Public Health Wales COVID-19 advice to the Chief Medical Officer for Wales No. 23

Non-Pharmaceutical Interventions during scenario 'COVID URGENT' of the Coronavirus Control Plan

01 November 2021

This advice note is provided by Public Health Wales to the Chief Medical Officer to inform the development of strategy and policy decisions taken by Welsh Government. As such, it is intended to be independent advice informed by evidence and should not be considered as definitive guidance or government policy.

1 Context

On Friday, 8 October 2021, the Welsh Government issued the 'Coronavirus Control Plan: autumn and winter 2021 update' [1] which outlines the strategic intent and approach to managing COVID over the autumn and winter. The plan emphasizes the need to maintain baseline measures throughout the period and additionally, describes two potential scenarios – **Covid Stable** and **Covid Urgent** – which could lead to different responses.

Covid Stable scenario will not require the re-imposition of any significant restrictions, such as legal limits on the number of people who, can meet or whether businesses are required to close. **Covid Urgent**, describes a scenario where new and unexpected Covid pressures could emerge, which might need to take more significant action to protect public health and people's lives. This would include a new, highly-transmissible variant establishing itself in Wales, or a variant which does not respond to the vaccine. This could also result in unsustainable pressure if the protections

[1] https://gov.wales/sites/default/files/publications/2021-10/coronavirus-control-plan-autumn-and-winter-2021-update.pdf

from the vaccine wane more quickly than expected, causing higher levels of hospital admissions.

Welsh Government has asked Public Health Wales (PHW) to advise on what Non-Pharmaceutical Interventions (NPIs) could be considered in the event the **COVID Urgent** scenario becomes real. This advice note, therefore, is PHW's response to that request.

2 Evidence Base of Effectiveness of NPIs

Evidence continues to accrue in respect of effectiveness of NPIs[2],[3]. A complete 'lockdown' has the maximum positive impact on bringing case incidence down. All other interventions have varying degrees of effectiveness and are heavily caveated by timing, population behaviour in terms of compliance to such restrictions, and the research evidence on effectiveness is still developing.

A review of the effectiveness of face masks to reduce the spread of transmission of SARS-CoV-2 in the community concluded face coverings may play an important role, but in the absence of other preventative measures may not be effective[4].

A review of school based NPIs highlights the importance of a multi-component approach including adherence to infection prevention and control measures in school and day-care settings and reducing activities outside of the school settings are effective[5]. A systematic review of 34 global studies (published from Jan 2020-Mar 2021) concluded school, workplace, business and venue closures were considered effective NPIs to control the spread of the virus[6].

Timing is important, as modelling suggests that the effect of introducing NPIs may be delayed by up to 3 weeks[7]. There are differences in the effectiveness of NPIs between different waves of the pandemic. A recent

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[2] S0057 SAGE16 Imperial Impact of NPIs to reduce Mortality and Healthcare Demand.pdf (publishing.service.gov.uk)
[3] S0769 Summary of effectiveness and harms of NPIs.pdf (publishing.service.gov.uk)
[4] Face coverings to reduce transmission of SARS-CoV-2 Report number – RR00007 (July 2021), Wales Covid-19 Evidence Centre
[5] The effectiveness of infection prevention and control measures applied in education and childcare settings for children: a summary and critical appraisal Report number – RR00011 (August 2021). Wales Covid-19 Evidence Centre
[6] Mendez-Brito (2021) Systematic review of empirical studies comparing the effectiveness of non-pharmaceutical interventions against COVID-19
[7] Campbell (2020) The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (R) of SARS-CoV-2:a modelling study across 131 countries

study, Sharma M et al [8], showed interventions such as business closures, educational institution closures, and gathering bans reduced transmission, but reduced it less than they did in the first wave. This difference is likely due to organisational safety measures and individual protective behaviours—such as distancing— which made various areas of public life safer and thereby reduced the effect of closing them. Specifically, that study found smaller effects for closing educational institutions, suggesting that stringent safety measures made schools safer compared to the first wave.

Reintroduction of NPI's would occur in a different context of higher population level immunity from vaccinations, potential waning immunity for those vaccinated early, dominance of Delta variant, end of furlough scheme and areas of enduring transmission, and increased deprivation and financial hardship. Unpublished work from SPI-B/SAGE (examining 12 behavioural interventions across 30 countries) indicates no sign of decline in effectiveness (measured by cases, hospitalisations, deaths) of interventions when reintroduced for a second or third time, suggesting that reintroduction could be effective. Wales has seen consistently high self-reported intention to adhere to personal protective behaviours, indeed the most recent polling[9] shows high proportions reporting continuity of adherence.

Regardless of type, interventions are likely to be most effective in combination - measures are not likely to be simply additive but may have complementary interactions that result in a greater cumulative impact on transmission. The Swiss-cheese-analogy approach to messaging is currently being tested in relation to keep Wales safe, and findings from this work should be considered in relation to further NPI introduction.

Estimates of transmission reduction from the European-level study (Sharma et al[8]), as a percentage reduction in reproductive number (Rt), include: business closures -35% (gastronomy 12%, nightclubs 12%, retail and close contact services 12%); banning all gatherings 26% (more stringent restrictions work better, ban on groups>=10 people only a small effect. The effect of closing all educational institutions in the 2nd wave was

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[8] Understanding the effectiveness of government interventions against the resurgence of COVID-19 in Europe (nature.com)

[9] https://phw.nhs.wales/topics/latest-information-on-novel-coronavirus-covid-19/how-are-you-doing/how-are-we-doing-in-wales-reports/how-are-we-doing-in-wales-week-78-report/

only a 7% reduction in Rt. Mask wearing in most or all shared spaces had a 12% effect.

Interventions to control and reduce harm from co-infections can, like vaccination, reduce the impact of COVID-19 transmissions. Influenza has an estimated 2-fold increase in mortality in SARS-CoV-2 infected patients[10], so interventions such as influenza vaccination and early detection and control of influenza cases in closed settings (including using antivirals) can help to reduce the impact of infection.

There is also emerging evidence of an influence of dose on the nature and severity of SARS-CoV-2 infection, so interventions that aimed at reducing the infectious dose such as face coverings, ventilation and spacing, and air treatment, have the potential to reduce overall disease burden[11],[12]

Two recent SAGE papers have recommended working from home, face coverings, and increasing vaccine uptake as effective measures to reduce transmission and mitigate the impact of COVID-19 infection.

3 Considerations of Welsh Context during a potential COVID Urgent Scenario

It would be important to base interventions proportionate to the existing epidemiological situation, including the metrics identified in the Coronavirus Control plan, should a COVID Urgent scenario present itself in Wales. However, in preparation, the following considerations are important

- Wales has benefitted from a cutting edge genomic surveillance service that will continue to identify and monitor the threat from new variants of SARS-CoV
- This is complemented by an ongoing sentinel surveillance system for a range of respiratory pathogens which will add to our intelligence of what is in circulation during the autumn and winter months
- Wales has very good vaccination coverage, and consistently high self-reported intention to adhere to other personal protective

[10] https://pubmed.ncbi.nlm.nih.gov/33942104/

[11] https://www.nature.com/articles/s41467-021-25156-8

[12] Dose-dependent COVID-19 symptoms: https://www.nature.com/articles/s41579-021-00634-4?proof=t%25C2%25A0

behaviours. Most recent polling showing high proportions reporting continuity of adherence

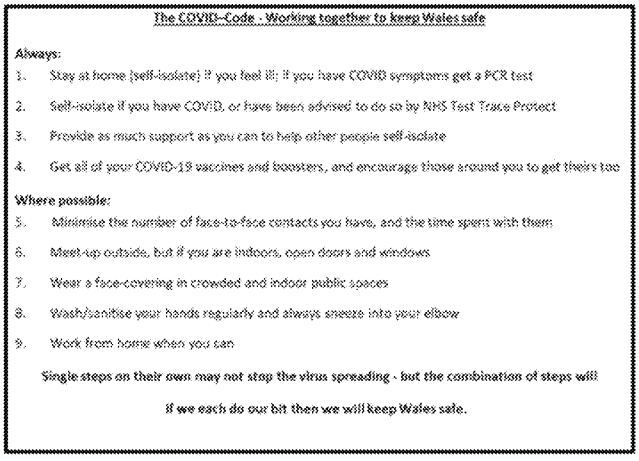
- NHS and social care indicators to gauge the risk of capacity being breached
- Consideration is given to understanding the routes of transmission. Work is underway by Office for National Statistics (ONS) in this area. A pre-print paper (received as personal communication) suggests that the main evidence for "Inferring risks of coronavirus transmission from community household data" is

    - In the pre-vaccine phase, patient-facing roles increased risk of bringing infection into the household
    - When schools are open, there is an increased risk of children bringing infection into the household. For primary school this is only true since the emergence of Alpha.
    - However, the analyses did not find strong evidence that child susceptibility and transmissibility differs – although higher relative susceptibility associated with non-vaccination is consistent with later periods.
    - Both adults and children can bring the infection into the home – it is common to see households with child-only, adult-only, or adult and child infections

- Consideration is given to balancing the harms from COVID with that from other health issues, including those that arise due to restrictions for COVID control

In line with the COVID-Code adopted by Welsh Government in the Coronavirus Control Plan, PHW recommends that much of the existing baseline measures should remain in place until at least March 2022.

These are detailed in the COVID Code as summarised below.



The COVID-Code - Working together to keep Wales safe

Always:

1. Stay at home (self-isolate) if you feel ill; if you have COVID symptoms get a PCR test
2. Self-isolate if you have COVID, or have been advised to do so by NHS Test Trace Protect
3. Provide as much support as you can to help other people self-isolate
4. Get all of your COVID-19 vaccines and boosters, and encourage those around you to get theirs too

Where possible:

5. Minimise the number of face-to-face contacts you have, and the time spent with them
6. Meet up outside, but if you are indoors, open doors and windows
7. Wear a face-covering in crowded and indoor public spaces
8. Wash/sanitise your hands regularly and always sneeze into your elbow
9. Work from home when you can

Single steps on their own may not stop the virus spreading - but the combination of steps will

If we each do our bit then we will keep Wales safe.

Recognising the finite cognitive resources people have, and these having been tested over the course of the pandemic, there is a clear and ongoing need for consistent messaging, recognising the collective effort - a sense of connection to the 'national community' has been identified as a predictor of adherence in a pandemic[13]. To maintain trust and protect majority-level-actions, the following principles should be applied:

- Co-produce communications (to build self-relevance) and use credible, trusted messengers.
- Explain the WHY (to build intrinsic motivation); focus on rationale (transmission prevention, keeping life going); employ the 'question-behaviour' effect – ask pertinent questions, rather than issuing instructions or mandates.
- Celebrate and emphasise collective efforts within the population; acknowledge the value of shared identities and collective responsibility/goals, for example accentuating the positive stories around the sacrifices people have made to protect others, high levels of adherence to public health behaviours and the role of mutual aid groups.
- Frame measures in terms of collective care and concern, and in collective and personal gains, rather than personal restriction.
- Place more emphasis on normalising protective behaviours and provide feedback, for example to leverage social norms of vaccine uptake. This could be through use of data, for example proportion of adults vaccinated (a large percentage) or recent numbers vaccinated by age band of focus, or use role modelling to support adoption of positive behaviours in target audiences.

4 Public Health Wales Advice

PHW advice is for consideration to be given to the introduction of NPIs in a staged approach using the following order of priority as an indicative guide:

STAGE 1 INTERVENTIONS:

Rationale: Interventions that offer the potential for greater reduction in Rt are chosen first. It is also acknowledged from evidence from behaviour science suggests that there is a need to balance this against the potential influence on compliance that can be affected by the ordering of the

[13] https://psyarxiv.com/ydt95

intervention. Interventions suggest in Stage 1 offer between 10% to 30% reduction in Rt estimates, based on good compliance

1. Re-introduction of Social distancing
2. Cease all mixing between households, except where single person household can form a bubble with one another household
3. Supplementary actions such as protection of the vulnerable individuals in vulnerable settings (e.g. shielding of the elderly), stricter testing policies, closure of public transport and wider mandated use of face coverings
4. Ban public gatherings and mass events
5. Implement a night-time curfew, noting there is a delicate benefit/harm balance

The recommendation is for these interventions to be introduced simultaneously.

STAGE 2 INTERVENTIONS

Rationale: Interventions in this stage are to be considered when there is continuing evidence of exponential growth despite stage 1 interventions. These interventions seek to keep the educational sector and non-essential retail businesses going as far as possible, recognising that the balance of harm and benefit by closure of these sectors. The potential additive impact on Rt (between 40% to 50%) from these set of interventions are greater and if kept for sufficiently longer duration is likely to bring case incidence lower.

6. Closure of non-essential retail businesses
7. Closure of Secondary Schools
8. Closure of Primary Schools
9. Stay-at-home directive (similar to full lockdown)

The recommendation is for these interventions to be introduced sequentially in the order set out above.

Additional mitigation measures to reduce co-infections by influenza vaccination and outbreak control in line with the recently published Welsh Government Winter plan for managing respiratory illness

Longer-term measures to improve spacing, ventilation and air treatment, particularly in higher risk venues and workplaces, including hospitals, will have a more permanent effect on the transmission of COVID-19.

Making effective use of the NHS COVID pass. The experience from Israel's Green Pass[14] suggests that re-introduction of this requiring individuals to have completed three courses of vaccination in order to qualify to enter venues such as:

- Culture and sporting events
- Conferences and exhibits
- Hotels
- Gyms, studios, pools, and country clubs
- Houses of worship with more than 50 people
- Event venues and gardens
- Festivals
- Restaurants, bars, dining rooms, and cafes
- Museums and libraries
- Tourist attractions and amusement parks
- Universities and establishments of higher learning
- Any gathering with more than 100 people

5 Conclusions and Recommendations

The implementation of NPIs during a COVID urgent scenario, needs to give due regard to the epidemiological context, balancing the competing harms and supplementing baseline measures with a graded approach to NPI introduction as outlined in section 4. Implementation needs to be supplemented by clear, concise and tailored communication and be positively framed, designed to ensure equity, and ideally co-produced. Consideration should be given to issuing targeted messages before re-introducing NPIs, so that those most at risk have the option to stay at home, if the numbers reach a certain threshold. Packages of measures are highly likely to be more effective than individual measures, and adequate support for those affected also needs to be considered. PHW will continue to work with policy officials in Welsh Government to further support the development of the NPI framework.

[14] Green Pass Restrictions - Corona Traffic Light Model (Ramzor) Website (health.gov.il)