

Technical Advisory Group

Statement regarding NPIs in the pre-Christmas period

2nd December 2020

The purpose of this paper is to set out the technical and scientific rationale for the introduction of non-pharmaceutical interventions (NPIs) in Wales in the pre-Christmas period.

Take home messages

- The virus spreads when an infected individual comes into contact with uninfected individual(s). The likelihood of a contact between an infected individual and uninfected individual resulting in a transmission is dependent upon the nature of the contact. Some environments and behaviours are more likely to enable the virus to transmit.
- Social distancing and quarantining remains highly effective at reducing the risk of infecting others, if observed correctly. Pre-isolating (e.g. not mixing outside of the household) for one incubation period (10 days) would be an effective way of lowering your risk of infecting others. Self-isolation remains of paramount importance for anyone with COVID-19 symptoms.
- The best way to protect older family members is not to expose them to potential infection, no matter how well intended the reason for contact.
- Survey data suggests evidence of household mixing and with those outside of the extended household. This is accompanied by a misunderstanding of the risks of transmission associated with mixing. Evidence suggests that the increased mixing of households and individuals, in indoor settings poses a substantial risk. Therefore, the fewer households and individuals mix, the lower the risk of transmission, hospitalisation and deaths.
- Policy modelling illustrates that keeping R_t lower (e.g. by the reduction of social mixing of people generally) would significantly reduce numbers of expected deaths and pressure on the NHS.
- 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.

Situation

The most recent daily surveillance report (02 December 2020) shows a national picture of 226 cases per 100,000 with a 13.3% positivity. For over 60s the national seven day case rate is 176 cases per 100,000 with positivity of 14.4%. Blaenau Gwent and Torfaen are over 400 cases per 100,000 with a positivity rate of 17.7 and 19.1% respectively, which is growing closer to the pre-firebreak peak.

The ONS infection survey data shows that positivity rate appears to have levelled off in the most recent week (22 to 28 November 2020), after falling from a peak at the end of October¹. The firebreak had the intended impact of a short sharp early intervention to push back the epidemic by three to four weeks^{2,3,4}. The benefits of this period of negative growth have nearly been lost, with case numbers and hospital admissions nearly reaching levels seen at the beginning of the firebreak. Rates of transmission are again increasing across 15 of 22 local authorities. Four health Boards areas (Aneurin Bevan, Cwm Taf Morgannwg and Swansea Bay) in the very high category (200+ cases per 100K); Hywel Da, Powys and Betsi Cadwaladr would be classed as high (50+ cases per 100K). Whilst some areas, with more rural, smaller populations, are lower (Gwynedd, Anglesey, Conwy), Wales as a whole is very high (200+ cases per 100,000, over 10% positivity). Increases in over 60s cases per 100,000 reported across all health boards, some of which will be accounted for by care home outbreaks and also population intergenerational mixing.

The Official SAGE estimate of R_t , which is a composite of several models puts the national R_t between 0.8-1.1 which straddles a higher range than the previous week. We have seen a greater increase in confirmed cases and mobility since the firebreak which suggests that hospital admissions and deaths may increase in the next 2-3 weeks depending on the age structure of cases.

Deaths are currently as high as May, with the excess death rate in Wales higher than in England and Scotland over recent weeks, and tracking above our reasonable worst case. NHS beds, admissions and hospitalisations during the coronavirus (COVID-19) pandemic have been considered separately and are presented here.

¹<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveys/pilot/4december2020#number-of-people-in-wales-who-had-covid-19>

² https://gov.wales/sites/default/files/publications/2020-10/technical-advisory-group-fire-breaks_2.pdf

³ <https://gov.wales/sites/default/files/publications/2020-12/technical-advisory-group-effectiveness-of-non-pharmaceutical-interventions-in-the-local-health-protection-zones-and-the-firebreak-in-wales.pdf>

⁴ <https://gov.wales/sites/default/files/publications/2020-11/technical-advisory-cell-summary-of-advice-20-november-2020.pdf>

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.