CEASE approach for combating COVID-19, AMR and future microbial threats

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CEASE approach for combating COVID-19, AMR and future microbial threats

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COVID-19 is a novel and deadly disease that has successfully spread across the world, and poses a serious threat in both developed and developing countries. There is currently no “specific” anti-viral drug or approved vaccine available for COVID-19. Without vaccines the world will be heavily reliant on chemical disinfectants such as hand sanitizers and antimicrobial soaps in order to maintain good personal, domestic and community hygiene to prevent the spread of COVID-19. Some of these chemicals especially in non-alcohol based sanitizers may contain toxic ingredients such as quaternary ammonium compounds that are known to persist in the environment (Bilal et al. 2020) and may contribute to antimicrobial resistance (AMR). The intensive use of antimicrobials during the COVID-19 pandemic raises fundamental questions concerning their implications towards human and environmental health. In the absence of a specific treatment for COVID-19, recent studies have also looked into repurposing of hydroxychloroquine (anti-malarial) and azithromycin (antibiotic) for COVID-19 treatment (Gautret et al. 2020). The latter could contribute to the rapid development, persistence and spread of AMR. This indiscriminate use of antibiotics is well acknowledged by the World Health Organization (WHO) and linked to the current global burden of AMR. Increase in AMR could ultimately lead to more COVID-19 associated deaths resulting from opportunistic infections caused by antimicrobial resistant pathogens.

It is therefore, plausible during this time of COVID-19 pandemic, to hypothesize on the anticipated effects of “excessive” hygiene resulting from extensive use/exposure to chemical disinfectants and/antimicrobials on human and environmental microbiomes. In 1989, Strachan formulated the “hygiene hypothesis” as a proposal to address the question of hygiene in relation to childhood exposure to environmental microorganisms and the prevalence of allergic diseases such as asthma and hay fever (Strachan 1989). Rook and colleagues also proposed the “old friends hypothesis” further expanding on the importance of exposure to essential microbes in the development of the human immune system (Rook et al. 2013). However, with regard to
hygiene in the 21st century where humans are still experiencing infectious diseases outbreaks such as SARS, MERS and COVID-19, newer hypotheses should be proposed. Bloomfield and colleagues have since called for the abandoning of the 20th century hygiene hypotheses and proposed rather a more risk assessment approach termed “targeted hygiene”. Targeted hygiene approach aims to strike a balance between exposure to essential microbes and protection against pathogenic ones, and has been used effectively during the previous SARS and Ebola outbreaks (Bloomfield et al. 2016) Scientists have also called for a “one health” approach to further provide insights into AMR implications to human, animal and environment health. Adopting a one health approach at a global scale can help in the prevention and control of COVID-19 (El Zowalaty and Järhult 2020).

I further propose a multidimensional approach, simply coined “CEASE” (Communicate-Educate-Advocate-Socialize-Experiment) to help in advancing scientific knowledge, dissemination of new ideas of sustainable strategies for global promotion and implementation towards combating COVID-19, AMR and future human health threats. The CEASE approach is conveniently derived from the word “cease”, meaning “to bring to an end” and comprise of five key elements of equal weight succinctly described below.

1. Communication is a fundamental element of the CEASE approach defined as a channel to effectively exchange vital information through speaking, writing and using technologies to reach out to the masses. What we can learn from the current COVID-19 pandemic is the spread of false and inaccurate information that consequently causes public confusion and panic. The media (e.g. newspapers, radio and TV), including social media if used in a responsible manner can play a pivotal role in communicating public health issues.

2. Education is a human right, a key element that opens the minds to shun ignorance, particularly in matters of human/public health. Higher institutions of learning, research
institutes, and health centres should provide such essential services as public training on microbial diseases. Lack of proper understanding of science in general, seem to be prevailing throughout communities around the world as many seem not to comprehend the implications of COVID-19 by failing to adhere to preventive measures such as hand washing and social distancing.

3. **Advocacy** is an activity by an individual or group that aims to influence socio-economic, political and in this context public health decisions. Various government, private and public health organization such as WHO remain world leading examples of public health advocates. Furthermore, funding agencies and scientific organizations should demonstrate their role through public health advocacy during the COVID-19 pandemic. Experts such as microbiologists, medical practitioners and public health specialists should be in the forefront of influencing government decisions towards implementation of strategies for preventing microbial disease outbreaks.

4. **Socialization** as defined in the field of Sociology is the process of internalizing the norms and ideologies of society. Cultural norms vary from one country to another because of differences in geography, economy and climate conditions. However, culture is dynamic and therefore expected to change overtime for better adaptation and survival of humankind. What we can also learn from past and current pandemics is that infectious diseases have huge impact in changing human behaviours/norms, the extreme social distancing and lockdowns experienced during the COVID-19 pandemic are a highlight of the importance of changing norms.

5. **Experimentation** is an important scientific process that begins with development of proposals/ideas, hypotheses, research methods and ultimately obtaining data/evidence for the purpose understanding and increasing knowledge. Scientists from across the world and disciplines need to collaborate in research and bring solutions to societal health problems.
Conducting research resulting in the discovery of new vaccines and antimicrobials have proven to be a challenge. Nonetheless, to understand COVID-19 and other disease causing agents, experiments should be conducted, and aim towards development of protocols for rapid detection, monitoring, prevention, control and prediction of infectious disease outbreaks.

The CEASE approach will be most effective if all the five key elements described above are equally considered and implemented simultaneously. This approach reinforces other efforts by individuals and organizations, and further highlights the importance of working together as global citizens; political leaders, health officials, researchers, policymakers, journalists and members of the general public during the time of a pandemic.

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