

Stopping the spread of coronavirus in universities

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As universities prepare to welcome students back, infectious disease modeling experts at the University of Bristol have conducted a rapid

review and developed a new epidemic model which contributed to evidence considered by SAGE to assess the effectiveness of different interventions that could stop the spread of SARS-CoV-2 in a university setting. The findings, published on the preprint server medRxiv, provides the sector with recommendations to help reduce the risk for students, staff and the wider community.

This month, thousands of [university students](#) are due to start the 2020/21 academic term and will arrive on campus from across the UK and internationally. As COVID-19 continues to circulate around the globe, universities are actively developing plans to keep students, staff and the wider community safe, while providing a high-quality [student](#) experience.

The team, led by Drs Ellen Brooks-Pollock and Hannah Christensen from the NIHR Health Protection Research Unit in Behavioral Science and Evaluation at the University of Bristol and part of Bristol UNCOVER, conducted a rapid review of mathematical modeling studies looking at how [coronavirus](#) might spread in a university setting and what mitigation strategies could be most useful in helping to reduce it.

The team reviewed five studies, four from the US and one from the UK, and developed a new, detailed epidemic model based on UK student data. Their investigations considered testing, contact tracing, quarantine strategies, and other non-pharmaceutical interventions.

Their analyses provided the following recommendations to policy makers and the higher education sector:

- Multiple interventions will be required to enable universities to respond quickly to any evolving increases in SARS-CoV-2 cases, which include reducing peoples' contacts (within residences and across the university community), effective testing, tracing and

quarantine of individuals.

- Students and staff will need to closely adhere to the national guidance around social distancing and [hand washing](#), and will need clear advice on what to do if they are symptomatic or asked to quarantine to help avoid large number of cases in the university community.
- Policies aimed at reducing how many people individuals come into contact with, and the risk of transmission during any face-to-face contacts, are critical. This could include moving teaching online, social distancing, and the correct use of face coverings.
- Limiting contacts, with reduced face-to-face teaching and reducing the size of living circles, was the single most effective control option.
- If mass testing is used, it needs to be frequent, with persons without symptoms being tested weekly or more often.

Dr. Hannah Christensen, Senior Lecturer in Infectious Disease Mathematical Modeling in Bristol Medical School, said: "Mathematical models are currently being used to help understand the evolving COVID-19 pandemic and to inform prevention and control strategies. Many UK universities are planning for students to return to campus in autumn 2020 in a blended teaching model, for example with large lectures replaced with online teaching and small group practical classes, delivered with social distancing measures in place. Other UK universities are considering alternative teaching models, including some planning full online learning for at least the first term. In the absence of a vaccine, managing COVID-19 within a university setting presents unique challenges. However, our results have shown certain interventions can be effective. Minimizing face-to-face contacts and lowering the risk of virus transmission when people do meet, through physical distancing, the use of face coverings and good hand hygiene, all help reduce the spread. Testing, with [contact tracing](#) and quarantining, also plays a critical part in controlling outbreaks."

Dr. Ellen Brooks-Pollock, Senior Lecturer in Veterinary Public Health and Infectious Disease Modeling at the University of Bristol, added: "Our findings clearly show that multiple mitigation interventions are needed to help universities respond effectively to any increase in cases. Some interventions can be implemented with limited additional resources, others, such as mass testing would require additional capacity. Mass testing of all students could be effective but is dependent on regular testing and effective self-isolation. In addition, there are big data gaps that need to be filled in order to characterize transmission in this population, such as how infectious cases with mild symptoms are."

More information: Hannah Christensen et al. COVID-19 transmission in a university setting: a rapid review of modelling studies, (2020). [DOI: 10.1101/2020.09.07.20189688](https://doi.org/10.1101/2020.09.07.20189688)

Ellen Brooks-Pollock et al. High COVID-19 transmission potential associated with re-opening universities can be mitigated with layered interventions, (2020). [DOI: 10.1101/2020.09.10.20189696](https://doi.org/10.1101/2020.09.10.20189696)

Provided by University of Bristol

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