

Schools and education

Cases and contacts identified in school students and teachers are increasing²¹. It is to be expected that numbers of school students and school staff in self-isolation as a 'bubble' contact will continue to grow as cases in the community rise.

The available evidence indicates that schools being open is associated with higher rates of infection in the population, although there is no clear evidence of a causative relationship; the mechanism for any association may be complex (potentially including many factors such as reopening of workplaces, parents returning to work, shops and hospitality, social mixing outside schools that links households and different networks together)²². It is also the case that during the pandemic, closing schools has been one of the NPIs most often deployed at a late stage i.e. when transmission was already at a high level. Movement data from the first and second week of the autumn firebreak in Wales suggests that schools being open is likely to lead to increased mobility²³.

Ordinarily closing schools should be the last intervention to be considered, due to the balance of risks of short term and longer term harm to children in terms of physical, mental health and well-being and learning. However, agreement for the formation of extended Christmas bubbles increases the risk of transmission within extended and intergenerational households during this period. The decision to partially close schools in the second week of the autumn firebreak took account of earlier SAGE advice on the modelled impacts²⁴. In November, SAGE endorsed a paper which stated "*As the prevalence of infection in children aged 12-16 increased between September and October, ONS analysis suggests that children aged 12-16 played a significantly higher role in introducing infection into households (medium confidence). The difference is less marked for younger children (medium confidence)*"²⁵. A period of pre-isolation for families with children as a result of school closures could reduce the level of social mixing ahead of 23-28 December if school attendance and wider social mixing associated with schools being open was not replaced by other social mixing activities.

Potential options for reducing the significant educational and wider socio-economic harms resulting from school closures have been set out elsewhere in advice to Ministers and considered previously, such as remote learning for some or all school pupils, opening a limited number of 'hub' schools for children of essential workers and vulnerable children, or shortening

²¹ <https://public.tableau.com/profile/public.health.wales.health.protection#!/vizhome/RapidCOVID-19virology-Public/Schoolsurveillance>

²² <https://gov.wales/sites/default/files/publications/2020-11/technical-advisory-group-evidence-review-on-children-and-young-people-under-18-in-preschool-school-or-college-following-the-firebreak.pdf>

²³ <https://gov.wales/sites/default/files/publications/2020-11/technical-advisory-cell-summary-of-advice-20-november-2020.pdf>

²⁴ <https://gov.wales/technical-advisory-group-fire-breaks>

²⁵ <https://www.gov.uk/government/publications/tfc-children-and-transmission-4-november-2020>

| Pre-Christmas Policy Modelling | | | | | | Cumulative | | |
|--------------------------------|--------------------------------------|-------|-------|------------------|------|---------------------------------|---------------------|--------|
| | | | | | | Hospital admissions (incl. ICU) | ICU Admissions only | Deaths |
| 2/12 | No intervention, contact scaling 0.7 | 23/12 | 28/12 | Background Rt1.3 | 28/2 | 8,570 | 1,030 | 2,520 |
| 2/12 | Dec Tier 2, contact scaling 0.7 | 23/12 | 28/12 | Background Rt1.3 | 28/2 | 6,920 | 830 | 2,030 |
| 2/12 | Dec Tier 3, contact scaling 0.7 | 23/12 | 28/12 | Background Rt1.3 | 28/2 | 4,860 | 580 | 1,460 |
| 2/12 | | 23/12 | 28/12 | Background Rt1.4 | 28/2 | 11,410 | 1,370 | 3,270 |
| 2/12 | Dec Tier 2, contact scaling 0.75 | 23/12 | 28/12 | Background Rt1.4 | 28/2 | 8,850 | 1,060 | 2,510 |
| 2/12 | Dec Tier 3, contact scaling 0.75 | 23/12 | 28/12 | Background Rt1.4 | 28/2 | 6,400 | 770 | 1,820 |

Table 1. Pre-Christmas policy modelling scenarios.

In summary, policy modelling suggests that introducing Tier 3 restrictions (e.g. closure of hospitality and entertainment, reduction in mixing) prior to the relaxation of restrictions before Christmas will reduce the number of hospital and ICU beds required for COVID-19 patients, and deaths.

Schools policy option

The policy options below also include the option for schools to move to close schools (blended learning) from 14 to 18 December. The table below provides modelled estimates of the impacts of this option, noting the difference between having schools open or schools being closed.

| Background Rt | Tier | Schools (Open/ Blended learning/ Difference) | Modelled estimates | | |
|---------------|--------|--|-------------------------------------|--------------------------------|-------------------------|
| | | | Hospital occupancy (COVID cases) | ICU occupancy (COVID cases) | Deaths (COVID cases) |
| 1.3 | Tier 2 | Open | 6,090 | 830 | 2,030 |
| 1.3 | Tier 2 | Blended learning | 5,650 | 770 | 1,900 |
| 1.3 | Tier 2 | <i>Difference</i> | <i>440</i> | <i>60</i> | <i>130</i> |
| 1.3 | Tier 3 | Open | 4,280 | 580 | 1,460 |
| 1.3 | Tier 3 | Blended learning | 3,840 | 520 | 1,340 |
| 1.3 | Tier 3 | <i>Difference</i> | <i>440</i> | <i>60</i> | <i>120</i> |
| 1.4 | Tier 2 | Open | 7,790 | 1,060 | 2,510 |
| 1.4 | Tier 2 | Blended learning | 7,260 | 990 | 2,350 |
| 1.4 | Tier 2 | <i>Difference</i> | <i>520</i> | <i>70</i> | <i>160</i> |
| 1.4 | Tier 3 | Open | 5,630 | 770 | 1,820 |
| 1.4 | Tier 3 | Blended learning | 5,080 | 690 | 1,670 |
| 1.4 | Tier 3 | <i>Difference</i> | <i>550</i> | <i>80</i> | <i>150</i> |

Source: Swansea University COVID-19 Modelling

The Figures below shows the change over time in deaths, ICU occupancy and hospital occupancy (excluding ICU). In a scenario where there are no control measures in December or January, estimates indicate an increase in all of these outcomes to a level above the first peak, noting that we are already above the first peak for hospital occupancy. Modelled estimates suggest that Tier 3 measures would have a favourable effect on these outcomes when compared to Tier 2 measures, and that there is a limited difference in this effect when comparing a scenario when schools are opened or closed.

Further details of the policy model will be published in the coming weeks.