

# Vaccination, and Virus Transmission in Towers

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The Government's announcement of its roadmap to normality, on 22<sup>nd</sup> February, gives a good idea of when the majority of us in England will be able to ring again, as detailed on the CCCBR announcement of 26<sup>th</sup> February 2021. The Government plan makes up by simplicity for what it lacks in speed, and in particular a very considerable proportion of ringers will have been offered vaccination by the time that much ringing resumes, in May. The roadmap as currently conceived will be straight forward to implement, but towers will still have to think carefully how they will return to ringing without putting people needlessly in danger.

## Vaccination

There is no doubt that vaccination is a game changer with respect to Coronavirus, and will be the key to a total return to ringing. However, there are good reasons why the Government has not told every vaccinated individual that they can immediately throw away the lockdown rulebook, and why it is not a *carte blanche* to resuming ringing.

Firstly, although recent evidence from Israel shows that the vaccines are very good for personal protection (from death and severe disease), we do not yet know (mid March 2021) if they reduce transmission of the infection. No vaccination is 100% effective, so some people who have had the jab will still be able to catch the virus, and pass it on to others.

Secondly, as the virus mutates, variants will emerge that are less well protected for by the vaccination, with the risk of a further surge in infections.

Thirdly, not all the population will have been vaccinated by May 15<sup>th</sup>; although young people are much less likely to die than the elderly, they can nevertheless have significant and life changing illness, so should not needlessly be put at risk.

There is a similarity here with the guidance about face masks. Vaccinated people are protecting the rest of the population, rather than themselves, by continuing to abide by lockdown discipline.

## Transmission

It is not chance that the government is permitting the resumption of outdoor activities before indoor ones – because the danger of transmission is much higher indoors. So, what sensible precautions can mitigate risk once we *are* allowed inside?

There are three main routes by which Coronavirus is transmitted: contact, droplet and aerosol.

**Surface Contact.** In the past year it has emerged that, *in the non-clinical environment*, contact (where someone touches a surface contaminated by an infectious person) is the least important, with very few, or any, cases having been demonstrated to have occurred. Pragmatically, what that means in the ringing chamber is that, so long as ringers sanitise their hands, we can be a bit more relaxed about touching more than one rope, or holding onto the rail as we ascend the stairs.

**Droplet transmission** is where the virus is transmitted in relatively large water particles, such as those sneezed and coughed out. These droplets generally fall relatively close to the infectious source, and this is the reason for 2 metre social distancing, which was very appropriately included in early advice by the CCCBR on returning to ringing. The wearing of masks made “1 metre plus” possible – because it significantly reduced the number of droplets and their distance travelled.

However, the increased infectiousness of new variants is highly relevant in respect to droplet spread, basically because a smaller number of virus particles needs to be breathed in by a susceptible individual for infection to take place. Government guidance on appropriate distancing is being reviewed (mid March 2021) and may change – with consequences that will affect ringers, and we will have to adjust our behaviour accordingly. However, most likely masks are with us for some time to come.

**Aerosol transmission** is where virus particles (released from the airways by breathing) are contained in much smaller amounts of moisture, and rather than falling by gravity to the floor, they remain suspended in the air, like smoke. In the open air, they get carried away harmlessly; which is why, in coming out of lockdown, the government allows outdoor activities before it allows them indoors.

However, indoors, aerosols can travel further than droplets, and if the air in a room is not being regularly changed they can accumulate – with strong evidence that they have been the cause of multiple “superspreading” events. The amount of potentially infectious aerosol that is generated is in proportion to how deeply and frequently the infected individual is breathing – so loud singing or exercising heavily is more dangerous than breathing quietly – and for how long the person is in the room. The whole process is very understandably explained in this excellently translated article from a Spanish magazine: [https://english.elpais.com/society/2020-10-28/a-room-a-bar-and-a-class-how-the-coronavirus-is-spread-through-the-air.html?fbclid=IwAR3bHnowFXy\\_JhIAtVR5NnQK7PDVN1wAAyxrIVjlxoltP9GNDeqn6v0sfZ4](https://english.elpais.com/society/2020-10-28/a-room-a-bar-and-a-class-how-the-coronavirus-is-spread-through-the-air.html?fbclid=IwAR3bHnowFXy_JhIAtVR5NnQK7PDVN1wAAyxrIVjlxoltP9GNDeqn6v0sfZ4)

Aerosol transmission remains important in the future, because Covid-19 will still be circulating in the community, like flu does. Even if in June the circulating level of virus is very low, the Chief Medical Officer has said that next autumn and winter significant virus transmission is likely to start again, which may require some resumption of precautions. We can mitigate risk (and thus make a reasoned case for continuing ringing) by making certain that our towers are indoor spaces where aerosols are unlikely to build up.

There are four variables affecting aerosol transmission that we can anticipate and adjust:

1. the number of ringers in the room in proportion to its size,
2. the degree of exertion (and thus breathing) undertaken,
3. the adequacy of ventilation in the room and
4. the duration of ringing.

These elements have been the reason for previous iterations of CCCBR advice on returning to ringing, and in particular limiting its duration to 15 minutes.

## Carbon Dioxide

Fortunately there is a proxy measurement that can help us to assess the likelihood that aerosols are building up in a room, taking into account all four variables: the carbon dioxide level.

Carbon Dioxide, the natural “waste product” gas of physical exertion, is generated in proportion to how deeply a person is breathing. The level tends to build up in poorly ventilated rooms, and has for a long time been used by architects and engineers to assess the adequacy of air conditioning. A paper produced by members of the Royal Society in September 2020<sup>1</sup> pointed this out, and suggested using the level of CO<sub>2</sub> to determine whether ventilation was adequate. If you have half an hour to spare, a very enjoyable listen is to hear Prof Cath Noakes on BBC’s *The Life Scientific*, 19/1/2021, talking about making buildings Covid safe through adequate ventilation.<sup>2</sup>

Common sense dictates that in some large, breezy ringing chambers, it is almost certain that ventilation is adequate. If it feels like you’re ringing out of doors, then you’ve probably got the ventilation about right. CO<sub>2</sub> monitoring will probably be most useful where doubt persists about the adequacy of ventilation of an individual tower, and when people want to ring for longer periods of time, as in peal ringing.

Thanks to the vaccination campaign, the resumption of ringing really does seem to be in sight. But, given that Coronavirus will continue to circulate in the community, we need to ensure that our ringing chambers are well ventilated, too.

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<sup>1</sup> The ventilation of buildings and other mitigating measures for COVID-19: a focus on winter 2020. The Royal Society ‘Rapid Assistance for Modelling the Pandemic (RAMP)’ project  
Task 7: Environmental and aerosol transmission September 30, 2020

<sup>2</sup> <https://www.bbc.co.uk/sounds/play/m000rcnl>