Is the cabin environment safe?

Dr David Powell
Medical Advisor IATA
Multiple Layers of Safety Throughout the Journey

1. **Health screening** including self-declaration and temperature screening

2. More **contactless and self-service** processes

3. More frequent and deeper **cleaning and sanitization** in airport and aircraft

4. **Physical distancing** at the airport where possible

5. **Mask wearing** for passengers and crew

6. **Simplified cabin service** to decrease crew movement and interactions with passengers

7. **Limited movement** during flight to avoid passengers congregating

8. **Contactless procedures** for customs and border protection
What are passengers saying?

• 86% say that they felt safe when traveling
  • Survey sample was of people who had traveled since June

• But mixed messages on cabin air quality
  • 60% say that cabin air is as clean as a hospital
  • 60% say that cabin air is dangerous
  • And their biggest concern is catching COVID-19 from the person next to them

Is this concern evidenced by the number of cases of onboard transmission?
## Flight-associated spread: **up to 44 people in 2020** (1.2 billion pax)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Author</th>
<th>Month</th>
<th>Primaries</th>
<th>Secondaries</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangzhou-Toronto</td>
<td>Schwartz</td>
<td>Jan</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Singapore-Hangzhou</td>
<td>Chen</td>
<td>Jan</td>
<td>15</td>
<td>1</td>
<td>Possible</td>
</tr>
<tr>
<td>Bangui-Yaounde</td>
<td>Eldin</td>
<td>Jan</td>
<td>1</td>
<td>1</td>
<td>Possible (by exclusion, questionable assumptions)</td>
</tr>
<tr>
<td>Tel Aviv-Frankfurt</td>
<td>Hoehl</td>
<td>Mar</td>
<td>7</td>
<td>2</td>
<td>Possible</td>
</tr>
<tr>
<td>Various-Greece</td>
<td>Pavli</td>
<td>Feb-Mar</td>
<td>21</td>
<td>5</td>
<td>Includes 1 cabin crew, 891 traced</td>
</tr>
<tr>
<td>Milan-Seoul</td>
<td>Bae</td>
<td>Mar</td>
<td>7</td>
<td>2</td>
<td>Possible, masks worn, asymptomatic primaries, 1 on the original flight + 1 on a subsequent flight</td>
</tr>
<tr>
<td>London-Hanoi</td>
<td>Khanh</td>
<td>Mar</td>
<td>1</td>
<td>15</td>
<td>Probable</td>
</tr>
<tr>
<td>New York-Taipei</td>
<td>Freedman</td>
<td>Mar</td>
<td>11</td>
<td>0</td>
<td>Masks worn</td>
</tr>
<tr>
<td>Boston-Hong Kong</td>
<td>Choi</td>
<td>Mar</td>
<td>2</td>
<td>2</td>
<td>Whole genome sequencing, both cabin crew</td>
</tr>
<tr>
<td>Sydney-Perth</td>
<td>Speake</td>
<td>Mar</td>
<td>3</td>
<td>11</td>
<td>8 definite/3 probable, whole genome sequencing,</td>
</tr>
<tr>
<td>Dubai-Hong Kong</td>
<td>Freedman</td>
<td>Jun-Jul</td>
<td>85</td>
<td>2</td>
<td>Possible, masks worn, 6 flights/1 with secondary</td>
</tr>
<tr>
<td>IATA Medical</td>
<td>MAG</td>
<td>Feb-Mar</td>
<td>1100</td>
<td>3</td>
<td>Possible, informal data, includes 2 cabin crew*</td>
</tr>
<tr>
<td>CDC</td>
<td>In media</td>
<td>2020</td>
<td>1600</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>2853</td>
<td>44</td>
<td>Includes 6 cabin crew</td>
</tr>
</tbody>
</table>

Excluded for lack of evidence/duplication: Yang et al (Singapore-Hangzhou), Qian et al (Hezhiang) *Excluded pilot-pilot transmission events, unknown when they occurred


References


See also: https://www.nejm.org/doi/full/10.1056/nejmc2001899 Wuhan to Germany
What does this tell us?

• 44 cases among 1.2 billion
  • 1 case for every 27.3 million travelers

• Even if we missed 90% of infections in this count...
  • It would be 1 case for every 2.73 million travelers

Perhaps the more important question is **why is it so rare?**
Factors lowering the risk of COVID-19 transmission onboard aircraft

1. Seats and passengers face forward meaning limited face-to-face interactions.

2. Seat backs act as a solid barrier.

3. Research to date suggests airflow exchange rates and direction are less conducive to droplet spread than other indoor environments, or modes of transport.

4. Modern jet airliners deliver high air flow and replacement rates, combined with hospital-grade HEPA filters. Cabin air is exchanged every 2-3 minutes.

Unlike other modes of transport, the cabin environment already makes the transmission of viruses difficult and we have seen little evidence of onboard transmission.
Manufacturer’s presentations

Bruno Fargeon  
Airbus

Dan Freeman  
Boeing

Luis Carlos Affonso  
Embraer
What have we learned?

- Risk of COVID-19 transmission on board appears to be low
  - Reflecting design characteristics of the aircraft
  - Enhanced by mask-wearing

- In addition, precautions along the travel experience will help people to travel, safely in the COVID-19 pandemic
Safety from departure to arrival

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5. **Mask wearing** for passengers and crew
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Some of the many industry and academic collaborations