

Infrastructure epidemiology

A public health-based approach to help asset owners and operators restore services and build confidence for a pandemic-resilient future



Infrastructure epidemiology: a unique discipline

Our health expertise can support asset owners and operators to restart or maintain services, while reducing risk.

We have combined our renowned infrastructure capabilities with the expertise of our International Health team, which has delivered infectious disease control programmes for more than 20 years, and is currently operating in over 30 countries.

Understanding the role infrastructure plays as a vector for the spread of diseases such as COVID-19 enables us to advise on and plan interventions to reduce transmission. It's a unique insight and discipline we call 'infrastructure epidemiology'.

Infrastructure epidemiology is about helping our clients exercise leadership to control the spread of infectious diseases, including COVID-19. It is also about keeping their employees informed and safe, and rebuilding people's confidence that the risk of infection when using public services is being effectively managed. Strong leadership and the willingness to adapt the use of their assets according to core infrastructure epidemiology principles are the main requisites to restore services and protect revenue, while safeguarding users and wider society.

Infrastructure epidemiology principles

The core guidelines provided by governments and health authorities to reduce exposure and risk of infection include:

- Increasing the distance between people and reducing the amount of time that people spend in enclosed spaces to limit viral transmission through respiratory droplets and aerosols in the air
- Avoiding contact between people to limit direct transmission
- Reducing contact with fomites (such as objects and surfaces) and improving overall hygiene (such as handwashing) to limit risk of transmission via touch

However, these interventions may not be sufficient if infrastructure owners and operators are to reduce the infection risk of their public-facing assets. At Mott MacDonald we work with our clients to implement measures such as: re-engineering passenger flows; reducing contact between employees and customers; reviewing processes and technology; and developing effective communications to help keep people safe.

How intense interventions should be depends on underlying transmission rates – but the speed at which epidemics and pandemics spread means that infrastructure operators must always be prepared. If transmission risk can be sufficiently reduced using the latest evidence that is available, the public can be reassured that the risk of using transport, sports or social infrastructure is no greater (or could even be lower) than the risk of normal daily activities in public places.



How we can help

Through our experience in epidemiology, disease control and infrastructure we will:

- Help you rebuild confidence and strengthen your leadership
- Look to streamline your operational processes through evidence-based risk analysis
- Focus on a few, essential, evidence-based measures that are known to work
- Help you build capacity and revenue
- Help you to confidently manage stakeholders based on insight and evidence

Recent work includes:

- Providing COVID-19 advice to the Port Authority of New York and New Jersey for their airports and rail transit system
- Managing disease control interventions in over 30 countries through our public health and epidemiology specialists, including the £265M Fleming Fund on behalf of the UK government to fight antimicrobial resistance
- Developing several Nightingale and other surge hospitals in the UK in a very short time, with capacity for over 7000 beds to treat COVID-19 patients



Our evolving COVID-19 resource hub is unique in our industry

Global understanding of the pandemic is advancing quickly. Infrastructure owners and operators need to respond using the latest information.

Since the start of the COVID-19 pandemic, we have been collating and reviewing global evidence about the disease, its transmission, detection, clinical features, and medical progress in treating it and developing a vaccine.

Our insight and advice are based on the best available information and collated as a live resource that is continuously updated as new information emerges. Our epidemiologists and public health specialists sift, compare and challenge information for credibility and quality, replacing out-of-date guidance as new findings become available. The result is a best-in-industry foundation to guide our clients to make better investment decisions and reduce risk.

Guiding principles of non-pharmaceutical interventions (NPIs)

Four key principles form the basis of our guidance to clients:

- Minimise access to the facility
- Minimise time spent in the facility
- Minimise touch of shared surfaces
- Optimise hygiene

From these guidelines, we support our clients to make a number of necessary interventions to restore services, while reducing contagion risk:

- **Get buy-in for your containment strategy:** Include all key stakeholders in core decision-making
- **Establish new ways of working:** Remove non-essential staff, processes and access to facilities
- **Reduce exposure risk:** Work to reduce the density of people in certain areas and minimise the time people spend in the facility
- **Re-engineer passenger flows:** Examine and adapt how people circulate to encourage social distancing and minimise touch and time spent in the facility
- **Minimise personal contact:** Examine how people interact in your facility and adapt processes to reduce close contact
- **Eliminate touchpoints:** Minimise contact with fomites by removing non-essential surfaces and redesign processes, using digital solutions where possible
- **Hygiene and maintenance:** Perform the 'basics' of cleaning and maintenance and adapt where needed for added protection
- **Individual protection:** Hand sanitiser, face coverings, and personal protective equipment (PPE) for staff
- **Effective communication:** Keep people informed, so they can play their part – eg asking staff to carry out necessary preparations, and asking customers to adopt required behaviours

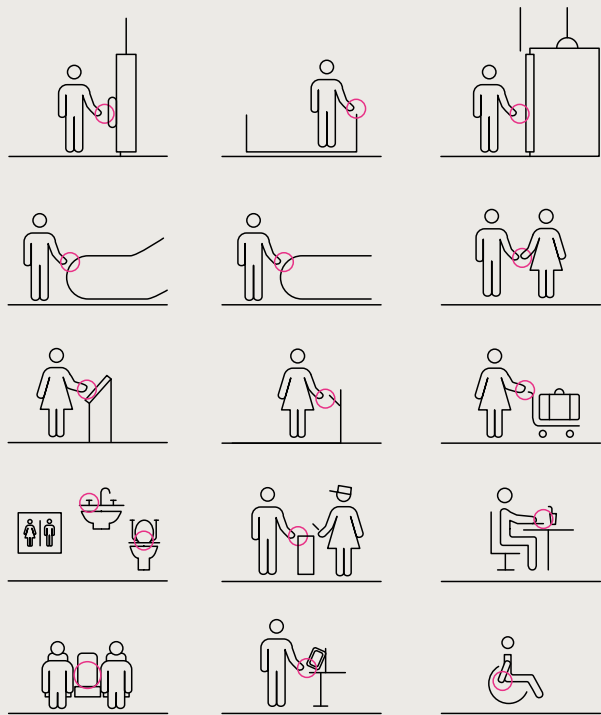
People

We use a 'circles of protection' approach to safeguard your customers.



Touchpoints

We examine touchpoints across your facility to help reduce the risk of infection.



A three-step process for coming out of COVID-19

A phased strategy will help asset owners and operators re-open their facilities, while managing contagion risk.

1. → 2. → 3.

1. Immediate actions:

Existing assets, equipment and processes should be reviewed, with new procedures employing the NPIs above to reduce the risk of transmission.

2. New solutions:

Employ new technologies (such as contactless payments/tickets or using data to provide insight into transmission risks and target interventions) to further reduce the risk until a vaccine is available.

3. Permanent changes:

Adapt assets, equipment and processes to further strengthen risk management. Planning and design of future assets.

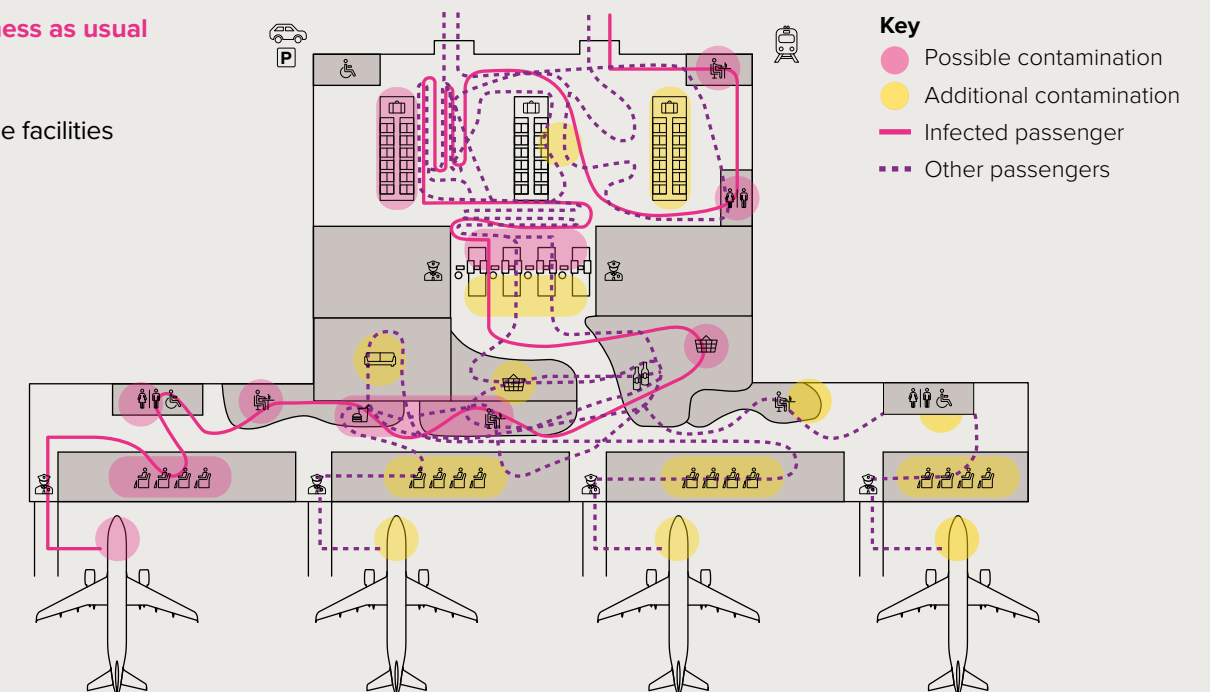


Customer movements

Adapting the movement of customers or users in your facility can reduce risk. This diagram shows how passenger flows can be modified in an airport terminal building.

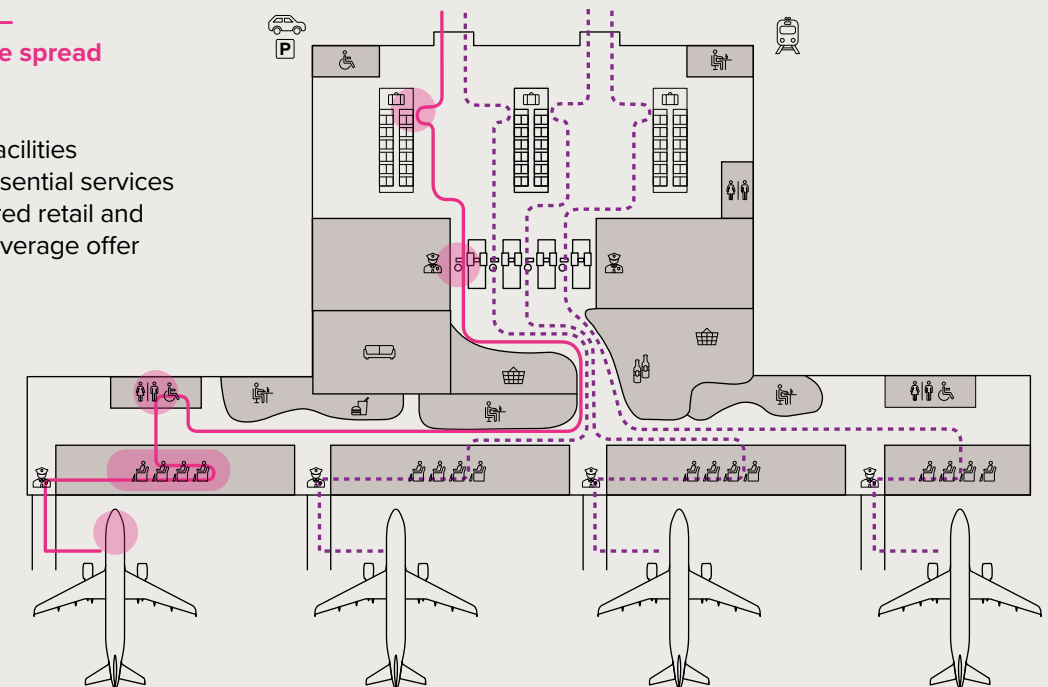
Historic business as usual

- Common use facilities



Reduced risk – minimising the spread

- Dedicated facilities
- Focus on essential services
- Re-engineered retail and food and beverage offer



Opening opportunities with connected thinking.

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