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MEMORANDUM E (20) 221 (C)

**FROM: Robin Swann MLA
MINISTER FOR HEALTH**

DATE: 24 September 2020

TO: EXECUTIVE COLLEAGUES

**FINAL EXECUTIVE PAPER: NON-PHARMACEUTICAL OPTIONS TO REDUCE
THE TRANSMISSION OF COVID-19**

Introduction

1. This paper sets out options for further measures to bring down COVID-19 transmission by non-pharmaceutical interventions (i.e. by means other than medicines including eventual vaccines) and examines the potential benefits and some of the harms, though excluding an economic analysis. It is not proposed that any decisions are taken this week on further changes to the restrictions but rather that the Executive considers the best approach to take if the level of infection continues to increase and leads to serious health consequences for the NI population.

Background

2. There has been a substantial increase in COVID-19 cases in NI which has gradually accelerated since the beginning of July. Cases are increasing in all age groups, but especially in younger adults. The effect of opening of schools, colleges and universities has only just begun to become apparent, and any impact of opening wet pubs will follow later. Even so, the latest data suggest that various COVID parameters, including cases and hospital bed occupancy, are increasing at a rate of at least 50% per week. As yet there has been little signal of increased intensive care bed usage or deaths, but these are anticipated to rise after a period of lag once hospital admissions increase.

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3. Test, Trace and Protect (TTP) data suggest that most cases are associated with household transmission or community transmission in unknown settings. However, clusters have been associated with a wide variety of other settings where individuals meet in indoor settings. Fewer than 10% of cases are associated with travel outside NI in the previous 14 days.
4. There is early evidence to suggest that the household restrictions applied on a postcode basis, and now NI wide, may have had some impact on reducing transmission. However, it will take another week at least to be certain, during which time frame we may also begin to see the counter effects of the opening of colleges and wet pubs, as well as some seasonal impacts.
5. From a scientific perspective it seems unlikely that the current restrictions will be sufficient to bring R back to less than 1 and maintain this. A package of interventions will therefore be required to prevent an exponential rise in the virus. Single interventions are unlikely to be sufficient. If schools colleges and universities are to remain open, then a wide range of other measures will in all likelihood be required.

Impact of full “lockdown” and scale of individual measures

6. The lockdown imposed in late March (and the changes in behaviour that preceded this) had a high level of uptake and resulted in a rapid reduction in the reproduction number (R), from about 2.5-3.0 to about 0.5-0.7. That is a reduction in R of about 2, or a reduction in transmission of 75%. The lockdown can be thought of as a combination of many different measures – from closing schools and universities, to closing pubs, restaurants, gyms and close-contact services, restricting all contact with other households, mandating that individuals must not leave their homes without a reasonable excuse and all except essential workers work from home. All of these measures came in simultaneously, and the sum of each of their effects reduced the reproduction number by about 2. Hence, each measure alone is likely to have a relatively small effect. That is, a large number of these individual measures is necessary to be in place to keep R to below 1.

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NEED FOR FURTHER ACTION

7. In the longer-term, gaining control of COVID-19 requires reduction in prevalence. Prevalence drives the absolute increase in numbers of infections; R drives the rate of increase. If the strategy is to retain control of the pandemic until a vaccine is available, then maintaining a low prevalence will be essential until a vaccine is available and whilst it is being delivered. The Executive will continue to have to consider the relative impacts on social freedom, economic activity and virus transmission for many months, and in some instances, possibly for defined periods, the decision will need to come down in favour of restrictions to meet the objective of reducing prevalence.
8. Reduction in prevalence is achieved by reducing the connectedness of the population. Transmission within households is efficient, so reducing the connectedness requires reducing interactions between households that occur via contacts made in education, work and social/leisure activities. The effectiveness of the individual interventions below should be considered in terms of their impact on connectedness between households. Evidence for the effectiveness and harms related to individual interventions is difficult to ascertain as packages of interventions are usually implemented together and the level of adherence may be inconsistent and poorly quantified. Furthermore, there will be delays between the imposition of an intervention and any effect it may have on cases or other key indicators. Finally, the counterfactual – what outcomes might have occurred without that package of interventions – is difficult to ascertain. There is a lack of randomised evidence for these packages of interventions, so the data are often built up from observation of temporal trends, supplemented with modelled estimates. Estimating the harms from these interventions is even more difficult, given the breadth of possible impact on physical and mental health, education, society and the economy. Overall, the evidence base on which to judge the effectiveness and harms associated with different interventions is weak.

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SAGE advice

9. SAGE have recommended this week a short-list of non-pharmaceutical interventions (NPIs) that should be considered for immediate introduction:
 - i. A circuit-breaker (short period of lockdown) to return incidence to low levels.
 - ii. Advice to work from home for all those that can.
 - iii. Banning all contact within the home with members of other households (except members of a support bubble)
 - iv. Closure of all bars, restaurants, cafes, indoor gyms, and personal services (e.g. hairdressers)
 - v. All university and college teaching to be online unless absolutely essential.
10. Of these, the Executive has already implemented the third, and the second has been implemented for some time although messaging about working from home could now be reinforced. All have associated costs in terms of health and wellbeing and many will affect the poorest members of society to a greater extent. Steps will need to be taken to mitigate these effects and achieve equity and social justice.
11. The more rapidly these interventions are put in place the greater the reduction in COVID-related deaths and the quicker they can be eased. However, some restrictions will be necessary for a considerable time, probably until an effective vaccine can be rolled out to the majority of the population.
12. Clear, consistent communications will be essential and a consistent package of measures should be adopted that do not appear to promote contradictory goals.
13. Whatever other decisions are taken, the implementation of tightened infection control measures in all hospitals, care homes, and other enclosed settings including regular testing of staff must remain a priority if infections continue to grow. Such measures are likely to have a major impact on deaths and hospitalisations for COVID-19.

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14. In addition, an effective TTP system is important to reduce the incidence of infections in the community. Estimates of the effectiveness of this system on R at present are difficult to ascertain. However, continued investment will be required to ensure that 80% of contacts self-isolate within 48 hours of the initial test request. This will require the system to grow at the same rate as the epidemic, and for support to be provided to people to enable them to adhere to self-isolation.

General principles

15. Key general principles which should be considered by the Executive when making decisions around non-pharmaceutical interventions include the following:

- i. aim to reduce the number of contacts which an individual has per day
- ii. aim to reduce the probability of infection per contact – outdoors where possible, good ventilation indoors, 2m where possible, face coverings where necessary, limited duration of contacts as much as possible, good hand and surface hygiene
- iii. isolate symptomatic / diagnosed individuals
- iv. reduce exposure of vulnerable groups
- v. provide a credible rationale for guidance and any changes – communicate need for sustained, multi-faceted control; provide transparent, detailed, explanations and guidance; give feedback about the effects of guidance and change
- vi. provide precise and consistent guidance – avoid inconsistent messaging and enforcement
- vii. engage all sections of society
- viii. enable changes and provide support – redesign spaces, enable good behaviours, consider financial support to enable self-isolation
- ix. promoting good health including exercise and tackling obesity

16. Although beyond the scope of this paper, the rapid rise in cases means that a raft of complementary measures is required to reduce transmission in care homes, hospitals and other enclosed settings, such as prisons and hostels for the homeless, and in addition clear guidance to protect the elderly and vulnerable.

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17. Measures to maximise adherence to restrictions are important. These include a range of enforcement actions along with the use of incentives.
18. Widespread community testing for the virus may become possible later in the year as new technologies become available but is not currently an option.
19. Screening at airports and other points of entry is considered to have at best a limited impact and is not considered further.

OPTIONS TO REDUCE PREVALENCE

Analysis of options

20. The table at **Annex 1** includes a wide range of options which would reduce transmission of the virus to a limited extent. Within these, graduated options will be available and could be considered. For example, between full opening and full closure of the bar/restaurant sector a range of options can be imagined – outdoor service or take away only, further limitation of opening hours, household table/groups only etc.
21. The tables summarise the potential impact of the different interventions, on transmission, severe disease and deaths from COVID-19, the potential social and health harms from the measure and potential implementation issues. They focus on impact on transmission of the virus, although other considerations are included. There is no consideration of the economic benefits / harms, which need to be reviewed carefully and require additional input from other Departments.
22. The measures recommended below for immediate consideration have been selected by SAGE (i) based on the balance between epidemiological benefits and health and social harms, (ii) likely each to make a non-negligible impact on R. The higher R rises, the more of them will be needed to restore R to below 1. From a purely epidemiological position, implementing measures as soon as

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possible would have the largest effect and likelihood of bringing R back below one.

23. A "circuit-breaker" (intermittent full lockdown), in which a package of stringent non-pharmaceutical interventions is reintroduced for 2-3 weeks would act to reduce R below 1. Over a fortnight's "break", two weeks of growth could be exchanged for two weeks of decay in transmission, assuming good adherence to measures, and no additional increase in contacts before or after the break. If this were as strict and well-adhered to as the restrictions in April, this could put the epidemic back by approximately 28 days. The amount of "time gained" is highly dependent on how quickly the epidemic is growing – the faster the growth or stricter the measures introduced, the more time gained.
24. If regulations and behaviour then returned to pre-circuit break levels, there would be a return to exponential growth, but from a significantly lower level than would have been the case without the break. Multiple circuit-breaks might be necessary to maintain low levels of incidence.
25. Before enacting any additional measures, consideration needs to be given to how long they will need to be in place. To regain control of transmission R has to be reduced, ideally to below 1. Releasing the measures is likely to result in R returning above 1, so the longer they are in place (and the lower the prevalence falls), the longer before they will have to be re-imposed.
26. The additional measures which might be considered by the Executive in line with the SAGE recommendations, to address further rises in positive cases and an escalation in serious health consequences, fall under the following headings
- i. Re-emphasis working at home for anyone who can with monitoring of adherence and to recommend in place for the next number of months.
 - ii. Implement a planned "circuit-breaker" (2 or 3 weeks in duration), with stay-at-home measures and a time to be determined.
 - iii. Closure of restaurants, bars, cafes etc. In place until prevalence has fallen or alternatively a graduated variation on hours and services provided.

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- iv. Closure of personal services (beauty etc). In place until prevalence has fallen.
- v. Closure of gyms and other similar indoor exercise activities. In place until prevalence has fallen.
- vi. Higher education tuition to move to on-line / distance learning for term 1. In place until prevalence has fallen. To be effective, this would require students to return home and adhere to other restrictions.

A wider range of options is included in the Annex, and others may be available.

Getting the implementation right

27. In terms of implementation, there is a danger in viewing each measure in isolation. When considering how to implement a package of measures, Executive colleagues should take into account:

- i. Consistency. If policies appear to promote contradictory goals, this will at best confuse the public and at worst degrade trust and adherence. For example, preventing people from meeting a relative at home, while encouraging them to go to pubs or workplaces appears inconsistent. Or allowing paid childcare / nannies, but not support between households.
- ii. Equity. Each measure will affect some groups and individuals more than others. Planning should start now to refine measures to minimise the harms and mitigate impact on vulnerable groups, to achieve equity and social justice.
- iii. Co-production. Implementing policies without engaging early and actively with the people they will affect increases the chances of mistakes being made, avoidable harm occurring and unworkable guidance leading to criticism and loss of trust. Developing and checking policies with those who will be affected will pay dividends and will improve trust and buy-in. Given the disproportionate impact of the pandemic on low income and minority ethnic communities, specific consideration is needed here.
- iv. Support. For many of the measures, people will need support to adhere. If measures result in those with the lowest incomes losing money, having

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less access to shops, having fewer social or educational interactions, or being without vital social support networks, they will need financial and other support. Without this, health, adherence and trust could all be harmed.

- v. Feedback. Monitoring the impact of changes and providing frequent, clear and honest feedback to the public will encourage adherence and support for any further change if needed. Seeking ongoing feedback from the public on where policies are misunderstood, hard to adhere to or going wrong, with suggestions for improvement, will allow rapid improvement and prevent loss of trust.

Other beneficial impacts of non-pharmaceutical interventions

28. Many of the NPIs will result in modest beneficial impacts on health. The most obvious impact being the reduction in circulation of influenza and other respiratory pathogens. Evidence from the Southern Hemisphere has demonstrated an almost complete absence of a flu season in those countries that have adopted stringent NPIs over their winters. Other pathogens spread through close contact, such as norovirus and rotavirus, might also be expected to be suppressed as a result of reductions in contact patterns. However, there are other benefits that may occur from, for instance, improved air quality as a result of reduced traffic congestion.

29. However these potential health benefits are set against health costs associated with sedentary behaviour, increased consumption of alcohol at home, social isolation and loneliness leading to, or exacerbating, mental health issues, as well as the long term detrimental impacts of interrupted education, joblessness and low incomes. We do not yet have a thorough understanding of the costs and benefits in economic and health terms of the restriction measures.

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RECOMMENDATION / DECISION SOUGHT

30.1 recommend that the Executive agrees that further work take place on a cross-departmental basis over the next week to develop a package of options for recommendation, including incremental approaches.

Irrelevant & Sensitive

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