



Air Travel And COVID-19 VOCs: Singapore's Recent Experience

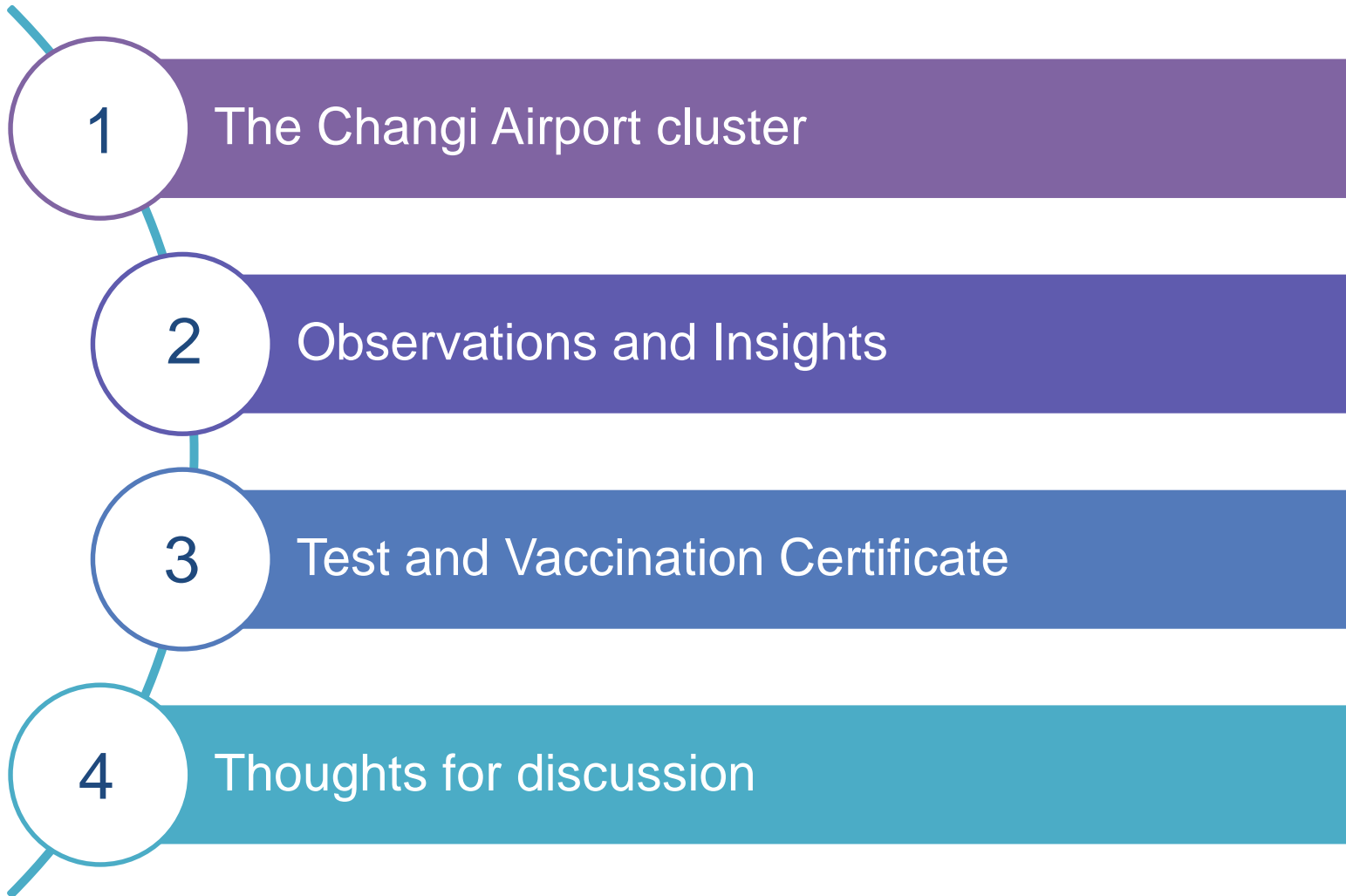
Dr Chong Chun Hon
Chairman, Civil Aviation Medical Board

1 July 2021

CAAS

Civil Aviation Authority of Singapore

Overview

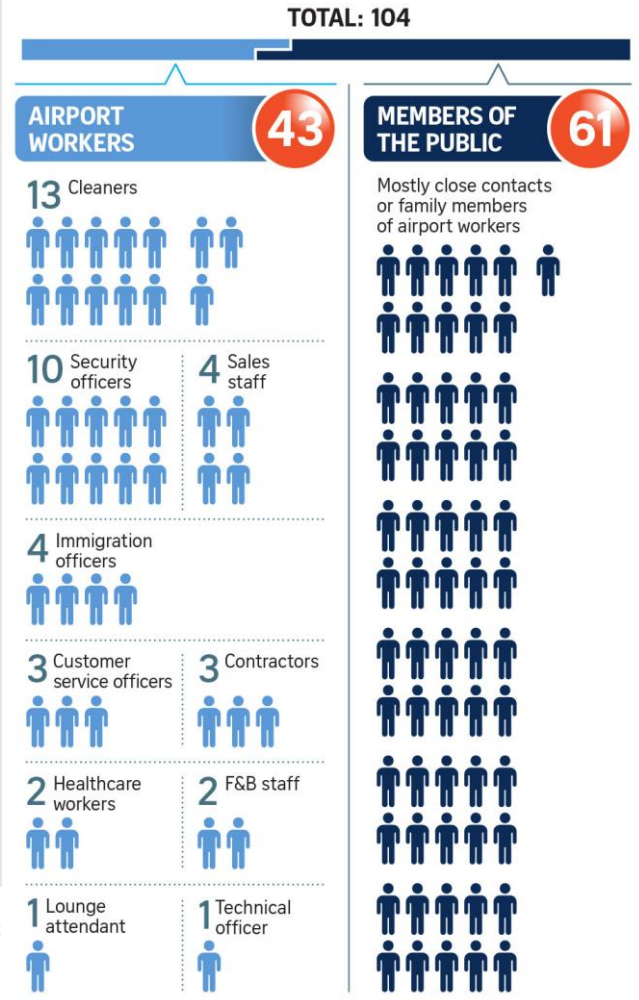


Recent COVID-19 cluster at Changi Airport

- 1st case detected on **4 May**: *Cleaner A* who cleans toilets at Terminal 3 south arrival pier.
- Subsequent spread
 - Worker to worker
 - Worker to public (via T3 foodcourt area)
 - Worker to household**
- Phylogenetic analysis identified link to traveler (family of 4) who arrived in Singapore on **29 Apr.**
 - PDT negative but OAT positive (low CT value)
 - CCTV: Husband used a toilet when *Cleaner A* was inside

Changi Airport Covid-19 cluster grows beyond 100 cases

The number of Covid-19 cases at Changi Airport has now increased to 104, with 43 airport staff testing positive so far. **The Straits Times** takes a look at the breakdown of the cases



Sources: MINISTRY OF HEALTH, CIVIL AVIATION AUTHORITY OF SINGAPORE AND CHANGI AIRPORT GROUP
PHOTO: LIANHE ZAOBAO
STRAITS TIMES GRAPHICS

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closed on 18 June 2021

TOTAL: 104

AIRPORT WORKERS

43

13 Cleaners



10 Security officers



4 Sales staff



4 Immigration officers



3 Customer service officers



3 Contractors



2 Healthcare workers



2 F&B staff



1 Lounge attendant



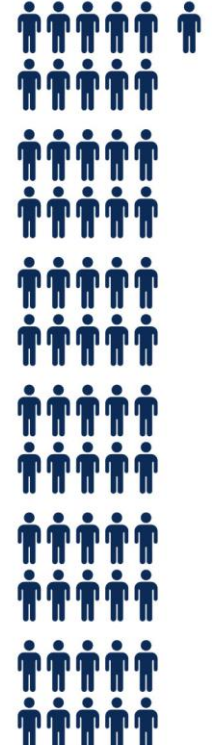
1 Technical officer



MEMBERS OF THE PUBLIC

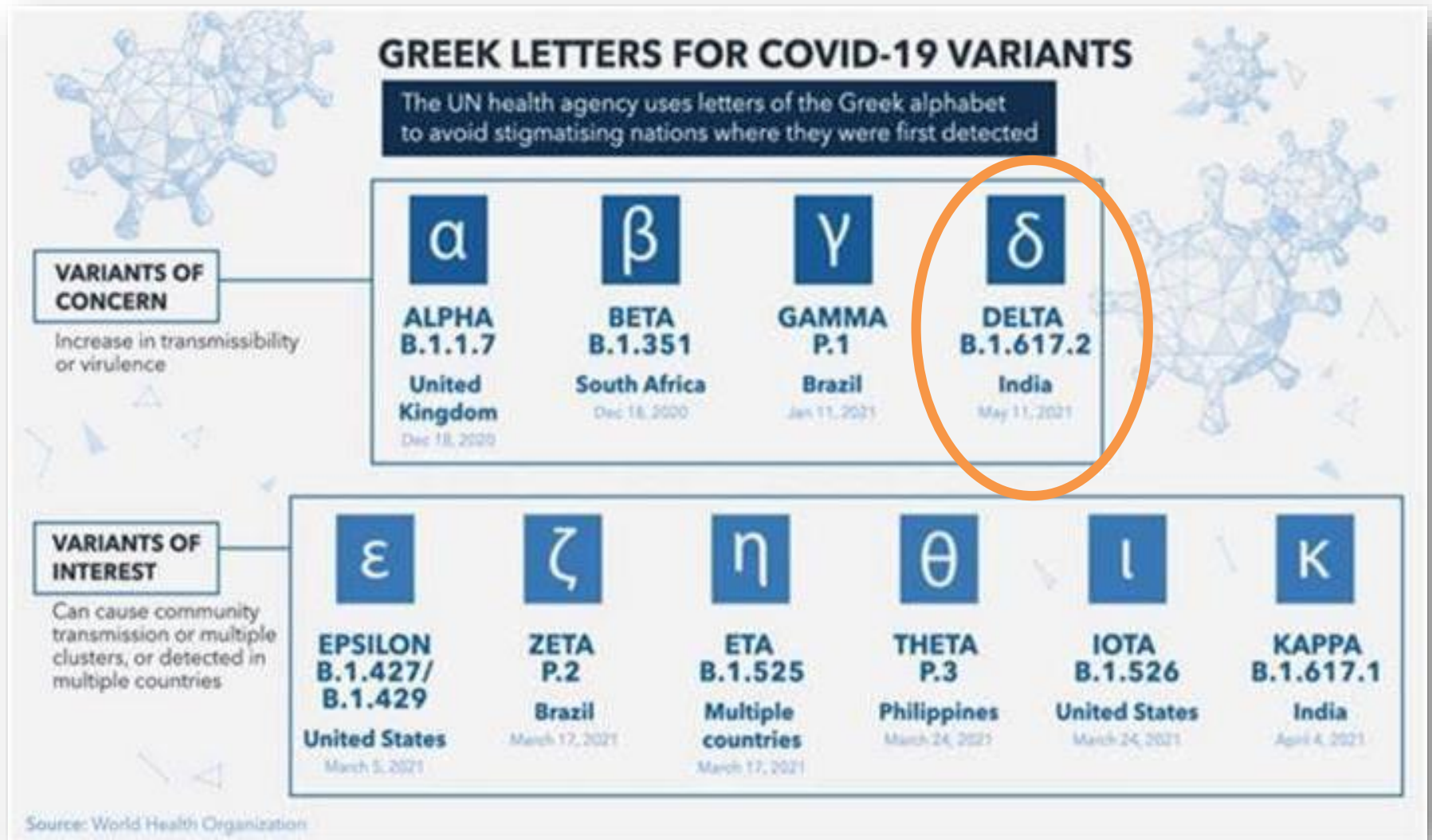
61

Mostly close contacts or family members of airport workers



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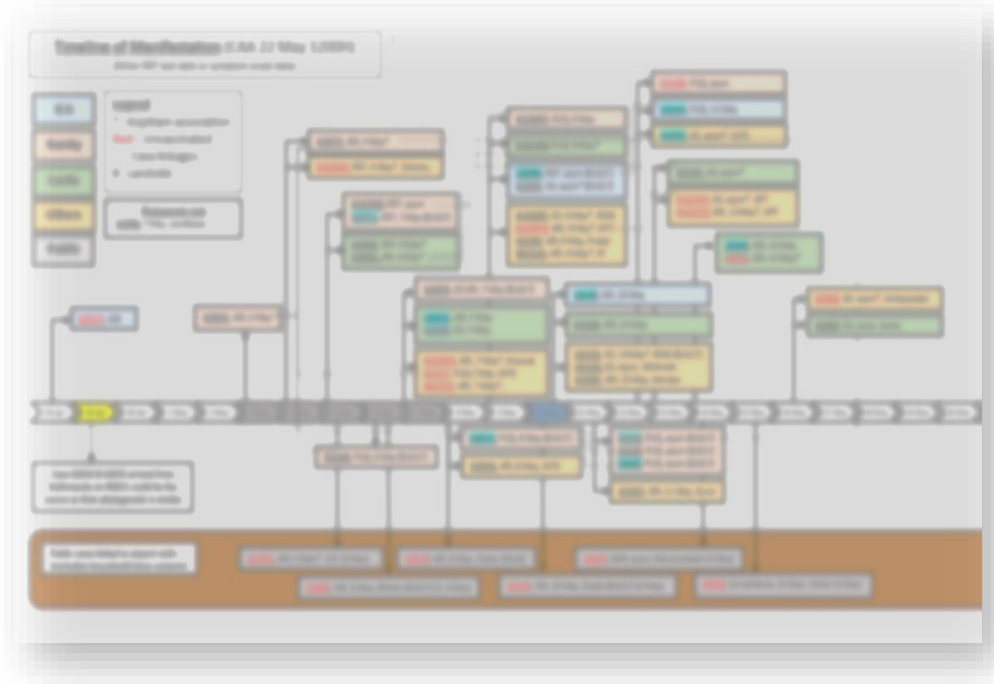
Variant behind the Changi Airport cluster



Schematic of Variants of Concern (VOCs)

Lessons from a more infectious variant

- Our observations from the airport cluster:
 - Incubation period
 - As short as 1 day
 - Transmissibility
 - Transient exposure
 - Age range of APW
 - 24 to 88 yrs
- Challenges:
 - Spreads extremely fast
 - Very mild symptoms or asymptomatic
 - Vaccine breakthrough



Lessons from a more infectious variant

Local cases involving variants of concern

As at May 31, there were 449 local Covid-19 cases infected with variants of concern, considered to be more easily transmitted. They include:

- 428 cases of the Delta variant, first detected in India;
- Seven cases of the Alpha variant, first detected in Britain;
- Nine cases of the Beta variant, first detected in South Africa; and
- Five cases of the Gamma variant, first detected in Brazil.

As for imported cases, the Health Ministry said that as at May 31, there were 491 cases infected with variants of concern. They include:

- 122 cases of the Delta variant;
- 197 cases of the Alpha variant;
- 168 cases of the Beta variant; and
- Four cases of the Gamma variant.

7-day moving ave peaked ~22 May
Started climbing slightly ~15 June

Vaccination: Demonstrated benefits

- Vaccination status of airport workers within the cluster:

	Vaccinated (77% sym / 23% asym)	Unvaccinated (75% sym / 25% asym)	
Symptomatic (72% v / 28% nv)	24	9	33 (77%)
Asymptomatic (70% v / 30% nv)	7	3	10 (23%)
	31 (72%)	12 (28%)	43

Some insights:

- About three-quarters of cases were symptomatic; proportions of symptomatic cases similar for vaccinated or unvaccinated cases
- Symptoms were mild for all
- Overall, unvaccinated cases seems to be slightly over-represented when compared to percentage of unvaccinated frontline airport worker population (>90% vax / <10% nvax)

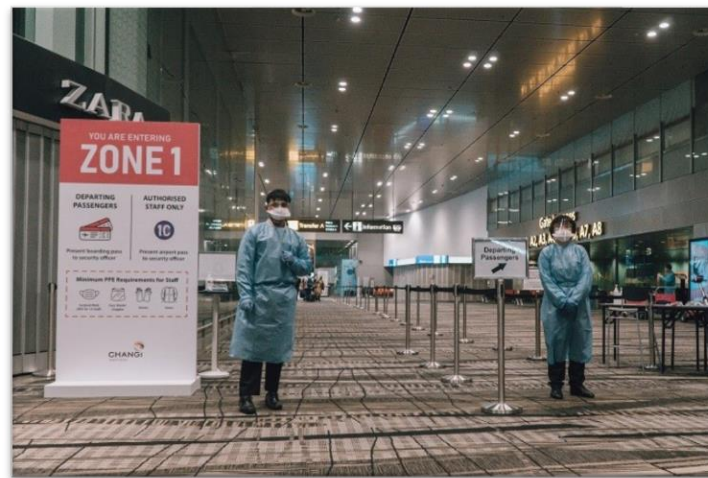
Vaccination: Demonstrated benefits

- Overall national vax vs non-vax outcome (caa 3 June 2021)
 - Fully vaccinated cases (n=93): only 1 (1.1%) who ever required O2 supplementation.
 - Unvaccinated cases (n=438): 6.4% ever required O2 supplementation; 1.4% ever required ICU admission; 0.7% demised
- Vaccination progress in Singapore:

National	Aviation workers
<ul style="list-style-type: none">• > 56% received at least one dose• > 36% fully vaccinated• Aim to reach 75% by 9 Aug 2021	More than 90% of frontline aviation workers vaccinated

Enhanced measures at Changi Airport

- Closed T3 foodcourt level (9 May); and Changi Airport to public (13 May)
- Stepped up **testing** of aviation workers
 - Special swab ops covered more than 18,000 workers
 - Increased frequency of Rostered Routine Testing (RRT)
- Stepped up **infection prevention and control measures**
 - PPE levels; restrict mingling; airside rest and meal areas; etc
- Tightened **safe handling of flights**
 - Pier designation (low risk vs others)
 - Pax from very high risk areas processed at remote gates – bussed to isolation facility after OATs (ART and PCR) and immigration processes



Enhanced measures at Changi Airport

Enhanced RRT (introduced since Oct 2020)

- ART(D3) + PCR(D7) for workers with direct exposure to arrival pax (Zone 1A and 1B)
- PCR(D7) for crew; OAT PCR + ART(D3) after returning from layover at overseas stations

Zone 1 Staff interacting with arrival/transfer passengers	Zone 2 Staff interacting with departing passengers	Zone 3 Staff interactions limited to departing passengers, public & office workers
<p>1A classification: Zone 1 Toilets, Medical Work Areas such as HSS and CTF, Stay Home Notice (SHN) escorts</p> <p>1B classification: Interaction with arrival and transfer passengers</p> <p>1C classification: Transient movement within Zone 1; no sustained contact with passengers, crew, and other staff working in Zone 1</p>	<p>Central Transit: Shops and staff within Central Transit</p> <p>Departure Immigration: Departure Immigration staff</p>	<p>Departure Hall: Check-in staff</p> <p>Public areas and shops: Office workers Jewel, landside shops</p>

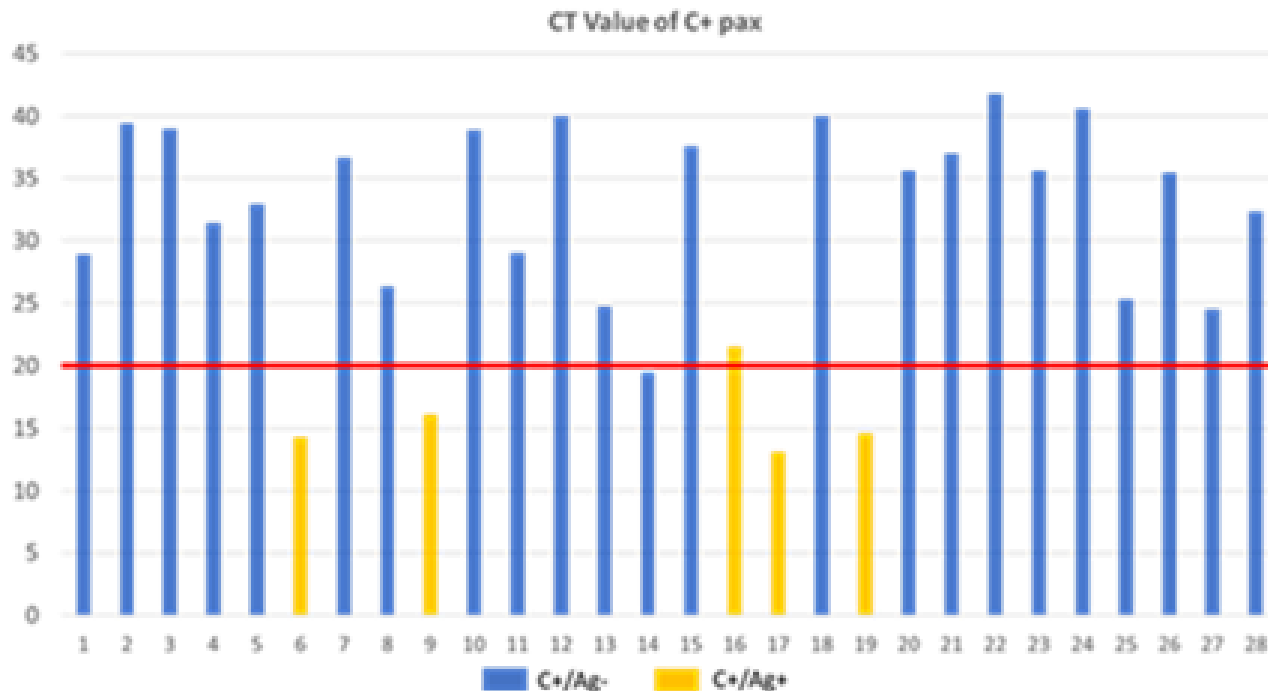
Enhanced Testing Requirements For Inbound Travellers

Stepping up:

- PDT for pax arriving from high risk countries introduced on 18 Nov 2020
- OAT (PCR) for all since 25 Jan 2021
- PDT for all since 30 Mar 2021
- **Added OAT (ART) for very high risk countries since 20 May 2021**
 - Initially, at test facility after immigration and baggage claim
 - From 10 June onwards, at remote gate

Enhanced Testing Requirements For Inbound Travellers

- **ART Results: Ag+ vs Cycle Threshold (CT) value** (caa 1 June)



- Potential use case of ART to enhance testing regime?

Implications on Air Travel

- International borders are important frontlines in the fight against COVID-19 pandemic; need to **open safely and steadily...**



Feb 2021

- Vaccination should not be a pre-requisite for air travel, however border measures can be calibrated according to risks analysis – **testing strategy** and **vaccination status** are important factors.

Ground work: Test and Vaccination Certificate (Tamper-proof, Verifiable, Interoperable)

- Critical for the purposes of **facilitating cross-border travel** with an ongoing pandemic.
- Singapore: Digital certs implemented Dec 2020. Onboarded vaccination cert function Apr 2021. Vaccinated persons:

Physical Card	Digital Certificates (on application)
<ul style="list-style-type: none">• Name• Identification number or passport number• Date of Birth• Name of clinic / vaccination centre• Name of vaccine used• Date(s) of vaccination	<ul style="list-style-type: none">• Issued in the HealthCerts standard (developed by the Ministry of Health and GovTech).• Based on OpenAttestation (OA), an open source framework using blockchain.• Online verification without the need for proprietary software or equipment.• Individual's data remains private; only a hash, or digital fingerprint is needed for verification.• Interoperable, verifiable, and tamper-proof, to expedite check-ins and customs clearance.

Thoughts for discussion

- Need for continued **adaptation of border safeguards** against COVID-19 transmission as variants emerge; as PH perspective evolves; etc.
- **Reliable** and **interoperable** test and vaccination certificates, and **mutual recognition**, are critical enablers for recovery of air travel.
 - Discussions will take time; need to start laying the ground work so that, when the time is right, travel can proceed smoothly
 - Many technology solutions are available and tested
 - ICAO's technical specifications for Visible Digital Seal (VDS) standards an important reference



Thank you