FAA Aviation Safety COVID-19 Research Activities

Presented to: Research, Engineering and Development Advisory Committee (REDAC)
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Purpose

• Clarify organizational roles in managing communicable disease risk in the flying public (scoping what to do)
• Review research activities supporting COVID-19 pandemic response (what we’ve done)
• Describe proposed research activities to inform planning for and mitigating future communicable disease outbreaks (where we’re going)
Background

• No Aviation Safety (AVS) communicable disease research requirement prior to the FY23 Aeromedical Research BLI Plan

• AVS Services/Offices organically initiated within-year-of-execution FY21 research projects to meet urgent needs

• Public health/emergency response function being established within to the Office of Aerospace Medicine

• AVS is transitioning from a response-focused to a preparatory-focused communicable disease research agenda starting in FY22
Organizational Roles (scoping what to do)

Scope includes “[c]oordinating and supporting prevention, preparedness, response, recovery, and mitigation activities among transportation stakeholders” (Emergency Support Function #1 – Transportation Annex, 2016)

Knowledge gaps = research drivers
- Communicable disease transmission risk within aircraft cabins
- Risk control measures

Program Status of Research Efforts and Action Still Needed to Develop Federal Preparedness Plan

FAA

Other Transportation Modes

Emergency Support Function #1 (ESF-1) Transportation

ESF-8 Health (HHS)

Other ESF’s
Responsive Research (what we’ve done)

COVID-19 transmission risk within transport aircraft cabins
- Aeromedical evidence based statements (knowledge capture and synthesis on high interest topics for decision makers)
- Preliminary transmission risk calculator (V/V pending)

Aircraft certification concerns from COVID-19 disinfection
- Damage to aircraft surfaces
- Reduction of flame retardant properties

Carbon dioxide risk from vaccine ultra-low temperature cold chain
- Incapacitation of aircraft occupants
- Incapacitation of cargo handlers

Goal: Rapidly Sourcing Knowledge Needed by the Aerospace Ecosystem
Proposed Research (where we’re going)

- Office of Aerospace Medicine is the primary Aviation Safety (AVS) research sponsor for communicable disease hazards
- Aerospace Medicine R&D Strategic Plan “Communicable Disease Preparedness and Response” focus area
  - Scoped to current COVID-19 pandemic response and planning for and mitigating future communicable disease outbreaks
  - Three research lines of effort:
    - Supporting the airman medical certification process
    - Supporting disease surveillance
    - Mitigating the risk of transmission of respiratory diseases of potential public health significance within transport aircraft cabins
Aerospace Medicine R&D Strategic Plan (July 2021)

**Strategic focus area**

**RESEARCH FOCUS AREA 3 – COMMUNICABLE DISEASE PREPAREDNESS AND RESPONSE**

**Lines of effort**

- 3.1 Medical certification
  - 3.1.1 COVID-19 sequelae
  - 3.1.2 Remote aeromedical certification exams
- 3.2 Disease surveillance
  - 3.2.1 Risk assessment
  - 3.2.2 Risk mitigation
  - 3.2.3 Risk management plan
- 3.2 Cabin health safety
Systems Approach & Operational Risk Management

Scope: Respiratory disease transmission occurring within the aircraft and its mitigation by intervention within the aircraft

- Identify the threats of harm
- Assess the risk
- Analyze risk control measures
- Implement risk controls
- Make control decisions
- Supervise and evaluate

Communicable Disease Preparedness and Response

3.2 Disease Surveillance
3.2.1 Cabin health safety risk assessment
3.2.2 Cabin health safety risk mitigation
3.2.3 Cabin health safety risk mgmt plan
## Cabin Health Safety Research Projects

<table>
<thead>
<tr>
<th>Research need</th>
<th>Gap</th>
<th>Research output</th>
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<tbody>
<tr>
<td>Cabin Health Safety Risk Assessment</td>
<td>Ability to estimate the risk for transmission of respiratory diseases of potential public health significance within transport aircraft cabins.</td>
<td>• Modeling, Simulation &amp; Analysis (MS&amp;A) framework</td>
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<td>• Associated tools</td>
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<tr>
<td>Cabin Health Safety Risk Mitigation</td>
<td>Knowledge of the potential solution set of control measures to mitigate the risk for transmission of respiratory diseases of potential public health significance within transport aircraft cabins</td>
<td>• Risk mitigation solution sets</td>
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<td>• Associated mitigation evidence base</td>
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<td>• Mitigation M&amp;S representations (as applicable)</td>
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<tr>
<td>Cabin Safety Risk Management Plan</td>
<td>Knowledge transfer and operationalization of the results of risk assessment and mitigation related research</td>
<td>• Cabin health safety response plan</td>
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<td>• Analysis toolkit (MS&amp;A tools and associated data)</td>
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Questions