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Evidence-based decision making during COVID-19 pandemic

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Human decisions are partially rational; they are influenced by several factors, such as emotions, biases, previous experience, and heuristics (Thaler & Ganser, 2015). Dr. Kahneman (Nobel Prize in Economics 2012) proposed a useful metaphor to understand the decision-making processes considering two systems (systems 1 and 2). "System 1" is fast, intuitive, and driven by emotion and automatic behaviors, allowing us to solve most of the simple tasks in daily life. "System 2", on the other hand, is slow, deliberative, rational, and it requires an information framework, allowing us to solve more complex tasks (Kahneman, 2011; Tversky & Kahneman, 1986). Both systems need to be feed by enough information, followed by consciously practice using those systems to create an efficient and reliable decision-making process over time (Kahneman, 2011; Tversky & Kahneman, 1986).

Clinical decisions are especially vulnerable to bias due to the critical circumstances where these activities are performed. One alternative to improve the decision-making process of clinicians is trough evidence-based medicine (EBM) training. The EBM is defined as a systematic approach to base clinical decisions on the integration of the best available research evidence, clinical expertise, and patient values (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Nowadays, the skill of evidence critical appraisal turns out as one of the most important domains in medical education (Maggio, Tannery, Chen, ten Cate, & O'Brien, 2013). Indeed, the higher the training in EBM, the higher is the likelihood to have less bias in clinical decisions and also to have a better ability to keep the clinical knowledge updated (Leung et al., 2003).

One important issue, though, is that the decision-making process is highly influenced by current circumstances, especially in emergencies, such as the current COVID-19 pandemic. The COVID-19 virus infection produces a respiratory illness that triggers an immune hyper reaction causing a generalized inflammatory state, which could lead to multi-systemic failure, especially in vulnerable populations (the elderly, multimorbid population, and immune-suppressed patients) (Organization, 2020). Currently, 210 countries reported cases and deaths over the world, and those rates are changing every day (Worldometer, 2020). The lack of preparation for the health systems around the world is generating a collapse of several hospitals and affecting many front-line physicians (Organization, 2020).

Under these circumstances, the lack of evidence on the disease and the uncertainty of the prognosis is generating an unprecedented global situation (far away from the current scientific medicine practice). Multiple therapeutic interventions are being used, without any prior knowledge of their benefit and risk from clinical trials. On the opposite, they are being guided by anecdotal reports, case series reports, or in-vitro experiments.

One example is the use of Hydroxychloroquine, a known antimalarial drug, that was proposed as a potential treatment for COVID-19 infection without any clear clinical evidence, although potential pharmacological relationship was found in animal and in-vitro studies. This drug has well-documented risks (heart arrhythmias), thus exposing patients to these risks would be unjustifiable in the absence of meaningful clinical benefit. However, multiples case series were reported its use over the world, and some clinical practice guidelines

recommend it use (Alhazzani et al., 2020). Currently, multiple trials are testing its efficacy and safety profile, but recently one study was stopped early due to the high incidence of fatal heart events (Borba et al., 2020), and others are reporting no significant effects (Tang et al., 2020).

The lack of information and generalized anxiety due to the current pandemic is hacking our decision-making systems producing potential scenarios with more harm than benefits. This is an opportunity to reflect on the need for improvement of EBM teaching over the world, changing the teaching paradigm to a student-centered and collaborative approach in the medical schools, and creating a refresher EBM training as part of emergency preparedness for health institutions. We truly believe these strategies could develop critical thinking skills in clinicians in the front-lines and public health decision-makers to assess the evidence (or its absence) critically even during the stormiest public health problem, and follow our oath as a physician – first, do no harm.

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