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Our Ref: TC.CS.020420.PR

2 April 2020

Peter Roderick

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Dear Peter,

Thank you for highlighting the BMJ editorial on COVID-19 testing and contact tracing (Pollock et al, 2020). The article makes two main points- firstly, a recommendation to pursue a policy of case identification and contact tracing and secondly, the importance of a local response from strong health protection services.

Public Health Wales, in line with the UK strategy, implemented case finding and contact tracing in the containment phase of the pandemic, in line with previous pandemic planning, and moved away from this in the "delay" phase after there was evidence of sporadic cases in the community.

The authors cite a preprint by Keeling et al from 17th February as evidence for the effectiveness of contact tracing and case finding. This is a theoretical model that explores heterogeneity in contacts per case and levels of contact, but did not take into account actual experience of contact tracing efforts for COVID-19 and also for the H1N1 pandemic in 2009.

Experience from these two situations demonstrated limitations to the practical use of contact tracing for a generally mild, infectious illness in a country such as the UK. Public Health Wales devoted considerable and rapidly increasing resources to contact tracing, in line with the UK strategy, until the change in case definition signalled the move to the delay phase. These efforts worked well in general to limit spread from reported cases, and were scaled up to meet increasing demand in Wales as they were in the rest of the UK.

However, and as in 2009, it became apparent both through the experience of the teams and through the emergence of "sporadic" cases that this was not sufficient to control community spread. It is becoming apparent also that a proportion of cases

present with mild or asymptomatic disease, and therefore would not have met the case definition at this time.

Contact tracing effectiveness is highly dependent on the proportion of cases reported. Early PHE modelling estimated that between 30% and 70% of imported cases could be ascertained for effective contact tracing, and the experiential evidence suggests that this proportion was not sufficient to contain spread.

There is reported evidence from countries such as the Republic of Korea that rigorous case ascertainment and contact tracing can be part of a strategy of successful containment. However, it should be noted that the strategies used did not rely solely on contact tracing – for example, school closures and other social distancing was also implemented in the Republic of Korea.

Also, considerable additional resource and societal co-operation is required to make this work. For example, in Wuhan (population = 10million), 1800 teams of epidemiologists with about 5 persons in each were required to trace the tens of thousands of contact per day required. Even with scaling up of efforts and training of new staff, this would be challenging in the UK. At a societal level, the response also required considerable individual co-operation and surveillance, instigated by the government.

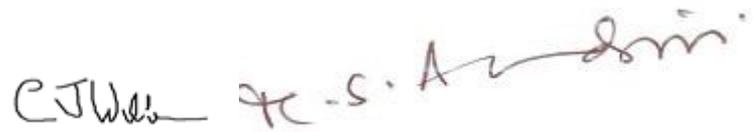
Contact tracing works by reducing the effective time that an infectious case can infect others. The index case is advised to self-isolate on onset of symptoms, and contacts are similarly advised to self-isolate and report any new symptoms. At a household level, the latter (household quarantine) prevents asymptomatic or mildly symptomatic cases from spreading infection outside the household. The implementation of case isolation and household quarantine as control measures provides a good part of the effectiveness of more general contact tracing, as the advice is clear to both cases and contacts at the outset. Wider contact tracing will only add in control measures in the non-household contacts of the index case.

Public Health Wales, in the current *delay* phase continues to, through a dedicated cell, focus control measures akin to the contact tracing principles in closed settings such as residential care homes and prisons.

Overall, the importance of contact tracing in infectious disease is recognised, and is undertaken on a daily basis in usual health protection practice in Wales, as the authors indicate. However, for a new infection, with a significant proportion of mild infections, in a mobile population with considerable under-reporting and in a country unused to stringent individual social controls, this may not be the best mainstay for future phases of the pandemic. Contact tracing may play a greater role following initial suppression, but is likely to be part of a wider set of measures, including some of the behavioural and social interventions currently in place. It could also be used in combination with case isolation, testing and household quarantine to identify contacts outside the household at an early stage.

One the second point, Public Health Wales has not followed England in moving public health teams to local authorities, and also the PHW-based health protection teams still provide good health protection services from multiple local offices across Wales using an All-Wales approach. We agree with the authors that frontline health protection services are key to effective control of Coronavirus.

Yours sincerely,

Handwritten signature in red ink, appearing to read 'C. Williams & G. Shankar'.

Dr Chris Williams and Dr Giri Shankar

*Rydym yn croesawu gohebiaeth yn y Gymraeg neu'r Saesneg
We welcome correspondence in Welsh or English*