Brief Communication:

Combating COVID-19: Lessons learnt particularly among developing countries and the implications

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We believe COVID-19 was first identified in Wuhan, China, in December 2019[1-3]. By 19 July 2020 there were already 14.349 million cases and over 603,000 deaths worldwide giving a case fatality ratio among confirmed cases of 4.21%[4]. This includes Bangladesh with 204,525 confirmed cases by 19 July and 2618 deaths; however, recognising appreciable underreporting[3-5]. Since COVID-19 is principally spread through droplet infection and physical contact[6],with an appreciable number of patients asymptomatic and currently no vaccine, current prevention strategies have centred on active testing, lockdown, closure of borders coupled with quarantining, sanitisation and social distancing[6-12]. However, the rate of adoption of preventative measures has varied considerably across countries,exacerbated by lack of testing facilities, clean water/ sanitisation and economic concerns, affecting prevalence and mortality rates[5,13,14]. Vietnam is an example of a developing country that rapidly introduced a range of measures under the banner 'Fighting the epidemic is like fighting against the enemy', which combined with other factors have resulted in only 383 reported cases up to 19 July and no deaths[4,15-17]. Rapid initiatives among a number of African countries including Botswana and Namibia have also limited prevalence and mortality rates in these countries[13]. This is despite concerns that patients of Black Afro-Caribbean and South Asian origin with COVID-19 in the United Kingdom appear at appreciably increased risk of dying from COVID-19 versus those of white ethnicity[18-22]. The lack of intensive care beds and ventilatory support has also been a concern among developing countries during the pandemic potentially adversely affecting mortality rates[5,13]; however, we are seeing shortages of ventilators being addressed through local innovations[13].

A number of medicines have been proposed for managing patients with COVID-19[23,24]. However, to date, there appears to be no cure although dexamethasone and remdesivir are showing promise in well constructed studies[5,25-27]. Initially, there was considerable hype surrounding the use of chloroquine and hydroxychloroquine with or without antibiotics such as azithromycin[5,28-30] despite concerns with the lack of control arms in the initial studies[31]. The hype resulted in appreciable increases in the utilisation and prices of antimalarials as well as suicides across a number of countries, enhanced by endorsement from Governments and Medical Societies[5,32-35].However, more recent studies, including randomised clinical trials, failed to show any benefit alongside potential harm[36-40]. As a result, the World Health Organisation (WHO) and the National Institute of Health in the US have stopped the hydroxychloroquine arm in their studies, with Governments, Societies and Agencies

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now also advising caution[41-45]. Hydroxychloroquine is still endorsed though in India for prophylaxis following the study of Chatterjee *et al.* (2020) despite concerns[46,47].

Recommendations of unproven or ineffective medicines are a concern in countries where there are high levels of co-payment, and where the costs of providing treatment for family members can have catastrophic consequences as seen for instance in Bangladesh and Pakistan[5,48,49]. Funding for unproven treatments, especially where there are increasing prices due to shortages, can divert valuable resources away from treating other priority infectious diseases as well as non-communicable diseases (NCDs) such as coronary vascular disease (CVD) and diabetes, which are on the increase across countries[5,50,51]. Instigating an evidence-based philosophy among all key stakeholder groups including physicians and pharmacists, starting in university and continuing, can help improve the situation in the future[13,52]. We have seen this philosophy work in practice in Stockholm, Sweden, where there are high adherence rates among prescribing physicians to a list of just 200 medicines in ambulatory care (the 'Wise List') covering over 95% of the needs of patients. High adherence rates have been achieved through instigating robust evidence-based systems for reviewing medicines for incorporating into the list including strong conflict-of-interest statements. Alongside this, actively broadcasting the List through multiple channels including making a patient version available, physicians able to robustly question those compiling the list as well as continual monitoring of physician prescribing against the recommendations with feedback on a monthly basis[53,54]. Robust evidence-based approaches have enhanced physician trust in the recommendations, which is reflected in high adherence rates[55]. Some countries have also started fines for instigating companies and individuals broadcasting misinformation during the pandemic, providing direction to others[13]. Patient organisations can also play a role addressing misinformation regarding prevention and management of COVID-19 through social media and other approaches[13], with evidence showing that patients do take on board key messages during the pandemic[56].

Inappropriate prescribing of antimicrobials will also increase resistance rates alongside costs to governments, health authorities and patients, which is a key concern across all countries[57-59]. Community pharmacists and others can play a key role in reducing inappropriate prescribing and dispensing of antimicrobials, enhanced through educational input to address any information gaps in their knowledge[57,60-62]. Patient education will also typically be needed to reduce requests for antimicrobials especially in countries with high levels of self-purchasing[57].

There are also concerns with the level of stigma associated with those who manage patients with COVID-19 along with those with the virus[63-65]. Alongside this, a potential increase in mental health disorders as a result of lockdown measures, fears about morbidity and mortality with COVID-19 as well as adverse reactions from potential treatments[13,66]. During pandemics, community pharmacists and others can help with educational and other approaches including increased use of telemedicine to address any stigma and mental health issues associated with the virus[67,68].Community pharmacists can also help address other unintended consequences from the pandemic. These include concerns with reduced immunisation, patients unable to obtain their medicines for priority diseases including NCDs, as well as patients with NCDs not adhering to their medicines, alongside communicating with patients on ways to reduce the spread of the virus[69-72]. Addressing concerns with availability and adherence to medicines is especially important in patients with NCDs such as CVD and diabetes during the pandemic as highlighted by the WHO and others[73,74]. Encouragingly there has been increase in the utilisation of personal protective equipment (PPE) across countries to help prevent the spread of COVID-19; however this has resulted in shortages and associated price rises[5,13,75]. Shortages are though being addressed through increasing local production in a number of countries, and this is likely to remain[13,76]. However care is needed to address concernswith sub-standard or falsified medicines, which are likely to increase where there are medicine shortages[13,77]. Initiatives such as the Lomé initiative, which places falsified and substandard medicines on the highest political agenda, alongside current

measures to strengthen the legal response to falsified medicines, are considerations for the future in pertinent developing countries[78].

In conclusion, COVID-19 has had, and continues to have, a devastating effect across countries. Its health impact can be minimised by rapid instigation of preventative measures. However, there needs to be plans in place to reduce the unintended consequences of lockdown measures, which can be significant. Governments and healthcare professionals also need to be proactive to reduce the spread of misinformation and any hype surrounding unproven treatments as this can also be catastrophic for families especially in developing countries with high co-payment levels. Finally, the economic and health consequences of preventative strategies also need to be considered alongside the gains since their overall impact could be greater than the morbidity and mortality associated with COVID-19 in the first place.This is especially important for COVID-19 in countries with younger populations, and where an appreciable number of citizens rely on daily work for their survival. We will continue to monitor the unintended consequences across countries to provide future direction.

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