Weekly Evidence Report

Health Technology Assessment Philippines

3 - 9 September 2022

Overview

The following report presents summaries of evidence the Department of Health (DOH) - Health Technology Assessment (HTA) Division reviewed for the period of 3-9 September 2022. The HTA Division reviewed a total of 11 studies for the said period.

Evidence includes 1 study on Epidemiology; 3 studies on Vaccines; 2 studies on Drugs; 1 study on Transmission; 1 study on Equipment and Devices; 0 studies on Medical and Surgical Procedures; 1 study on Traditional Medicine; 2 studies on Preventive & Promotive Health; and 0 studies on Other Health Technologies.

Sections

Evidence on Epidemiology

Local COVID-19 Case Tracker:
https://doh.gov.ph/2019-nCoV?gclid=CjwKCAjwjtOTBhAvEiwASG4bCOmLzFMQIjh8DX_VVSGA-HmO0Pt5_CscykID7xZv4zqlXG5vm9PM2xoC27QQAvD_BwE

Date	Author/s	Title	Journal/ Article Type	Summary
4 September 2022	WHO Global	Weekly epidemiological update on COVID-19 - 10 August 2022	*WHO Global Situation Report*	• Globally, the number of weekly cases decreased by 12% during the week of 29 August to 4 September 2022 as compared to the previous week, with just under 4.2 million new cases reported. • The number of new weekly deaths decreased by 5% as compared to the previous week, with over 13 700 fatalities reported. • As of 4 September 2022, over 600 million confirmed cases and over 6.4 million deaths have been reported globally.

Evidence on Vaccines

Bloomberg Vaccine Tracker: https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/
WHO COVID-19 Vaccine Tracker:
https://www.who.int/publications/m/item/draft-landscape-of-covid-19-candidate-vaccines
WHO SAGE Vaccine Recommendations:
https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization
Local COVID-19 Vaccine Updates: https://doh.gov.ph/vaccines

Date	Author/s	Title	Journal/ Article Type	Summary
5 September, 2022	Bouleftour et al.	COVID-19 vaccine-related adverse events in solid cancer patients treated with immunotherapy	*Cancer Investigation/ Narrative Review*	• Little data are available regarding the effects of COVID-19 vaccine in cancer patients undergoing immunotherapy. Thereby, COVID-19 vaccine-related adverse events were monitored through a short questionnaire in solid cancer patients receiving immunotherapy.A total of 95 patients were included in this study. Two doses of vaccines were administered to cancer patients which mainly received Pembrolizumab (51.1%). Respectively 78.2% and 62.2% of patients reported no adverse events after the first and the second dose regardless of the type of vaccine used. Considering the high mortality rate due to COVID-19 among cancer patients, this study demonstrated the good tolerance of COVID-19 vaccine.

Evidence on Vaccines *(cont.)*

Date	Author/s	Title	Journal/ Article Type	Summary
5 September 2022	Nagpal et al.	Current clinical status of new COVID-19 vaccines and immunotherapy	*Environmental Science and Pollution Research International/ Clinical Review*	• COVID-19, caused by SARS-CoV-2, is a positive-strand RNA belonging to Coronaviridae family, along with MERS and SARS. Since its first report in 2019 in Wuhan, China, it has affected over 530 million people and led to 6.3 million deaths worldwide until June 2022. Despite eleven vaccines being used worldwide already, new variants are of concern. Therefore, the governing bodies are re-evaluating the strategies for achieving universal vaccination. Initially, the WHO expected that vaccines showing around 50-80% efficacy would develop in 1-2 years. However, US-FDA announced emergency approval of the two m-RNA vaccines within 11 months of vaccine development, which enabled early vaccination for healthcare workers in many countries. Later, in January 2021, 63 vaccine candidates were under human clinical trials and 172 under preclinical development. Currently, the number of such clinical studies is still increasing.
8 September 2022	Pellegrino et al.	BNT162b2 mRNA COVID-19 vaccine is safe in a setting of patients on biologic therapy with inflammatory bowel diseases: a monocentric real-life study	*Expert Review of Clinical Pharmacology/ Prospective observational study*	• Patients with inflammatory bowel disease were excluded from trials that led to the approval of anti-COVID-19 vaccines and are worthy of real-life studies providing information on the safety of these vaccines in this clinical setting. • A prospective observational study was performed to estimate BNT162b2 mRNA COVID-19 Vaccine local and systemic adverse events (AEs) incidence related to administration in patients with inflammatory bowel disease through a questionnaire administered at the first, second, and third doses. Disease activity by Mayo Partial Score and Harvey-Bradshaw Index was also evaluated. • Eighty patients with a median age of 47.5 years were initially enrolled. The local AEs rate was 26.25%, 58.75%, and 28.37% at the first, second, and third doses of the vaccine, respectively. In contrast, the systemic AEs rate was 52.2%, 48.75%, and 43.24%. Clinic-demographic predictor variables for AEs were not identified. Vaccination did not affect disease activity and no statistically significant difference in disease activity index scores was observed between the three doses. No serious adverse events were observed. • Vaccine was safe in a population of patients with inflammatory bowel disease and, therefore, could be safely administered in this clinical setting.

Evidence on Drugs

Date	Author/s	Title	Journal/ Article Type	Summary
4 September 2022	Wattanakul et al.	A pharmacometric approach to evaluate drugs for potential repurposing as COVID-19 therapeutics	*European Journal of Epidemiology / Systematic Review & Meta-analysis*	• Developing and evaluating novel compounds for treatment or prophylaxis of emerging infectious diseases is costly and time-consuming. Repurposing of already available marketed compounds is an appealing option as they already have an established safety profile. This approach could substantially reduce cost and time required to make effective treatments available to fight the COVID-19 pandemic. However, this approach is challenging since many drug candidates show efficacy in in vitro experiments, but fail to deliver effect when evaluated in clinical trials. Better approaches to evaluate in vitro data are needed, in order to prioritize drugs for repurposing. • A pharmacometric simulation-based approach was developed to evaluate in vitro activity data in combination with expected clinical drug exposure, in order to evaluate the likelihood of achieving effective concentrations in patients. • The presented pharmacometric approach bridges in vitro activity data to clinically expected drug exposures, and could therefore be a useful compliment to other methods in order to prioritize repurposed drugs for evaluation in prospective randomized controlled clinical trials.
6 September 2022	Sharma et al.	Drugs acting on the renin-angiotensin-aldosterone system (RAAS) and deaths of COVID-19 patients: a systematic review and meta-analysis of observational studies	*Therapeutic Drug Monitoring/ Narrative Review*	• Angiotensin-converting enzyme inhibitors (ACEi) and angiotensin receptor blockers (ARBs) are two of the most commonly used antihypertensive drugs acting on the renin-angiotensin-aldosterone system (RAAS). Previous research has shown that RAAS inhibitors increase the expression of angiotensin-converting enzyme, a cellular receptor for the severe acute respiratory syndrome coronavirus 2, raising concerns that the use of ACEi and ARBs in hypertensive patients may increase COVID-19 patient mortality. Therefore, the main aim of the current study was to find out the role of drugs acting on RAAS, particularly ACEi/ARBs in the deaths of COVID-19 patients.

Evidence on Drugs (cont.)

Date	Author/s	Title	Journal/ Article Type	Summary
6 September 2022	Sharma et al.	Drugs acting on the renin-angiotensin-aldosterone system (RAAS) and deaths of COVID-19 patients: a systematic review and meta-analysis of observational studies (cont.)	*Egyptian Heart Journal/ Meta-analysis study*	• In total, 68 studies were found to be appropriate, reporting a total of 128,078 subjects. The odds ratio was found to be 1.14 [0.95, 1.36], which indicates the non-significant association of ACEi/ARBs with mortality of COVID-19 patients. Further, the association of individual ACEi/ARBs with mortality of COVID-19 patients was also found non-significant. The sensitivity analysis results have shown no significant effect of outliers on the outcome. • Based on available evidence, ACEi/ARB were not significantly associated with deaths of COVID-19 patients.

Evidence on Preventive & Promotive Health

Evidence on Community Measures

Date	Author/s	Title	Journal/ Article Type	Summary
7 September 2022	Medhat et.al.	Triggers for Acceptance of COVID-19 Vaccination: A Community-Based Study	*Recent advances in anti-infective drug discovery/ Community-based study*	• COVID- 19 vaccines have been released, giving a major hope of getting rid of the dark pandemic crisis. Availability of vaccine does not necessarily mean that the mass vaccination program is a success. We aimed to investigate COVID-19 vaccination knowledge level, acceptance rate, and perception state among Egyptians. • We analyzed data for 957 participants, aged 18-78 years, 55.7% were females, and 66.9% were healthcare workers (HCWs). About one-fourth had history of confirmed COVID-19 infection and 56.5% would accept to have one of COVID-19 vaccines where "Pfizer" was the most preferable one (37.8%), while "AstraZeneca" was the most rejected vaccine (26.8%). The 1st vaccine dose was received by 273 (28.5%) of which 260 were intended to receive the 2nd dose. Vaccine efficacy, side effects, protection time, and administration route were essentially among factors that may influence their decision to accept COVID-19 vaccines. About 83.1% had good knowledge about vaccination which was significantly higher with increased age, among graduates/professionals, governmental workers, HCWs in addition to those able to save/invest money, had history of confirmed COVID-19 infection, and intending to have COVID-19 vaccine.

Evidence on Preventive & Promotive Health (cont.)

Evidence on Community Measures

Date	Author/s	Title	Journal/ Article Type	Summary
7 September 2022	Medhat et.al.	Triggers for Acceptance of COVID-19 Vaccination: A Community-Based Study (cont.)	*Recent advances in anti-infective drug discovery/ Community-based study*	• Perceptions that vaccination decreases chance of getting COVID-19 or its complications (OR=9.28; CI: 5.03-17.12), vaccination makes less worry about catching COVID-19 (OR=6.76; CI: 3.88-11.76), and being afraid of getting COVID-19 (OR=2.04; CI: 1.26-3.31) were strong significant predictors for vaccine acceptance. • Vaccine campaigns should emphasize vaccine benefits and highlight severity of infection, while addressing barriers to vaccination in order to improve vaccine coverage among populations.

Evidence on Preventive & Promotive Health

Evidence on Screening

Date	Author/s	Title	Journal/ Article Type	Summary
7 September 2022	Zoest, et al.	Spatio-temporal predictions of COVID-19 test positivity in Uppsala County, Sweden: a comparative approach	*Scientific reports/ Spatio-temporal modeling Study*	• Previous spatio-temporal COVID-19 prediction models have focused on the prediction of subsequent number of cases, and have shown varying accuracy and lack of high geographical resolution. The researchers aimed to predict trends in COVID-19 test positivity, an important marker for planning local testing capacity and accessibility. We included a full year of information (June 29, 2020-July 4, 2021) with both direct and indirect indicators of transmission, e.g. mobility data, number of calls to the national healthcare advice line and vaccination coverage from Uppsala County, Sweden, as potential predictors. The researchers developed four models for a 1-week-window, based on gradient boosting (GB), random forest (RF), autoregressive integrated moving average (ARIMA) and integrated nested laplace approximations (INLA). Three of the models (GB, RF and INLA) outperformed the naïve baseline model after data from a full pandemic wave became available and demonstrated moderate accuracy. An ensemble model of these three models slightly improved the average root mean square error to 0.039 compared to 0.040 for GB, RF and INLA, 0.055 for ARIMA and 0.046 for the naïve model. Our findings indicate that the collection of a wide variety of data can contribute to spatio-temporal predictions of COVID-19 test positivity.

Evidence on Preventive & Promotive Health

Evidence on Transmission

Date	Author/s	Title	Journal/ Article Type	Summary
8 September 2022	Chan et al.	COVID-19 infection and transmission includes complex sequence diversity	*PLOS Genetics/ Survey*	• SARS-CoV-2 whole genome sequencing has played an important role in documenting the emergence of polymorphisms in the viral genome and its continuing evolution during the COVID-19 pandemic. Here we present data from over 360 patients to characterize the complex sequence diversity of individual infections identified during multiple variant surges (e.g., Alpha and Delta). • Across our survey, the researchers observed significantly increasing SARS-CoV-2 sequence diversity during the pandemic and frequent occurrence of multiple biallelic sequence polymorphisms in all infections. This sequence polymorphism shows that SARS-CoV-2 infections are heterogeneous mixtures. Convention for reporting microbial pathogens guides investigators to report a majority consensus sequence. In our study, we found that this approach would under-report sequence variation in all samples tested. As we find that this sequence heterogeneity is efficiently transmitted from donors to recipients, our findings illustrate that infection complexity must be monitored and reported more completely to understand SARS-CoV-2 infection and transmission dynamics. Many of the nucleotide changes that would not be reported in a majority consensus sequence have now been observed as lineage defining SNPs in Omicron BA.1 and/or BA.2 variants. This suggests that minority alleles in earlier SARS-CoV-2 infections may play an important role in the continuing evolution of new variants of concern.

Evidence on Traditional Medicine

Date	Author/s	Title	Journal/ Article Type	Summary
6 September 2022	Vargas-Cortez et al.	Therapeutic Plants with Immunoregulatory Activity and Their Applications: A Scientific Vision of Traditional Medicine in Times of COVID-19	*Journal of Medical Food/ Literature Review*	• The progression of SARS-CoV-2 (COVID-19) in humans heavily depends on the patient's overall health status, especially on its immunoregulatory capacity. Different plants and plant-derived preparations (infusions, encapsulated, etc.) have been used as immunoregulators, several of them with scientific support. Nevertheless, due to the composition complexity of such plant-derived preparations, the molecular and physiological mechanisms involved in their beneficial effects remain, in some cases, unclear. In this review article, the most reported plants used in traditional medicine to enhance immunoregulatory capacity are presented, and their effect on the innate immune response is discussed and correlated with their respective phytochemical profile. • Understanding how the plant phytochemical profile relates to the observed impact on the innate and adaptative immune response is fundamental to designing plant-derived co-treatments to lessen the symptoms and favor the recovery of COVID-19 patients. In this regard, we propose a prospective guideline for using plants and plant-derived preparations as co-treatments for COVID-19 (and similar viral infections), which could be helpful in the context of the worldwide effort to end the current SARS-CoV-2 pandemic.

Evidence on Equipment and Devices

Date	Author/s	Title	Journal/ Article Type	Summary
7 September 2022	Kaushik et al.	Smart and connected devices in point-of-care molecular diagnostics: what role can they play in the response to COVID-19?	*Expert review of Molecular Diagnostics*/ Narrative Review	• Coronavirus disease-2019 (COVID-19) has been a huge public health challenge that has led to significant morbidity and mortality across the globe. Given the high prevalence and continued circulation of SARS-CoV-2 infection globally, accurate and rapid point-of-care testing is critical. • Knowledge of role of digital technology including smart and connected devices in rapid diagnosis of COVID-19 is an evolving area of scientific investigation. This review discusses the importance of rapid at-home point-of-care testing, highlighting the possible role of smart and connected device-based molecular diagnostics for COVID-19. • Accurate and rapid diagnostic modalities have the potential to improve accessibility and efficiency of diagnosis of symptomatic and asymptomatic patients and could be instrumental in timely implementation of appropriate therapeutic interventions as well as public health measures to mitigate spread of infection. With emerging challenges like newer, virulent viral variants, global vaccine shortages and vaccine hesitancy, accurate diagnostic testing with the ability to rapidly identify infection remains critical and has the potential to be pivotal in pandemic control. Digital technologies are likely to become important tools in future of healthcare and technological advancements may play a crucial role in response to COVID-19 with the goal of ultimately overcoming this pandemic.

Evidence on Medical and Surgical Procedures

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Other Health Technologies

Date	Author/s	Title	Journal/ Article Type	Summary
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Note. Studies that have not been peer-reviewed are highlighted in red.

Back to Sections page