visibility and accountability of policy. Another SME added, "it was the best thing we could have done and did do, and we should have done it much earlier."

### CDPH Used Data and Technology to Improve Equity

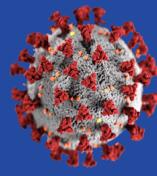
- Vaccine equity initiatives were linked to data, and in the words of one expert, "always went hand in hand." In November 2021, CDPH established a vaccine data equity team comprised of five epidemiologists dedicated to analyzing and reporting on vaccine equity data by a number of key indicators, including vaccination rates by age, race, ethnicity, and HPI quartile (among others). This team enabled CDPH to closely monitor vaccination rates and rapidly identify inequities, such as quartiles, neighborhoods, or communities whose vaccine uptake lagged behind State averages. The team regularly communicates and collaborates with CDPH and LHJ teams and programs, such as the public-facing Vaccinate All 58 Campaign, who use the data to inform their equity initiatives. Summary vaccine equity data is reported weekly to the public dashboard, as well as shared with CDPH leadership, providers, and LHJs to help identify equity trends and gaps.
- For instance, based on vaccine equity data, the State invested in mobile and pop-up vaccine providers to administer doses at convenient sites, such as schools, churches, and grocery stores, with easy access in terms of language access, hours, and walk-in availability. Using data from My Turn, CDPH was able to determine the best location for these clinics. It also reserved vaccination appointments Statewide for target populations. Furthermore, an equity-focused outreach initiative targeted counties with the highest Black and LatinX unvaccinated populations, using census-tract level data, to generate demand for vaccines at the neighborhood level. The State also established a robust community-based organization (CBO) network and grant program, which was used to address equity gaps. In a "constant positive feedback loop," vaccine data was communicated and used to create, implement, and monitor many equity initiatives.



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- Additionally, vaccine data was used to apply an equity lens to provider enrollment efforts, for instance, by focusing intensive provider outreach and enrollment efforts in HPI quartile 1 and quartile 2 zip codes. According to one SME, “we were making sure we had providers enrolling in the program located in rural areas and those zip codes.” This was especially true for pediatric providers. When the initial pediatric population became eligible for vaccination, CDPH mapped out pediatric providers Statewide and, using equity data, identified under-represented areas where more provider outreach was needed.
- This data-driven approach was facilitated by the State’s new vaccine scheduling system, My Turn (the system is discussed in more detail in the Vaccine Technology section below). My Turn facilitated equity initiatives by capturing the data that was used to drive and measure the success of vaccine equity work, especially the efforts of community-based organizations. While the legacy immunization registry, CAIR2, had the functionality to collect race and ethnicity data, it only offered five broad categories; these are referred to as the “OMB” categories since they are designated by the federal Office of Management and Budget Standards. The OMB categories have one category for ethnicity, and five minimum categories for race (Black or African-American, Asian, White, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander). However, since My Turn was built from scratch, it enabled CDPH to collect more granular and specific race and ethnicity information—for instance, Filipino or Chinese—in addition to collecting occupational data and other data fields that CAIR2 was unable to. With this granular data, the vaccine data equity team was able to perform more sophisticated analysis on vaccine trends. However, since CAIR2 (and not My Turn) remains the “system of record” for California’s vaccination data, ultimately the more specific categories in My Turn were “rolled up” and aggregated back into the five minimum categories.
- Ultimately, SMEs felt that a major success of California’s COVID-19 vaccination program was “not only making sure that we had the data to prove who needs to be vaccinated, but providing the resources so they could get vaccinated.”
- Despite the large improvements made in vaccination data quality challenges remain. My Turn data only reflects a subset of the population, and does not include data reported via third-party systems, such as



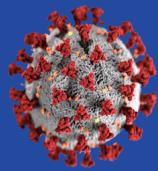
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Electronic Health Records (EHRs) or other systems used by the mobile and pop-up vendors.

- For a discussion of equity in the context of various workstreams, see the Analysis of Activities section above.

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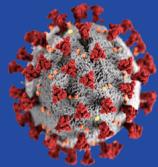
# Data and Technology

This section describes data and technology specific to this chapter.

## Vaccine Data

### Early Vaccine Data Quality Issues Related to Reporting Challenges

- When the first Pfizer vaccine doses arrived in California in mid-December 2020, CDPH suddenly found itself under scrutiny from the public and State leadership, who wanted to know with granularity where vaccines were located and where they had been administered. According to one SME, everyone wanted to know where the vaccine was, “and we couldn’t tell them with precision.” While CDPH tracked how many vaccines were being ordered and shipped to providers, “we couldn’t sync the numbers between orders shipped and what was administered.” SMEs pointed out that vaccine doses do not have UPC codes or GPS trackers. However, in the context of vaccine scarcity “every single dose counted,” and being unable to show precise vaccination data, this created a perception that California’s vaccination program was struggling and that providers weren’t administering doses quickly enough.
- This lack of visibility into vaccine administration data was the result of a number of concurrent factors, including data system limitations, new reporting requirements that providers struggled to meet, misaligned provider reporting structures, and lack of a unique provider identifier that matched providers across data systems. The inability to provide detailed vaccination data “exposed this whole faultline,” according to one SME. For instance, the legacy CAIR2 immunization registry did not offer the needed specificity. As one SME explained, while CDPH had many meetings about CAIR2, no one raised the issue of how difficult it would be to track vaccines by specific codes, “which led to big problems in the vaccination data.” As a result, CDPH was unable to show the link between vaccine ordering, shipment, and administration data.
- Additionally, providers of COVID-19 vaccinations found themselves in a new paradigm in which they were required to report doses administered to the registry within 24 hours. Historically, reporting immunizations for other disease conditions had been voluntary. Some providers struggled to meet the new reporting requirement and used incorrect reporting IDs or did not



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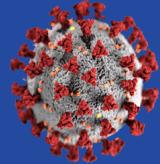
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submit IDs. Some did not have CAIR2 accounts and needed to establish them. CDPH had to create new business processes to track provider reporting compliance, and was hampered by the difficulty in matching provider IDs from the ordering system, myCAvax, with the immunization registry.

- Additionally, the centralized reporting practices used by national pharmacy chains and large, multi-county entities such as Kaiser and Sutter contributed to the lack of visibility into vaccination data. These types of providers were submitting their vaccination data to the registry under their corporate IDs (as they had always done), but this made it appear as if all of their vaccinations were taking place in at one centralized location, rather than the actual patient care sites. As a result of these centralized reporting practices, CDPH was unable to identify where these doses were being administered.
- Lastly, due to the initial “hub and spoke” allocation model, CDPH also lacked visibility into vaccine transfers. For the first allocation, doses were delivered to LHJs, who then transferred them to providers. The new vaccine management system (myCAvax) that was being built did not yet have the functionality to record transfers, so CDPH asked providers to record transfers in a SurveyMonkey form. However, this created inaccuracies due to mix-ups between location and organizational codes, and the fact that vaccines might have been transferred multiple times.
- Ultimately, the poor quality of vaccination data and lack of visibility into where vaccines were actually being administered was due to a number of complex factors. Yet SMEs acknowledged that this “was not an easy soundbite to report” and “not a great answer” to questions from leadership about the location of vaccine doses in California.

### Data Strike Team Initiative and Improved Reporting

- In January 2021, when State leadership contracted with the TPA to help expedite California's COVID-19 vaccination program, one of the first initiatives established by the TPA was the Data Strike Team. This team, composed of consultants, conducted intensive provider outreach and troubleshooting to help providers submit doses to the immunization registry and offer support to those who were struggling to do so. The Data Strike Team called thousands of providers and helped sort out “these very intricate, tedious issues,” including identifying barriers to reporting and



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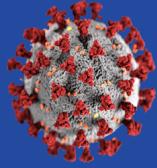
finding solutions, such as helping providers find their correct IDs. The team was also able to onboard new providers to My Turn, and engage small providers who had not been reporting before.

- Additionally, the team worked with national pharmacy chains and multi-county entities to report their data by individual location, as opposed to under one centralized ID. This included an unprecedented and successful effort to re-map and re-code historical data for several MCEs. According to one SME, it was a “massive effort to trace back and provide enough granularity” in the vaccination data, and one that CDPH could not have accomplished without this assistance. Following this substantial effort, vaccination data quality and timeliness improved dramatically.
- Ultimately, the State's early struggles with vaccination administration data revealed the challenges with being a recipient of data that is not verified or quality checked. As one SME noted, “we don't collect the data, we just receive the data,” and more could have been done earlier to encourage and educate providers on how to report accurate, consistently coded vaccination data.
- With the passage of [AB 1797](#) (effective January 2023) providers will be required to report race and ethnicity information for each patient in the immunization registry to support assessment of health disparities in immunization coverage.
- For a further discussion of data and reporting, including test data, see the Data and Reporting chapter in this AAR.

## Vaccine Technology

### California Immunization Registry (CAIR2)

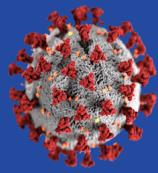
- The California Immunization Registry (CAIR2) is the State's immunization registry—a secure, web-based database that stores patients' immunization records. This legacy system is the State's primary registry. However, at the start of the pandemic, San Diego County and San Joaquin County did not participate in CAIR2 but maintained separate registries: the San Diego Immunization Registry (SDIR) and the San Joaquin County RIDE/Healthy Futures (RIDE) registry. Collectively, these three systems are called CAIR.



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- Historically, the option for California providers to submit their vaccination data to CAIR2 was mostly voluntary, but this changed with the arrival of COVID-19 vaccines in early December 2020. In order to administer COVID-19 vaccines in California under the federal provider agreement, providers were required to report doses administered to the immunization registry every 24 hours. Subsequent State legislation mandated this reporting through 2025 (AB 1797, chaptered 2022). If the provider does not report this data, it loses its eligibility to administer COVID-19 vaccines. Consequently, many of the business processes CDPH had in place for optional reporting no longer applied. CDPH had to create new processes to identify providers who were not reporting their vaccination data.
- Prior to the pandemic, vaccination data sent by providers could be lost if CAIR2 was down or overwhelmed by a large influx of data. The new reporting requirements for COVID-19 vaccine administration created an urgent business need for CDPH to be able to receive, queue, and audit vaccination data.
- The team accelerated the implementation of a “message broker” software tool in December 2020 to help expand CAIR2’s processing capacity and prevent the loss of data messages. CDPH also upgraded the CAIR2 hardware, added a cloud-based data warehouse (Snowflake), and made other improvements including enhanced integrations. Since CDPH needed to report vaccine doses administered for the entire State, CDPH also created a mechanism to report on the doses in SDIR and RIDE. CDPH built solutions to identify and remove duplicate records. One SME noted that the “implementation of the message broker was key and it’s hard to remember not having it. If things go wrong, we’re still getting data. It’s a real comfort.”
- In addition to tracking vaccine data, CAIR2 serves an important public health function by allowing providers to query the database. For instance, health care providers with access to the system can query vaccination records for their patients. In February 2021, the volume of queries increased as providers sought information on their patients’ vaccination rates, many of whom were newly vaccinated. The number of query transactions was so large that it started to interfere with CAIR2’s capacity to process the vaccination data submissions—not just for COVID-19 immunizations but other immunizations as well. As one SME pointed out, “in terms of sheer volume, we went from a sleepy little town to New York



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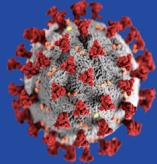
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City in a short period of time, to the extent that we were able to process that volume."

- During February and March of 2021, the significant increase in electronic data traffic produced a huge backlog of unprocessed doses and vaccine history queries. Over a six-week period, the State engaged internal IT and vendor resources to remediate the issues, finetune the application and database, reconfigure the hardware, and increase the number of production servers from 16 to 48.
- While these State and vendors resources were helpful, they did not all necessarily understand the complexity of the registry and the ongoing non-COVID-19 immunization functions that had been operating for more than 20 years. According to one SME, the "focus was on COVID processing," and the changes made precipitated additional work to correct and update CAIR2's non-COVID-19 functionality.
- Improvements continue to be made to the State's immunization registries. In April 2022, San Diego migrated to CAIR2, leaving only the one remaining county reporting separately. Efforts are underway to better share data between RIDE and CAIR2.
- Additionally, a technology project is underway to deploy a new immunization registry called CAIR3 that will offer improved statewide reporting and other needed functionalities.
- For a discussion of CAIR2 within the context of enterprise technology, see the Enterprise Technology chapter in this AAR.

#### myCAvax

- In late 2020, with the impending arrival of COVID-19 vaccines, the State began planning for a new vaccine management system. Following a rapid challenge-based procurement, the State contracted with Accenture to build myCAvax, which would become California's cloud-based vaccine management system for provider enrollments, provider registrations, vaccine allocations, ordering, and shipments. Since myCAvax was not yet ready in November/December 2020, CDPH used PrepMod/COVIDReadi to bridge the gap. This temporary solution allowed providers to enroll in the vaccination program while myCAvax was in the procurement and development process.



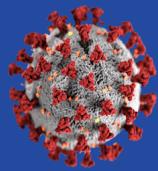
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- In mid-January 2021, CDPH launched the myCAvax initial provider enrollment functionality. This was a major milestone and “huge success” since it automated the previously manual provider enrollment process. myCAvax made this process much more efficient since the system automatically checked enrollment information against current state licensing board data. CDPH and Accenture continued to build and release additional functionality, “working non-stop to get the system up and running,” as one SME noted. Ordering functionality was made available in myCAvax in mid-February, and PrepMod/COVIDReadi was subsequently phased out. Integration between myCAvax and the immunization registry, CAIR2, occurred in March 2021. This was all accomplished in a highly accelerated timeline that was unprecedented for a State of California technology implementation.
- At its height in May 2021, the myCAvax contractor team had approximately 200 consultants working on systems implementation, training, helpdesk, and other support. Working with State staff also established a robust project communications and project management effort. The team would regularly disseminate release notes to inform providers and LHJs of updates, bug fixes, and new functionality. The team also provided standing updates at the regularly-scheduled weekly LHJs webinars, and held weekly in-depth “office hours,” during which LHJs and providers could ask questions and receive system support. Overall, program communication and project management were successful, with CDPH and Accenture working together in close partnership, which, according to one SME, was “the key to success.”
- The myCAvax project team, including State and contractor staff, continue to build and release functionality in response to changing pandemic needs and new vaccine products. As of January 2023, the system has over 9,000 providers enrolled and has been used to order over 59 million COVID-19 vaccine doses.

#### My Turn

- In January 2021, it became clear that the LHJs were not going to use the mass vaccination clinic tool (PrepMod/COVIDReadi), and were exploring other software options. Los Angeles County, for instance, considered building its own COVID-19 management system. CDT leadership recognized there would be challenges with data reporting if separate local and Statewide systems were developed, so they asked CDPH to

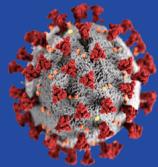


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collaborate with Los Angeles County on a Statewide solution. The team quickly determined the requirements and amended the existing myCAvax contract for Accenture to develop a vaccine clinic and patient appointment system.

- This new system, called My Turn, became the Statewide “front door” that would allow Californians to assess their eligibility for the vaccine, search for vaccine clinics, and book their appointments. The My Turn team had many key stakeholders, including IZB, CDT, LHJs (especially Los Angeles and San Diego Counties), and others. The system went from concept to go-live in 10 days and launched on January 18, 2021.
- Initial functionality was very limited and needed manual intervention behind-the-scenes. For instance, providers were not initially able to create clinics in the system. Instead, they transmitted MS Excel spreadsheets to CDPH contractors, who created and managed the clinics in My Turn behind the scenes. As one SME noted it was “like building the plane as we were flying it.” Many more features and modules were added over time. In 2021, My Turn had 112 releases where a typical project of this scope and size would have two releases per month or 24 releases per year. According to one SME, “the scale and speed at which we had to develop functions were compressed.”
- My Turn was implemented in two key phases. Initially, when the vaccine was in scarce supply, the system was configured to moderate demand with eligibility restrictions (e.g., co-morbidity, occupation, age) so that Californians could determine when it was “their turn” to obtain the vaccine. The team continually made updates to the system as eligibility restrictions evolved and eventually relaxed. During this period, the team also had to create a “geofencing” functionality so that when individuals entered their address, My Turn only showed clinics within their county of residence.
- In the second phase of the project, as vaccine supply increased and more Californians were eligible for the vaccine, My Turn was used to help generate demand for vaccines. Consequently, functionality had to be created for users to access walk-in and mobile clinics and for CDPH to conduct equity outreach. Over time, My Turn added the ability for Californians to request other services (such as transportation to a vaccine appointment) as well as functionality for providers and LHJs. Eventually, My Turn included an online portal for LHJs and providers to receive



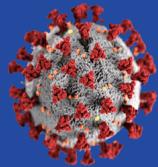
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inventory, assign inventory to a location, and capture vaccine recipient information to report back to the immunization registry. The My Turn clinic module enabled providers to establish and manage their clinic, and manage the distribution, scheduling, staffing, recording, and reporting of their vaccine administration.

- SMEs noted that a major accomplishment was the successful creation of interfaces between My Turn and third-party electronic health records systems. This was a “huge lift” to figure out how My Turn would interact with thousands of third-party systems, from medical hospitals to large multi-jurisdictional providers such as Kaiser and Dignity Health.
- My Turn cannot pull data from temporary clinics, such as mobile vans, pop-ups, or school-located events. Consequently, staff working on mobile and pop-up clinics had to track data manually (or use another system called Color) to determine vaccines administered.
- Similar to the myCAvax project team, the My Turn team established a regular communications cadence. The team provided standing updates at the regularly-scheduled weekly LHJs webinars, and held weekly in-depth “office hours,” during which LHJs and providers could ask questions and receive technical support. Additionally, My Turn provided weekly briefings to the Legislature.
- Ultimately, My Turn represented a milestone in the pandemic response. With a Statewide solution that LHJs were required (for some time) to use, the State introduced a novel model, which involved a joint partnership between CDPH, Los Angeles County and San Diego County LHJs. The two LHJs provided important health department input into the system’s development. As one team member noted, it was a “successful strategy born out of frustration.”
- As of August 2022, Californians used My Turn to schedule over 10.7 million appointments and intake for 3.4 million walk-in appointments, out of the more than 90 million doses given statewide. My Turn is available in 14 languages. The My Turn system was designed to mirror the accessibility of the State’s Medi-Cal system, which is available in California’s threshold languages.

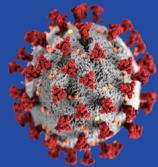
#### Digital Vaccine Record



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- In July 2021, the Governor mandated that all state employees and on-site public and private health care workers either be vaccinated against COVID-19 or get tested for COVID-19 at least weekly. In addition, the Governor issued the nation's first statewide vaccine mandate for schoolchildren, starting in fall 2021. Concurrently, many businesses, including restaurants, bars, gyms, and other businesses, began requiring consumers to provide proof of vaccination.
- As mobility became more dependent on providing proof of vaccination, many individuals found themselves in a bind. The paper cards issued by vaccine providers were vulnerable to being lost or damaged. CDPH quickly became inundated with calls and requests for assistance to obtain vaccination records from the State's immunization registry. Because only a handful of staff were historically assigned to research to this type of request, responses typically took 2-3 weeks, which was not sustainable with the public's growing need to show proof of vaccination. Consequently, the State decided to implement a digital solution to allow individuals to access and use their own vaccination data.
- In June 2021 the State implemented the Digital COVID-19 Vaccine Record (DVR) for Californians to readily access their vaccination record at <https://myvaccinerecord.cdph.ca.gov> in eight languages. This web-based application taps into immunization registry (CAIR2) data and delivers a DVR with a scannable QR code using the SMART Health Card framework. When information entered matches information already in CAIR2, a confirmation is sent by SMS or email to the resident with a link to retrieve their DVR. Users can save the DVR to their phone or print out their record when needed for travel, at restaurants, or other venues.
- This project represented a collaborative effort between CDT's Office of Enterprise Technology and CDPH, with cross-organizational governance. The portal was managed by CDT. The backend data and remediations, needed to support the solution, were stood up and enhanced by CDPH. The solution's development was supported by several vendors already engaged on other COVID-19 initiatives.
- To access their DVR, users need to input their first name, last name, date of birth, and phone number or email address. The user can access their DVR when 4 of these fields match a record in CAIR2. When the DVR launched, CDPH soon learned that the phone and email data in CAIR2 frequently did not match what the user entered in the portal. When the

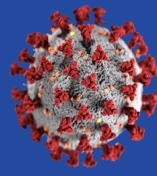


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public attempted to access their DVR, the success rate was only 47%. This was due to several reasons, including the fact that when providers vaccinated their patients, they usually submitted the patients' home phone number to the registry, whereas users input their cell number into the DVR portal. Another reason is that many providers did not collect email addresses so there was no email information in CAIR2.

- CDPH was immediately inundated with requests to resolve the data matching issues. The volume peaked in August and September of 2021 when CDPH received 10,000 service requests per day. Consequently, the DVR team quickly scaled up to 120 staff just to address user issues. In addition, CDPH quickly developed solutions to support data remediation. In July 2021, a [Virtual Assistant Tool](#) was implemented that allowed the public to submit remediation requests. In November 2021, in order to verify the user's identify more efficiently, CDPH launched an identity verification tool, [ID.me](#), that integrated with the Virtual Assistant tool.
- Data quality issues were also addressed through outreach and collaboration with providers to ensure complete and accurate vaccination data is submitted to the registry on a timely basis. A State Public Health Order that became effective in October 2021 required that COVID-19 immunization providers collect and submit contact information to ensure equitable access to the DVR by all vaccine recipients.
- Following deployment of the portal, CDPH collaborated with LHJs, who also served as advocates, providing feedback and collaborating on data remediation efforts. Together, CDPH and the LHJs worked to develop communications and to educate the public about the DVR. CDPH also worked with California business organizations to help educate businesses on leveraging the technology as they verified customer vaccination status.
- The DVR was popular with the public, and within six months of implementation, 6.3 million Californians downloaded their digital vaccine record. As of mid-April 2022, almost 8 million Californians have downloaded their records. As a result of the data remediation efforts, by August 2022, the match rate increased to 89%. My Turn is available in 8 languages.
- In August 2021, CDT released the front-end code into the public domain, so other states could use it to implement systems for their own residents.



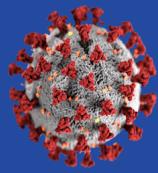
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Two months later, the state of Washington did just that, releasing their WAVerify digital record portal. Furthermore, California supported six other states to implement their solution, sharing its [playbook](#) of lessons learned.

- In 2022, the National Association of State Chief Information Officers recognized the Digital Vaccination Record Project as a finalist for its State CIO Office Special Recognition Award, which showcase the CIO/office's innovation and leadership.
- For additional information on CDPH's technology, see the Enterprise Technology chapter of this AAR.

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# Communications

This section describes communications specific to this chapter.

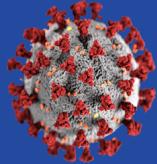
## External

### Communicating with LHJs

- CDPH developed and maintained robust communication channels to keep LHJs continuously informed and answer their questions on all aspects of vaccine administration through weekly webinars, weekly office hours, weekly leadership meetings with the California Council of Local Health Officers (CCHLO), and listserv/email communications. These forums enabled two-way communication and provided a space for the State to share updates, answer questions, and listen to local input. According to one SME, it was very important to have that space available for locals to share their concerns and frustrations. In addition, CDPH's LHJ Coordination team designated a coordinator for each LHJ, "to give the LHJ someone to go to, which was a helpful conduit. We put that in place early." CDPH also established a password-protected SharePoint site for LHJs and regularly posted data, files, and resources there.
- CDPH continuously looked for ways to communicate with the local agencies. The approach evolved over time to the degree that it became CDPH's "first mindset" to bring the locals into the response.
- However, with so many different workstreams and stakeholders in the vaccination campaign, communication siloes occasionally developed. Multiple different State teams were often communicating with different levels of the LHJs (e.g., the local health officers vs. the LHJ staff), which made it difficult to keep communications consistent and aligned.
- For further discussion on LHJ communication see the LHJ Coordination section in the Analysis of Activities above.

### Communicating with Providers

- CDPH developed numerous communication channels to keep providers informed with up-to-date information. These channels included weekly webinars, weekly office hours, a listserv, a website, a provider call center, a dedicated Partner Communications team, and various help desks that provided technology assistance.



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- The provider call center agents answered programmatic and technology-related inquiries, while the three IT help desks (myCAvax, My Turn, and CAIR2) each provided system-specific assistance. Initially, this confused providers as they did not know which resource to use for a particular issue. Consequently, CDPH and the technology consultant teams collaborated to define roles and responsibilities for the communication workstreams. They developed a customer flow with complex call routing options to help providers navigate the multiple resources available.
- For a discussion of provider communications see the Vaccine Provider Enrollment and Engagement section in the Analysis of Activities above.

### Communicating with Contractor Partners

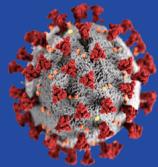
- CDPH used contractors to address a wide variety of needs, including technology, call center infrastructure, staffing, and operational support. In general, there was strong collaboration and partnership between CDPH and its contractor partners. Many staff reported that “it was like we were all one team,” and praised the contractors for their diligence, willingness to help, and camaraderie. This side-by-side collaboration helped build new systems and programs with speed and agility.

### Communicating with the TPA

- Many CDPH staff reported that communications with the TPA proved challenging. Initially, the Vaccine Task Force was not involved in the process changes and decisions the TPA made. Also, although the LHJs had been an important partner to CDPH in the early planning of the vaccine roll-out, they were not consulted either in the TPA’s decision-making. Members of various workstream teams recalled that both CDPH and the LHJs found communication and coordination more difficult during the TPA’s tenure. Furthermore, the TPA alienated some LHJs by treating them as providers rather than as integral public health partners. Consequently, CDPH staff spent considerable effort after the TPA transitioned off to mend relationships with LHJs.

### Communicating with the CDC

- When CDPH began planning for the vaccine roll-out in April 2020, it communicated regularly with the CDC to understand federal plans and obtain up-to-date information as vaccines were in development. These communications informed the [California COVID-19 Vaccine Plan](#), which



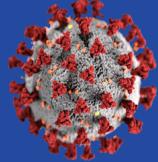
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CDPH submitted to the CDC in October 2020. In addition, the logistics and distribution team communicated with the CDC ahead of the vaccine's arrival to understand the cold storage and handling needs, which informed the team's decisions on what to procure and when to position cold chain equipment.

#### Communicating with the Public

- As vaccines began to arrive in California in late December 2020, CDPH found itself inundated with questions from the public, providers, LHJs, and the media. To meet this demand, CDPH and the State bolstered existing public communications methods and established new, innovative campaigns, including the VA58 campaign, to encourage Californians to get vaccinated.
- The public could visit both the State of California's dedicated COVID-19 website ([covid19.ca.gov](https://covid19.ca.gov)) and CDPH's departmental website ([cdph.ca.gov](https://cdph.ca.gov)) to obtain information on COVID-19 vaccines. The State website offered up-to-date information on how to get vaccinated, who was eligible, how vaccines work, the differences between available vaccines, potential side effects, and how to access one's Digital Vaccine Record. CDPH's website provided more public health information, as well as COVID-19 communication toolkits for the public and local health jurisdictions (LHJs) to use. CDPH's innovative use of technology included increased use of social media. For Californians with technology limitations, CDPH's Public Call Center offered information on COVID-19 vaccines and other topics.
- In addition to these channels, the Governor's Office launched the VA58 campaign in early 2021, which was exclusively on public communications for the Statewide COVID-19 vaccination campaign. The VA58 campaign executed extensive messaging across multiple channels (e.g., TV, radio, print, social, paid advertising, earned media) that targeted the unvaccinated and partially vaccinated to encourage them to complete their primary series and to get booster shots. Specific initiatives included "Let's Get to Immunity" that promoted acceptance of vaccines, and "Family and Children" to promote the availability, safety, and efficacy of vaccines and boosters for children and their families.



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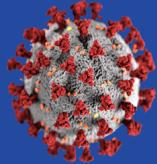
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- For further information on CDPH's public communications activities, see the Public Communications chapter and the Public Call Center chapter in this AAR.
- For further information about the VA58 campaign's communications activities, refer to the VA58 Evaluation Report.

## Internal

### Communicating within CDPH

- The Vaccine Task Force established a weekly All-Hands meeting to communicate and coordinate activities across its workstreams. At this meeting, each vaccine-related workstream would report out on their latest accomplishments and upcoming activities. However, SMEs noted that with so many teams, contractors, and State partners involved, it was "not always clear who was responsible for what." The enormous scope and complexity of the vaccine effort caused communication and coordination challenges, which led to some teams working in siloes and duplicating efforts. This was most apparent with vaccine equity, as one SME noted that "there were a lot of teams working on vaccine equity in different ways, and there was not an easy way to coordinate everyone."
- To address the communication and coordination issues, numerous SMEs recommended that for future pandemics, roles and responsibilities should be clearly defined and disseminated out to everyone working on a task force. In addition, they suggested a comprehensive organizational chart that is updated regularly to reflect roles as SMEs and other staff rotate in and out of the response.
- The various communication teams (LHJ Local Coordination Team, Partner Communications, and Provider Call Center) all relied on CDPH programmatic SMEs to develop accurate and timely information that could be disseminated out to stakeholders. Especially early in the vaccination program when information was changing rapidly, clinical SMEs were tapped to research topics, develop responses, and create content for communications under very tight timeframes. According to one SME, CDPH experts "were so cooperative and always willing to provide answers," which contributed to successful stakeholder communications.



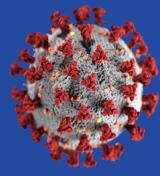
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- When it came to communications within CDPH, the type and degree of communication varied by workstream. For instance, the logistics and distribution team developed effective communications with legal and contracts management teams to expedite contracts as well as procure supplies and cold chain equipment.

### Communicating with Other State Departments

- Throughout the pandemic, CDPH communicated continuously with the Governor's Office and the CalHHS Agency on its COVID-19 vaccination program planning and implementation. CDPH also communicated with GovOps during the period it provided oversight over the TPA.
- To support distribution of the vaccine, the Vaccine Task Force coordinated with the Cal OES' Logistics Task Force on planning efforts that included warehouses, cold storage, and logistical and commodity movement. In addition, CDPH assisted Cal OES with pharmacy planning for the two mass vaccination sites in Oakland and Los Angeles, and embedded staff to support pharmacy operations. In retrospect, the team would have preferred the opportunity to communicate earlier with Cal OES regarding setting up clinic pharmacy operations in a mass vaccination setting.
- CDT was a valued partner that the CDPH communicated with extensively regarding its technology workstreams. Numerous CDPH staff testimonials indicated that by working "side-by-side" with CDT, CDPH was able to get contracts finalized quickly and vendors in place to support its numerous technology implementation and enhancement projects.
- To implement the Federal Pharmacy Partnership for LTC Program, CDPH communicated and led the multi-agency coordination of State agencies that license congregate care settings. These include the Department of Aging, Department of Developmental Services, Department of Social Services, and Department of Health Care Services. When the Federal program ended, CDPH collaborated with these agencies to creatively use resources to continue booster vaccinations in LTC facilities.
- CDPH participated in a Multi-Agency Coordination (MAC) group that adjudicated supplemental staffing requests for vaccination events when staffing was a scarce resource. For more information, see the MAC Group and Scarce Resource Allocation chapter in this AAR.

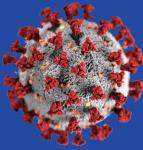


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- CDPH communicated and collaborated with GovOps, the California Lottery, and CDT to design and implement the successful “Vax for the Win” incentive program. Since the State had never implemented an incentive program like this before, the team communicated with the State Controller’s Office and the Department of Tax and Fee Administration on issues such as tax implications for recipients and processes for prize payouts.

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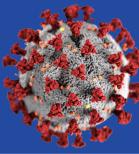
## Workplan

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.

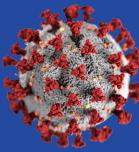
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
Planning; Initial start-up; Ongoing operations	Form Task Force and associated Working Groups to oversee the vaccination program	<ul style="list-style-type: none"><li>• The Task Force is comprised of the appropriate subject matter experts and leaders, including physicians, pharmacists, epidemiologists, policy-makers, and other SMEs to plan and operationalize a</li></ul>	<ul style="list-style-type: none"><li>• Determine appropriate workstreams for the vaccination program, define roles and responsibilities, and create/maintain an organizational chart.</li><li>• Designate a small project management office to track issues, risks, facilitate key</li></ul>	<ul style="list-style-type: none"><li>• Vaccines 1, 3, 4, 25</li></ul>	



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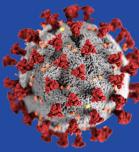
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
		Statewide vaccination program.	<p>meetings, and manage cross workstream special projects.</p> <ul style="list-style-type: none"><li>• Designate teams, with staff trained in immunization implementation, emergency preparedness, implementation, and ICS principles.</li><li>• Ensure coordination and communication channels between Task Force, Working Groups, and workstream teams to avoid silos.</li></ul>		
<b>Planning; Initial start-up; Ongoing operations</b>	Create Community Advisory Committee	<ul style="list-style-type: none"><li>• Communities representing all of California are involved in vaccine rollout discussions.</li><li>• Extensive community input is obtained on ways to equitably distribute vaccine doses.</li></ul>	<ul style="list-style-type: none"><li>• Consider establishing similar Committees for multiple response areas (e.g., Vaccines, Testing, etc.).</li><li>• Include broad representation from all sectors of California, with a focus on historically under-represented populations.</li></ul>	• Vaccines 5	



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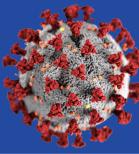
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
<b>Planning; Initial start-up; Ongoing operations</b>	Use data-driven strategies to promote vaccine equity	<ul style="list-style-type: none"><li>• Equity is formally incorporated into all vaccine workstreams.</li><li>• CDPH, in partnership with LHJs, deploys innovative strategies to promote vaccine equity based on vaccination.</li></ul>	<ul style="list-style-type: none"><li>• Engage professional facilitator to coordinate the effort.</li><li>• Use Healthy Places Index and develop additional vaccine equity metrics, as appropriate.</li><li>• Form a vaccine data equity team comprised of epidemiologists.</li><li>• Continue to improve data collection methods for vaccine equity metrics.</li><li>• Make data accessible 24/7 to diverse audiences, including the public, leadership, LHJs, and other State departments.</li><li>• Continuously monitor data trends and develop new interventions in response (e.g., mobile or pop-up clinics, increased outreach, etc.).</li></ul>	<ul style="list-style-type: none"><li>• Vaccines 1, 2, 6, 7, 8, 17, 34</li></ul>	



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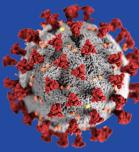
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
<b>Planning; Initial start-up; Ongoing operations</b>	Identify what systems need to be built and/or augmented	<ul style="list-style-type: none"><li>CDPH's public health systems align with the Future of Public Health initiative.</li><li>CDPH's public health systems are flexible, scalable, and meet stakeholders' needs.</li><li>State leadership and policymakers can rely on systems for accurate, timely data.</li></ul>	<ul style="list-style-type: none"><li>Fund, build, and sustain IT systems to support pandemic response prior to the next pandemic.</li><li>Monitor and supplement vaccine safety surveillance systems as needed.</li><li>Evaluate the need for new or improved systems and begin planning early.</li><li>Involve stakeholders as needed (e.g., LHJs, MCEs, large providers, small providers) in business process and specification development.</li><li>Recognize that integration between internal systems and external/third-party systems (CDC, LHJs, providers) may require additional software applications.</li><li>Identify inter-dependencies between systems and</li></ul>	<ul style="list-style-type: none"><li>Vaccines 1, 9, 26, 28, 33, 34, 35</li></ul>	



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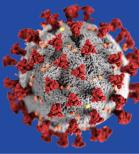
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
<b>Planning; Initial start-up; Ongoing operations</b>	Obtain necessary authority to rapidly procure goods and services	<ul style="list-style-type: none"><li>CDPH teams can rapidly acquire supplies, equipment, subject matter expertise, support services, and technology to implement a Statewide vaccination campaign.</li><li>CDPH can rapidly position supplies and equipment when needed.</li></ul>	<ul style="list-style-type: none"><li>document potential impacts.</li><li>The authority to expedite procurement processes may be in the form of Executive Orders, emergency proclamations, or exemptions.</li><li>Contracting rules and regulations not waived must still be followed.</li><li>Establish a logistics and distribution workstream.</li><li>Partner with Cal OES, CDT, and Gov Ops.</li></ul>	<ul style="list-style-type: none"><li>Vaccines 1, 22; Medical Surge 7, 8, 9</li></ul>	
<b>Planning; Initial start-up; Ongoing operations</b>	Anticipate and plan for staffing challenges	<ul style="list-style-type: none"><li>Continuity of coverage is ensured.</li><li>Resources are available to staff new and expanded workstreams.</li><li>Staff can take breaks and refresh to avoid burnout.</li><li>Onboarding and training procedures are in place.</li></ul>	<ul style="list-style-type: none"><li>Develop staffing plans for new workstreams or to address backlogs and protocols for redirected staff.</li><li>Anticipate staff burnout and develop a staffing mitigation plan.</li><li>Develop onboarding and training plans for staff and contractors</li></ul>	<ul style="list-style-type: none"><li>Vaccines 16, 26, 36</li></ul>	



# CDPH COVID-19 After Action Report

## Chapter 16 – Vaccines

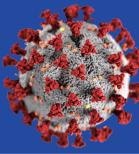
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
<b>Initial start-up; Ongoing operations; Close-out</b>	Establish robust communication channels and processes coordinated throughout State government	<ul style="list-style-type: none"><li>Information is disseminated quickly, accurately, and effectively to stakeholders and partners.</li></ul>	<ul style="list-style-type: none"><li>Assess resource needs and develop communication plans.</li><li>If using redirected staff, ensure they have the skills and training for effective communications.</li></ul>	<ul style="list-style-type: none"><li>Vaccines 10, 11, 12, 25</li></ul>	
<b>Planning; Initial start-up; Ongoing operations; Close-out</b>	Provide cold chain expertise, technical guidance, and equipment/supplies	<ul style="list-style-type: none"><li>CDPH can rapidly procure and position cold chain equipment and supplies.</li></ul>	<ul style="list-style-type: none"><li>Engage with CDC and vaccine manufacturers to understand cold chain requirements.</li><li>Survey LHJs to establish cold chain equipment needs and associated ancillary supplies.</li><li>Identify other State departments that will need CDPH to provide cold chain expertise and supplies.</li></ul>	<ul style="list-style-type: none"><li>Vaccines 14</li></ul>	
<b>Planning; Initial start-</b>	Make advance mass purchases of vaccination	<ul style="list-style-type: none"><li>The State has adequate vaccine supplies and</li></ul>	<ul style="list-style-type: none"><li>Involve medical specialists in the development of</li></ul>	<ul style="list-style-type: none"><li>Vaccines 14, 27</li></ul>	



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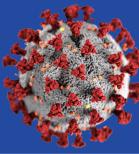
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
<b>Planning; Initial start-up; Ongoing operations</b>	ancillary items needed for a statewide response	<ul style="list-style-type: none"><li>equipment in its stockpile.</li><li>The State and its partners can access items as they are needed.</li></ul>	<ul style="list-style-type: none"><li>specifications and purchasing decisions to procure correct medical supplies.</li><li>Survey LHJs for stock on hand and supply needs.</li><li>Explore public and private sector options for storing mass quantities of supplies that are waiting for distribution.</li></ul>		
<b>Planning; Initial start-up; Ongoing operations</b>	Create a plan and playbook for pharmacy operations at mass vaccination sites	<ul style="list-style-type: none"><li>Stakeholder Roles, responsibilities, and authorities are identified in advance, mitigating confusion.</li><li>Protocols for reconstituting vaccines are well known, effectively communicated, and followed to prevent wastage and underdosing.</li></ul>	<ul style="list-style-type: none"><li>For mass vaccination sites, plan for involvement from federal government agencies (e.g., FEMA).</li><li>Ensure pharmacy staff at mass vaccination sites have expertise in reconstituting doses in a clinic.</li><li>On-site pharmacy should replicate large-scale clinic pharmacy operations.</li></ul>	<ul style="list-style-type: none"><li>Vaccines 18, 29</li></ul>	
<b>Initial start-up; Ongoing</b>	Support implementation	<ul style="list-style-type: none"><li>Efforts are coordinated across</li></ul>	<ul style="list-style-type: none"><li>Identify the categories of facilities</li></ul>	<ul style="list-style-type: none"><li>Vaccines 19, 20</li></ul>	



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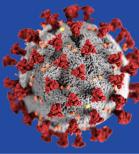
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
<b>operations; Close-out</b>	of federal programs, such as the Federal Pharmacy Partnership for LTC Program	State agencies that license congregate care facilities. <ul style="list-style-type: none"><li>Facilities are enrolled in the program; residents and staff receive vaccinations.</li></ul>	and the government agencies responsible for oversight. <ul style="list-style-type: none"><li>Create a multi-agency workgroup to coordinate efforts and engage with participating pharmacies.</li><li>Develop guidance as necessary (e.g., providing vaccinations in closed facilities).</li><li>Seek ways to use existing resources (e.g., Outbreak Response Team for vaccinations in LTC facilities) for support.</li></ul>		
<b>Initial start-up; Ongoing operations</b>	Partner with other State departments to provide supplemental staffing resources to locals	<ul style="list-style-type: none"><li>LHJs can expand their vaccination capabilities and choose the combination of resources that best meet their needs.</li></ul>	<ul style="list-style-type: none"><li>Staffing may sometimes be a scarce resource; in this case, adjudicate staffing requests through a Multi-Agency (MAC) Group.</li><li>Contract with vendors that provide vaccinators who can be deployed</li></ul>	• Vaccines 16	



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## Chapter 16 – Vaccines

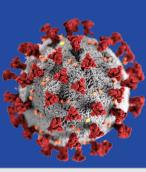
Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			<p>Statewide, including to remote/rural locations.</p> <ul style="list-style-type: none"><li>• Encourage LHJs and providers to plan for and train supplemental staff for future events.</li></ul>		
<b>Initial start-up; Ongoing operations</b>	Streamline allocation, ordering, distribution, and vaccine administration processes	<ul style="list-style-type: none"><li>• LHJs can administer their individual programs in alignment with their unique needs.</li><li>• Providers can order doses in amount that best meets their supply and demand needs.</li><li>• The public can schedule and access vaccines conveniently.</li></ul>	<ul style="list-style-type: none"><li>• Rely on public health experts to determine appropriate strategies and solutions.</li><li>• Create an allocation plan, including strategies and formulas, to address changes in vaccine supply and demand.</li><li>• Leverage successful strategies (e.g., Vaccine Marketplace, Third-Party Distributor) and identify additional innovative strategies to deploy.</li><li>• Survey LHJs and providers to identify potential improvements.</li></ul>	<ul style="list-style-type: none"><li>• Vaccines 1, 14, 15, 16, 22, 23, 24, 30, 31</li></ul>	



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Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
			<ul style="list-style-type: none"><li>• Revise processes to accommodate changes in supply and demand.</li><li>• Consider streamlining the enrollment process for existing CDPH providers (e.g., VFC) to reduce administrative burden of enrolling in a vaccine separate program.</li></ul>		
<b>Initial start-up; Ongoing operations</b>	Consider sponsoring grants to assist targeted providers with their start-up and administrative costs	<ul style="list-style-type: none"><li>• Providers are incentivized to enroll in the vaccine program and remain community vaccinators.</li><li>• Disadvantaged communities have vaccine providers easily accessible in their neighborhoods</li></ul>	<ul style="list-style-type: none"><li>• Leverage partnership with non-profit organizations such as Physicians for a Healthy California to establish grant programs.</li><li>• Use data to identify geographic locations where provider enrollment efforts should be concentrated.</li></ul>	<ul style="list-style-type: none"><li>• Vaccines 13</li></ul>	
<b>Initial start-up; Ongoing operations</b>	Consider evidence and workload for the judicious use of public incentive	<ul style="list-style-type: none"><li>• More Californians seek vaccinations.</li></ul>	<ul style="list-style-type: none"><li>• Create a multi-agency team and empower them to implement innovative solutions.</li></ul>	<ul style="list-style-type: none"><li>• Vaccines 21, 32</li></ul>	



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Phase	Major Tasks	Success Criteria	Considerations	Finding ID	Lead
	programs to generate vaccination demand		<ul style="list-style-type: none"><li>• Execute a comprehensive promotional campaign to increase public awareness.</li><li>• Develop a simple process for recipients to claim and redeem prizes.</li><li>• Establish adequate controls to ensure there are no duplicate gift cards issued.</li><li>• Run one incentive program at a time in order to measure effectiveness.</li></ul>		