Technical Advisory Group

Statement regarding NPIs in
the pre-Christmas period

02 December 2020
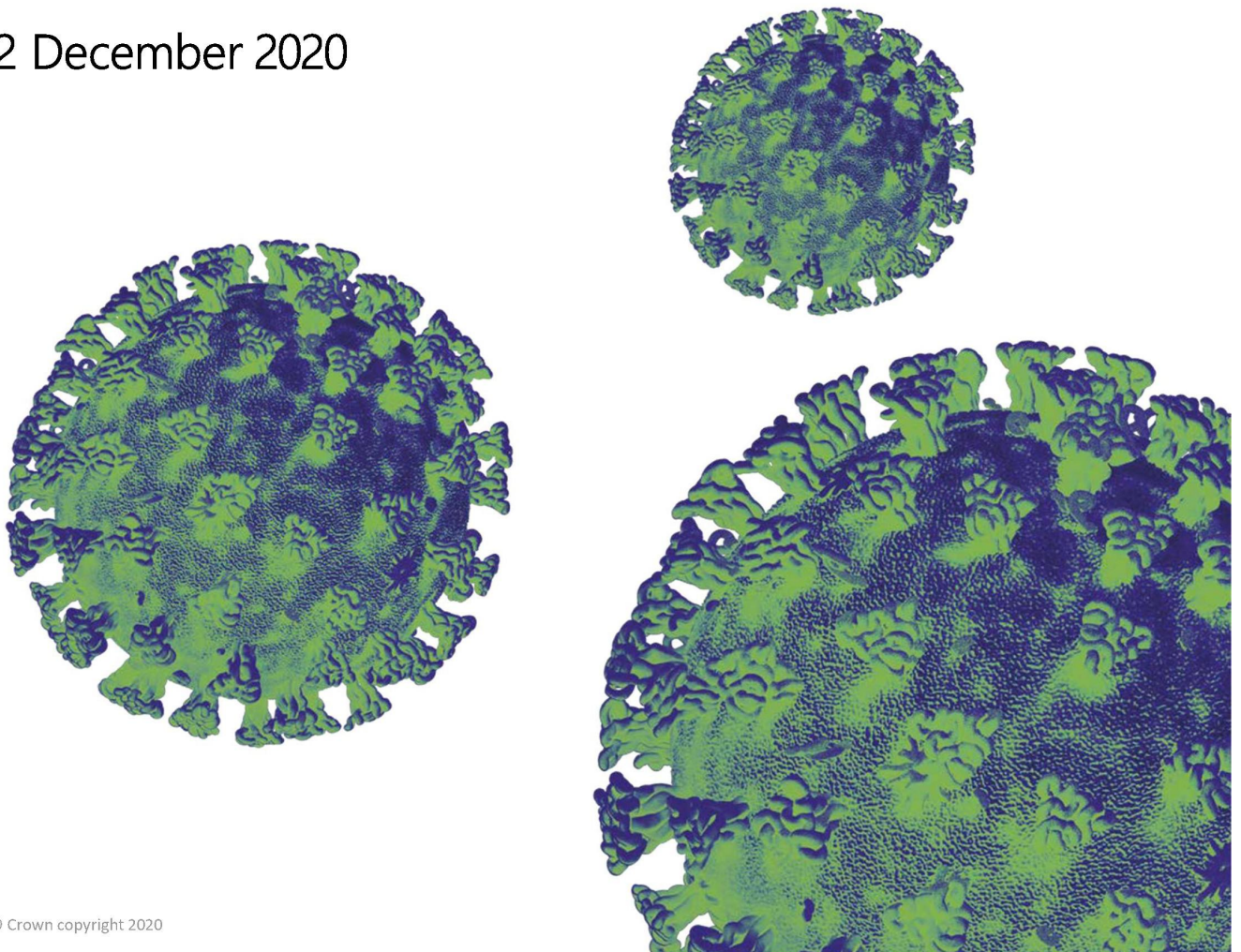
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2nd December 2020

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 October[1]. 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.

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[1]https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/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

The modelled impact of non-pharmaceutical interventions on the growth of the epidemic in Wales have been described previously here. An analysis of the effectiveness of the local health protection measures and the Firebreak in Wales can be found here. A comparison of the effectiveness of autumn interventions in the four nations can be found here. Other harms, notably socioeconomic harms, are widely acknowledged to be associated with non-pharmaceutical interventions. A separate paper considers these harms alongside mitigation measures and can be found here.

Christmas and winter celebrations

Winter celebrations, like Christmas, will likely lead to increased intergenerational mixing and opportunities for the virus to spread to new networks of contacts, from pre-Christmas social mixing to extended household mixing at Christmas[5]. This is highly likely to provide increased opportunities for transmission of the disease. Increases in infections in older adults is likely to lead to higher deaths and hospitalisations after Christmas[6].

Whilst there are new technologies that will enable more rapid testing, these are not a silver bullet. Invariably new lateral flow devices will help reduce the lag in test to result and may enable greater freedoms and flexibility of testing; however, they may lack comparable sensitivity to RT-PCR[7,8]. **Social distancing and quarantining remains highly effective at reducing the risk of infecting others if observed correctly**.

The central premise of non-pharmaceutical interventions (NPIs) is to reduce the risk of transmission from infectious people to those who are susceptible to infection by reducing mixing; this in turn reduces the risk of spread and large outbreaks. As rates of infection in the community rise before the Christmas period, it is likely that more people will need to self-isolate or quarantine over Christmas. **Pre-isolating (e.g. not mixing outside of the household) for one incubation period (10 days) would likely be an effective way of lowering your risk of infecting others**. If people become symptomatic during this period they should not see others and seek a RT-PCR swab test immediately. If people can avoid seeing others over the Christmas period, perhaps postponing celebrations until later next year or meeting via video, then this is strongly advised.

[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/939073/S0922_EMG_and_SPI-B_-_Mitigating_risks_of_SARS-CoV-2_transmission_associated_with_household_social_interactions.pdf
[6] https://thepsc.co.uk/news-insights/entry/learning-from-flu-outbreaks-and-covid-outbreaks-in-care-homes/
[7] https://www.ecdc.europa.eu/en/publications-data/options-use-rapid-antigen-tests-covid-19-eueea-and-uk
[8] https://www.ox.ac.uk/sites/files/oxford/media_wysiwyg/UK%20evaluation_PHE%20Porton%20Down%20%20University%20of%20Oxford_final.pdf

Pre-isolation may be a helpful consideration for families with children before visiting older relatives. Similarly, in occupations where there is a higher odds ratio of infection (e.g. warehouse and factory workers, health and social care workers)[9], pre-isolation before mixing with older adults may reduce the risk of transmission[10]. **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.** It is likely that once a vaccine has been widely distributed the current restrictions will not be required. Until widespread vaccination is undertaken, it will be important to equip people with some sensible advice about how to visit family members as safely as possible (e.g. reduced length of stay, good hand hygiene and ventilation). However, evidence suggests that most transmission occurs due to prolonged, close interaction with familiar people in a home environment, and that pre-symptomatic and asymptomatic transmission can occur[11,12].

Recent SAGE papers highlights how to approach Christmas and festivals during the pandemic[13,14].

Hospitality and Entertainment

SAGE has considered the impacts of the hospitality on the epidemic and the associated risks; a summary can be found here. Work of the SAGE Environmental Modelling Group highlights that transmission risk is a combination of environmental and behavioural factors: higher risk contacts are those that are close, prolonged, indoors, face-to-face, in poorly ventilated and/or crowded spaces, or involve "loud" activities. These are all prevalent in the hospitality sector (but not unique to it). The disinhibitory effects of alcohol are likely to exacerbate difficulties with social distancing[15,16,17].

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[9]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938977/S0909_Sixty-ninth_SAGE_meeting_on_Covid-19.pdf
[10]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/939073/S0922_EMG_and_SPI-B_-_Mitigating_risks_of_SARS-CoV-2_transmission_associated_with_household_social_interactions.pdf
[11]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/939073/S0922_EMG_and_SPI-B_-_Mitigating_risks_of_SARS-CoV-2_transmission_associated_with_household_social_interactions.pdf
[12] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933225/S0824_SARS-CoV-2_Transmission_routes_and_environments.pdf
[13] https://www.gov.uk/government/publications/spi-m-o-covid-19-notes-on-the-festive-period-19-november-2020
[14] https://www.gov.uk/government/publications/emgspi-b-mitigating-risks-of-sars-cov-2-transmission-associated-with-household-social-interactions-26-november-2020
[15]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933225/S0824_SARS-CoV-2_Transmission_routes_and_environments.pdf
[16] https://www.gov.uk/government/publications/sage-63-minutes-coronavirus-covid-19-response-22-october-2020
[17] https://www.gov.uk/government/publications/transmission-risk-in-the-hospitality-sector/transmission-risk-in-the-hospitality-sector

A review of published outbreak clusters conducted in April 2020 also identified numerous clusters associated with bars and households, although few clusters were found in schools[18]. A report from the United States Centre for Disease Control found that those infected with SARS-CoV-2 without known close contact with a person with confirmed COVID-19, case-patients were 2.8 x more likely to report dining at a restaurant (adjusted Odds Ratio; aOR = 2.8, 95% Confidence Interval; CI = 1.9–4.3) or 3.9x more likely to report going to a bar/coffee shop (aOR = 3.9, 95% CI = 1.5–10.1) than were control participants[19]. Results of the third Public Health England epidemiological investigation into high-risk exposure settings for COVID-19 in England using data collected through enhanced contact tracing and a market research panel showed that certain occupational groups are associated with increased odds of being a COVID-19 case, including working in warehouse settings, construction, and hospitality, as well as health and social care[20]. Additionally, there was strong statistical evidence that engaging in entertainment activities was associated increased odds of disease.

Test, Trace and Protect (TTP) teams collect exposure data from cases and contacts which relies on the recall of those being interviewed and should be viewed with caution in establishing cause and effect. Contact tracing was not designed as a research tool but the data that is collected does provide an indicator of potential exposures that can then be evaluated for evidence of clustering. In a recent survey of local authority (LA) cluster data undertaken between 21/09/20 and 20/10/20, a total of 176 clusters associated with commercial workplaces were reported by 10 LA environmental health teams in Wales. In the same TTP system, individual cases report exposure to pubs and restaurants relatively infrequently (<10% of reported location exposures). Wet pubs and clubs (i.e. those venues predominantly serving alcohol) were the most common commercial setting associated with infection and accounted for 41 (23%) clusters. Enforcement data can provide an indication of the likelihood of infection risk associated with specific commercial settings. Since the introduction of the Restrictions Regulations on 9th August (up to 20th November) a total of 295 Premises Improvement Notices and 80 Premises Closure Notices have been served, hospitality is consistently the most common setting for service of these notices – 179 (61%) improvement notices and 62 (78%) closure notices. Despite much effort from the industry to provide COVID secure environments, it is not possible to uncouple the linking activities that also confer higher risks of transmission (e.g. transport to venue, mixing between venues).

[18] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7327724/
[19] https://www.gov.uk/government/publications/transmission-risk-in-the-hospitality-sector/transmission-risk-in-the-hospitality-sector
[20] https://www.gov.uk/government/publications/sage-69-minutes-coronavirus-covid-19-response-19-november-2020

Schools and education

Cases and contacts identified in school students and teachers are increasing[21]. 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 mobility[23].

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 impacts[24]. 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

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[21] https://public.tableau.com/profile/public.health.wales.health.protection#!/vizhome/RapidCOVID-19virology-Public/Schoolssurveillance
[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

school holiday periods over the summer to allow for more learning. However, the risk remains of these mitigations increasing inequality as online learning is less accessible to lower socioeconomic groups. The deliverability and effectiveness of any mitigating measures should be considered in a careful risk/benefit approach.

For decisions on whether any school closures should take place beyond the Christmas period, it will be important to consider further evidence as this becomes available, given the significant wider harms caused by school closures.

If learning transitioned to a blended period for the final week of term, consideration would need to be given to displacement activities that could see more mixing (e.g. through leisure or shopping). If agreed, the week should be used for isolation and reducing social contacts, with a clear 'stay at home' message for all age groups.

The policy modelling analysis section further below provides the estimated impact on hospital occupancy, ICU occupancy and deaths for a blended learning approach.

Behaviours and Risk Communication

Whilst we would recommend continuing to pursue the agenda of shared responsibility for longer term behaviour change, it is clear that some members of society, for a multitude of reasons, are not adhering to aspects of the guidelines in place. This adherence is required for individuals to protect themselves and others and it is important to recognise that what might be considered minor breaches may have a bigger impact at population level when compared to a small minority taking significant risks[26].

Evidence to date suggests many people continue to adhere to the guidelines in Wales, with exceptions largely being thought to be associated with barriers such as understanding of guidelines, lack of skills (e.g. ability to say no) and lack of access to support (e.g. financial, practical and emotional). Furthermore, while confidence in Welsh Government remains high, an important consideration given it has been found to be a key predictor of adherence[27], there will be some people who disagree with the restrictions that have been in place and are less likely to comply. **Survey data also suggest a degree of mixing in the home with those outside the extended household and misunderstanding in the population of the risks of transmission associated with such mixing (e.g. reporting they are more likely to be**

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[26] https://www.gov.uk/government/publications/spi-b-key-evidence-and-advice-on-celebrations-and-observances-during-covid-19-5-november-2020
[27] https://www.medrxiv.org/content/10.1101/2020.10.19.20215376v1

exposed to the virus from strangers than family/friends [28]). Objective mobility data also indicate returns to pre-firebreak levels of travel.

While a little more speculative, current circumstances may exacerbate the risk of transmission in the community. For example:

- Changing behaviours following the relaxing of restrictions post-firebreak (largely anecdotal but survey data will allow this to be routinely monitored).
- Greater mixing in the pre-Christmas period is likely, in for example, hospitality settings and non-essential retail.
- Possible complacency with the welcome news on the forthcoming availability of vaccines, a recent qualitative study noting the possibility of people relaxing[29], (although a counter-argument is feasible, where people continue to be cautious as they can now see an end in sight).

While the trajectory of the pandemic has changed over time, in part due to the various interventions put in place, many of the evidence-informed behavioural considerations remain the same as in the spring (and outlined in the recent TAC paper[30]). These include:

- The importance of public communication around risk that is both simple to understand and accompanied by a clear rationale. This would be particularly pertinent were there to be a deviation from the post-firebreak national approach (e.g. to localities in different tiers as in England and Scotland). That said, perceived consistency across the UK would likely be viewed positively, as has been agreed for the Christmas period.
- Financial support in place should be continued (e.g. £500 self-isolation payments) and other forms of social and emotional support encouraged (e.g. family, friends and volunteers keeping in touch and providing practical support such as shopping).
- Use of appropriate communication channels reflecting demographic and cultural differences and interventions co-produced wherever possible.
- Recognising enforcement should not be a focus of any activity without having first attempted to engage, explain and encourage and remaining aware of the risk of inequitable deployment.

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[28] https://phw.nhs.wales/topics/latest-information-on-novel-coronavirus-covid-19/how-are-you-doing/how-are-we-doing-in-wales-reports/week-31-how-are-we-doing-in-wales/
[29] https://www.medrxiv.org/content/10.1101/2020.11.17.20233486v1
[30] https://gov.wales/technical-advisory-group-behavioural-insights-support-post-fire-break-wales

The importance of considering those behaviours more likely during the festive season, some of which are drawn out above, also need to be factored in, with a number of SAGE/SPI-B papers that should be drawn on in order to minimise the risk of transmission and the behavioural insights to assist in doing so[31].

Policy modelling

From analysis we have undertaken and comparisons of interventions across the UK with SAGE, we can see that: it is better to intervene early than late; short and sharp interventions work; adherence wanes over time; and firebreaks and harder restrictions (e.g. tier 3+) can reduce levels of transmission in the community. Rules must be simple, understandable and achievable – with an agreed beginning and end[32,33,34,35,36,37].

SAGE agree that it is better to enter into the Christmas period with a low level of community transmission as opposed to high[38]. As we have seen from our hospitals, care homes, and prisons, high community prevalence leads to outbreaks in these settings and outbreaks spread quickly. The same logic can be applied to residential settings – if an infectious individual enters a multiple occupancy home is it likely that more than one other person will become infected.

A new Reasonable Worst Case scenario has been produced and will be published shortly.

An analysis of different policy options has been undertaken by Swansea University to model the potential impact of non-pharmaceutical interventions[39,40] in the pre and post Christmas period. The policy scenarios considered transmission levels indicative of either a Scottish level 2 or 3 or England tier 2 or 3 period before Christmas. Herein tier 2 and tier 3 are used to describe a similar level of transmission and mixing to that associated with Tier 2 and Tier 3 restrictions described in the SAGE paper on four nations NPI analysis[28]. The transmission rate

[31] https://www.gov.uk/government/publications/spi-b-key-evidence-and-advice-on-celebrations-and-observances-during-covid-19-5-november-2020

[32] https://www.gov.uk/government/publications/impact-of-interventions-tfg-the-uks-4-nations-autumn-interventions-update-26-november-2020

[33] https://www.gov.uk/government/publications/fifty-eighth-sage-meeting-on-covid-19-21-september-2020

[34] https://www.gov.uk/government/publications/npis-table-17-september-2020

[35] https://www.gov.uk/government/publications/impact-of-interventions-tfg-the-uks-4-nations-autumn-interventions-update-26-november-2020

[36] https://b6bdcb03-332c-4ff9-8b9d-28f9c957493a.filesusr.com/ugd/3d9db5_29a5ae83bcd74eb8a238f75fb2d50735.pdf

[37] 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

[38] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938977/S0909_Sixty-ninth_SAGE_meeting_on_Covid-19.pdf

[39] https://www.gov.uk/government/publications/summary-of-the-effectiveness-and-harms-of-different-non-pharmaceutical-interventions-16-september-2020

[40] https://gov.wales/technical-advisory-group-fire-breaks

scenarios were chosen based on a pre-firebreak (as at 16 October) R_t value of 1.3, and a 10% higher value representing increased seasonal transmission going into the winter.

The analysis was helpful as it illustrated the potential benefits in terms of reduction in deaths, NHS occupancy and ICU bed for tier 2 and 3 scenarios. The model also illustrates that keeping R_t generally lower (e.g. by the reduction of social mixing of people generally) would significantly impact on deaths: R_t1.3 (2,520 deaths) versus R_t1.4 (3,270 deaths), if we include deaths from 1 December until 28 February. The estimates do not factor in any non-pharmaceutical interventions after Christmas, or likely COVID-19 deaths over the springtime.

The Figures below show the modelled effects of 6 different pre-Christmas policy scenarios. Each of the scenarios can be read from left to right, from the recent date of 2/12/20, to the start of the period of reduced restrictions (23/12/20), up until the end of the post-Christmas period of reduced restrictions (28/12/20). The red section of the line indicates additional mixing during the Christmas period, estimated to result in a further 10% additional transmission.

For example, in the first 'No intervention' scenario, where the background R_t is assumed to be 1.3 (as of 2/12/20), the cumulative number of COVID-19 patients requiring hospital and ICU beds is estimated to be 8,570 and 1,030 respectively, with 2,520 deaths. In the third 'Tier 3' pre-Christmas intervention, which is estimated to bring R_t down from the background Rt of 1.3, to below 1 (0.9), the number the cumulative number of hospital and ICU beds is estimated to reduce to 4,860 and 580 respectively, with 1,460 deaths.

If the background R_t is higher, at 1.4, then the number of hospital and ICU beds required, and deaths, will be higher overall, as per last 3 scenarios in the Figure below.

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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 occpancy (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	*Difference*	*440*	*60*	*130*
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	*Difference*	*440*	*60*	*120*
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	*Difference*	*520*	*70*	*160*
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	*Difference*	*550*	*80*	*150*

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.
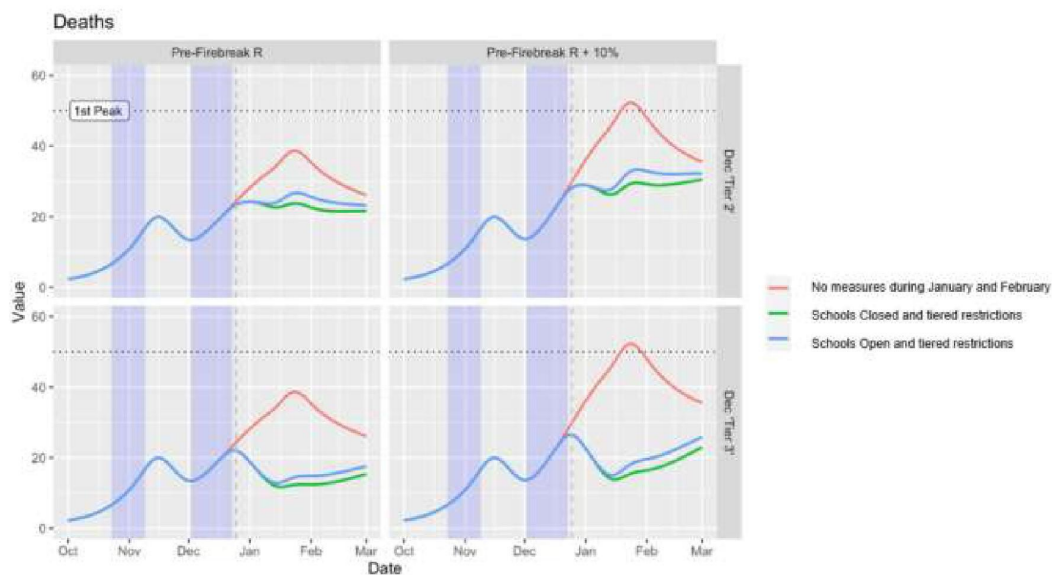
Figure 2. Deaths per day between October and March 2020 in different pre-Christmas scenarios (Source: Swansea University COVID-19 Modelling)
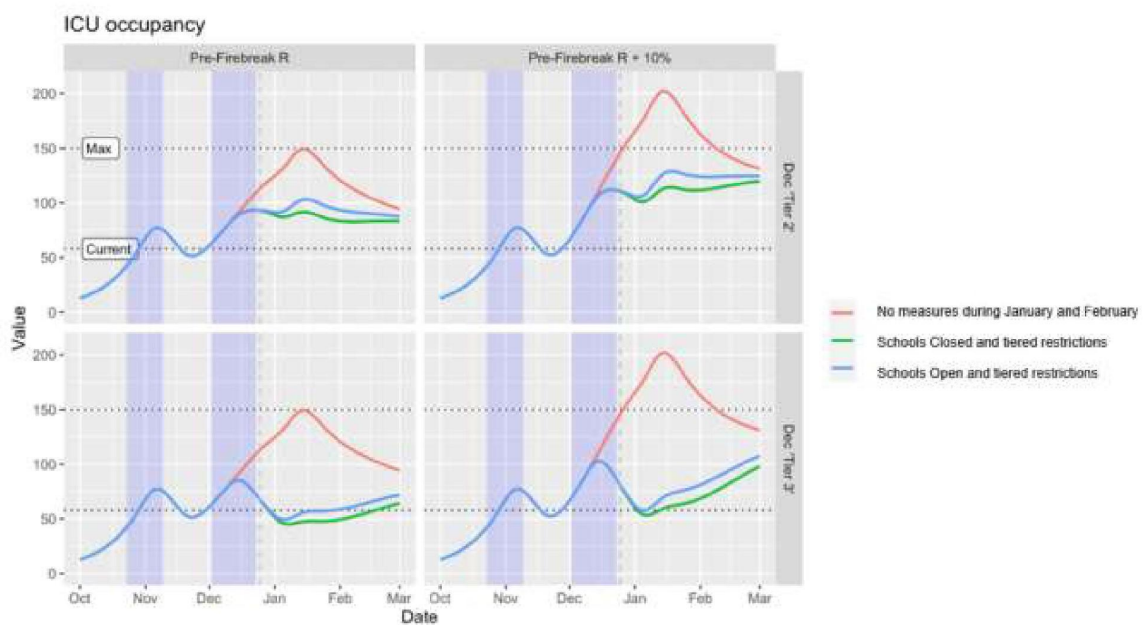

Figure 3. ICU Occupancy between October and March 2020 in different pre-Christmas scenarios (Source: Swansea University COVID-19 Modelling)
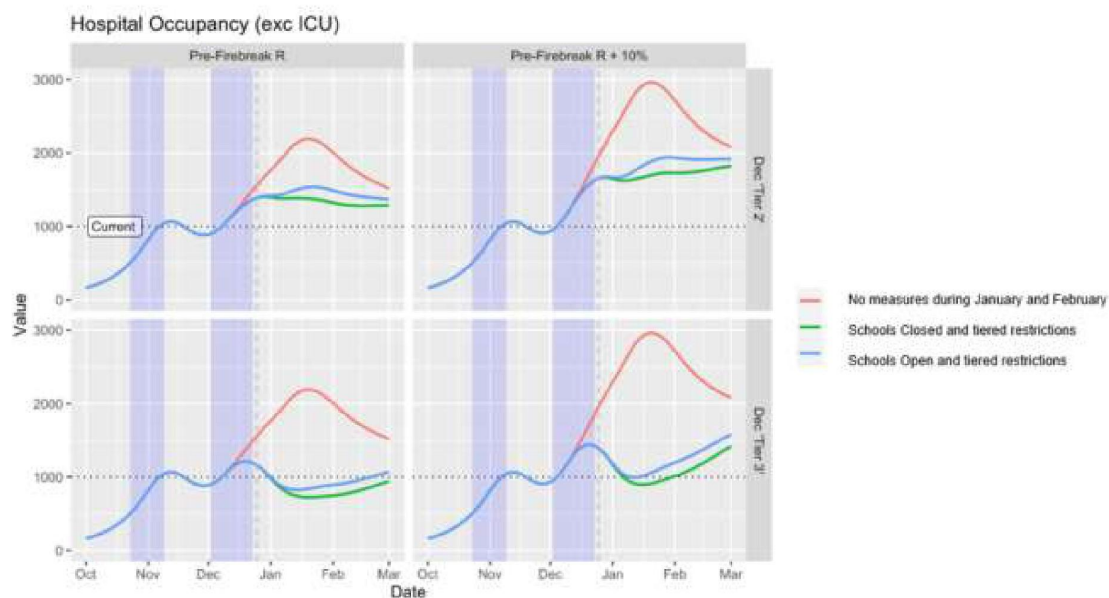
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Figure 4. Hospital bed occupancy between October and March 2020 in different pre-Christmas scenarios (Source: Swansea University COVID-19 Modelling)