Three-Part Webinar Series

Webinar 3: Key learnings from the ongoing vaccine distribution effort and paving the way for the future

Welcome
Key learnings from the ongoing vaccine distribution effort and paving the way for the future

Andrea Gruber
Head, Special Cargo
IATA
This session is conducted under the Competition Law Compliance

Microphones have been muted

Please submit your questions through the Question box and send to Everyone

The webinar is being recorded and will be made available afterwards, including the PPT slides.
Transport of Vaccines and Life Science Products by Air

Welcome Address

Air Cargo Economic Outlook

COVID-19 Vaccine Delivery Update

How Air Cargo Responded to the Covid-19 Vaccines Global Distribution

Proactive Efforts in Fulfilling the Mission of Quick Vaccine Distribution

Panel and Q&A Session

Speaker biographies are available on the IATA website
Recent Economic Developments in the Air Cargo Market and the Vaccine Roll-Out

Brian Pearce
Chief Economist
IATA
COVID-19
Outlook for air cargo

Brian Pearce
Chief Economist

19th April 2021
Air cargo volumes back to pre-crisis levels, unlike pax

Global RPKs fell to -75% vs Feb 2019, but cargo tonne km 9% higher

Source: IATA Economics using data from IATA Monthly Statistics. Data is adjusted for seasonality.
But big differences between major trade lanes
Strongest trade lanes between Asia & N America and over M East hubs

Cargo tonne km flown by major trade lane, indexed Jan 2020=100, segment basis

Source: IATA Economics using data from IATA Monthly Statistics
‘V-shape’ economic recovery has driven cargo demand
Global output back above pre-crisis levels but has pulled fuel costs up

Global industrial production and jet fuel prices

Source: IATA Economics using data from Refinitiv Datastream and Platts
Trade lanes reflect relative economic strength of regions. Asia and N America relatively strong vs Europe. Outlook +ve for all.

GDP by region, indexed to 100 in 2019

Source: IATA Economics using data from Oxford Economics
Vaccine rollout brings recovery but large differences
Widespread vaccination only in advanced economies by late 2021

Governments have mostly kept borders closed to travel
Travel restrictions tightened in January keeping international travel low.

International travel stringency index weighted by population (Jan 2020-March 2021)

- 4 – total border closure
- 3 – closed to some regions
- 2 – quarantine arrivals from high risk regions
- 1 – screening
- 0 – no measures

Source: IATA Economics analysis based on Oxford University data
Cargo faces a continuing capacity shortage
Freighters highly utilized but much capacity in passenger fleet is grounded

Source: IATA Economics using data from IATA Monthly Statistics
‘Preighters’ have played important role on some markets
More than one fifth of cargo carried by preighters on top ME trade lanes

Source: IATA Economics using data from IATA Monthly Statistics
Capacity shortage has elevated yields and revenues. Slow opening of borders to travel likely to support cargo strength in 2021.

Source: IATA Economics using data from IATA Monthly Statistics and CargoIS.
Cargo is now one-third of the typical airline business. In the past, air cargo was marginal at 10-15% revenues. Now, it is 30-35%.

Cargo has kept some long-haul services cash positive. Strong cargo replaced loss of high yield passengers on some markets.

Estimated economics of an average B777-300 operation on different route areas in Mar-Aug 2020, (USD ‘000s)

- **Transatlantic**: Operating profit of $8, operating costs of $42, total revenues of $51, loss of $13, profit margin of 16% of revenues.
- **Europe-Middle East**: Operating profit of $10, operating costs of $27, total revenues of $45, loss of $13, profit margin of 22% of revenues.
- **Middle East-Asia**: Operating profit of $11, operating costs of $24, total revenues of $45, loss of $13, profit margin of 24% of revenues.

Source: IATA Economics analysis based on data from SRS, DDS, ACMG, Cargo IS, IATA Statistics, Platts
COVID-19 Vaccine Distribution - COVAX Status Update

Mounir Bouazar
COVID-19 Vaccine Global Logistics Lead
UNICEF
COVID-19 vaccine delivery update

21 April 2021

COVAX
Total doses administered per 100 population

Data as of 6 Apr, 12PM CET

Note: The designations employed and the presentation of these materials do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.
“We need speed and simplicity to remove barriers to the acquisition, manufacture and distribution of COVID-19 vaccines globally”

Three urgent actions:

- **Simplify Intellectual Property Rights (IPR) through voluntary and proactive licensing by IPR holders.** UNICEF calls on governments to build on and increase recent manufacturing partnerships and supports proactive partnership and cooperation between manufacturers.

- **End vaccine nationalism.** Governments should remove direct and indirect export- and import-control measures that block, restrict or slow down exports of COVID-19 vaccines, ingredients and supplies.

- **Ensure equal access to vaccine supplies.** Governments that have contracted to receive more ‘future doses’ than required to vaccinate their entire adult populations this year, should immediately loan, release or donate most or all excess contracted doses for 2021 to COVAX. Countries with a sufficient, current supply of manufactured doses should consider donating at least 5% of their available manufactured doses right away, and commit to making further contributions on a continued, rolling basis throughout the year, scaling up their contributions in line with rising supply.
The Implementation Overview dashboard presents allocated COVID-19 vaccine doses, contracted with suppliers, on shipment and delivered to countries and territories.

Doses allocated, through May: 251,625,450
Doses Ordered, cumulative: 119,656,570
Doses released for shipment, cumulative: 42,777,370
Doses on shipment in transit: 253,400
Doses Shipped, cumulative: 40,787,140
Countries and territories, doses shipped: 117

Region
All

WHO countries and territories
All

Vendor Name

AMC countries and territories
All

Planned shipments
Who countries and territories
Mongolia: 21/04/2021
Syrian Arab Republic: 21/04/2021
Syrian Arab Republic: 22/04/2021
Malaysia: 23/04/2021
Honduras: 26/04/2021

The information displayed reflects the status of deliveries based on logistics information in a highly dynamic context and subject to change. This visual may not display the most recent data at all points.

Data last refreshed on: 20/04/2021
# Implementation Overview

The information displayed reflects the status of deliveries based logistics information in a highly dynamic context and subject to change. This visual may not display the most recent data at all points.

Data last refreshed on: 20/04/2021

## Shipments

**Doses Shipped, per day**  
- Number of doses

**Shipments progress**

- Feb 2021: Shipment arrival
- Mar 2021:
- Apr 2021:

## Supplier Overview

- Doses Ordered, cumulative
- Doses released for shipment cumulative
- Doses Shipped, cumulative

### Material Number

<table>
<thead>
<tr>
<th>Vendor Name</th>
<th>Number of doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Life Sciences Ltd</td>
<td>104.33M</td>
</tr>
<tr>
<td>AstraZeneca AB</td>
<td>14.33M</td>
</tr>
<tr>
<td>Pfizer Overseas LLC</td>
<td>0.36M</td>
</tr>
</tbody>
</table>

###WHO Countries and territories

<table>
<thead>
<tr>
<th>Region</th>
<th>Doses allocated, through May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doses Ordered, cumulative</td>
<td>251,625,450</td>
</tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries and territories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andorra</td>
<td>Doses Shipped, cumulative</td>
</tr>
<tr>
<td>Dominica</td>
<td>Doses shipped, in % 100.00%</td>
</tr>
<tr>
<td>Nauru</td>
<td>7,200</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>21,600</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>4,800</td>
</tr>
<tr>
<td>Jordan</td>
<td>477,750</td>
</tr>
<tr>
<td>Antigua and Barbuda</td>
<td>20,000</td>
</tr>
<tr>
<td>Tonga</td>
<td>43,200</td>
</tr>
<tr>
<td>Albania</td>
<td>143,400</td>
</tr>
<tr>
<td>Grenada</td>
<td>45,600</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>24,000</td>
</tr>
<tr>
<td>Georgia</td>
<td>160,020</td>
</tr>
<tr>
<td>El Salvador</td>
<td>417,480</td>
</tr>
<tr>
<td>West Bank and Gaza</td>
<td>308,400</td>
</tr>
<tr>
<td>Republic of Moldova</td>
<td>223,190</td>
</tr>
<tr>
<td>Bermuda</td>
<td>26,400</td>
</tr>
<tr>
<td>Rwanda</td>
<td>947,580</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>251,625,450</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doses Shipped, cumulative</td>
<td>40,787,140</td>
</tr>
<tr>
<td>Allocated doses shipped, in %</td>
<td>16.21%</td>
</tr>
</tbody>
</table>
Access to preferred and stable pricing

Giving priority to Covid-19 vaccine and other vaccines and humanitarian supplies

Secure the necessary logistics capacity for Covid-19 vaccines as well as existing vaccine shipments

Transport schedules

Temperature control management for cold chain during transit and at arrival

Access to countries

Network and services

Capacity

Priority

Schedule Reliability

Cold Chain

Pricing
Next steps and future engagement with airlines

• Tri-partite collaboration for planning preparedness activities with the COVAX logistics control tower:
  - Capacity
  - Services availability
  - Flights information sharing
  - Specialized targeted solutions

• Airlines to express interest in supporting UNICEF/PAHO through engagement on logistics preparedness or partnerships / In kind donations

• Commercial engagement will continue to be managed through our global 3PLs
Thank You
How Air Cargo Responded to the Covid-19 Vaccines Global Distribution

Jaisey Yip
Cargo & Logistics Development
Changi Airport
How air cargo responded to the Covid-19 vaccines global distribution
At the beginning, there was an unprecedented level of urgency and uncertainties in the pharma world impacting logistics

1. Fast-track development of Covid-19 vaccines
   - 4x acceleration than any preceding vaccines

2. Many vaccine manufacturers in the race
   - Over 250 vaccines\(^1\) in development

3. Many types of vaccines in the race
   - 10 different vaccine platforms\(^1\)

- **Limited time for logistics** players to strategize, invest, deploy adequate infrastructure and develop required skills and processes
- **Long list of unknowns**: packaging, containers (active or passive), use of dry-ice or not, transportation and handling conditions etc.
- Little information on manufacturing production and schedule, so **no possibility to identify and prepare the trade lanes and air capacity**

Source: World Health Organisation
Yet, the global Covid-19 vaccine distribution mission demands air cargo to deliver in the highest degree of **Speed, Security, Reliability** and **Transparency**

<table>
<thead>
<tr>
<th>Speed</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Timely and accurate bookings to support effective planning</td>
<td>• Co-ordinated approach and programs to prevent illicit trades, counterfeit, cyberattacks and theft</td>
</tr>
<tr>
<td>• Guaranteed transit time</td>
<td>• Secured airport facilities and in-country transportation</td>
</tr>
<tr>
<td>• Minimise unexpected delays</td>
<td></td>
</tr>
<tr>
<td>• Priority service</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strong readiness across the supply chain</td>
<td>• Real-time (or near-real time) tracking, monitoring and information sharing on shipment (location, status, temperature) and alerts in case of deviation in time to react and correct</td>
</tr>
<tr>
<td>• Guaranteed delivery times</td>
<td>• Information on existing airfreight capacity and lead times per trade-lane</td>
</tr>
<tr>
<td>• Minimise temperature excursions and deviations</td>
<td>• Reliable information on cool chain capabilities and capacity of logistics providers including each cargo facilities at origin, transit and destination points</td>
</tr>
<tr>
<td>• Safe transportation and handling of the shipments</td>
<td></td>
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</tbody>
</table>
The air cargo industry had a jittery start when preparing for the first Covid-19 vaccines approval

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**Top Concerns of Covid-19 Vaccines Handling and Transportation**

- Temperature Excursions
- Lack of Visibility
- Lack of Adequate Infrastructure
- Capacity Storage
- Unexpected Delays
- End-to-End Connectivity
- Security
- Cost

Source: Project Sunrays

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**The World’s Supply Chain Isn’t Ready for a Covid-19 Vaccine**

By Brandon Mayne and Barry Griff
July 23, 2020, 2:00 AM EDT

- Freight companies say they need a coordinated strategy fast
- Air cargo capacity has shrunk and shipping costs are elevated
Project Sunrays, a joint initiative launched by TIACA and Pharma.Aero

- Create **transparency** between pharma shippers and air cargo professionals
- Deliver useful **guidelines** for the airfreight industry to get ready to handle, store, transport and deliver future Covid-19 vaccines

A joint steering group composed by Board members from TIACA and Pharma.Aero
With information availability over time, the air cargo industry felt more prepared with Covid-19 vaccines handling and transportation.

Source: Project Sunrays Air Freight Readiness Survey
Respondents which felt very well prepared, scored 8, 9 or 10 to the question "how well-informed and prepared is your organization in the global air transportation of COVID-19 vaccines

- Airports and ground handlers scored the lowest
- Ground handlers’ score was most improved
Effective distribution requires open communication and strong collaboration across the air cargo supply chain

'Winning Formula' for Respondents with Highest Readiness Score

Source: Project Sunrays Air Freight Readiness Survey
Several air cargo communities have since established joint task forces as a way to strengthen collaboration at local level:

- BRUcure Task Force
- YEG CEIV Cargo Community Ready Response
- HKIA Community Task Force for COVID-19 Vaccines Handling
- MIAVAC Task Force
- Changi Ready Task Force
- Hope Consortium
In the task force formation, air cargo communities highlighted and underscored five key imperatives:

- Clear local air cargo community objectives
- Inclusive organized structure
- Equal importance with global collaboration
- Recognition that the first vaccines are just the beginning
- Build collaboration and trust
Majority of our members, which have started handling Covid-19 vaccine shipments, are already part of an internal and local air cargo community task force.

Established an internal taskforce and part of local community taskforce: 77%

Established an internal taskforce only: 15%

Part of local community taskforce only: 8%

Source: Pharma.Aero’s Member Survey April 2021 (based on respondents which have handled actual Covid-19 vaccine shipments)
Action plans and measures implemented by air cargo stakeholders

- Assign parking bays close to cargo terminals
- Expedited custom clearance procedures
- Streamlined handling processes across entire air cargo community
- Cold chain capacity mapping across airport environment
- Unique commodity code for Covid-19 vaccines and COVAX shipments
- Conduct operational drills and test shipments
- Institute a Covid-19-tailored SOP guideline detailing all new and existing procedures relevant to vaccine handling, followed by validation of the airport community and issuance of Covid-19 readiness label to compliant stakeholders
- Introduction of temperature-controlled pre-clearance area for Covid-19 vaccines
- New dry ice limitations based on different sublimation rates
- Security risk assessment for Covid-19 vaccine shipments
- Auxiliary police deployed for apron transportation
- Police escort from airport to warehouse
- Pre-shipment notifications
- Visibility on availability and cost of dry-ice
- Track and trace from airport to airport, increased data metrics, piece-level tracking
- A community data-sharing solution to offer full transparency of all pharma shipments

Source: Project Sunrays Second White Paper and Pharma.Aero’s Member Survey April 2021
Some of our members have made new investments on cold chain infrastructure and capabilities

- Cold Rooms
- Airside Staging Area
- Cool Dollies
- Temperature loggers and Data-sharing Platforms

Source: Pharma.Aero’s Member Survey April 2021
Current risks and observations

- Vaccine production challenges
- Volatile delivery schedule
- Lack of full visibility on packaging, dry ice requirements, shelf life of packaging
- Ad-hoc adjustments to flight schedules
- Collaboration amongst industry stakeholders could still improve
Following Project Sunrays, Pharma.Aero and TIACA will be jointly rolling out a regular industry newsletter
‘A Chain Is Only as Strong as Its Weakest Link’

Thank you
Proactive Efforts in Fulfilling the Mission of Quick Vaccine Distribution

Jennifer Haigh
Head of Specialty Products, Americas
United Cargo
Proactive efforts in fulfilling the mission of quick vaccine distribution

Jennifer L Haigh
Head of Specialty Products, Americas
United Cargo
COVID-19 impact for an airline

- Worst case scenario based upon 9/11
- Passenger demand fell by almost 100%
- Many talented employees were furloughed across the industry, while led to issues with staffing and hours of operation
- Remain compliant with complex regulatory framework
- Unpredictability
- Distancing; not prepared
- Cost focus (high fixed costs)
- Built a “skeleton” schedule/network from scratch
- Increased supply chain cost
United’s international service changed drastically with COVID-19 shutdowns
We reduced service in late March from 5,000 flights per day to only 6 international destinations last April
Cargo keeps the supply chain moving

- Ensures frontline health works have the supplies they need
- Cold chain processes transport pharma, medicines and vaccines
- Maintains the flow of all goods to mitigate impact to commerce and trade
COVID Vaccine Readiness Task Force

Vision statement & responsibilities

- Developed an all-encompassing plan for COVID-19 vaccine air cargo transport
- Created structures & processes
- Remained fully aligned, cross-divisional effort to maintain safe operations and provide humanitarian support
- Created a strategy to ensure other life-saving flows were not affected
COVID Vaccine Readiness Task force
Started as a team within Cargo, but quickly expanded across several teams at United

- **Involvement from groups across the airlines**
  - Teamwork & collaboration
  - NOC
  - Flight / Tech Ops
  - IT
  - Crewing
  - Scheduling
  - Security
  - Airport Ops
  - Corp Comm
  - Govt
  - Engineering
  - E Team

- **New Special Handling Codes**
  - CVD & CV2
    - Key Prioritization
    - Speed
    - Security
    - Highest visibility in UA

- **Improving existing handling procedures**
  - Helps to move shipments quickly
    - Deliver ASAP at destination
    - Dedicated Control Tower for bookings & follow up

- **Increase maximum dry ice limit**
  - Available on B777-200F
    - Special handling code
    - First vaccine charters in the world (BRU-ORD)

- **Cool Storage**
  - Available at all key import and export locations
A cohesive cross-functional effort to ensure safe and timely carriage of vaccines

- **CRITICAL PATH** – increase of dry ice for use on cargo charters in Q42020
  - Engineering reports
  - Inter-airline discussions
  - Policies and procedure reviews
  - Dangerous Goods review
  - Regulator discussions
  - Focused on specific aircraft type
  - Collaboration between shipper and packaging company is key
2 SHCs available for COVID-19 related shipments

- COVID-19 SHC codes were created to ensure visibility across all United divisions
  - Cargo, Airport Ops, Flight Ops, Contact Centers…a joint team effort!
  - SHC codes give shipments higher boarding priority

<table>
<thead>
<tr>
<th>SHC Code</th>
<th>Type of Shipment</th>
<th>Boarding Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVD</td>
<td>COVID-19 vaccines</td>
<td>Highest</td>
</tr>
<tr>
<td>CV2</td>
<td>COVID-19 support materials such as test kits, PPE, etc.</td>
<td>High</td>
</tr>
</tbody>
</table>
Remember: CV2 and traditional pharma shipments are important too!

While all the attention is focused on CVD vaccines now, CV2 shipments are also critically important to fighting the pandemic and saving lives.

- While vaccinations are increasing in the US, most people in the rest of the world will not have any access to COVID vaccines until the summer or fall.
- Until the vaccines come, they must also fight new versions of COVID such as the Brazil variant, which is more deadly and contagious.
- CV2 shipments are medicines that can fight variants and save lives! Treat them with care.
Looking forward
Key lessons learned

- Cooperation within the entire airline is key.
- Be(come) an agile and flexible organization.
- We are not all “in the same boat”, but we are all in the same storm.
- Airlines & forwarders seem to be prepared for vaccine movements
- Discussion between the airlines, forwarders and pharma companies are key
- Every vaccine shipment keep on require a lot of attention and dedication.
- Communication with all stakeholders is crucial (GHA’s, airports and regulators play a big role for the entire industry)
- The airline industry will bounce back! (Although it will be a long & painful process)
Keeping the global supply chain moving
Since March 19, 2020, United has moved...

- 937M+ lbs. of cargo moved on both passenger and cargo-only flights
- 11,900+ cargo-only flights operated worldwide
- 146M+ lbs. of critical medical shipments moved overall
- 628M+ lbs. of cargo moved on cargo-only flights alone
- 4M+ lbs. of military shipments moved overall
Vaccine transportation effort is a **global & industry-wide** effort

The airline industry will only return to “normal” once we reach herd immunity. We have an **obligation** to support this effort as quickly and efficiently as possible!

As an industry, **we must work together** to keep these vaccines moving and do our part to bring this crisis to an end.
Thank you!
Panel and Q&A

Please use the Q&A box and send to “Everyone”

Andrea Gruber
Head, Special Cargo
Moderator

Manu JACOBS
Managing Director Specialty Products, United Cargo

Jaisey YIP
Cargo & Logistics Development, Changi Airport

Mounir BOUAZAR
COVID-19 Vaccine Global Logistics Lead, UNICEF

Eddy WEYGAERTS
Transportation Manager, Pfizer

Terence SELL
Global Pharma Product Manager, Air Logistics, K&N
Wrap up & Closing Remarks

Andrea Gruber
Head, Special Cargo
IATA
Lessons Learned since the first vaccine roll out

- Capacity
- Regulatory
- Infrastructure
- Public-Private Partnership
- Communication
- Collaboration
- Sustainability
- Focus on quality
- Security
Industry Call To Action

• Sharing information - Global Collaboration
  • Plan - Prepare - Perform
  • Engage and communicate with partners/suppliers on scale up projects and initiatives to support COVID-19 vaccines distribution or humanitarian aid
  • Accessible on iata.org/cargo

• Capabilities & infrastructure industry platform – ONE Source
  • Visibility of facilities with validated information
  • Demonstrate competencies in handling expertise
  • Showcase adherence to quality standards
  • OneSource accessible here
Industry Readiness and Preparedness

Guidelines
4th Edition
30 March 2021

Regulations
Global Standards

Training
3,2K people trained

Certification – Risk Mitigation
296 certified
75 in progress
26 communities

Registry
400+ companies
Additional Outreach & Resources

THREE-PART WEBINAR SERIES: TRANSPORT OF VACCINES AND LIFE SCIENCE PRODUCTS BY AIR CARGO

Webinar 1: Readiness for vaccine and life science products transportation - 21 October 2020
Webinar 2: Global distribution and the flow of vaccines throughout the supply chain - 24 November 2020
Webinar 3: Key learnings in the aftermath of the vaccine distribution effort and paving the way for the future – 21 April 2021

VISIT iata.org/events/webinars/

Action Cargo: COVID-19

Enabling global trade

Airlines transport over 52 million metric tons of goods a year, representing more than 35% of global trade by value but less than 1% of world trade by volume. That is equivalent to $6.8 trillion worth of goods annually, or $18.6 billion worth of goods every day. Find out more interesting air cargo facts (pdf)

VISIT iata.org/cargo

Transportation of COVID-19 Vaccine

Air cargo plays a key role in the distribution of vaccines through well-established temperature-sensitive distribution systems, using cutting-edge technology and procedures. This capability will prove crucial to the quick and efficient transport of COVID-19 vaccines once available. This will naturally require careful planning by every segment in the entire cargo supply chain to ensure full preparedness when vaccines for COVID-19 are approved and ready for distribution.

IATA offers solutions and services to support cold chain capacity and resources for the anticipated scale of transporting and distributing COVID-19 vaccines.

VISIT iata.org/vaccine-transport
Thank you

- Please visit iata.org/vaccine-transport to register for the upcoming webinars
- Please visit iata.org/cargo for all COVID-19 resources

For further information, contact us at cargo@iata.org