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Title: Winter is coming, and it is going to be tough: COVID-19 and winter preparedness.

As the incidence of COVID-19 reduces in some parts of the world, countries like the UK are turning their attention to winter. The UK Government Office for Science commissioned a rapid review by the Academy of Medical Sciences (AMS). The report ('Preparing for a challenging winter 2020/21')¹ published on the 14th July presents a reasonable worst case scenario of a second wave, substantially worse than the first, occurring against the backdrop of the seasonal influenza epidemic, and examines the wider impacts on health, healthcare delivery and inequalities.

The report presents four main challenges arising from the usual winter pressures compounded by a possible increase in COVID-19 cases. Firstly, it describes estimates, based on an increase in R_t to 1.7 from September 2020, of hospital admissions and deaths. The modelled data suggests a peak at the height of NHS winter demand in January/February 2021 with double the number of in-hospital deaths compared to the first wave. Secondly, the ensuing disruption to non-COVID health and social care delivery. Thirdly, the mounting backlog of delayed access to care the pandemic has caused, including poor management of long-term conditions, long waiting lists for elective surgery, and late presentations to healthcare leading to worse outcomes. The final challenge is the additional damage of a major seasonal influenza epidemic.

Alongside the challenges, the report also identifies four priority areas for preventing or mitigating these issues. Firstly, and crucially, minimising community transmission of COVID-19 before and throughout winter, by increasing adherence to prevention measures like physical distancing and wearing face coverings, removing socioeconomic barriers to isolation, and boosting capacity for testing and contact tracing. Secondly, and just as significantly, improving Covid-19 surveillance systems and the integration of data to support local public health teams. Thirdly, optimising infection control to enable health and social care to deliver COVID-19 and routine care in parallel. Finally, maximising the uptake of influenza vaccination.

The report is primarily healthcare focussed and lacks detail on the disjointed public health landscape in the UK and data flow issues which have hampered efforts to date. The timing of the report meant that it was not able to include meaningful data evaluating the national NHS Test and Trace service launched in May, or the Local Government-led local outbreak control plans produced in June. Furthermore the recommendations could be more emphatic, with the missed opportunities described elsewhere².

A key strand of the report is the potential of COVID-19 to exacerbate existing health inequalities, particularly among minority ethnic groups³. The sociocultural disparities in risk of infection and adverse outcomes from COVID-19 are well documented in many different countries³. The overlaying of inequalities in social determinants of health and chronic diseases are at the root of this and has been termed a *syndemic pandemic* – where risk factors and co-morbidities interact to worsen the impacts of the disease⁴. Lockdowns, and related mitigation strategies, have their own profound risks to widen social inequalities⁴, as well as the economic aftershocks. The report stresses that addressing inequalities can only be achieved by strong political and public health leadership. In the UK a cross-party

parliamentary taskforce focussed on inequalities and COVID-19 is needed to generate policy interventions that deliver the recommendations of the report, building on the significant social security measures implemented already. Furthermore, policy makers need flexibility to respond to the emerging data and resources, such as the recent framework published to identify and mitigate equity harms of COVID-19 policy interventions⁵.

Whilst the health system in the UK recovers from the first wave of the pandemic, there is a critical need for it to prepare now for a challenging winter and the added difficulties that a coinciding second Covid19 wave will have. The health system will need to maintain its ability to respond and adapt to emerging needs, and be amply resourced to save lives, protect the vulnerable and maintain services. And most importantly, there is a need to learn lessons from the initial response, and to disseminate and embed the learning quickly. There will be resonance too for other health systems worldwide that are similarly emerging from the initial aftermath of COVID19. Resurgent second waves are already apparent in several countries such as the US, Israel and Iran, and there is every likelihood this pattern will be repeated elsewhere.

The report is not a prophecy, but a call to action. Historian Yuval Noah Harari said, “if the discussion makes us choose differently, so that the prediction is proven wrong, all the better”. We now need swift, coherent policy interventions drawing on the challenges and recommendations made in this report which address the multiple interacting risks this winter while preventing short and long-term exacerbations of health inequalities. This report is a start of the discussion, but by no means will be the end of it.

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