

acceptable solutions where risk is hard to avoid, provision of support and culturally appropriate communications⁸. Again, this is consistent with advice provided throughout the pandemic to date.

Education and schools

Accumulating evidence is consistent with increased transmission of SARS-CoV-2 (current strain, wild-type) occurring amongst school children when schools are open, particularly in children of secondary school age (high confidence): multiple data sources show a reduction in transmission in children following schools closing for half term, and transmission rates increasing again following the post-half term return to school (medium confidence). It is difficult to quantify the size of this effect, and it remains difficult to quantify the level of transmission taking place specifically within schools compared to other settings, open schools also being associated with adults attending work, more travel and commuting, and schools day wrap around, community and sport activities⁹ in the end-to-end day. (SAGE Children Sub-Group)

ONS analysis published on 14 December contrasted contacts for school age children and adults in England gathered through the COVID-19 Community Infection Survey (CIS). According to this analysis children's contacts increased during the term (except over half term) while by contrast, across *"all ages of socially distanced contacts, in adults the number of socially distanced contacts has decreased over time from late September or early October, which could be because of tighter local and national restrictions."*¹⁰ Similarly the CoMix report for survey week 38, looking at data up to 15 December 2020, reported that under 18 year olds *"have much higher and variable contacts overall [when compared with the general population] driven by educational contacts"*.¹¹

The virus spreads when an infected individual comes into contact with one or more uninfected individuals, via direct contact (person to person or droplet transmission), or indirect contact (aerosol or fomite spread).¹² The relatively higher numbers of contacts which children appear to have had, on average, during the autumn, when compared with adults, is therefore likely to have been a factor in contributing to the rising rates of infection in England among school age children, particularly secondary school age children, during the autumn.¹³

In Wales, according to PHW data, rates of confirmed cases among school age children have also risen during the autumn and winter, although these have usually been, and currently remain, lower than among most other age groups, and

⁸ EMG/SPI-B/TWEG: Mitigations to reduce transmission of the new variant SARS-CoV-2 virus (22 December 2020)

⁹ TFC: Children and transmission - update paper (17 December 2020)

¹⁰ Coronavirus (COVID-19) Infection Survey: characteristics of people testing positive for COVID-19 in England and antibody data for the UK: December 2020 (14 December 2020)

¹¹ CoMix social contact survey, week 38, data to 15 December 2020

¹² Technical Advisory Group: statement regarding non-pharmaceutical interventions in the pre-Christmas period (7 December 2020)

¹³ These rising rates of infection in England are illustrated in the SAGE paper cited at [note 9](#) above using ONS CIS data.

broadly consistent across age groups, although this will of course include pre-symptomatic and post-symptomatic cases as well as asymptomatic cases.¹⁵ There is some uncertainty about rates of asymptomatic infection as research conducted earlier in the course of the pandemic suggested there could be a greater proportion of asymptomatic cases among children compared with adults.¹⁶ Early results from the ONS School Infection Study (SIS) conducted in England and published on 17 December indicated similar low levels of infection in staff and pupils attending school (and so without clear symptoms, as symptomatic individuals should not have been attending school). Among those tested, 1.24% of pupils and 1.29% of staff tested positive for current infection.¹⁷ It should be noted the estimated participant enrolment rate for round one of SIS testing is 17% for pupils and 55% for staff which gives low confidence in generalisability of these findings. New methods of participant engagement are being put into place to increase numbers of participants for subsequent rounds of testing. It should also be noted the study design (which over-samples schools in areas of England where COVID-19 infection was highest at the start of the academic year) means the data presented are not intended to be generally applicable to all schools in England.

The pattern of confirmed cases and clusters of cases associated with schools in Wales reported by PHW during the autumn term did not indicate a large proportion of transmission associated with schools. Between 1 September 2020 and 23 December 2020, there were 7,304 reports of new COVID-19 cases associated with 1,127 schools; 3,176 cases (43%) in staff and 4,128 (57%) in pupils. From a total of 1,573 schools across Wales, this represents 71.6% of schools that have had a COVID-19 case during the autumn term 2020. Of these, 245 schools (16% of schools) were associated with only one case. In the last 21 days to 23 December 2020, of the 1,573 schools across Wales, 760 schools (48%) were not associated with any cases, 262 (17%) with one case, 166 (11%) with two cases, 107 (7%) with three cases, 196 (12%) with between four and eight cases, 71 (5%) with between nine and nineteen cases, and 11 (less than 1%) with twenty or more cases (Figure 6).¹⁸

¹⁵ [Coronavirus \(COVID-19\) Infection Survey: characteristics of people testing positive for COVID-19 in England and antibody data for the UK: November 2020](#) – see figure 6.

¹⁶ For example S. Beale, A. Hayward, L. Shallcross, R. W. Aldridge and E. Fragaszy, "A Rapid Review of the Asymptomatic Proportion of PCR-Confirmed SARS-CoV-2 Infections in Community Settings," 2020, <https://www.gov.uk/government/publications/nervtag-rapid-review-of-the-asymptomatic-proportion-of-pcr-confirmed-sars-cov-2-infections-in-community-settings-9-september-2020> (a review of the literature to 25 August 2020); R. Viner, J. Ward, L. Hudson, M. Ashe, S. Patel, D. Hargreaves and E. Whittaker, "Systematic review of reviews of symptoms and signs of COVID-19 in children and adolescents," online at <https://adc.bmj.com/content/early/2020/12/16/archdischild-2020-320972> (a review of the literature to 25 October 2020); N. G. Davies, P. Klepac, Y. Liu, K. Prem, M. Jit, CMMID COVID-19 working group and R. M. Eggo, "Age-dependent effects in the transmission and control of COVID-19 epidemics," *Nature Medicine*, vol. 26, pp. 1205-1211, published 16 June 2020, online at <https://pubmed.ncbi.nlm.nih.gov/32546824/>; Buitrago-Garcia D, Egly-Gani D, Counotte MJ, Hossmann S, Imeri H, Ipekci AM, et al. Occurrence and transmission potential of asymptomatic and presymptomatic SARS-CoV-2 infections: A living systematic review and meta-analysis. *PLOS Medicine*. 2020; Sept 17(9) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7508369/pdf/pmed.1003346.pdf> (a review of the literature up to 10 June 2020)

¹⁷ [COVID-19 Schools Infection Survey Round 1, England: November 2020 \(17 December 2020\)](#)

¹⁸ [PHW Schools and Colleges COVID-19 summary report \(23 December 2020\)](#)

- Excluding 262 schools that have had only 1 case.

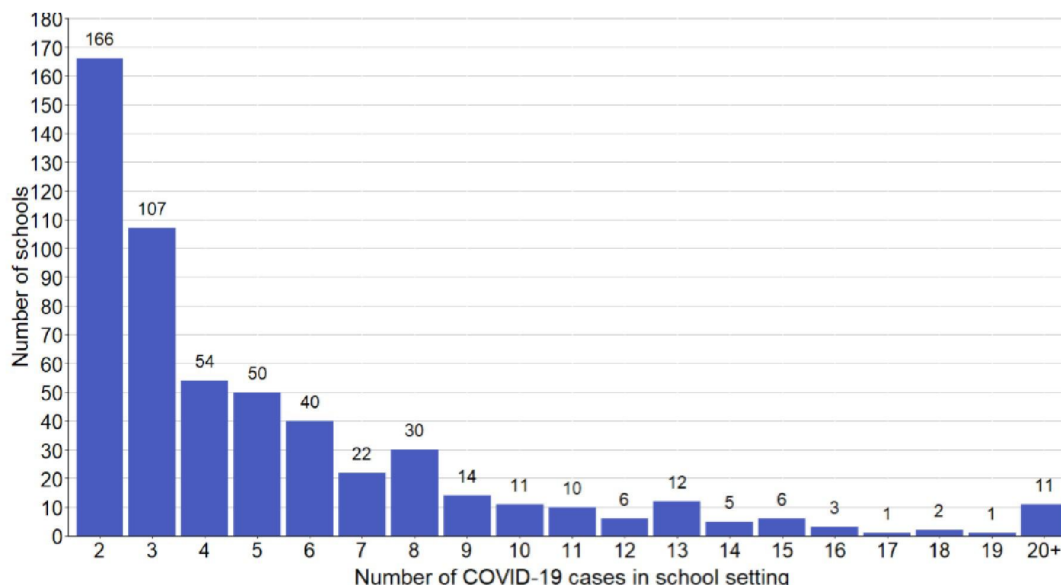


Figure 6. Number of schools with more than one Covid-19 case identified in the past 21 days (PHW).

ONS CIS data from 2 September to 16 October show no evidence of difference in the rates of teachers/education workers in England testing positive for SARS-CoV-2 compared to key workers and other professions (medium confidence). This is seen even when combining different categories of school staff in the analysis. Surveillance evidence from Scotland published on 16 December indicated that teachers in Scotland are not at increased risk of being hospitalised for COVID-19 compared to the population as a whole, and have a lower risk of having severe COVID-19 compared to the population as a whole, but that following the re-opening of schools in Scotland, the risk of testing positive has been higher among teachers than the general population. However, rates of testing in Scotland were relatively high among teachers after schools returned, so some of the increased risk of testing positive may be due to this. Nonetheless, teaching is an occupation which involves in-person working in settings with large numbers of other people. As such, some of the increased risk of testing positive may reflect this exposure. Equally, this analysis did not compare the risk of teachers to other, non-healthcare, in-person occupations, such as police, social care or retail. People working in educational settings in Scotland have similar levels of antibodies to the COVID-19 virus in their blood compared to the adult population as a whole.¹⁹ This issue of risk of infection in school staff will need to be kept under review.

Despite all this, the emergence of the new variant means that further measures beyond those applied during the autumn term may be required. The VOC was capable of expanding in the South East of England and London despite lockdown measures sufficient to suppress other SARS-CoV-2 lineages.²⁰ It is highly unlikely

¹⁹ [Public Health Scotland, Enhanced surveillance of COVID-19 in education settings \(16 December 2020\)](#)

²⁰ [Virological, Lineage-specific growth of SARS-CoV-2 B.1.1.7 during the English national lockdown \(30 December 2020\)](#)

should be rigorously applied in schools. If the new variant has a stronger forcing effect on community transmission and cases in schools then this should be met with more robust controls e.g. blended learning (substitution), serial lateral flow assays for contacts, smaller class (bubble) sizes, firebreak periods, inspections for compliance (administration), wider use of face coverings or medical masks (protective measures). Further modelling and evaluation of school testing strategies (e.g. serial lateral flow testing) with the new variant dynamics will be important as schools and education establishments reopen. In line with SAGE advice above, more work should be done with children, students, families and organisations to ensure control measures are effective, equitable, understood and achievable. SPI-B²⁸ and TAG²⁹ have previously advised on behavioural insights and increasing adherence with reference to young people. It will also be important to minimise indirect harms from these control measures wherever possible.

Schools should not be disproportionately used as a control measure for reducing Rt, particularly if existing non-pharmaceutical interventions are not being observed as well as they could be (e.g. indoor mixing). Every possible effort should be taken to reduce community, social and workplace mixing. The aim to maintain schools operations to minimise avoidable harm to children would be accompanied by a clear communication strategy that should signal to the community that there should be no wider relaxation of precautions with clearer messaging that Tier 4 means 'Stay in your home' not 'Stay at your friends' or extended family home', and reduce face to face and social contacts even for children outside school.

Annex 1 summarises the current scientific evidence related to schools and education.

²⁸ [SAGE, SPI-B: Increasing adherence to COVID-19 preventative behaviours among young people \(22 October 2020\)](#)

²⁹ [Technical Advisory Group, Behavioural insights for contact tracing systems and young people \(1 October 2020\)](#)