

Transportation Research Board  
Research on the Transmission of Disease in Airports and on Aircraft: A Symposium  
Washington, D.C.  
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Flight Attendant Research Recommendations  
Association of Flight Attendants-CWA, AFL-CIO

1. Measured Concentrations of Simulated Airborne Pathogens in Airplane Cabins

Adapt the Boeing 767 mockup at the University of Illinois, or some suitable alternative, to operate under simulated in-flight environmental conditions. The cabin mockup would be placed in an environmental chamber that allows variation of cabin pressure altitudes up to 8000 ft above mean sea level, as well as temperature and humidity levels consistent with typical conditions encountered during boarding, cruise and deplaning operations on large commercial passenger aircraft. Passengers and crew could be actual human subjects, one ill passenger with other occupants simulated with manikins, or all manikins; movable items that might alter air flow patterns such as beverage carts could be operated by humans or robots. Depending on the nature of the pathogen “source(s)”, sensors at key cabin locations could be used to record time dependent tracer gas concentrations or sampling devices could be used to capture viruses or bacteria at various locations. Resulting data could be used to develop and/or validate analytical models that would inform decision-making into, for example, appropriate targeting of potentially exposed passengers and crew during disease outbreak contact tracing investigations.

2. Comparative Study into Engineering and Source Controls and Personal Protective Equipment in Minimizing Risk of Aerosol Disease Transmission in Airplane Cabins

Assess the feasibility and effectiveness of various options for minimizing disease transmission in airplane cabins. Engineering control options might include varying air conditioning pack flow rates and cabin air recirculation levels, varying air flow rates and directions from individual air “gaspers” located above each seat location, and ultraviolet or other active measures in a/c ducts to decontaminate recirculated air flows. Source control options to minimize droplets and aerosols from coughs, sneezes and tidal breathing might consider the use of cough etiquette techniques (into elbows or tissues) or surgical masks or respirators. Personal protective equipment might include disposable plastic or non-latex surgical gloves for crew use during routine cabin service operations or N95 or other disposable or re-usable respirators. Target groups for this study may include randomly selected cohorts of frequent travelers and cabin crew members. Use of the airplane cabin mockup described in Study #1, above, may help to advise or facilitate portions of this study.

3. Measurement of Typical Pathogen Levels on Fomites in Airplane Cabins

Identify aircraft cabin surfaces that encounter frequent contact with fingers of passengers and crew (e.g., tray tables; armrests and in-flight entertainment remote controls; seatbelt clasps; lavatory doorknobs; handles and other fixtures; beverage cart handles; galley equipment and coffee pots; flight attendant call buttons, overhead light switches and air “gaspers”; etc.) Determine actual levels of selected disease pathogens and corresponding pathogen transfer rates to skin at each identified location, in the cabins of actual, in-service aircraft in sufficient numbers

to allow statistical validity. Resulting data would inform targeting, prioritization and scheduling of both routine and post-outbreak disinfection programs.

#### 4. Control of Pathogen Levels on Fomites in Airplane Cabins

Identify appropriate, cost effective active and passive measures to minimize levels of various common disease-causing surface pathogens in airplane cabins. Active measures might include disinfectants, UV light, or temperature/humidity. Passive measures might include use of self-sanitizing surfaces or surface materials with low contact transfer rates of pathogens to skin.

5. Perform Study #3 in Airports.

6. Perform Study #4 in Airports.

#### 7. International Database of Pandemic Policies, Procedures and Practices in Aviation

ICAO (and possibly WHO) collaborate with international regulators and aviation industry and labor groups to develop and manage a database of regulatory, public health, training and airline and airport policies/procedures/practices that support global aviation pandemic preparedness and response measures. The database would support future research initiatives designed to identify, assess and disseminate rapidly global best practices to industry and regulators.