Infection Prevention Aspects of Air Travel

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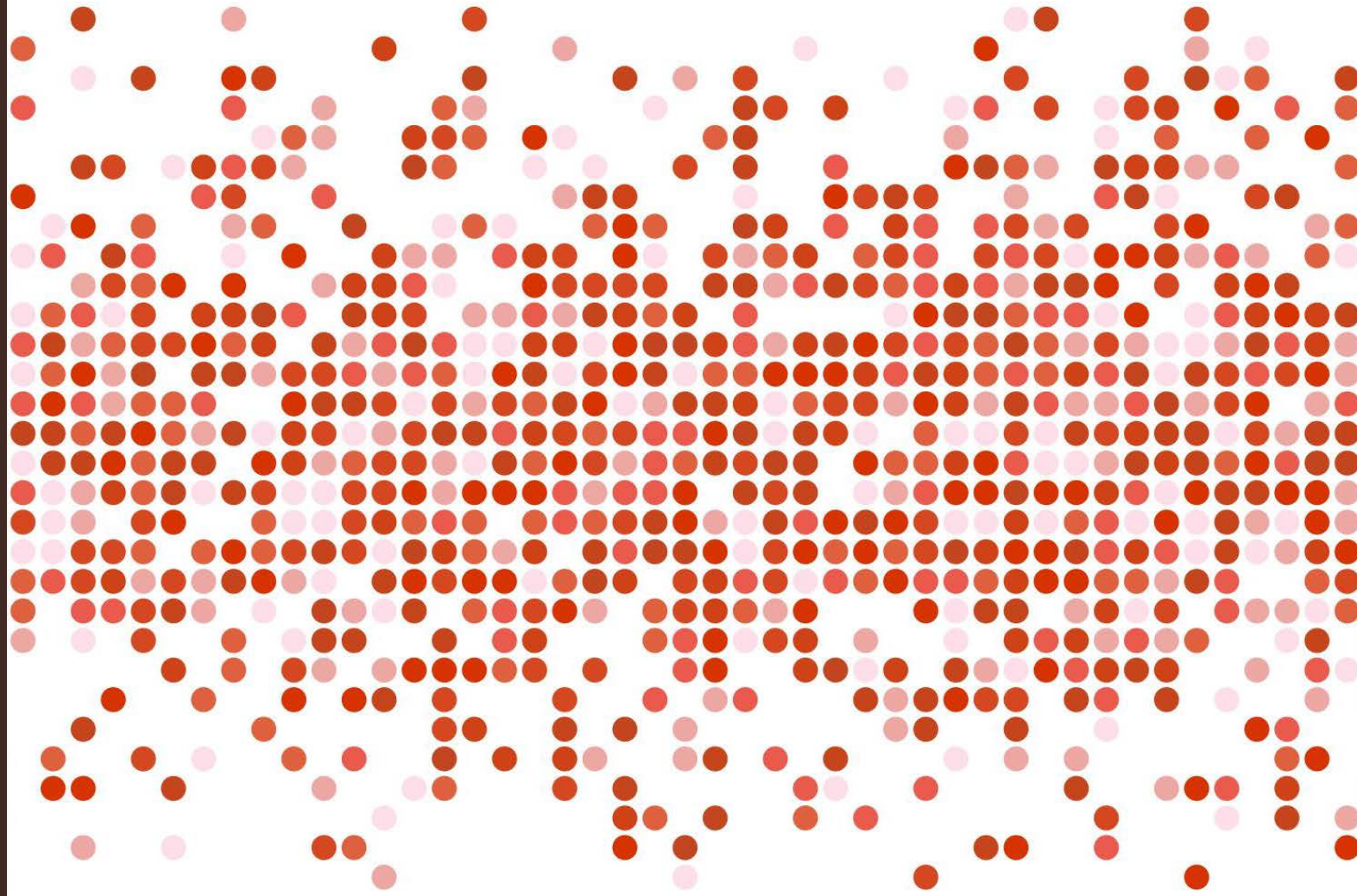
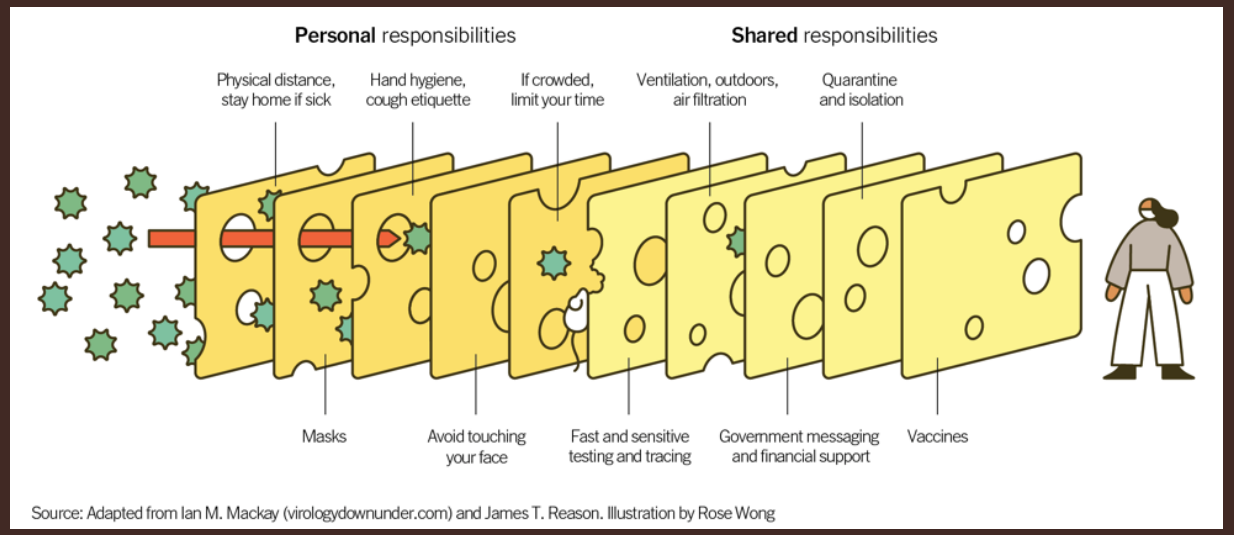


Infection Prevention – What is it?



Source: Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong

Prevents and stops the spread of infectious diseases – traditionally in a healthcare setting

Wholistic approach to disease prevention which includes:

- Disease surveillance
- Cleaning/disinfection
- Ventilation/air filtration
- Transmission-based precautions (PPE, isolation precautions)
- Contact tracing & risk assessments
- Policy development
- Human behavior and education
- Science communication

Air Travel – A Unique Environment

Airport

Airplane

Baggage claim

Buses/transportation

Air Ventilation, Masks, & Response Protocols

- 2013 NAS report emphasized ensuring airport HVAC system are assessed and providing necessary pressure, air filtration, air exchanges, and circulation. Special focus on high-occupant areas within the airport as well
- Focus on **airplane ventilation** when at the gate – efforts to reduce ventilation downtime (HEPA filtration, cabin air turnover every 3 min)
- Mask requirements by airlines and airports, but **variability in accountability**
- Bias in studies regarding masks & airplane transmission capabilities – masking compliance, single-source, etc.

Ventilation and masking discussions tend to be airplane-focused

Cleaning and Disinfection

It's never as simple as a spray or hand sanitizer….

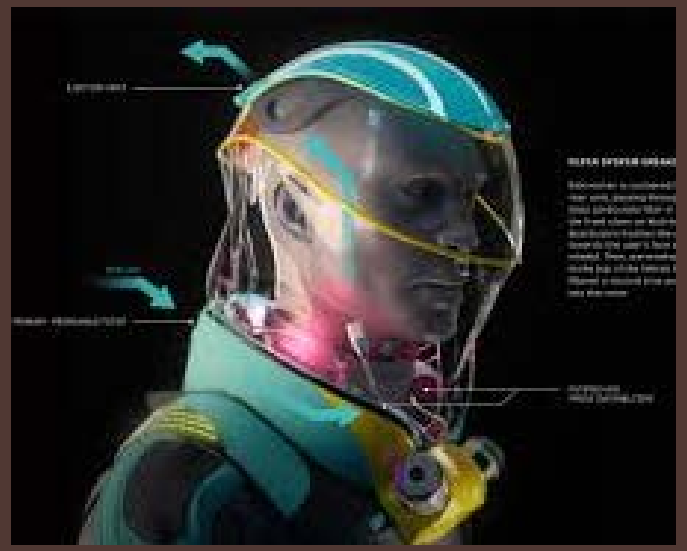
EPA List N – but what about contact times? Who determines high-touch surfaces? Frequency of application? Who actually monitors their use?

UV-C

- Can be effective germicidal (surface and upper-room) to lower concentrations of microorganisms
- Limited published data on wavelength, dose, and duration for SARS-CoV-2
- Does not penetrate biofilm or replace manual cleaning/disinfection
- Variability in products and efficacy – regulated by FDA as an electronic product that emits radiation (medical & non-medical), but there are no performance standards for non-medical

Hygiene Theater

Good intention, but risk reduction is additive



Human Factors and Risk Perception

- Airplane vs airport (security, terminal, gate, restaurant, and baggage claim) **– what are we focused on vs what are we ignoring**?
- Distribution of snacks and drinks on the plane
- Exceedingly difficult to assess **secondary attack rates** and outbreaks in airports vs airplanes
- Focus is often on passengers, but we must also remember crew/airport operations, and guests
- Are we making it easier or just making assumptions?

Sustainable Infection Prevention Efforts

Aerospace leans into human factors assessments – can we do this with infection prevention efforts in air travel?

All hazards approach and ability to lean into guidance evolution

Inclusion of multi-disciplinary groups, like infection preventionists, epidemiologists, science communicators, virologists, infectious aerosol experts, etc.

Drive cultural change that continues to include infection prevention efforts as a facet of travel