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EDITORIAL

Return to work guidelines for the COVID-19 pandemic

The novel coronavirus 2019 or SARS-CoV-2 has spread worldwide since first being detected in China in December 2019. It has been declared a global health emergency by the World Health Organization [1], and public health measures have been applied, including social distancing, work restrictions and home-working promotion. As many countries have flattened the epidemic curve, they are now examining strategies to reopen their economies, requiring evidence-based strategies to return workers to their jobs in the safest way possible.

Occupational physicians can play key roles in monitoring workers' health and developing effective return to work guidelines. Along with clinical presentation, laboratory tests provide added value to confirm the diagnosis and the stage of COVID-19.

Rapid tests based on viral antigen or antibody detection are often scarce [2]. The use of reverse transcriptase-polymerase chain reaction (RT-PCR), based on viral-RNA detection, may be limited to high-risk patients, healthcare and first-responder personnel. The Spanish Society of Infectious Diseases and Clinical Microbiology and other societies [3–5] have established that RT-PCR can remain positive for up to 1 month in patients who are no longer contagious [6]. RT-PCR is a useful diagnostic test in COVID-19, but used alone qualitatively (positive or negative), it may be inadequate to determine the end of a COVID-19-affected worker's isolation. The combined use of SARS-CoV-2 viral-RNA detection and serological antibody determination could improve the management of COVID-19 patients, but timing is important. Doing tests too early may result in test repetition and waste of resources, whereas delaying tests may delay return to work.

The best strategy, preventing any contagious worker from entering/re-entering the workplace based on large-scale screening, is usually not available. Therefore, best practice for safe return to work after COVID-19 requires accurately identifying the final phases of the disease, where the worker is clinically recovered and no longer contagious. As laboratory tests are limited, we propose the combined use of:

Clinical parameters based on clinical evolution and days since exposure [7–9]. The isolated use of clinical criteria without laboratory support for return to work decisions would only be justified in circumstances where laboratory tests are unavailable [7,10,11].

Genomic tests (viral-RNA detection) have been the primary diagnostic and 'proof of cure' tests during the pandemic. A negative RT-PCR has been commonly used as a requirement for return to work, but it may remain positive for weeks after clinical recovery [4]. The Cycle threshold (Ct) value of the quantitative RT-PCR has been correlated with infectivity, suggesting that people with Ct values above 33–34 are no longer contagious because virus can no longer be grown in cell cultures from samples exceeding that cut-off [5]. More studies are needed to confirm this result and employ Ct as a criterion in clinical practice.

Serological tests (detection of antibodies) are an alternative approach based on the worker's immune response to the viral infection. Positive IgM titres generally reflect acute infection, whereas positive IgG titres indicate convalescent or past disease. However, there are insufficient data to estimate the level of IgG titres required to be protective and the duration of immunity [6,12,13].

We conducted a literature review using the search terms 'coronavirus' and 'workers' and 'return to work' in PubMed for original publications written in English from 1 December 2019 to 15 April 2020. More than 180 publications were found but based on review of titles and abstracts, we found no articles specifically addressing return to work guidelines. Therefore, to develop evidence-based return to work guidelines, articles based on coronavirus diagnosis using genomic and serological testing and articles related to infectivity and immunity were reviewed with the same dates and criteria. Local European guidelines, and US_CDC reports were also consulted. A panel of experts was then convened by the Spanish Association of Occupational Medicine (AEEMT) to discuss and elaborate return to work guidelines.

Until a vaccine or herd immunity is established, we propose the following return to work strategies. All workers must remain isolated at home for the duration of any significant symptoms. Depending on the worker's relative future risk of exposure to SARS-CoV-2 and persons at risk for infection, there are two different scenarios:

Workers at higher risk of exposure: existence of a double high-risk (high risk for the worker, and high risk from the worker to third parties), despite the proper use

of personal protective equipment, contact with patients is possible. This group includes essential workers such as healthcare workers (physicians, nurses, hospital laboratory technicians and other healthcare workers) or public safety workers (police, fire and ambulance). In this group, we propose the algorithms summarized in Figure 1.

Workers with lower risk of exposure: activities that, with the use of general and collective protective

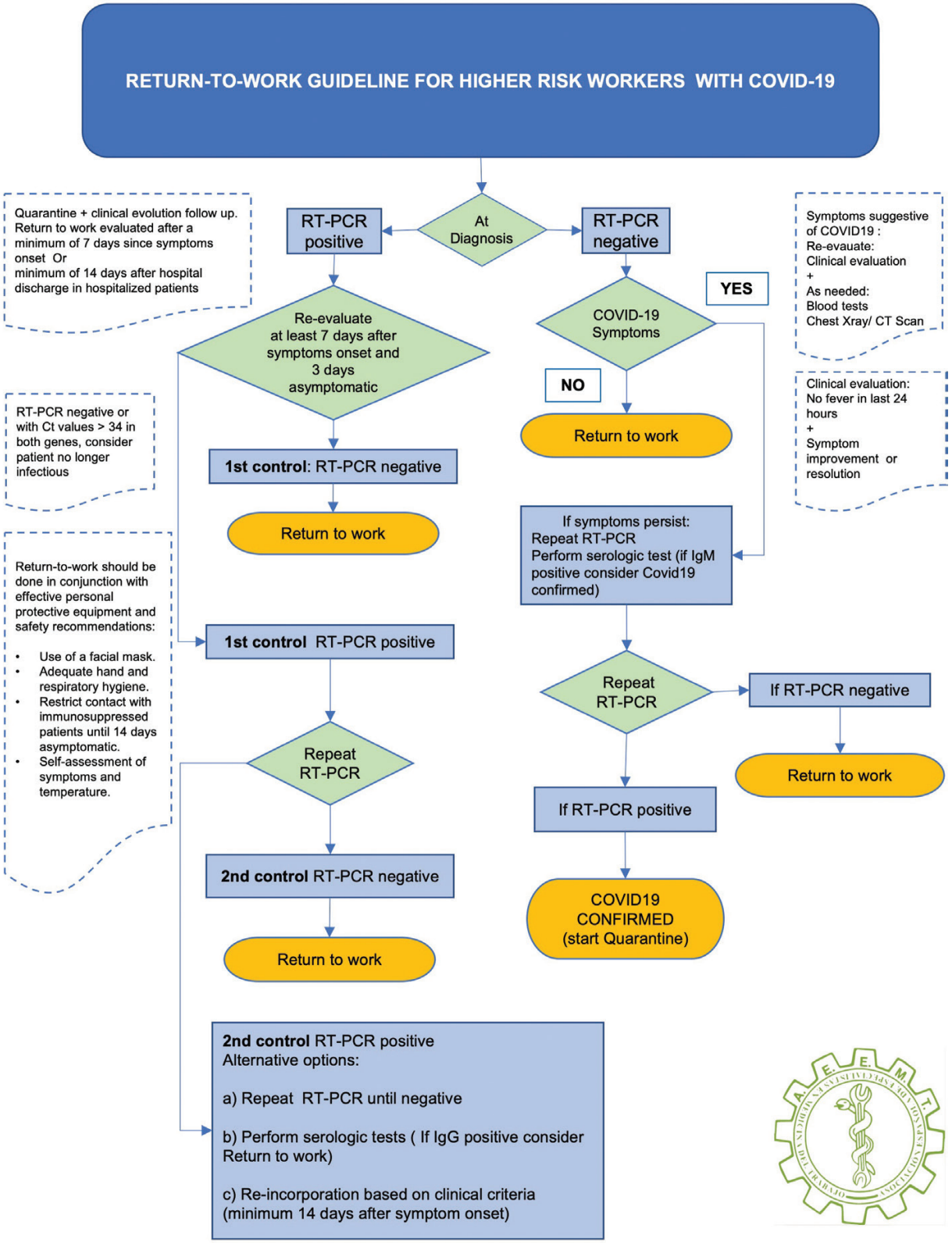

Figure 1. Return to work guideline for higher risk workers with COVID-19.

equipment and social distancing, do not present a greater than average population risk of exposure. In this second occupational group, we propose the algorithms summarized in Figure 2.

Employees who are household contacts of COVID-19 patients represent another unique group due to the potential incubation latency from initial exposure to secondary infections. For return to work of COVID-19

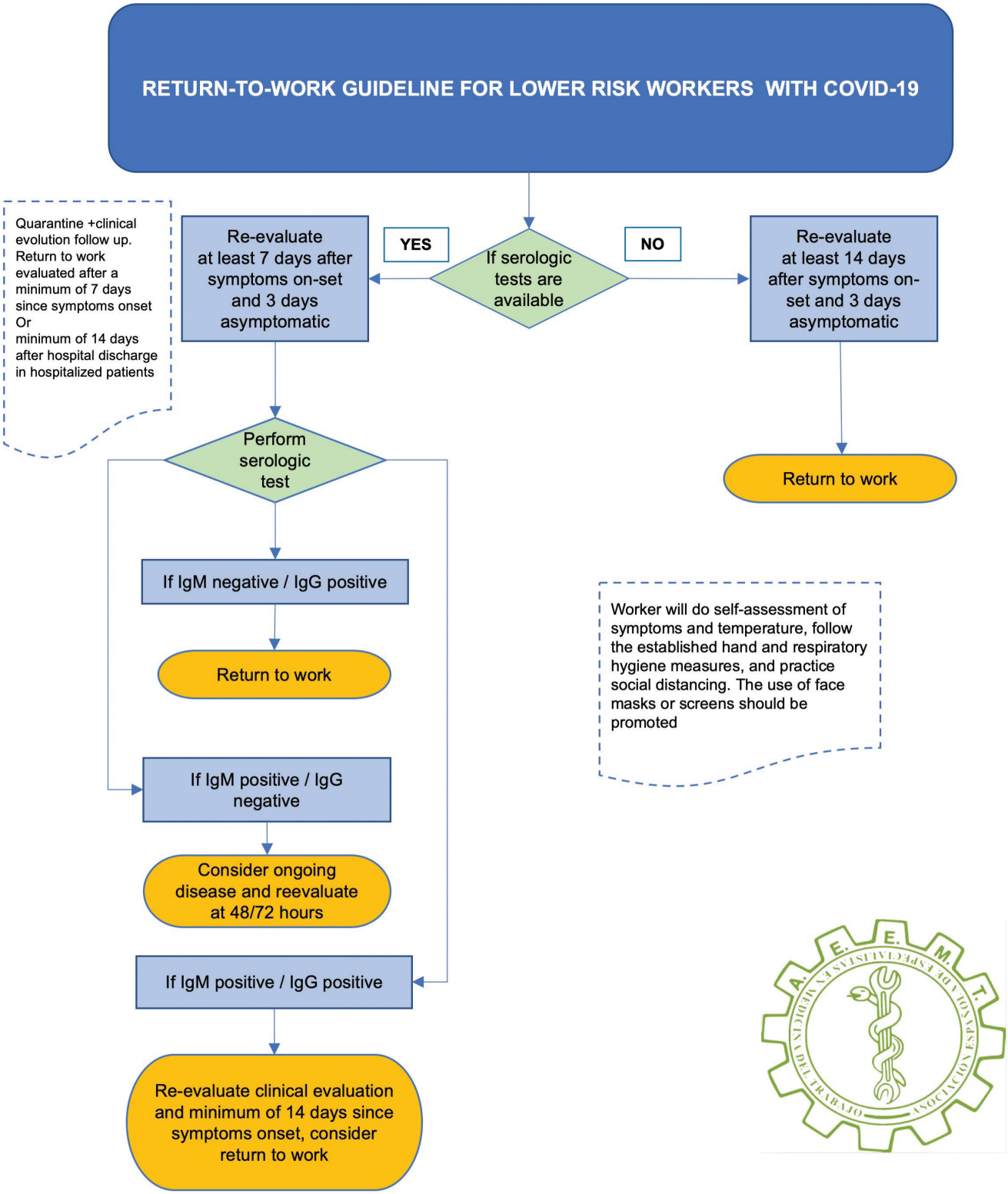

Figure 2. Return to work guideline for lower risk workers with COVID-19.

close contacts, we propose the algorithms summarized in Figure 3.

A separate issue is the reintroduction of employees who have worked remotely during the pandemic to the physical workplace. For this group, we propose a gradual and staggered return to work [14]. Each organization should establish its own pace to progressively bring employees back according to each worker's need to physically attend work, the strategic interests of the employer and the individual vulnerabilities of each worker [15]. According to

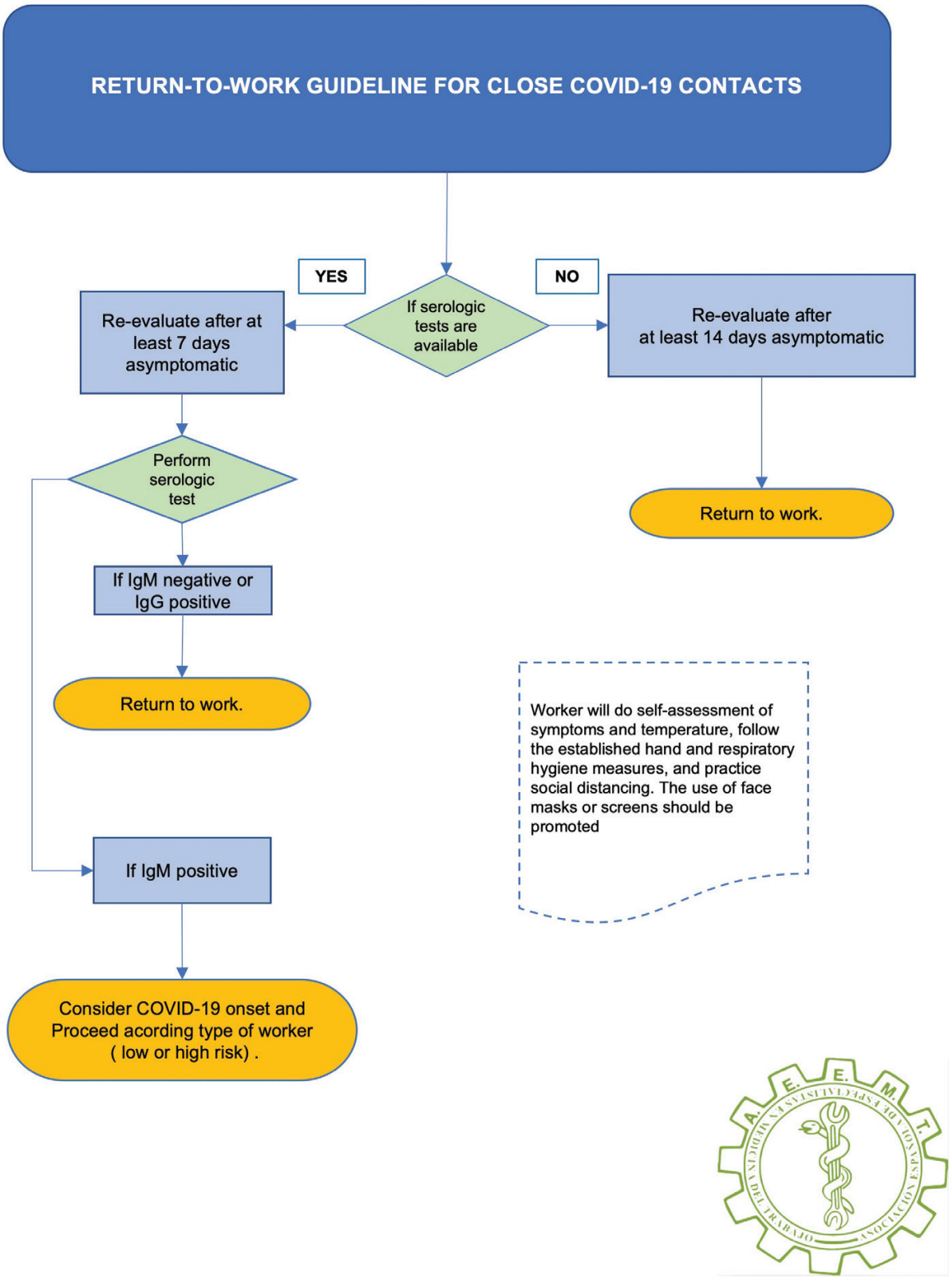

Figure 3. Return to work guideline for close COVID-19 contacts.

COVID-19 susceptibility, home-workers could gradually return to the workplace in the following order: firstly, not particularly susceptible workers (employees <50 without underlying health conditions); secondly, workers from 50–60 years old, without underlying health conditions; next workers >60 without underlying health conditions; and lastly vulnerable workers. Close follow-up of the workforce upon return should be undertaken [16].

In conclusion, return to work guidelines in any pandemic will depend on the state of the local epidemic, the nature and conditions of each job and on the availability of testing. Guidelines need to be reviewed and updated over time as local epidemic status and supplies may change. In the current situation with a high rate of transmission and limited testing resources, it is important to differentiate between high- and low-risk workers. While low-risk workers' guidelines may rely on clinical criteria, more specific testing-based strategies should be used for high-risk workers.

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Social Distancing in the Covid-19 Pandemic

A consistent feature of every national response to the Covid-19 pandemic has been the issuing of guidance to the public on social distancing. Also called safe distancing in Singapore, social distancing is a series of measures designed to prevent the transmission of the virus from human to human and is essentially a variety of means of physical separation. Key consistent features of public health advice across the world include staying indoors, working from home where possible and avoiding social gatherings.

Also consistent across national and international public health advice is the need to leave the house only for essential work, food shopping, caring for sick and vulnerable people and for medical treatment. When individuals leave the house, they are advised to keep a specific minimum distance from other people, but this is where some of the consistency of advice ends.

Different countries have different minimum distances which they advise their citizens to maintain. This varies from 1 m as advised by the World Health Organization (WHO), Singapore and Hong Kong, to 1.5 m in Australia. The USA advises 1.8 m (the equivalent of 6 feet) and the UK, Ireland and New Zealand favour 2 m. All governments state that their advice is based on the scientific evidence underpinning the control of pandemics. So how do different countries come up with different recommendations and do the public know what these distances actually look like?

In the case of a safe distance to avoid spread, recommendations originate from modelling, simulations and lessons learnt from outbreaks of other viruses. Recent work by Guo *et al.* suggests that maybe none of these distances is fully protective for Covid-19 with spread of up to 4 m reported in a hospital setting although it is not clear if particles travelling this far are infectious [1].

Adhering to guidance on safe distancing does depend on the public both knowing the recommended distance and being able to accurately judge that distance when out of the house and then interpret it as greater or less than 2 m.

In addition to advising a safe distance of 2 m, guidance could more consistently add examples of what 2 m 'looks and feels like', e.g. three steps distance, half the length of a small car (Ford Fiesta size), a standard household room door or the length of a double bed. This may help the public to understand what they need to do in their everyday lives to stay clear and stay safe.

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