Weekly Evidence Report

Health Technology Assessment Philippines

5 - 11 November 2022

Overview

The following report presents summaries of evidence the Department of Health (DOH) - Health Technology Assessment (HTA) Division reviewed for the period of 5 - 11 November 2022 on current public health emergency concerns, COVID-19 and monkeypox. The HTA Division reviewed a total of 11 studies for COVID-19 and 6 studies for monkeypox.

For COVID-19, evidence includes 2 studies on Epidemiology; 7 studies on Vaccines; 2 studies on Drugs; 0 studies on Transmission; 0 studies on Equipment and Devices; 0 studies on Medical and Surgical Procedures; 0 studies on Traditional Medicine; 0 studies on Preventive & Promotive Health; and 0 studies on Other Health Technologies.

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

Sections

COVID-19

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
09 Nov 2022	WHO Global	Weekly epidemiological update on COVID-19 - 6 November 2022	*WHO Global Situation Report*	• Globally, from 7 October to 7 November 2022, 114 781 SARS-CoV-2 sequences were shared through GISAID. Among these, 114 340 sequences were the Omicron variant of concern (VOC), accounting for 99.6% of sequences reported globally in the past 30 days. • During epidemiological week 42 (17 to 23 October 2022), among Omicron sister lineages, BA.5 and its descendent lineages continued to be dominant globally, accounting for 74.5% of sequences submitted to GISAID. A comparison of sequences submitted to GISAID during week 41 (10 to 16 October 2022) to week 42 shows a rise in sequence prevalence from 5.8% to 7.3% for BA.2 and its descendent lineages, while BA.4 descendent lineages declined slightly from 5.2% to 4.1%. Unassigned sequences (presumed to be Omicron) account for 11.9% of sequences submitted to GISAID as of week 42.
11 November 2022	Hamid et al.	COVID-19–Associated Hospitalizations Among U.S. Infants Aged <6 Months — COVID-NET, 13 States, June 2021–August 2022	*CDC MMWR/ Epidemiological Report*	• During the Omicron BA.2/BA.5–predominant periods (19 December 2021 to 31 August 2022) in the US, weekly hospitalizations per 100,000 infants aged <6 months increased from 2.2 (9 April 2022) to a peak of 26.0 (23 July 2022). The mean weekly hospitalization rate in this group was higher during the Omicron BA.2/BA.5 period (13.7 hospitalizations per 100,000 infants) than during the Delta period (8.3 hospitalizations per 100,000 infants). • However, the prevalence of indicators of severe disease among hospitalized infants did not increase since the Delta-predominant period. • It is still recommended that pregnant women should stay up to date with COVID-19 vaccination to help protect themselves and infants too young to be vaccinated.

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
05 November 2022	Baum et al.	High vaccine effectiveness against severe COVID-19 in the elderly in Finland before and after the emergence of Omicron	*BMC Infectious Diseases volume/ Retrospective cohort study*	• This nationwide, register-based cohort analysis included 896,220 residents aged ≥70 years in Finland with follow up period starting from 27 December 2020 to 31 March 2022. Vaccine effectiveness (VE) against hospitalization and intensive care unit (ICU) admission due to COVID-19 were determined for homologous and heterologous vaccination with Comirnaty (*Pfizer-BioNTech)*, Spikevax *(Moderna)* and Vaxzevria *(AstraZeneca).* • VE against severe COVID-19 relative to the unvaccinated is high among the elderly. VE waned slightly after two doses, but a third restored the protection. VE against severe COVID-19 remained high even after the emergence of Omicron.
07 November 2022	Kumar et al.	Efficacy of COVID-19 vaccines: a systematic review and network meta-analysis of phase 3 randomized controlled trials	*Pharmacological Reports/ Systematic Review and Meta-analysis*	• A total of 17 studies were included in the systematic review and network meta-analysis to determine the most efficacious vaccine against SARS-CoV-2 infection. • The evidence generated from this network meta-analysis indicates the good efficacy of all the included vaccines in preventing symptomatic COVID-19 as compared to placebo. BNT126b2 *(Pfizer-BioNTech)* vaccine confers the maximum reduction in the risk to contract symptomatic SARS-CoV-2 infection in comparison to placebo followed by mRNA-1273 *(Moderna)*, rAd26 & rAd5 and NVX-CoV2373 *(Novavax)*.
07 November 2022	Sabu et al.	Effectiveness of the BNT162b2 (Pfizer-BioNTech) Vaccine in Children and Adolescents: A Systematic Review and Meta-Analysis	*Vaccines/ Systematic Review and Meta-analysis*	• Fifteen studies were included in the systematic review and 12 studies for the meta-analysis to assess the utility of the BNT162b2 (*Pfizer-BioNTech*) vaccine in children and adolescents aged 5–18 years. • Evidence suggests that the two-dose vaccination regime provided high effectiveness against COVID infection, hospitalisation and intensive care admission due to COVID-19. • *Pfizer-BioNTech* vaccine was highly protective against the Delta variant of the virus, but showed a lower protection against the. Current findings are suggestive of waning immunity over time.

Evidence on Vaccines (cont.)

Date	Author/s	Title	Journal/ Article Type	Summary
10 November 2022	Witberg et al.	Myocarditis after BNT162b2 Vaccination in Israeli Adolescents	*The New England Journal of Medicine/ Safety surveillance study*	• The results of the study showed that the incidence rate of myocarditis in adolescents ages 12 to 15 years old is 4.8 cases (95% CI: 1.7 to 7.9) per 100,000 persons. The study indicates that *Pfizer-BioNTech* vaccine induced myocarditis in adolescents appears to be a rare adverse event that occurs predominantly in males after the second vaccine dose.
11 November 2022	Rosenblum et al.	Interim Recommendations from the Advisory Committee on Immunization Practices for the Use of Bivalent Booster Doses of COVID-19 Vaccines — United States, October 2022	*CDC MMWR/ ACIP Interim Recommendation*	• In October 2022, the US FDA authorized and CDC recommends Pfizer-BioNTech bivalent booster dose for persons aged ≥5 years and Moderna for persons bivalent booster for persons aged ≥ 6 years old. CDC recommends bivalent boosters be given ≥2 months after last primary series or booster dose. No booster is authorized for persons aged 6 mos to 4 years old. • Related protection decreased after the emergence of Omicron subvariants; bivalent booster doses might have the potential to improve vaccine protection against newly circulating Omicron variants. ACIP recommendations for a COVID-19 bivalent mRNA booster dose were also guided by data on immunogenicity and safety from clinical trials of the Moderna and Pfizer-BioNTech bivalent vaccines composed of ancestral and Omicron BA.1 strains • Also, FDA authorizes and CDC recommends a monovalent Novavax booster dose for adults aged ≥18 years instead of a bivalent booster if they have completed the primary series vaccination but have not previously received a COVID-19 booster, and if they cannot or will not receive mRNA vaccines.
11 November 2022	Solante et al.	Expert review of global real-world data on COVID-19 vaccine booster effectiveness and safety during the omicron-dominant phase of the pandemic	*Expert Review of Vaccines/ Expert review*	• A total of 52 studies on vaccine effectiveness (VE) after booster vaccinations from the publicly available IVAC VIEW-hub platform were reviewed. • All COVID-19 vaccines have a lower VE against symptomatic infection due to Omicron than to the Delta variant. Even following a booster dose, VE significantly wanes within the first 3 months post-booster dose. Booster shots of the current COVID-19 vaccines provide consistently high protection against Omicron-related severe disease and death. • Future vaccination strategies would likely include a combination of schedules based on risk profile, as overly frequent boosting may be neither beneficial nor sustainable for the general population.

Evidence on Vaccines (cont.)

Date	Author/s	Title	Journal/ Article Type	Summary
8 November 2022	Wagenhäuser et al.	Bivalent BNT162b2 mRNA original/Omicron BA.4-5 booster vaccination: adverse reactions and inability to work compared to the monovalent COVID-19 booster	*medRxiv/ Non-randomized controlled study*	• This non-randomized controlled study examined adverse reactions, PRN (pro re nata) medication intake and inability to work after a fourth COVID-19 vaccination among 76 healthcare workers. • As fourth dose either the original, monovalent BNT162b2mRNA (48.7%) or the bivalent BNT162b2mRNA original/Omicron BA.4-5 vaccine (51.3%) was administered. The rate of adverse reactions for the second booster dose was significantly higher among participants receiving the bivalent 84.6% (95% CI 70.3%-92.8%; 33/39) compared to the monovalent 51.4% (95% CI 35.9-66.6%; 19/37) vaccine (p=0.0028). Also, there was a trend towards an increased rate of inability to work and intake of PRN medication following bivalent vaccination.

Evidence on Drugs

Date	Author/s	Title	Journal/ Article Type	Summary
6 November 2022	Polkinghorne and Branley	Medications for early treatment of COVID-19 in Australia	*The Medical Journal of Australia/ Narrative Review*	• Early treatment of SARS-CoV-2 infections can prevent hospitalisation and death in patients risk factors for serious COVID-19 progression.Several drugs with different modes of action are approved in Australia for early treatment of COVID-19, including nirmatrelvir plus ritonavir, molnupiravir, and monoclonal antibody formulations. Other treatments, including hydroxychloroquine, ivermectin and dietary supplements, have been popularised but are not recommended for early treatment of COVID-19. • As it stands, early treatment of COVID-19 needs to be individualised depending on age, pregnancy status, existing medications, and renal and liver disease status.
10 November 2022	Zamani et al.	Prognostic comparison of COVID-19 outpatients and inpatients treated with Remdesivr: A retrospective cohort study	*PLOS ONE/ Retrospective cohort study*	• In this retrospective cohort study, 214 patients (121 outpatient and 93 hospitalized) with moderate levels of SARS-CoV-2 infection were studied. Both groups were treated with 200 mg of Remdesivir, followed by 100 mg daily intravenous injections for five days. • There was no statistical difference between baseline and clinical characteristics in the outpatients and hospitalized groups. After adjusting for oxygen saturation at baseline and gender in the multivariable Cox regression analysis, the risk of death did not statistically differ between the hospitalized and outpatient group (HR: 0.99, 95% CI: 0.39–2.50) at the end of the study.

Evidence on Equipment and Devices

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Medical and Surgical Procedures

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Preventive & Promotive Health

Evidence on Screening

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Personal Measures

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Community Measures

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

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Evidence on Transmission

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Traditional Medicine

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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MONKEYPOX

Evidence on Epidemiology

Monkeypox Case Tracker:

WHO: https://extranet.who.int/publicemergency/#
US CDC: https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html

Date	Author/s	Title	Journal/ Article Type	Summary
11 November 2022	WHO	2022 Monkeypox Outbreak: Global Trends	*WHO/Global Epidemiological Report*	• From 1 January 2022 to 10 November 2022, there have been a total of 79,151 laboratory confirmed cases, 1,345 probable cases and 49 deaths reported by 110 member states across all WHO regions. • WHO assesses the risk as moderate globally and low in the Western Pacific Region. • The following are the key features of reported cases with available data: 96.9% are male, majority of which are between 18 to 44 years old and identify as MSM, including bisexual men. Sexual encounter was the most commonly reported type of transmission while party setting with sexual contacts was the most commonly reported exposure setting.
11 November 2022	Kava et al.	Epidemiologic Features of the Monkeypox Outbreak and the Public Health Response — United States, May 17–October 6, 2022	*CDC MMWR/ Epidemiological Report*	• From 17 May to 6 October 2022, a total of 26,384 monkeypox cases were reported to US CDC by all 50 states, the District of Columbia, and Puerto Rico. Among 59% of persons with data on gender and recent sexual or close intimate contact, 70% reported recent male-to-male sexual contact. Black and Hispanic persons continue to be disproportionately affected. • Information on hospitalization was reported for 11,204 persons with monkeypox, 17% (1,870/11,207) of whom were hospitalized. Six deaths were reported. • CDC's emergency response focused on surveillance, laboratory testing, medical countermeasures, and education. Public health monkeypox prevention efforts, including vaccination, should continue to prioritize men who have sex with men, Black and Hispanic persons, and persons who are immunocompromised.

Evidence on Drugs

Date	Author/s	Title	Journal/ Article Type	Summary
07 November 2002	Frenois-Veyrat et al.	Tecovirimat is effective against human monkeypox virus in vitro at nanomolar concentrations	*Nature Microbiology/ Dose response study*	• The study assessed the activity of tecovirimat and cidofovir on the 2022 monkeypox virus (MPXV) strain through dose response studies on Vero cells. • Using plaque reduction assay, it was determined that Tecovirimat completely abolished MPXV replication at 100 nM, with a 50% inhibitory concentration (IC50) of 12.7 nM. On the other hands, Cidofovir in vitro IC50 for MPXV lineage B.1 in Vero cells was 30 µM, indicating 3,000-fold lower potency than that of tecovirimat.
10 November 2022	Bhattacharjee et al.	Proteome-Based Investigation Identified Potential Drug Repurposable Small Molecules Against Monkeypox Disease	*Molecular Biotechnology/ In silico study*	• This study explored the monkeypox virus (MPXV) proteome to suggest repurposable drugs. Drugs such as Brinzolamide, Dorzolamide, Methazolamide, Zidovudine, Gemcitabine, Hydroxyurea, Fludarabine, and Tecovirimat were used as controls. • After Molecular docking and Absorption, Distribution, Metabolism, Excretion, and Toxicity (ADMET)-based screening, it was determined that Zidovudine, 2,4-butanetriol harmala alkaloid, Fludarabine, and 5′-Dehydroadenosine purine analog are potent antiviral agent that can impede MPXV DNA synthesis by inhibiting or reacting with Ribonucleotide reductase large subunit R1 and Thymidine Kinase. This *in silico* analysis encourages these drugs to be explored in in vivo and in vitro models for clinical applications.
10 November 2022	Ortiz-Saavedra	Antiviral Treatment against Monkeypox: A Scoping Review	*Tropical Medicine and Infectious Disease/ Scoping Review*	• A total of 11 articles reporting cases of monkeypox with antiviral treatment were considered eligible for inclusion in this scoping review. • The most commonly used drugs for antiviral treatment of monkeypox were: tecovirimat, cidofovir, and brincidofovir. All patients had a complete recovery. According to current evidence, the efficacy and safety of antiviral drugs against monkeypox is of low quality and scarce.

Evidence on Transmission

Date	Author/s	Title	Journal/ Article Type	Summary
08 November 2022	Shenoy et al.	Contact Tracing and Exposure Investigation in Response to the First Case of Monkeypox Virus Infection in the United States During the 2022 Global Monkeypox Outbreak	*ACP Journal/ Surveillance study*	• Contact tracing and exposure investigation was conducted among multiple health care facilities and community settings in Massachusetts. • There were 37 community and 129 health care contacts identified. Fifteen health care contacts developed symptoms during the monitoring period. Three met criteria for monkeypox virus (MPXV) testing, with negative results. Two community contacts developed symptoms. Neither met criteria for MPXV testing, and neither showed disease progression consistent with monkeypox. Among 4 persons with high-risk exposures offered postexposure prophylaxis (PEP), 3 elected to receive PEP. Among 10 HCP with intermediate-risk exposures for which PEP was offered, 2 elected to receive PEP. • No transmissions were identified at the conclusion of the 21-day monitoring period, despite the delay in recognition of monkeypox in the index patient.

Evidence on Vaccines

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Equipment and Devices

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Medical and Surgical Procedures

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Traditional Medicine

Date	Author/s	Title	Journal/ Article Type	Summary
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Evidence on Preventive & Promotive Health

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Evidence on Personal Measures

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Evidence on Community Measures

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Evidence on Other Health Technologies

Date	Author/s	Title	Journal/ Article Type	Summary
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