



COVID-19 VACCINE DISTRIBUTION: STRATEGIC INFORMATION FOR AIRPORTS

*A Briefing from the ACI-NA Air Cargo Committee
As of November 20, 2020*

Air cargo has played a vital role in the delivery of critical supplies throughout history and is now relied upon more than ever during the extraordinary circumstances of the ongoing COVID-19 pandemic. As the worldwide pharmaceutical industry rushes to deliver an effective COVID-19 vaccine or vaccines to hundreds of millions of people across North America (and globally) as fast as possible, a paramount challenge toward defeating this pandemic is optimum and efficient vaccine distribution. It is a logistical health challenge more complicated on many levels than ever seen before. Regardless of what the winning vaccine brand or brands and their points of origin prove to be, air cargo will play a significant if not substantial role in the mass delivery of millions and likely billions of vaccine doses and supporting medical equipment for distribution to the general population.

There are essentially two elements involved in delivering the vaccine to people. The first is vaccine administration. This is at the local level and is concerned with coordinating the connection between recipients of the vaccine and medical facilities. It is the purview of health and government officials, and airports as an industry will have little if anything to do with this. The other element is strategic logistics planning, and it is here that airports will likely be significantly involved. Quite a bit has been written regarding local coordination of vaccine delivery, but less information is available on the broader logistics issues. What follows is a summary of what we have been able to determine thus far under the current U.S. administration and Canadian Federal government, noting that updates will likely be needed for the incoming U.S. administration.

Phasing Expectations

As has already been widely reported, it is extremely likely that vaccine distribution, when ready, will be phased to some extent by availability and will not necessarily completely overwhelm the supply chain from the very start. This does not minimize that airports and their transportation partners will need to be in overdrive to deliver out of the gate—on top of already keeping the pandemic economy moving and handling other emergency supplies. The logical assumption is that initial delivery would go to front-line and essential workers and their institutions, especially medical facilities. Ultimately, mass delivery to population centers, perhaps prioritized toward high-risk populations and/or infection hot spots, would follow via regional distribution facilities, with nursing homes and schools probable candidates as targets early on.

Mission Oversight

Right now, despite a significant amount of inconsistent and confusing rhetoric, the Air Cargo Committee and our associated sources have been told that the U.S. Government will have no direct logistical role, including the use of federal facilities, in vaccine distribution to the American public. However, federal agencies, led by the Department of Health and Human Services (HHS) and its subsidiaries (CDC, FDA, etc.)—will certainly advise and monitor, including coordination with state and local emergency management officials. The current U.S. response is promoted as “Operation Warp Speed” (OWS) and the Canadian Federal Government has a similar “Vaccine Task Force” (VTF). Above all, OWS would essentially reimburse the private sector and transportation institutions to take the lead, under the coordination of the Childhood and Adult Vaccination Distribution Program.

For air cargo movement, much of the coordination work would be led by the shipper, forwarder and trucking partners—not so much by the airport authority. In addition, it is anticipated that an

extraordinary amount of cold chain storage and overland transport capacity at or near airports will be essential. For the most part, there may be sufficiently available facilities at many large or specialized air cargo hubs (along with CBP capabilities as needed). Since large capacity cold chain storage is generally not as available at smaller airports, larger airports are seemingly positioned to have a more prominent role (but we do not yet have word on any designated focus airports for distribution, at least in the U.S.).

IATA has put forth and promoted an estimate that one B777F could carry just over one million vaccine doses at a time—but compare that to the *hundreds of millions* of doses that eventually will be needed for North America and even the billions of doses that will be needed worldwide. All of this unprecedented volume of an incredibly valuable product moving at once has also raised alarm bells by various authorities of the need for secure movement and storage, including plans already in place for secret storage locations, contingencies for weather emergencies, decoys for criminals, IT and GPS tracking, and even police escorts.

Vaccine Production and Transport

Pharmaceutical companies and researchers across the globe are testing over 40 different vaccines in clinical trials on people, with dozens more active in animal study. As has been reported, a Pfizer consortium, Moderna (supported by the National Institutes of Health), AstraZeneca (in collaboration with the University of Oxford), and a Johnson & Johnson partnership are seemingly in the lead on a medically-acceptable (successful) vaccine. At this point advanced testing and trials continue for all, although Pfizer and Moderna are particularly optimistic on having a winner ready by early 2021. Pfizer is also in the process of seeking FDA approval at the time of writing. Some of the leaders, like Pfizer and Johnson & Johnson, would seem to imply a North American base for distribution, whereas others may have Europe or Asia as a supply chain source—requiring more cargo planes for North American distribution. Regardless of the source, there will be a substantial reliance on climate-controlled trucking for the final mile.

Each unique vaccine may have its own temperature specifications for transport, ranging from cool or near freezing to a deep freeze, obviously a critical supply chain factor for mass movement of product. The possible extreme temperature requirement would seem to invoke the need for dry ice packaging—lots of it—creating extreme caution for air transport. In accordance with current ICAO and IATA Dangerous Good Regulations, packaging must be allowed to breathe to prevent carbon dioxide build-up. Based on these regulations, a limited amount of carbon dioxide is allowed in each compartment and on the entire aircraft. Pfizer, for example, has developed mass packaging technology to keep its vaccines frozen for up to ten days when unsealed—but these and other shipments would also need to be unsealed and broken down to reach smaller population areas.

Operation Warp Speed (OWS) in the U.S. and COVID-19 Vaccine Task Force (VTF) in Canada

Operation Warp Speed (OWS), the current U.S. vaccine response, has four basic goals:

- Ensure the production of a safe vaccine
- Support rapid vaccine distribution
- Reduce sickness and mortality accordingly
- Return to a normal quality of life

The basis of OWS is for FDA and CDC to monitor the vaccine manufacturers and, when ready, to support the private-sector distribution as fast as possible to the end user. For example, CDC has expanded its partnership with pharmaceutical distributor McKesson Corporation (with additional support by Cardinal Health) to distribute millions of doses of vaccine in the United States and Canada. A key tenet of this partnership is to help mitigate the cost of receiving the vaccine for the user, ultimately for many millions of people at all income levels. OWS also reminds the supply chain that it is not just the vaccine that will need to be transported, but also ancillary supplies (“kits”) in the millions to effectively administer the vaccine, including needles, syringes, alcohol pads, and limited PPE for vaccinators.

Canada's COVID-19 Vaccine Task Force (VTF) is drawing on a council of independent experts from across the country to make sure that vaccine purchases, distribution, and availability are coordinated, equitable, and affordable. It also is collaborating with provincial and territorial partners to oversee, supply, and distribute vaccines. Similar to the U.S., Canada is leaning on the private sector, seeking a single logistics service provider (LSP) to assume responsibility for end-to-end vaccine distribution. The wide scope leaves the potential for companies to come together and form consortiums. Various air carriers, integrators, and international supply chain corporations have participated in initial discussions. The Canadian Airport System is anticipated to play a critical role in the national transportation network connecting all the provinces and territories, including the many remote northern and indigenous communities. Furthermore, over the last few years, private pharmaceutical distributors have played a greater role in supporting the government's distribution system. With the varied cold storage temperature requirements through the supply chain, Health Canada has indicated a requirement for Drug Establishment Licensed (DEL) storage facilities. There is a likely to be a gap with the availability of DEL facilities, especially on or near airports. Some reports have estimated a requirement for 1.7 million cubic feet of warehousing space with freezer capabilities nationwide.

Airport Preparation

The pandemic has already placed a large financial strain on the entire aviation industry. Nevertheless, as we all hold on as best we can into 2021, what can airports do to stay ahead of the curve on vaccine distribution—especially larger cargo airports? The Air Cargo Committee recommends that members stay very informed on developments and keep up on your own research and planning resources. Then, in a nutshell, establish local and state emergency management contacts. Know or get to know better your on-airport cargo tenants and handlers in addition to your off-airport forwarders and trucking companies. That is, be prepared to communicate with greater regional facilities and resources, including pertinent private sector operations. Also be ready for future announcements, instructions, or special designations at a federal, state, provincial, or local level as they might likely affect your airport. Air transport is expected to play a prominent role in the Canadian vaccine response, if not the U.S. as well. When a vaccine or multiple vaccines are ready for release, offer support to your carriers, cargo tenants and involved stakeholders as best as possible with potential ad hoc space, parking, or operational needs to get by together. As mentioned, the Air Cargo Committee certainly intends to continue to monitor this dynamic and complicated issue, including updates under a new U.S. administration. We all need to rise to this monumental and inevitable task coming our way. Airports (and their air cargo operations) have always stood firm as a foundation of our modern daily economic lives, and the great COVID-19 vaccine distribution challenge will be no different, no matter how long it is needed.

This briefing was compiled from several direct and indirect sources, including U.S. Department of Health and Human Services, Washington State Department of Health, U.S. Region 10 HHS, Government of Canada COVID-19 Vaccine Task Force, U.S. Interim COVID-19 Vaccination Plan, U.S. COVID-19 Vaccination Program Interim Playbook for Jurisdiction Operations, The New York Times, and The Wall Street Journal.

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