COVID Response

March 2021

Ventilation Risk Assessment Tool

(COVID-19 Multi occupancy space assessment)

Occupational Health and Safety Service

HSD211M (rev 2)

UNIVERSITY OF CAMBRIDGE

Document Control

Version	Reviewed by:	Title	Tracking	Date
	Alison Gower	HSD211M Ventilation Risk Assessment Tool		December 2020
Rev 1	Alison Gower	HSD211M Ventilation Risk Assessment Tool (COVID-19 Multi occupancy spaces)	P 6 Adjusted face visor risk factor in Table 2 - Face	February 2021
Rev 2	Alison Gower Andrea Eccles	HSD211M Ventilation Risk Assessment Tool (COVID-19 Multi occupancy spaces)	Due to decreasing local infection rates; Addition of table 7. Cambridge COVID case rate mitigating factors. Increased individual risk of infection rate from 1% to 6% in Airborne.cam	March 2021

Ventilation Risk Assessment Tool

In the initial stages of the Covid-19 pandemic there was not as much information available as to the importance of ventilation in the fight to reduce transmission of the coronavirus. This guidance will give you the information on key factors that can help you assess this aspect of risk management and improve ventilation in your buildings.

COVID-19 is thought to spread by three mechanisms:

1. **Large droplets**- Large droplets fall to the ground quickly. This transmission route can be reduced by social distancing and face coverings.
2. **Fomite transmission** - is when an infected person touches a surface, or aerosol/droplets fall on surfaces, then a susceptible person touches that same surface and then their face. We can reduce this transmission route by washing our hands and surfaces frequently.
3. **By aerosols** - The final transmission route is via aerosols, which are tiny particles that remain suspended in the air, build up over time, and mix throughout a space. This transmission route can be decreased by reducing the length of time of an activity, reducing the number of people in a space, and increasing ventilation.

It is increasingly clear that airborne transmission can play a significant role, especially for asymptomatic and pre-symptomatic cases. Because the risk of airborne transmission was not as widely recognised as it could have been for so much of the pandemic, it is particularly important that it is emphasised now, and that buildings are reassessed . This is especially important as colder weather ensues and occupants will not be as keen to open windows to provide thermal comfort.

Ventilation is key in helping to avoid super spreading events, as existing evidence shows these are more likely to occur when a group of people gather in a poorly ventilated space, for a significant length of time, often in situations where people are speaking loudly or singing.

It is not enough for building services to be improving ventilation behind the scenes. A large proportion of rooms in university and college buildings are naturally ventilated through openable windows. If people do not understand the importance of ventilation, they will not know to open these windows. **Ventilation should be given equal weight to hand washing, mask wearing, and social distancing**

Key control measures

1. Open windows

Coronavirus can be spread by small particles emanating from an infected person's airway that can remain suspended in the air for long times, get mixed throughout a room and build up over time. This means it is very important to enhance ventilation whenever possible.

- Open windows before meetings start and leave them open afterwards (being mindful of security aspects when the building is not occupied).
- Do not have meetings or work with others in a room that has no obvious source of outdoor air.
- Ask staff/students to dress for the colder temperatures.
- Display posters to remind room users to open windows.

2. Reduce room density

Ensure that where in-person meetings/working is necessary people numbers are reduced as much as possible.

- Consider using larger spaces for meetings that are currently not being used e.g. seminar rooms, lecture theatres.
- Timetable space so as to ensure that all staff/students have access but for a limited time.
- Decide on maximum user densities, or reassess spaces using the risk assessment tool to guide you.
- Display posters on each space to communicate maximum occupancy levels to users.

3. Reduce occupancy time in rooms

Over the course of a day's use, aerosol builds in a room. Ensure that rooms are not put into continuous use and time tabled sessions with large ventilation gaps 1hr+ where possible to allow a fresh air supply into the space.

- Limit use to an hour where possible.
- For sessions over an hour consider using a virtual meeting space.
- Ensure that staff/students leave work areas for breaks times and lunch.

4. Face coverings

Face coverings dramatically reduce the amount of aerosol in a space.

- Ensure that all who can wear a face covering do so at all times in multi occupancy spaces.
- Where work requires close contact for over 15 minutes, ensure FFP3 masks or air hoods are worn.

- Face coverings are not needed in single occupancy spaces but will be needed when staff leave these areas and go into communal spaces.
- Display posters to remind users to wear a face covering.

5. Mechanical ventilation

A large number of University buildings have mechanical ventilation. This can be beneficial due to larger number of air changes compared to a naturally ventilated space. You should find out the details of your system before conducting the risk assessment. In some cases mechanical ventilation can create danger zones where contaminated air builds up in an area. These will be found with enhanced modelling/survey.

- Where possible find out the number of air changes per hour for you mechanical ventilation. Above 10 changes per hour is good.
- Find out if the ventilation feed is fresh or recirculated air or a combination of the two, if possible set the system to run on 100% fresh air feed, or as high as the unit will allow.
- Ensure that air vents are free of obstruction and that systems are up to date with regular servicing.
- If air is recirculated only do not use the system. Communicate the need to not use this to building users if it cannot be isolated.

Ensure that all multi occupancy areas / rooms are risk assessed with the ventilation tool.

NB some areas maximum occupancy figures may need to be adjusted once the space has been assessed using this tool.

Ventilation Risk Assessment Tool – Multi Occupancy Spaces

This tool is an indicator and provides a guide to risk factors. Should a medium or high risk be calculated you should contact the Safety Office for further advice. If very high risk factors are calculated specialist technical help and analysis will be necessary.

Is face to face contact essential?

Acceptable work examples

- Practical sessions e.g. music or science based
- Physical work activity e.g. maintenance teams
- Mental health need – counselling session, persons who live alone.
- Privacy need e.g. Confidential discussion that cannot be done online
- Unable to work from home due to home circumstances – Personal safety reasons, children at home.
- To pick up essential equipment
- Supervisions that cannot be completed online
- Work that cannot be done from home

Unacceptable work examples

- Administration/computer based work
- Non-essential face to face meetings
- Socialising – team coffee breaks, introduction meetings

Yes	No
Proceed to Risk assessment tool	Do not use space for face to face contact

Ensure that the need for the space use is detailed on the risk assessment.

Risk assessment tool for assessing a physical space– Hands, Face, Space, Ventilation, Duration

Ventilation cannot be assessed without first ensuring that other key control measures are in place.

1. Hands

Control measure		
Hand sanitiser/washing facilities at entrance/visual reminders in place	0	
Hand wash facilities in toilets and kitchens only /no visual reminders	+10	
No hand sanitiser available/no handwashing facilities at all/no visual reminders	+20	

2. Face

Assumption - everyone is wearing the same face protection in the space

Control measure	Score	
FFP3 mask/half mask with filter (un-valved)/air-fed hood	+0	
FFP2 mask (un-valved)	+0	
Any valved mask	+5	
Type II face covering	+5	
Fabric face covering (non-rated)	+5	
Face shield/visor	+10	
No face coverings worn	+20	

3. Space

A. This relates to the physical distance between people in the space

Control measure	Score	
>5m	0	
2-5m	+5	
2m	+10	
<2m	+20	

* Social distancing of 2m must be maintained at all times unless specific essential reasons for working closer are identified, risk assessed and controlled by other measures. E.g. Clinical setting, use of shared laboratory equipment.

B. Occupancy level (persons)

Control measure	Score	
1	0	
2	+5	
2-5	+10	
6-8	+15	
8+	+20	

* Occupancy rates cannot exceed any number determined by the 2m social distancing rule.

4. Ventilation

Control measure	Score	
Mechanical ventilation with HEPA filtration	0	
Mechanical ventilation - supplied from fresh air feed	0	
Positive air pressure in room	+10	
Openable windows/doors– natural ventilation	+10	
Mechanical ventilation – recirculated air/fresh air mix	+15	
Mechanical ventilation – completely recirculated air (including recirculating air conditioning units)	+20	
No ventilation (internal space or no opening windows)	+20	

5. Duration

Control measure	Score	
< 15 minutes	0	
30 minutes max	+5	
60 minutes max	+10	
90 minutes max	+15	
>90 minutes	+20	

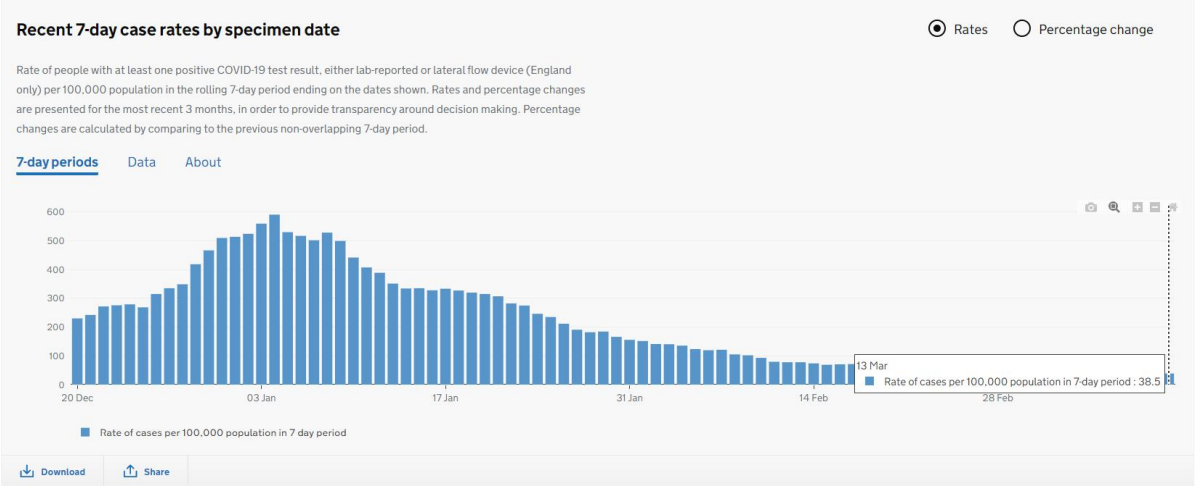
6. Mitigating factors

Air changes per hour above 10 (if known)	-20	
Room left empty for 15 minutes+ prior to occupation with mechanical ventilation that includes outside air running.	-15	
Room left empty for 15 minutes+ prior to occupation with only ventilation from open windows	-10	
Static use (minimal movement – people sat at desks i.e. office, lecture etc.)	-5	

7. Cambridge COVID case rate mitigating factors

0-10	-30	
11-20	-25	
21-30	-20	
31-40	-15	
41-50	-10	
51-60	-5	
61-70	0	
71-80	+5	
81-90	+10	
91-100	+15	

To find this case rate use the following link Cases | Coronavirus in the UK (data.gov.uk)
Scroll down to 'Recent 7-day case rates by specimen date' bar graph and click on the furthest bar on the right hand side of the chart as shown in the screen shot below. The case rate will appear in a pop up box.



8. Additional Risk factors

Low aerosol generating activity e.g. lecture/training	+5	
Temperature below 8 degrees c e.g. cold room	+10	
Medium aerosol generating activity e.g. meeting with discussion, eating	+15	
High aerosol generating activity e.g. Singing, wind instruments, voice projection, drama, loud speaking (e.g. speaking over loud machinery)	+20	
Aerobic activity i.e. Gym	+20	

RAV1 Form

Essential Use
Reason for room use _____

RA - Calculation

Section	Score
1. Hands	
2. Face	
3. Space A	
Space B	
4. Ventilation	
5. Duration	
6. Mitigating Factors	
7. Cambridge COVID case rate mitigating factors	
8. High risk factors	
Total	

Assessor name	Signature	Supervisor name	Signature

Risk rating	Score
Low	**<35**
Medium	**35-50**
High	**50+**

Action needed	
Low risk	1. Record the findings on your risk assessment. Ensure that this is signed by the assessor. 2. Ensure that all control measures are clearly communicated to room users with signage and include in SOP's.
Medium risk	1. Record the findings of your risk assessment. Ensure that this is signed off by the assessor. 2. Consider changing control measures in the tool and recalculate. 3. If risk is still medium, use the Airborne.cam (not available using Internet Explorer) calculator tool to assess ventilation further. If you require further assistance please contact the Safe Space Team 4. Use the tool to change risk factors, (please ensure you have constant infectious set to 1 at all times) e.g. Occupancy, type of face covering, to reduce infection risk factor to a minimum – under 6% individual risk of infection 5. If infection risk is acceptable proceed to use the room with control measures implemented. 6. Ensure that all control measures are clearly communicated to room users with signage and include in SOP's. 7. If infection risk is over 6% do not use the room and contact the Safety Office for specialist help.
High risk	1. Record the findings of your risk assessment. Ensure that this is signed off by the assessor. 2. Use the Airborne.cam (not available using Internet Explorer) calculator tool to assess ventilation further. If you require further assistance please contact the Safe Space Team 3. Use the tool to change risk factors e.g. Occupancy, type of face covering, to reduce infection risk factor to a minimum – Below 6% individual risk of infection 4. If infection risk is acceptable proceed to use the room with control measures implemented. Ensuring that all control measures are clearly communicated to room users with signage and include in SOP's. 5. If infection risk is calculated as over 6% do not use the room and contact the Safety Office who will ensure that you have specialist technical help with accurate assessment.

* Social distancing of 2m must be maintained at all times unless specific essential reasons for working closer are identified, risk assessed and controlled by other measures. E.g. Clinical setting, use of shared laboratory equipment.

UNIVERSITY OF CAMBRIDGE
Safety Office
Greenwich House
Madingley Road
Cambridge CB3 0TX

Tel: 01223 333301
Fax: 01223 330256
safety@admin.cam.ac.uk
www.safety.admin.cam.ac.uk/

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