COVID-19 Weekly Epidemiological Update

Edition 68, published 30 November 2021

In this edition:

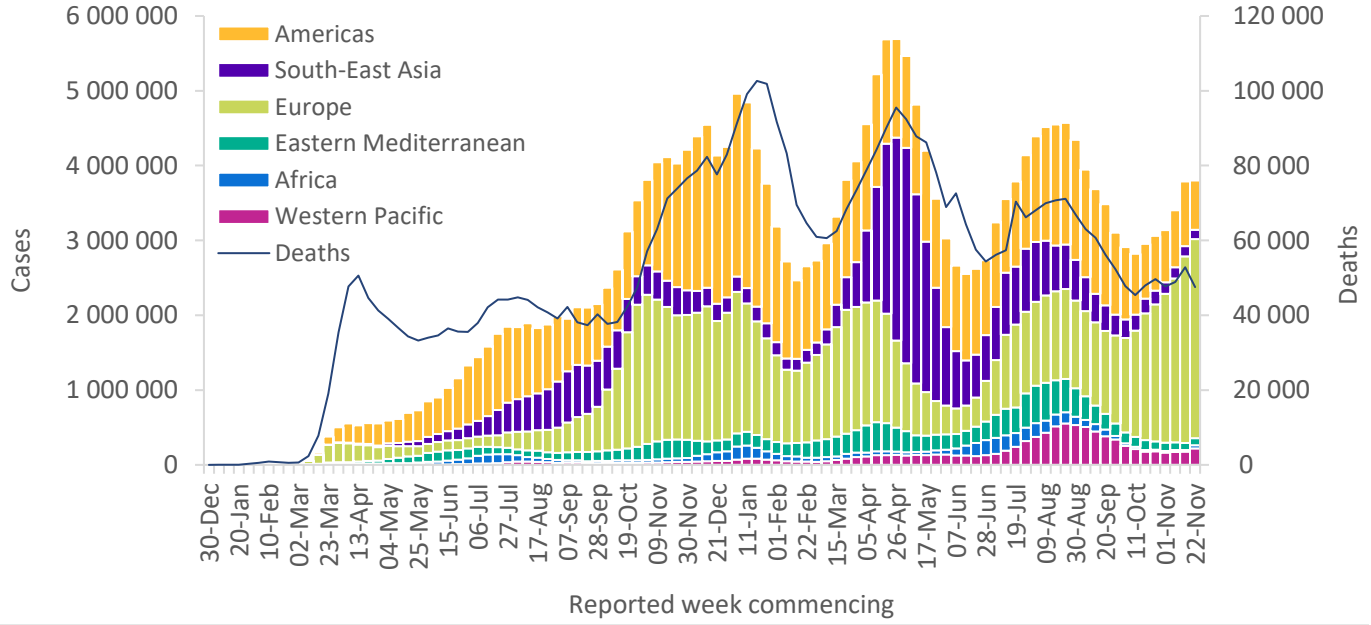
Global overview

Data as of 28 November 2021

Globally, weekly case incidence plateaued this week (22-28 November 2021), with nearly 3.8 million confirmed new cases reported, similar to the previous week's figures. However, new weekly deaths decreased by 10% in the past seven days as compared to the previous week, with over 47 500 new deaths reported. As of 28 November, over 260 million confirmed cases and nearly 5.2 million deaths have been reported globally.

The African, Western Pacific and European Regions reported increases in new weekly cases of 93%, 24% and 7%, respectively, while the Regions of the Americas and South-East Asia reported decreases of 24% and 11%, respectively. To note, the increase in the African Region was largely due to batch reporting of antigen tests by South Africa last week, therefore the trends should be interpreted with caution. The incidence in cases in the Eastern Mediterranean Region was stable with figures similar to the previous week. New weekly deaths decreased by 36% and 8% in the Regions of the Americas and the Eastern Mediterranean, respectively, and increased by 26% and 7% in the South-East Asia and African Regions, respectively. The number of new deaths were similar to the numbers reported in the previous week in both the European and Western Pacific Regions.

Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 28 November 2021**



**See *Annex 3: Data, table, and figure notes*

The regions reporting the highest weekly case incidence per 100 000 population continue to be the European Region (285.2 new cases per 100 000 population) and the Region of the Americas (64.5 new cases per 100 000 population). The European Region also reported the highest weekly incidence in deaths of 3.1 per 100 000 population while <1 new death per 100 000 was reported in all other regions.

The highest numbers of new cases were reported from the United States of America (464 800 new cases; a 31% decrease), Germany (406 754 new cases; a 22% increase), the United Kingdom (304 374 new cases; an 8% increase), the Russian Federation (239 215 new cases; an 8% decrease) and France (190 402 new cases; a 62% increase).

Table 1. Newly reported and cumulative COVID-19 confirmed cases and deaths, by WHO Region, as of 28 November 2021**

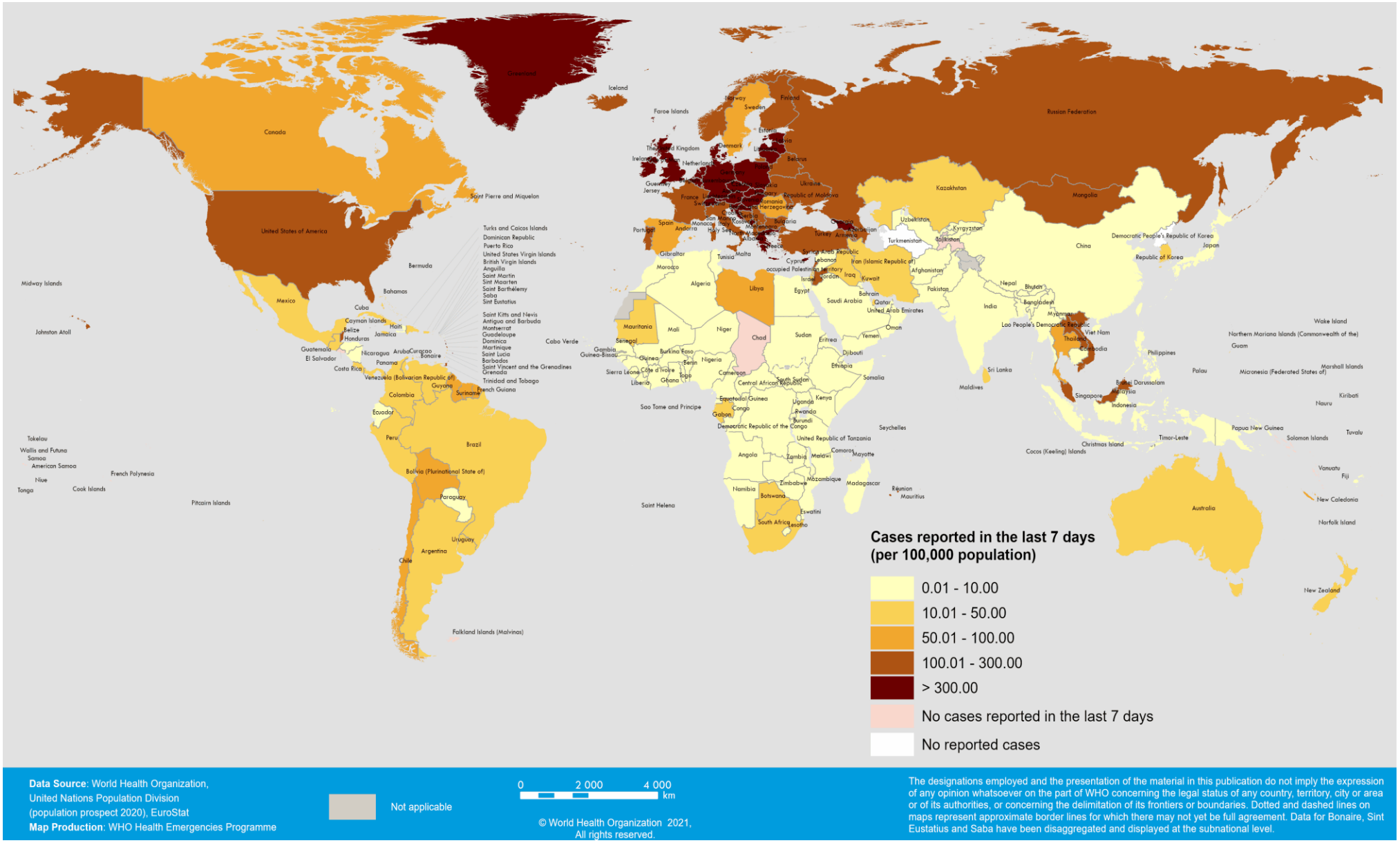
WHO Region	New cases in last 7 days (%)	Change in new cases in last 7 days *	Cumulative cases (%)	New deaths in last 7 days (%)	Change in new deaths in last 7 days *	Cumulative deaths (%)
Europe	2 660 956 (70%)	7%	86 151 591 (33%)	29 096 (61%)	-2%	1 540 178 (30%)
Americas	659 605 (17%)	-24%	96 627 452 (37%)	9 397 (20%)	-36%	2 346 007 (45%)
Western Pacific	220 501 (6%)	24%	10 170 912 (4%)	3 160 (7%)	0%	140 984 (3%)
South-East Asia	120 704 (3%)	-11%	44 529 941 (17%)	3 574 (8%)	26%	706 336 (14%)
Eastern Mediterranean	94 382 (2%)	2%	16 751 411 (6%)	1 772 (4%)	-8%	309 105 (6%)
Africa	43 730 (1%)	93%	6 261 502 (2%)	525 (1%)	7%	152 731 (3%)
Global	**3 799 878 (100%)**	**0%**	**260 493 573 (100%)**	**47 524 (100%)**	**-10%**	**5 195 354 (100%)**

**Percent change in the number of newly confirmed cases/deaths in the past seven days, compared to seven days prior*
***See Annex 3: Data, table, and figure notes*

For the latest data and other updates on COVID-19, please see:

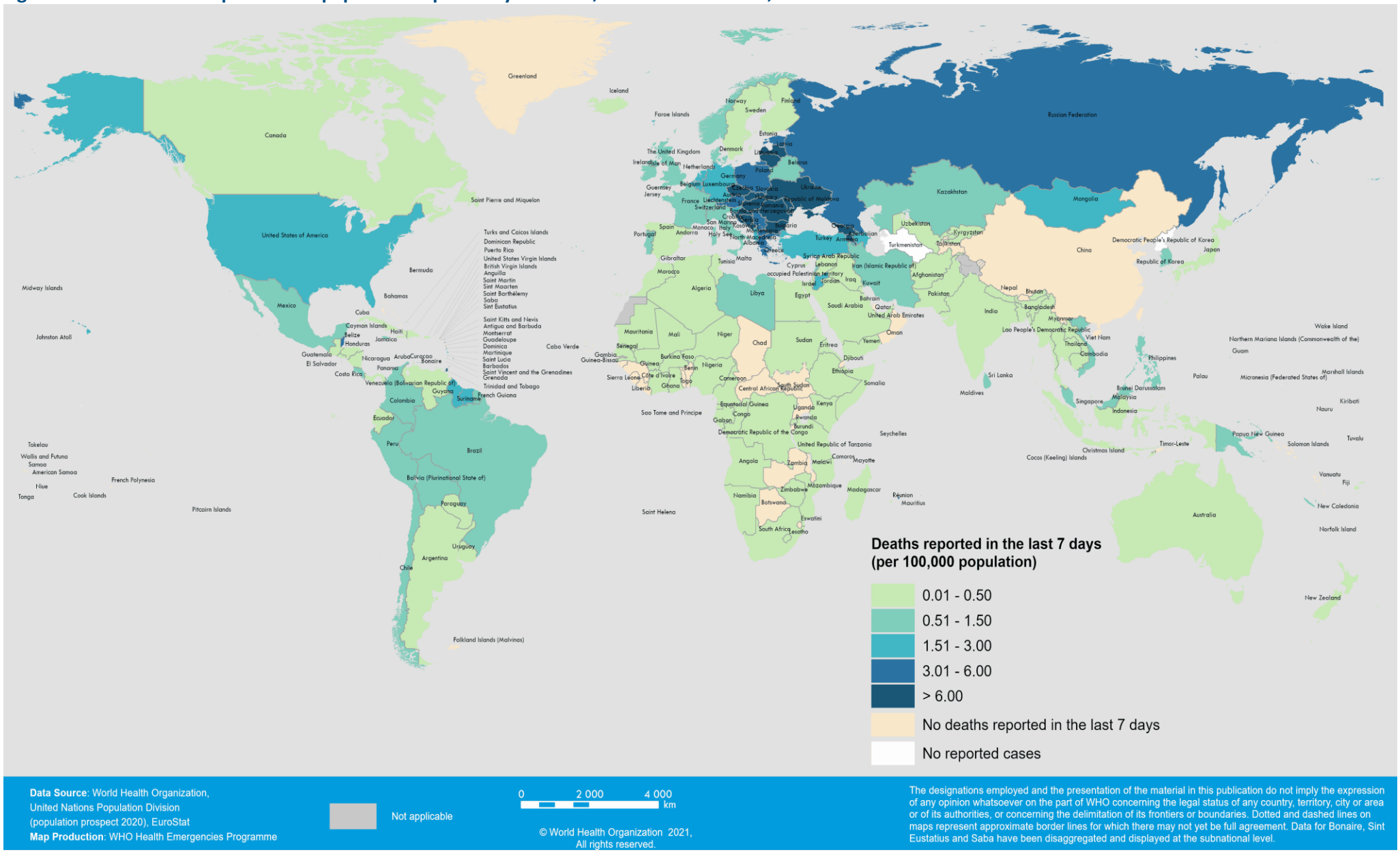
- WHO COVID-19 Dashboard
- WHO COVID-19 Weekly Operational Update and previous editions of the Weekly Epidemiological Update

Figure 2. COVID-19 cases per 100 000 population reported by countries, territories and areas, 22-28 November 2021**



**See *Annex 3: Data, table, and figure notes*

Figure 3. COVID-19 deaths per 100 000 population reported by countries, territories and areas, 22-28 November 2021**



**See *Annex 3: Data, table, and figure notes*

Special Focus: Update on SARS-CoV-2 Variants of Interest and Variants of Concern

WHO, in collaboration with national authorities, institutions and researchers, routinely assesses if variants of SARS-CoV-2 alter transmission or disease characteristics, or impact effectiveness of vaccines, therapeutics, diagnostics or public health and social measures (PHSM) applied by national authorities to control disease spread. Potential Variants of Concern (VOCs), Variants of Interest (VOIs) or Variants Under Monitoring (VUMs) are regularly assessed based on the risk posed to global public health. As evidence becomes available, classifications of variants will be revised to reflect the continuous evolution of circulating variants and their changing epidemiology. Criteria for variant classification, and the current lists of VOCs, VOIs and VUMs, are available on the WHO Tracking SARS-CoV-2 variants website. National authorities may choose to designate other variants of local interest/concern and are encouraged to investigate and report on the impacts of these variants.

VOC Omicron (B.1.1.529)

On 26 November 2021, the Technical Advisory Group on SARS-CoV-2 Virus Evolution (TAG-VE) advised WHO that the B.1.1.529 variant should be designated as a VOC. It has been given the name Omicron. The decision to designate it as a VOC was based on the evidence presented to the TAG-VE that Omicron has several mutations (including 26-32 in the spike protein) which may enhance its transmissibility and/or enable some degree of immune escape. The B.1.1.529 variant was first reported to WHO on 24 November 2021 from South Africa, while the first known laboratory-confirmed case was identified from a specimen collected on 9 November 2021.

On 28 November 2021, WHO published a technical brief with priority actions for Member States. Cases of Omicron have already been identified in a number of countries, with a high likelihood of further spread. There is preliminary evidence suggesting that Omicron may have potential immune escape and/or possibly higher transmissibility, as compared to previous VOCs, that could lead to further surges. As a result of this, the overall global risk related to the new VOC Omicron in the context of the COVID-19 pandemic is very high. The evidence for this assessment contains considerable uncertainty and will be updated as more information becomes available.

Based on available evidence, a list of priority actions for Member States has been recommended including:

- Enhance surveillance and sequencing activities to understand the extent of circulation of SARS-CoV-2 variants, including Omicron.
- Submit complete genome sequences and associated metadata to a publicly available database, such as GISAID.
- Where applicable, use the S gene target failure (SGTF) on certain Polymerase Chain Reaction (PCR) tests as a marker for Omicron infection.
- Report initial cases/clusters of Omicron infections to WHO through the International Health Regulations (2005) mechanism; thereafter, report the relative prevalence of Omicron amongst sequenced samples and/or, where available, the number of SGTF out of the number of samples tested.
- Continue to report evidence-based information on other circulating variants by authorities in a regular, timely and transparent manner.
- Accelerate the coverage of COVID-19 vaccination as rapidly as possible, particularly amongst those who are unvaccinated or partially vaccinated and are in a population at high priority for vaccination.
- Use a risk-based approach to adjust international travel measures in a timely manner, and report to WHO the application of time-limited measures affecting international travel and trade.

- Reduce transmission of SARS-CoV-2 via the use of well-fitted masks, physical distancing, hand hygiene, adequate ventilation of indoor spaces, and avoiding crowded spaces.
- Allow public health and social measures to be adjusted efficiently, depending on the local transmission scenario.
- Prepare and ensure essential health services can be maintained including the necessary health care resources, when demand on health care services is high.

At the present time, WHO is coordinating with a large number of researchers around the world to better understand Omicron. Studies currently or soon to be underway include assessments of transmissibility, clinical presentation including severity, risk of reinfection, and the performance of vaccines, diagnostic tests, and therapeutics against this variant.

Geographic spread and prevalence of VOCs

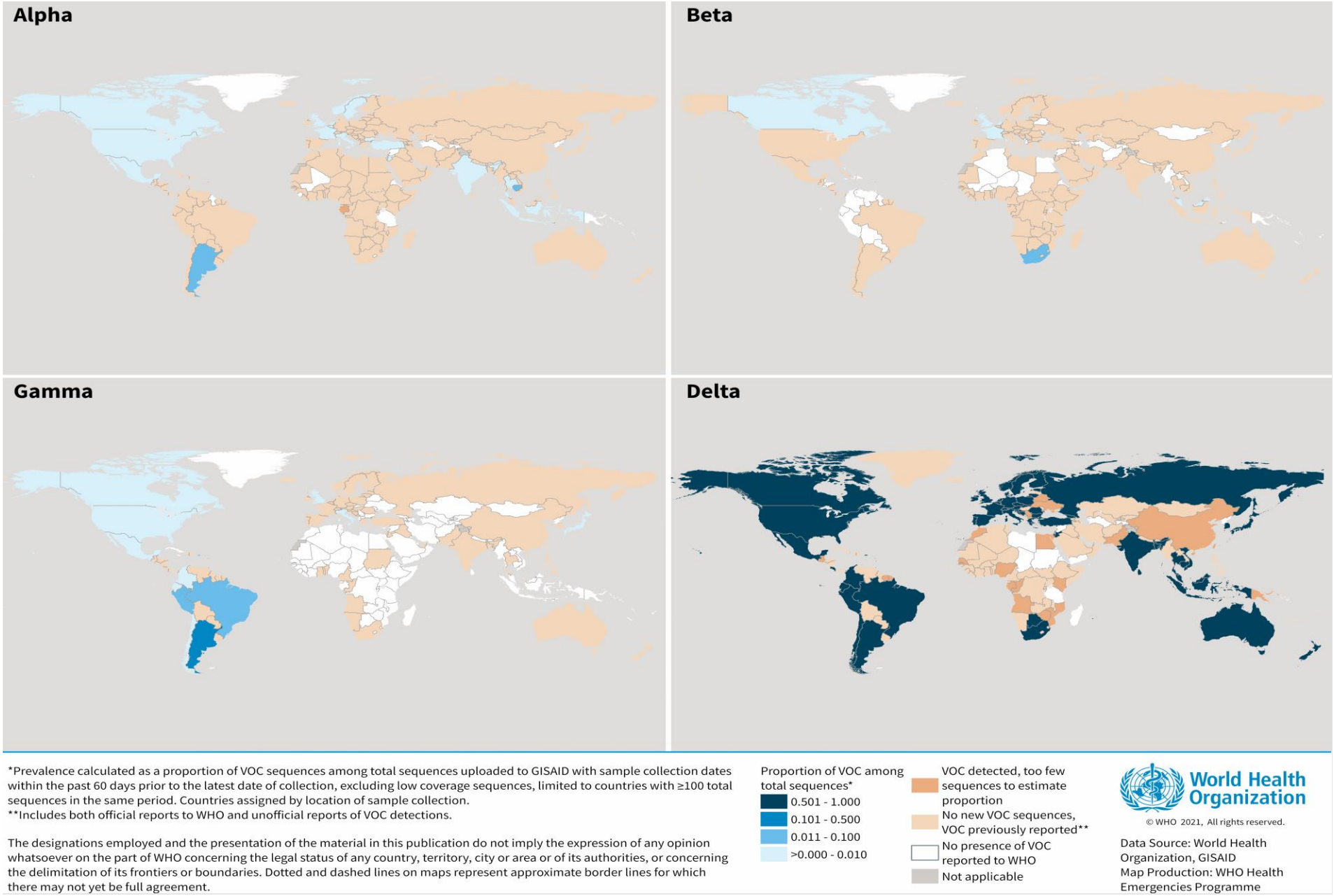
The current global epidemiology of SARS-CoV-2 is characterized by a predominance of the Delta variant, with the prevalence of other variants continuing to decline among genomic sequences submitted to publicly available datasets or detections reported to WHO (Figure 4, Annex 2). Delta has outcompeted other variants, including other VOCs, in most countries. Omicron, which was only identified recently, has been reported in a limited number of countries so far (Figure 5). At present, there is evidence of spread to several countries in four WHO regions. While most of the cases identified in these countries are travel-related, this may change as more information becomes available. Of 839 119 sequences uploaded to GISAID with specimens collected in the last 60 days[i], 837 253 (99.8%) were Delta, 314 (<0.1%) Gamma, 160 (<0.1%) Alpha, 159 (<0.1%) Omicron, 14 (<0.1%) Beta, and <0.1% comprised other circulating variants (including VOIs Mu and Lambda).

Sub-regional and country-level variation continues to be observed; most notably within some South American countries, where the progression of the Delta variant has been more gradual, and other variants (e.g., Gamma, Lambda, Mu) still contribute a large proportion of reported sequences. South Africa, where Omicron was first detected, has experienced a recent sharp increase in the number of cases in multiple provinces, coinciding with the detection of the Omicron variant.

To note, global VOCs distribution should be interpreted with due consideration of surveillance limitations, including differences in sequencing capacities and sampling strategies between countries, as well as delays in reporting.

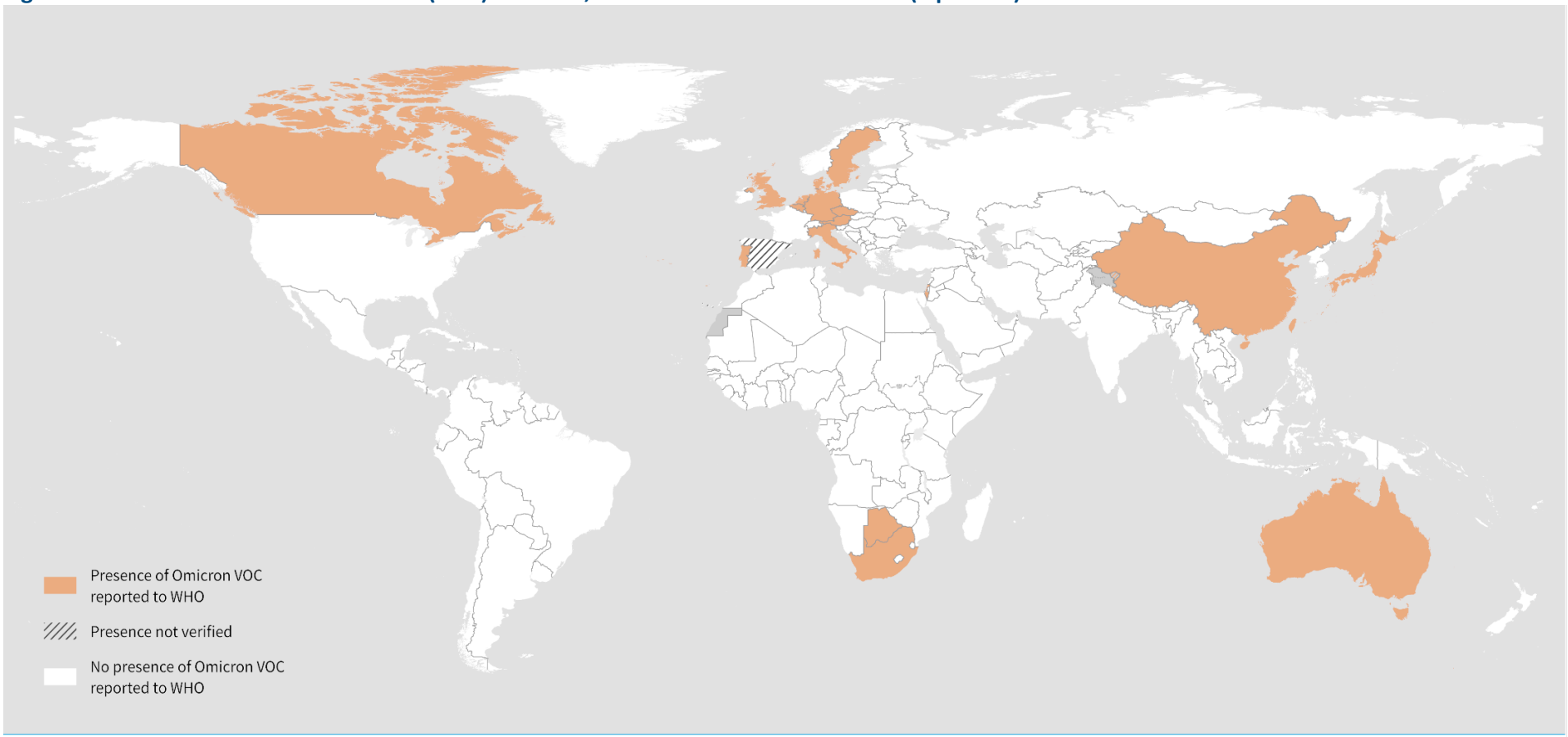
[i] Includes sequences submitted to GISAID with sample collected dates from 29 September to 28 November 2021 (last reported sample at the time of data extraction), excluding low coverage sequences.

Figure 4. Prevalence of Variants of Concern (VOCs) Alpha, Beta, Gamma and Delta in the last 60 days and historic detections, data as of 30 November 2021



Prevalence data based on sequences reported to GISAID, excluding low coverage sequences. See also Annex 2 for reported VOC detections by country/territory/area

Figure 5. Presence of Variant of Concern (VOC) Omicron, data as of 30 November 2021 (4 pm CET)



Data Source: World Health Organization
Map Production: WHO Health Emergencies Programme

Not applicable

World Health Organization

Presence of Omicron variant is based on information reported to WHO. It includes countries/territories/areas reporting the detection of VOCs among travellers (e.g., imported cases detected at points of entry), or local cases (detected in the community). See also Annex 2 for reported VOC detections by country/territory/area.

Phenotypic characteristics

Available evidence on the phenotypic impacts of VOCs is summarized in Table 2, as well as in previous editions of the COVID-19 Weekly Epidemiological Update. Since the last detailed update on 16 November, there are several new publications on the phenotypic characteristics of VOCs**.**

A retrospective cohort study (not yet peer-reviewed)[1] was conducted in the city of Belo Horizonte, Brazil to evaluate the impact of the Gamma variant on hospital admissions and mortality. The Gamma variant became the dominant variant in the country from January 2021 following its emergence in Amazonas state in December 2020. The socio-demographics varied widely across the country and prior to the arrival of the Gamma variant; mortality was less likely among those admitted to hospitals in the city as compared to those admitted to hospitals in rural areas. A total of 42 443 patients who tested positive for SARS-CoV-2 by RT-PCR between 13 March 2020 and 9 September 2021 were included in the study. Using multivariable logistic regression analysis adjusting for covariates such as gender, ethnicity, age, socioeconomic status, comorbidities and severity of symptoms, the in-hospital mortality between periods was compared, there was no difference when comparing the first period, 13 March 2020 – 18 October 2020, to the second period, 19 October 2020 – 14 February 2021, (OR=1.08, 95%CI 0.98-1.19, p=0.117). However, in-hospital mortality was higher during the third period 15 February 2021 – 9 September 2021 (OR=1.95, 95%CI=1.79-2.11, p<0.001) as compared to the first. This suggests that mortality was higher during periods of transmission of the Gamma variant however, it is unknown whether this is due to a more pathogenic effect of the virus or as a result of the increased pressure on the healthcare system.

A peer-reviewed retrospective study conducted in Israel[2] between February 2020 and October 2021 examined the trends in COVID-19 incidence, morbidity and mortality. A fourth surge in case incidence across the country, reported in Israel from June to September 2021, was driven by the Delta variant and characterized by the county's highest rate of infection, with over 11 000 cases per day; the number of severe hospitalizations due to COVID-19 during the fourth period was lower as compared to those reported during the previous three surges (e.g., maximum 8 per 100 000 population in the fourth surge vs. maximum 16 per 100 000 population during the second surge). During the fourth surge, higher death rates were reported among people who were not fully vaccinated as compared to those who were fully vaccinated (0.1 deaths per 100 000 population in fully vaccinated individuals vs. over 0.7 deaths per 100 000 population in partially vaccinated individuals). Most public health and social measures were lifted in April and May 2021, which may have contributed to higher transmission during the fourth surge. Authors inferred that reduced hospitalizations and mortality in the fourth surge compared to the previous waves likely reflect higher vaccine coverage.

A study (not yet peer-reviewed) to assess markers of viral shedding, was conducted by the United States Centers for Disease Control and Prevention (US CDC)[3], among 95 prisoners with different vaccination status (82% fully vaccinated, 16% unvaccinated and 2% partially vaccinated), during an outbreak of the Delta variant in a federal prison (18 July-9 August 2021). A small number of participants (3% of fully vaccinated and 12% of not fully vaccinated), had a documented prior SARS-CoV-2 infection. Among individuals with no known history of infection, there was no difference in the median duration of RT-PCR positivity between those fully vaccinated and not fully vaccinated (13 days; p=0.50). The median duration of illness among those with a known history of prior infection regardless of their vaccination status was shorter, 10 days, but with no evidence of a difference as compared to those without previous infection (p=0.12). No difference was found in the median duration of RT-PCR positivity by type of vaccine received (13 days; p=0.39). Similarly, there was no difference in the duration of viral culture positivity between those fully and not fully vaccinated (median of 5 days for both groups). Finally, there was no evidence of a difference in Ct value by vaccination status, type of vaccine, time since vaccination or known prior infection (p>0.0026, the Bonferroni-corrected α threshold).

A published study conducted by the US CDC[4], compared the odds of having laboratory-confirmed COVID-19 between unvaccinated adult patients (≥18 years) with a previous SARS-CoV-2 infection occurring 90–179 days prior to hospitalization, and patients who were fully vaccinated with an mRNA COVID-19 vaccine 90–179 days before hospitalization with no previous documented SARS-CoV-2 infection. Patients were included in the study if they had been tested at least twice: once associated with a COVID-19-like illness hospitalization during the study period (1 January– 2 September 2021) and at least once earlier (between February 1, 2020, and ≥14 days prior to the current admission). Among the 201 269 hospitalized with a COVID-19-like illness, 7348 met the study inclusion criteria of whom 1020 were previously infected and unvaccinated, and 6328, fully vaccinated and previously uninfected. In a multivariable logistic regression, the adjusted odds of laboratory confirmed COVID-19 was 5.49 times higher (95%CI 2.75-10.99) among those who were unvaccinated with previous infection compared to those who were fully vaccinated with no previous infection. These findings suggest that vaccine-induced immunity provides greater protection than infection-induced immunity against laboratory-confirmed COVID-19.

Table 2: Summary of phenotypic impacts* of Variants of Concern

WHO label	Alpha	Beta	Gamma	Delta	Omicron
Transmissibility	Increased transmissibility[5]	Increased transmissibility[6,7]	Increased transmissibility[7,8]	Increased transmissibility [7,9,10]	No direct evidence for increased transmissibility.
Disease severity	Possible increased risk of hospitalization[11,12], possible increased risk of severe disease and death[13,14]	Possible increased risk of hospitalization[12], possible increased in-hospital mortality[15]	Possible increased risk of hospitalization[12], possible increased risk of severe disease[16]	Possible increased risk of hospitalization[17,18]	Not yet known. Clinical outcome data are under review.
Risk of reinfection	Neutralizing activity retained[19], risk of reinfection remains similar[20]	Reduction in neutralizing activity reported; T cell response elicited by D614G virus remains effective[21]	Moderate reduction in neutralizing activity reported[22]	Reduction in neutralizing activity reported[23–25]	Preliminary evidence suggests a possible increased risk of reinfection [26]
Impacts on diagnostics	Limited impact – S gene target failure (SGTF), no impact on overall result from multiple target RT-PCR; No impact on Ag RDTs observed[27]	No impact on RT-PCR or Ag RDTs observed[25]	None reported to date	No impact on RT-PCR or Ag RDTs observed[28]	PCR continues to detect Omicron. Impact on Ag-RDTs is under investigation.

**Generalized findings as compared to previously/co-circulating variants. Based on emerging evidence, including non-peer-reviewed preprint articles and reports, all subject to ongoing investigation and revision.*

Table 3 summarizes the impact of variants on product specific vaccine efficacy/effectiveness (VE) and quantifies the reduction in VE in the setting of variants compared to non-VOC settings. As of the writing of this update, no studies of neutralization or vaccine performance against Omicron are available. Since the 16 November update, six notable new studies have provided evidence of COVID-19 vaccine performance against the other Variants of Concern.

A peer-reviewed, test-negative case-control study from India evaluated the effectiveness of Bharat-Covaxin, an inactivated whole-virion vaccine, in preventing symptomatic disease among employees of a tertiary care hospital in New Delhi from 15 April 2021 to 15 May 2021, when Delta was the dominant circulating variant.[29] The VE of one and two doses of the vaccine at preventing symptomatic disease 14 or more days after vaccination was -1% (95% CI: -51-33%, not statistically significant) and 50% (33-62%), respectively. When excluding persons who had been previously infected with SARS-CoV-2, the VE of two doses of the vaccine was 47% (29-61%) against symptomatic disease among this population with high exposure, with a median follow-up time of 50 days from receipt of the second dose.

A second test-negative case-control study (not yet peer-reviewed) assessed the effectiveness of Sinovac-CoronaVac among 19 838 pregnant women 18-49 years of age in Brazil from 15 March 2021 to 3 October 2021.[30] Gamma was the predominant circulating variant during most of this period, while Delta became the predominant circulating variant during the last 1-2 months of the study. The effectiveness of one and two doses of the vaccine at preventing symptomatic disease 14 or more days after vaccination was 5% (-18.2%-23.7%, not statistically significant) and 41% (27.0-52.2%), respectively. The VE of one and two doses against progression to severe disease (defined as dyspnea or respiratory discomfort, persistent pressure or pain in the chest, oxygen saturation less than 95% on room air, cyanosis of the lips or face) or COVID-19 hospitalization or death, among pregnant women infected with SARS-CoV-2, was 67.7% (20.0-87.0) and 85.4% (59.4-94.8%), respectively. The maximum possible follow-up time post final dose was approximately 28 weeks.

A third retrospective cohort study (not yet peer-reviewed) from the United Arab Emirates assessed the VE of the Beijing CNBG- BBIBP-CorV vaccine against hospitalization and death among residents of Abu Dhabi from September 2020 to April 2021. During the study period, there was initially a high prevalence of non-VOCs, followed by a period of Alpha predominance, then a period of Beta predominance at the very end.[31] Authors note that Alpha and Beta variants comprised the majority of cases over the study period, although the study did not present variant-specific VE estimates. A single dose of Beijing CNBG- BBIBP-CorV vaccine was not effective at preventing hospitalization (VE: -35%, 95% CI: -45 to -26%) and showed low VE against death 14 or more days after vaccination (VE: 12%, 95% CI: -95%-61%, not statistically significant). However, two doses of the vaccine had VE against hospitalization and death of 74% (72-76%) and 96% (69-99%) 14 or more days following immunization. The maximum possible follow-up time post final dose was approximately 33.5 weeks.

A fourth, peer-reviewed retrospective cohort study from Singapore evaluated the combined VE of Moderna-mRNA-1273 and Pfizer BioNTech-Comirnaty vaccines at preventing infection, symptomatic disease, and severe disease among 1204 household contacts of 301 confirmed Delta index cases.[32] Two doses of either vaccine was 61.6% (95% CI: 37.5-80.4%), 67.9% (41.3-87.8%), and 100% (no CI available due to no events among vaccinated persons) effective at preventing infection, symptomatic disease, and severe disease, respectively, 15 or more days following receipt of the second dose. Lower VE estimates for infection and symptomatic disease than in other studies likely reflect the high exposure risk among household contacts of cases. In addition, after adjusting for age, gender, and vaccination status of household contacts, vaccinated index cases were less likely to infect household contacts compared to unvaccinated contacts, though this finding was not statistically significant (VE against transmission: 27%, 95% CI: -40-62%).

A fifth prospective cohort study from the United Kingdom (not yet peer-reviewed) evaluated the VE of AstraZeneca-Vaxzevria and Pfizer BioNTech-Comirnaty against transmission of SARS-CoV-2 infection to household contacts of Alpha index cases and Delta index cases, separately.[33] After adjusting for age and vaccination status of contacts, two doses of AstraZeneca-Vaxzevria or Pfizer BioNTech-Comirnaty vaccines were 35% (95% CI:-26%-74%, not statistically significant) and 57% (5-85%) effective at preventing transmission to household contacts of Alpha index cases, respectively, and 42% (14-69) and 31% (-3-61%, not statistically significant) effective at preventing transmission to household contacts of Delta index cases, respectively.

Finally, a test-negative case-control study from the United Kingdom (not yet peer-reviewed) assessed the VE of a third dose of Pfizer BioNTech-Comirnaty in addition to the primary series of either two doses of AstraZeneca-Vaxzevria or two doses of Pfizer BioNTech-Comirnaty among persons 50 years and older during a period when Delta was the dominant variant.[34] Compared to persons receiving two doses of AstraZeneca-Vaxzevria 140 or more days prior to testing with no booster, the relative VE of two doses of AstraZeneca-Vaxzevria plus an additional dose of Pfizer BioNTech-Comirnaty was 87.4% (84.9-89.4%) against symptomatic disease 14 or more days after the additional dose. The relative VE against symptomatic disease of a third dose of Pfizer BioNTech-Comirnaty following a primary series of Pfizer BioNTech-Comirnaty compared to two doses of Pfizer BioNTech-Comirnaty only was 84.4% (82.8%-85.8%). Using the unvaccinated group as the comparator, the absolute VE of a third dose of Pfizer BioNTech-Comirnaty following a primary series of AstraZeneca-Vaxzevria was 93.1% (91.7-94.3%); the absolute VE of three doses of Pfizer BioNTech-Comirnaty was 94.0% (93.4-94.6%).

Additional resources

- Tracking SARS-CoV-2 Variants
- COVID-19 new variants: Knowledge gaps and research
- Genomic sequencing of SARS-CoV-2: a guide to implementation for maximum impact on public health
- Considerations for implementing and adjusting public health and social measures in the context of COVID-19

Table 3. Summary of vaccine performance against Variants of Concern, data as of 25 November 2021

	WHO Emergency Use Listing (EUL) Qualified Vaccines								Vaccines without WHO EUL		
	AstraZeneca-Vaxzevria/SII - Covishield	Beijing CNBG-BBIBP-CorV	Bharat-Covaxin	Janssen-Ad26.COV 2.S	Moderna-mRNA-1273	Moderna-mRNA-1273/ Pfizer BioN BioNTech-Comirnaty	Pfizer BioNTech-Comirnaty	Sinovac-CoronaVac	Anhui ZL-Recombinant	Gamaleya-Sputnik V	Novavax-Covavax
Alpha[35,36]											
Summary of VE*	Protection retained against all outcomes										
- Severe disease	↔$_{2}$	-	-	-	↔$_{2}$	↔$_{1}$	↔$_{6}$	-	-	-	-
- Symptomatic disease	↔to↓$_{5}$	-	-	-	↔$_{1}$	↔$_{1}$	↔$_{4}$	-	-	-	↓$_{1}$
- Infection	↔to↓$_{4}$	-	-		↔$_{3}$	-	↔$_{3}$	-	-	-	-
Neutralization	↔to↓$_{8}$	↔$_{1}$	↔$_{2}$	↔$_{4}$	↔to↓$_{13}$	↔to↓$_{2}$	↔to↓$_{42}$	↔to↓↓$_{6}$	↔$_{2}$	↔to↓$_{4}$	↓$_{1}$
Beta[37–40]											
Summary of VE*	Protection retained against severe disease; reduced protection against symptomatic disease; limited evidence										
- Severe disease	-	-	-	↔$_{1}$	↔$_{1}$	-	↔$_{3}$	-	-	-	-
- Symptomatic disease	↔to↓↓↓$_{2}$	-	-	↔$_{1}$	↔$_{1}$	-	↔$_{2}$	-	-	-	↓↓↓$_{1}$
- Infection	-	-	-	-	↔$_{1}$	-	↓$_{1}$	-	-	-	-
Neutralization	↓to↓↓$_{8}$	↔to↓$_{2}$	↓$_{2}$	↓to↓↓$_{8}$	↓to↓↓$_{17}$	↓↓to↓↓↓$_{2}$	↓to↓↓$_{42}$	↓to↓↓↓$_{6}$	↔to↓$_{3}$	↓↓to↓↓↓$_{5}$	↓↓↓$_{1}$
Gamma											
Summary of VE*	Unclear impact; very limited evidence										
- Severe disease	↔$_{1}$	-	-	-	↔$_{1}$	-	↔$_{2}$	-	-	-	-
- Symptomatic disease	↔$_{1}$	-	-	-	↔$_{1}$	-	↔$_{1}$	-	-	-	-
- Infection	↔$_{1}$	-	-	-	↔$_{1}$	-	↔$_{1}$	↔$_{1}$	-	-	-
Neutralization	↔to↓$_{3}$	-	-	↔to↓$_{4}$	↓$_{8}$	-	↔to↓$_{26}$	↔to↓$_{4}$	↔$_{1}$	↓to↓↓$_{3}$	-
Delta[41]											
Summary of VE*	Protection retained against severe disease; possible reduced protection against symptomatic disease and infection; limited evidence										
- Severe disease	↔$_{3}$	-	-	-	↔$_{3}$	-	↔$_{6}$	-	-	-	-
- Symptomatic disease	↓to↓↓$_{5}$	-	↓$_{1}$	-	↔$_{1}$	-	↔to↓$_{4}$	-	-	-	-
- Infection	↔to↓$_{4}$	-	-	↓↓↓$_{1}$	↔$_{3}$	-	↔to↓$_{3}$	-	-	-	-
Neutralization	↓$_{9}$	-	↔to↓$_{3}$	↔to↓↓$_{8}$	↓$_{9}$	↓to↓↓$_{2}$	↔to↓$_{21}$	↓to↓↓↓$_{4}$	↔to↓$_{2}$	↓to↓↓$_{3}$	-
Omicron											

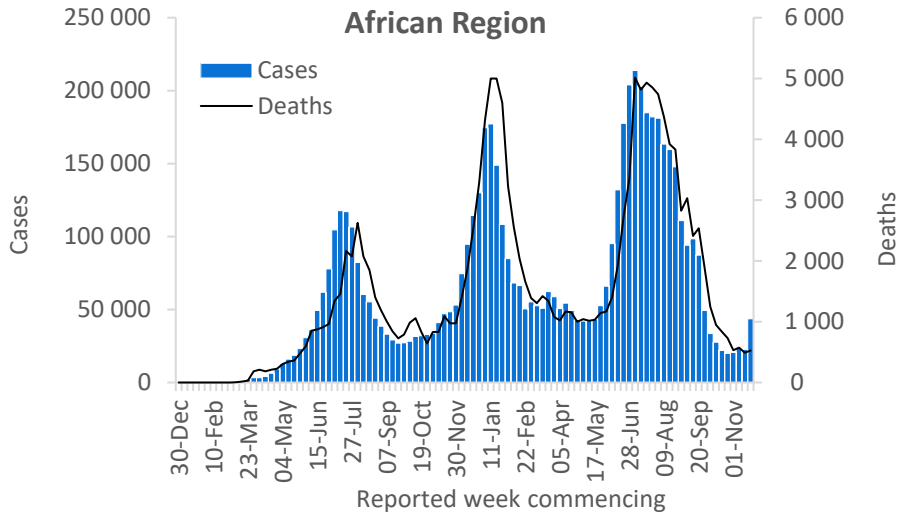
VE refers to vaccine effectiveness and vaccine efficacy. *Summary of VE: indicates the general conclusions but only for the vaccines evaluated against the specific variant. Arrows generalize the magnitude of reduction in VE or neutralization: "↔" <10% reduction in VE, or VE >90% with no comparator, or that there was a <2-fold reduction in neutralization; "↓" 10 to <20% reduction in VE, or 2 to <5-fold reduction in neutralization; "↓↓" 20 to <30% reduction in VE, or 5 to <10-fold reduction in neutralization; "↓↓↓" ≥30% reduction in VE, or ≥10-fold reduction in neutralization. When more than one neutralization study is available, the interquartile range (25th and 75th percentiles) of fold-reductions across all studies for specific vaccine/variant was used. "Moderna-mRNA-1273/Pfizer BioNTech-Comirnaty" indicates that both vaccines were evaluated together in study. The number of studies is shown as subscripts: vaccine effectiveness and neutralization studies informing this table can be found on the VIEW-hub Resources Library . References indicated by superscripts next to VOC name in column 1 are vaccine efficacy results from randomized controlled trials informing this table. Information for the Omicron variant will be included in upcoming issues as data becomes available.

WHO regional overviews Epidemiological week 22-28 November 2021

African Region

Following a declining trend since late June 2021, the case incidence in the African Region increased by 93%, with over 43 000 new cases reported during the week of 22-28 November. To note, 43% of the new cases were from a batch reporting of antigen tests from South Africa in the last week. Twenty-one of the 49 countries in the region (43%) reported an increase of >10% in new cases as compared to the previous week, with the highest numbers of new cases reported from South Africa (29 373 new cases; 49.5 new cases per 100 000 population; an 740% increase), Mauritius (3474 new cases; 273.2 new cases per 100 000; a 63% decrease) and Réunion (1875 new cases; 209.4 new cases per 100 000; a 43% increase).

Eleven of the 49 countries reported an increase of over 10% in the number of new weekly deaths with the highest numbers of new deaths reported from South Africa (219 new deaths; <1 new death per 100 000 population; a 128% increase), Ethiopia (64 new deaths; <1 new death per 100 000; an 8% increase), and Mauritius (50 new deaths; 3.9 new deaths per 100 000; a 52% decrease).

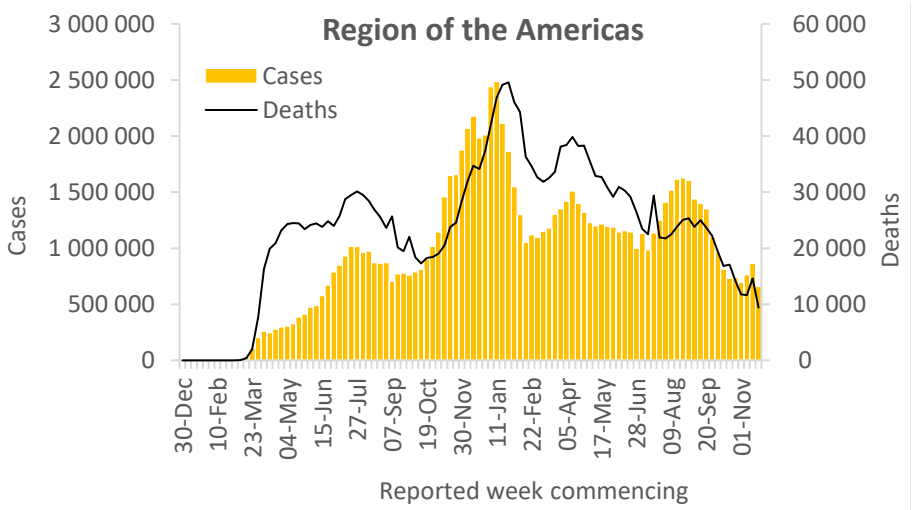


Updates from the African Region

Region of the Americas

The Region of the Americas reported a 24% decline in case incidence in the last week, with over 659 000 new cases reported. This trend is largely driven by the 31% decrease in the incidence of cases in the United States of America despite the country continuing to report the highest number of cases (464 800 new cases; 140.4 new cases per 100 000) in the region. It is important to note that the public holiday in the United States of America which took place at the end of last week may have impacted testing and reporting. Twenty-seven percent (15/56) of countries in the region reported increases of over 10%. In addition to the United States of America, countries reporting the highest numbers of cases included Brazil (64 313 new cases; 30.3 new cases per 100 000; similar to the previous week's figures) and Canada (19 737 new cases; 52.3 new cases per 100 000; a 16% increase).

The incidence of deaths also declined with just under 9400 new deaths reported, a 36% decrease compared to the previous week. Despite having the highest number of deaths in the Region, the United States of America and Brazil saw reductions in the number of new deaths (5003 new deaths; 1.5 new deaths per 100 000; a 52% decrease and 1587 new deaths; <1 new death per 100 000; a 16% decrease, respectively), as compared to the numbers reported in the previous week.

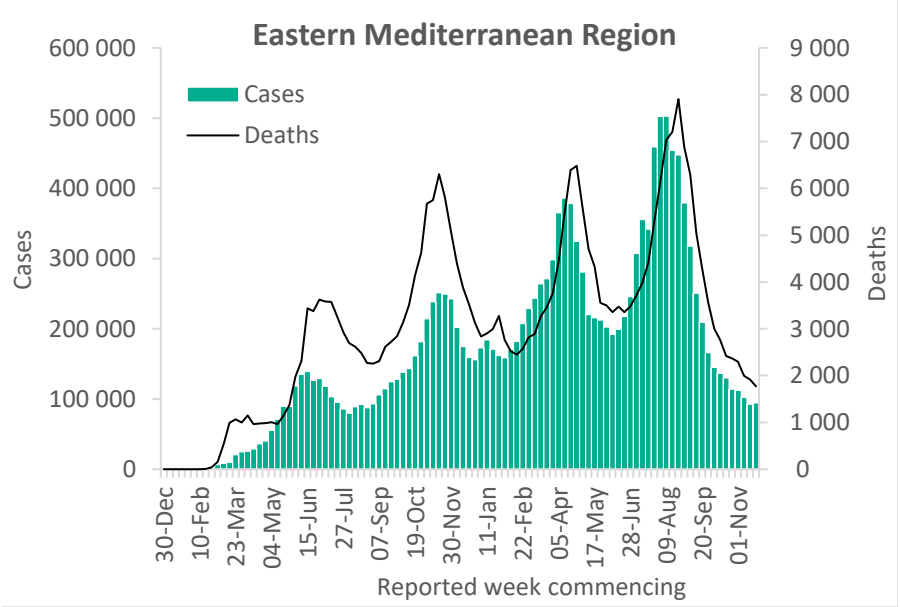


Updates from the Region of the Americas

Eastern Mediterranean Region

The weekly incidence of cases in the Eastern Mediterranean Region remained stable with over 94 000 reported (similar to the previous week's figures). The number of weekly deaths decreased by 8%, with just over 1700 reported. However, nearly one-third (7/22) of countries in the region reported >10% increase in weekly incidence, the highest including Sudan (143%), Tunisia (80%) and Lebanon (69%). The highest numbers of new cases were reported from the Islamic Republic of Iran which contributed to just over a third of the cases in the region (32 003 new cases; 38.1 new cases per 100 000; a 23% decrease), followed by Jordan (28 023 new cases; 274.7 new cases per 100 000; a 30% increase), and Lebanon (9401 new cases; 137.7 new cases per 100 000; a 69% increase).

The highest numbers of new deaths were reported from the Islamic Republic of Iran (697 new deaths; <1 new death per 100 000; a 14% decrease), Egypt (433 new deaths; <1 new death per 100 000; similar to the previous week's figures), and Jordan (168 new deaths; 1.6 new deaths per 100 000; a 27% increase).

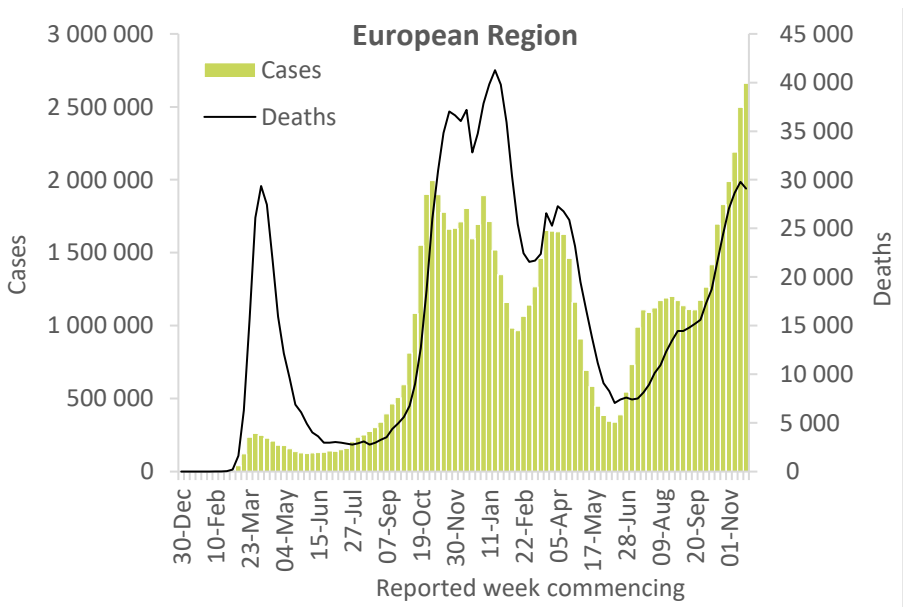


Updates from the Eastern Mediterranean Region

European Region

The European Region has continued to report an increase in cases since early-October 2021, with over 2.6 million new cases reported this week (a 7% increase as compared to the previous week). The incidence in deaths has remained stable compared to the previous week, with over 29 000 new deaths reported. Thirty-eight percent of countries in the region (23/61) reported an increase in new weekly cases of over 10%. Just over a third of all new cases continue to be reported from three countries: Germany (406 754 new cases; 489.1 new cases per 100 000; a 22% increase), the United Kingdom (304 374 new cases; 448.4 new cases per 100 000; an 8% increase), and the Russian Federation (239 215 new cases; 163.9 new cases per 100 000; an 8% decrease).

The highest numbers of new deaths were reported from the Russian Federation (8660 new deaths; 5.9 new deaths per 100 000; similar to the previous week's figures); Ukraine (3845 new deaths; 8.8 new deaths per 100 000; a 16% decrease) and Poland (2214 new deaths; 5.8 new deaths per 100 000; a 13% increase).

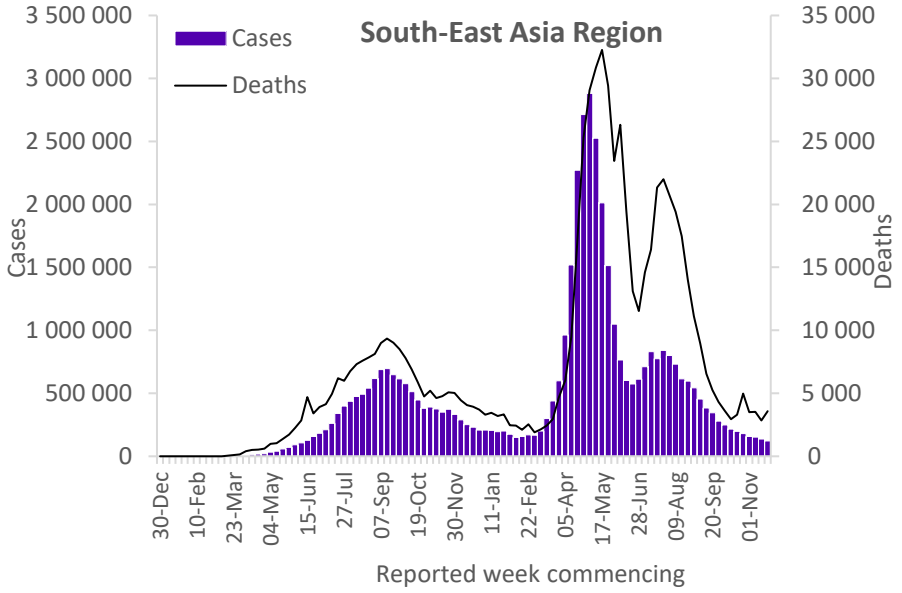


Updates from the European Region

South-East Asia Region

Since July 2021, the incidence of cases in the South-East Asia Region has continued to decline with 120 000 new cases reported this week, an 11% decrease as compared to the previous week. However, three countries reported an increase of over 10% including Sri Lanka (16%), Bhutan (14%) and Bangladesh (7%). Sri Lanka also reported the third highest number of new cases (5894 new cases; 27.5 new cases per 100 000; a 16% increase), after India (62 110 new cases; 4.5 new cases per 100 000; a 15% decrease) and Thailand (42 232 new cases; 60.5 new cases per 100 000; a 9% decrease).

The number of weekly deaths increased by 26% as compared to the previous week, with over 3500 new deaths reported this week. Three countries reported an increase of >10% including Nepal (27 new deaths; <1 new death per 100 000; a 42% increase); India (2892 new deaths; <1 new death per 100 000; a 36% increase) and Sri Lanka (178 new deaths; <1 new death per 100 000; a 35% increase). Thailand reported the second highest number of deaths after India but the number of deaths declined (320 new deaths; <1 new death per 100 000; a 9% decrease) as compared to the previous week.

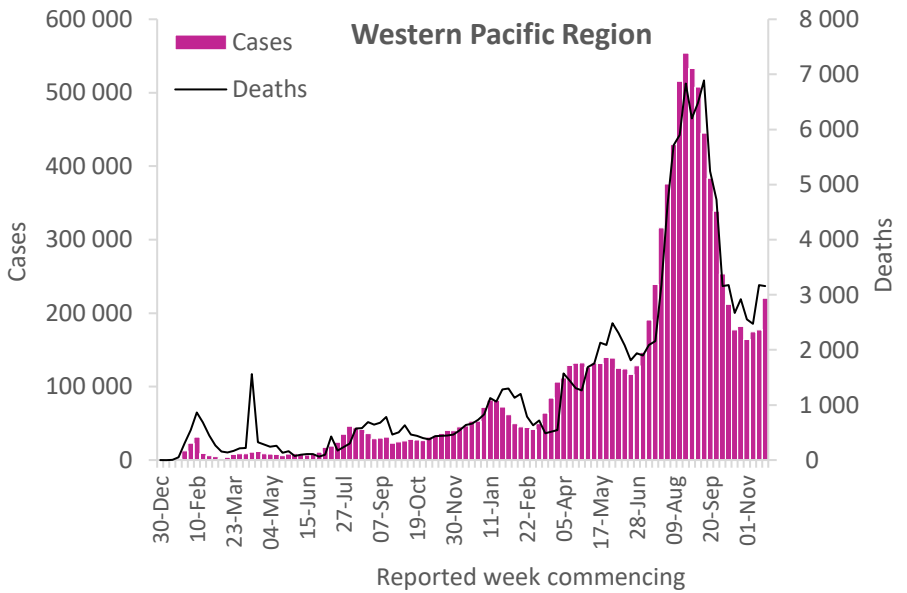


Updates from the South-East Asia Region

Western Pacific Region

Following a relatively stable trend over the past month, the weekly case incidence in the Western Pacific Region increased by 24% this week with over 220 000 new cases reported. Six of the 27 countries in the region reported an increase in case incidence of >10%, including the Northern Mariana Islands (222%), Viet Nam (70%), Brunei Darussalam (40%), the Republic of Korea (28%), Australia (15%) and Lao People's Democratic Republic (13%). The highest number of new cases continued to be reported from Viet Nam (112 779 new cases; 115.9 new cases per 100 000; a 70% increase), Malaysia (37 830 new cases; 116.9 new cases per 100 000; a 7% decrease) and the Republic of Korea (25 466 new cases; 49.7 new cases per 100 000; a 28% increase).

The region reported over 3100 new deaths this week, similar to the previous week's figures. The highest numbers of new deaths continued to be reported from the Philippines (1302 new deaths; 1.2 new death per 100 000; a 20% decrease), Viet Nam (1007 new deaths; 1.0 new deaths per 100 000; a 51% increase), and Malaysia (302 new deaths; <1 new death per 100 000; a 13% decrease).



Updates from the Western Pacific Region

Summary of the COVID-19 Weekly Operational Update

The Weekly Operational Update is a report provided by the COVID-19 Strategic Preparedness and Response Plan (SPRP) Monitoring and Evaluation team, which aims to update on the ongoing global progress against the COVID-19 SPRP 2021 framework, and to highlight country-level actions and WHO support to countries. In this week's edition published on 30 November, highlights include the following:

- Ethiopia launches a nationwide COVID-19 vaccination campaign
- Training for Indigenous youth leaders to promote COVID-19 messaging in Colombia
- Addressing the urgent COVID-19 and broader health needs of vulnerable populations in Belarus through a WHO support mission
- Maintaining essential health services during COVID-19 in Afghanistan
- Progress on a subset of indicators from the SPRP 2021 Monitoring and Evaluation Framework
- Updates on WHO's financing to support countries in SPRP 2021 implementation and provision of critical supplies

Technical guidance and other resources

- WHO technical guidance
- WHO COVID-19 Dashboard
- WHO Weekly Operational Updates on COVID-19
- WHO COVID-19 case definitions
- COVID-19 Supply Chain Inter-Agency Coordination Cell Weekly Situational Update
- Research and Development
- Open WHO courses on COVID-19 in official UN languages and in additional national languages
- WHO Academy COVID-19 mobile learning app
- The Strategic Preparedness and Response Plan (SPRP) outlining the support the international community can provide to all countries to prepare and respond to the virus
- Recommendations and advice for the public:
  - Protect yourself
  - Questions and answers
  - Travel advice
- EPI-WIN: tailored information for individuals, organizations, and communities

Annexes

Annex 1. Additional notes on VOC impacts on vaccines

- Reductions in VE do not necessarily mean loss of protection, as indicated by the absolute VE estimate. For example, a 10-percentage point reduction in VE against symptomatic disease for mRNA vaccines would still mean high vaccine effectiveness of ~85%. Likewise, vaccines have shown higher VE against severe disease; thus, small reductions in VE against severe disease due to VOCs may still mean substantial protection.
- Table 3 summarizes the impact of VOCs on COVID-19 vaccine performance in the absence of waning, and, therefore, does not include studies that only assess VE greater than 4 months post final dose.
- Studies reporting VOC-specific VE estimates for full vaccination (≥7 days post final dose) are assessed against a comparator VE estimate for that vaccine product to determine level of reduction in VE. For symptomatic disease, VOC VE is compared against phase 3 RCT results from non-VOC settings. For severe disease and infection, due to instability or lack of phase 3 RCT estimates, VOC VE is compared to non-VOC VE estimates from the same study when available (or to Alpha VE from same study when assessing Beta, Gamma, or Delta); with an exception for AstraZeneca-Vaxzevria for infection (when a phase 3 estimate of VE against infection due to non-VOC is available and used as comparator). In some instances, a study may be included for severe disease or infection outcome even without a comparator if a very high VE estimate is reported against a VOC (i.e., >90%).
- It is also important to note that studies vary in population, outcome definitions, study design and other methodological considerations, which may in part explain differences when comparing VE estimates for a product between different studies. In addition, the reductions summarized in the table represent VE point estimates and do not represent the uncertainty intervals around these estimates which vary substantially across studies. The reductions in VE noted should be interpreted with these limitations in mind.

Annex 2. List of countries/territories/areas reporting Variants of Concern as of 30 November 2021

	Alpha	Beta	Delta	Gamma	Omicron
Afghanistan	●	-	●	-	-
Albania	●	-	○	-	-
Algeria	●	-	●	-	-
Andorra	○	○	○	-	-
Angola	●	●	●	●	-
Anguilla	●	-	●	-	-
Antigua and Barbuda	●	●	●	●	-
Argentina	●	●	●	●	-
Armenia	●	-	●	-	-
Aruba	●	●	●	●	-
Australia	●	●	●	●	●*
Austria	●	●	●	●	●*
Azerbaijan	●	-	○	-	-
Bahamas	●	-	●	●	-
Bahrain	●	●	●	●	-
Bangladesh	●	●	●	○	-
Barbados	●	-	●	●	-
Belarus	●	-	○	-	-
Belgium	●	●	●	●	●*
Belize	●	-	●	●	-
Benin	●	●	●	●	-
Bermuda	●	●	●	-	-
Bhutan	●	●	●	-	-
Bolivia (Plurinational State of)	●	-	●	●	-
Bonaire	●	-	●	●	-
Bosnia and Herzegovina	●	●	○	●	-
Botswana	○	●	●	-	●*
Brazil	●	●	●	●	-
British Virgin Islands	●	-	●	●	-
Brunei Darussalam	●	●	●	-	-
Bulgaria	●	●	●	-	-
Burkina Faso	●	-	●	-	-
Burundi	●	●	●	-	-
Cabo Verde	●	-	●	-	-
Cambodia	●	●	●	-	-
Cameroon	●	●	●	●*	-
Canada	●	●	●	●	●*
Cayman Islands	●	●	●	●	-
Central African Republic	●	●	●	-	-
Chad	●	-	-	-	-
Chile	●	●	●	●	-
China	●	●	●	●	●*
Colombia	●	-	●	●	-
Comoros	-	●	●	-	-
Congo	●	●	●	●	-
Costa Rica	●	●	●	●	-
Croatia	●	●	○	●	-
Cuba	●	●	●	-	-
Curaçao	●	●	●	●	-
Cyprus	●	●	○	-	-
Czechia	●	●	●	●	●*
Côte d'Ivoire	●	●	○	-	-
Democratic Republic of the Congo	●	●	●	-	-
Denmark	●	●	●	●	●*
Djibouti	●	●	●*	-	-
Dominica	●	-	●	-	-
Dominican Republic	●	-	●	●	-
Ecuador	●	-	●	●	-
Egypt	●	-	●	-	-
El Salvador	●	-	●	●	-
Equatorial Guinea	●	●	●	-	-
Estonia	●	●	○	○	-
Eswatini	○	●	●	-	-
Ethiopia	●	●	●	-	-
Falkland Islands (Malvinas)	●	●	-	-	-
Faroe Islands	●	-	-	●	-
Fiji	○	-	●	-	-
Finland	●	●	●	●	-
France	●	●	●	●	-
French Guiana	●	●	●	●	-
French Polynesia	●	●	●	●	-
Gabon	●	●	●	-	-
Gambia	●	-	●	-	-
Georgia	●	○	●	-	-
Germany	●	●	●	●	●*
Ghana	●	●	●	●	-
Gibraltar	●	-	○	-	-
Greece	●	●	●	●	-
Greenland	-	-	●	-	-
Grenada	●	-	●	●	-
Guadeloupe	●	●	●	●	-
Guam	●	●	●	●	-
Guatemala	●	●	●	●	-
Guinea	●	●	●	-	-
Guinea-Bissau	●	●	●	-	-
Guyana	-	-	●	●	-
Haiti	●	-	●	●	-
Honduras	●	-	●	●	-
Hungary	●	○	○	●	-
Iceland	●	●	●	●	-
India	●	●	●	●	-
Indonesia	●	●	●	-	-
Iran (Islamic Republic of)	●	●	●	-	-
Iraq	●	●	●	●	-
Ireland	●	●	●	●	-

	Alpha	Beta	Delta	Gamma	Omicron
Israel	●	●	●	●	●*
Italy	●	●	●	●	●*
Jamaica	●	-	●	-	-
Japan	●	●	●	●	●*
Jordan	●	●	●	●	-
Kazakhstan	●	○	●	-	-
Kenya	●	●	●	-	-
Kosovo[1]	●	○	○	-	-
Kuwait	●	●	●	-	-
Kyrgyzstan	●	●	●	-	-
Lao People's Democratic Republic	●	-	●	-	-
Latvia	●	●	○	●	-
Lebanon	●	-	●	-	-
Lesotho	-	●	○	-	-
Liberia	●	●	●	-	-
Libya	●	●	-	-	-
Liechtenstein	●	-	○	○	-
Lithuania	●	●	○	●	-
Luxembourg	●	●	●	●	-
Madagascar	●	●	-	-	-
Malawi	●	●	●	-	-
Malaysia	●	●	●	-	-
Maldives	●	-	●	-	-
Mali	-	-	●	-	-
Malta	●	○	○	●	-
Martinique	●	●	●	●	-
Mauritania	●	●	●	-	-
Mauritius	●	●	●	-	-
Mayotte	●	●	○	-	-
Mexico	●	●	●	●	-
Monaco	●	●	●	-	-
Mongolia	●	-	●	-	-
Montenegro	●	-	○	○	-

	Alpha	Beta	Delta	Gamma	Omicron
Montserrat	●	-	●	●	-
Morocco	●	●	●	-	-
Mozambique	●	●	●	-	-
Myanmar	●	-	●	-	-
Namibia	●	●	●	●	-
Nepal	●	-	●	-	-
Netherlands	●	●	●	●	●*
New Caledonia	●	-	●	-	-
New Zealand	●	●	●	●	-
Nicaragua	●	●	●	●	-
Niger	●	-	●	-	-
Nigeria	●	●	●	-	-
North Macedonia	●	●	○	-	-
Northern Mariana Islands (Commonwealth of the)	○	-	●	-	-
Norway	●	●	●	●	-
Occupied Palestinian Territory	●	●	●	-	-
Oman	●	●	●	-	-
Pakistan	●	●	●	●	-
Panama	●	●	●	●	-
Papua New Guinea	-	-	●	-	-
Paraguay	●	-	●	●	-
Peru	●	-	●	●	-
Philippines	●	●	●	●	-
Poland	●	○	●	●	-
Portugal	●	●	●	●	●*
Puerto Rico	●	●	●	●	-
Qatar	●	●	●	-	-
Republic of Korea	●	●	●	●	-
Republic of Moldova	●	-	●	-	-
Romania	●	●	●	●	-
Russian Federation	●	●	●	○	-
Rwanda	●	●	●	-	-
Réunion	●	●	○	●	○*

	Alpha	Beta	Delta	Gamma	Omicron
Saba	-	-	●	-	-
Saint Barthélemy	●	-	●	-	-
Saint Kitts and Nevis	-	-	●	-	-
Saint Lucia	●	-	●	-	-
Saint Martin	●	●	●	-	-
Saint Pierre and Miquelon	-	-	●	-	-
Saint Vincent and the Grenadines	-	-	●	●	-
Sao Tome and Principe	●	-	○	-	-
Saudi Arabia	●	●	●	-	-
Senegal	●	●	●	-	-
Serbia	●	-	●	-	-
Seychelles	●	●	●	-	-
Sierra Leone	-	●	●	-	-
Singapore	●	●	●	●	-
Sint Maarten	●	●	●	●	-
Slovakia	●	●	●	-	-
Slovenia	●	●	●	●	-
Somalia	●	●	●	-	-
South Africa	●	●	●	○	●*
South Sudan	●	●	●	-	-
Spain	●	●	●	●	○*
Sri Lanka	●	●	●	-	-
Sudan	●	●	-	●	-
Suriname	●	●	●	●	-
Sweden	●	●	●	●	●*
Switzerland	●	●	●	●	-
Thailand	●	●	●	●	-
Timor-Leste	●	-	●	-	-
Togo	●	●	●	●	-
Trinidad and Tobago	●	-	●	●	-
Tunisia	●	●	●	-	-
Turkey	●	●	●	●	-
Turks and Caicos Islands	●	-	●	●	-

	Alpha	Beta	Delta	Gamma	Omicron
Uganda	●	●	●	-	-
Ukraine	●	○	○	-	-
United Arab Emirates	●	●	●	●	-
United Kingdom	●	●	●	●	●*
United Republic of Tanzania	-	●	-	-	-
United States Virgin Islands	●	●	●	●	-

	Alpha	Beta	Delta	Gamma	Omicron
United States of America	●	●	●	●	-
Uruguay	●	●	●	●	-
Uzbekistan	●	●	○	-	-
Vanuatu	-	-	●	-	-
Venezuela (Bolivarian Republic of)	●	-	●	●	-

	Alpha	Beta	Delta	Gamma	Omicron
Viet Nam	●	●	●	-	-
Wallis and Futuna	●	-	-	-	-
Yemen	●	●	-	-	-
Zambia	●	●	●	-	-
Zimbabwe	●	●	●	-	-

**Newly reported in this update. "●" indicates that information for this variant was received by WHO from official sources. "○" indicates that information for this variant was received by WHO from unofficial sources and will be reviewed as more information become available. **Includes countries/territories/areas reporting the detection of VOCs among travellers (e.g., imported cases detected at points of entry), or local cases (detected in the community). Excludes countries, territories, and areas that have never reported the detection of a variant of concern. See also Annex 3: Data, table, and figure notes*

Annex 3. Data, table, and figure notes

Data presented are based on official laboratory-confirmed COVID-19 case and deaths reported to WHO by country/territories/areas, largely based upon WHO case definitions and surveillance guidance. While steps are taken to ensure accuracy and reliability, all data are subject to continuous verification and change, and caution must be taken when interpreting these data as several factors influence the counts presented, with variable underestimation of true case and death incidences, and variable delays to reflecting these data at the global level. Case detection, inclusion criteria, testing strategies, reporting practices, and data cut-off and lag times differ between countries/territories/areas. A small number of countries/territories/areas report combined probable and laboratory-confirmed cases. Differences are to be expected between information products published by WHO, national public health authorities, and other sources.

Due to public health authorities conducting data reconciliation exercises that remove large numbers of cases or deaths from their total counts, negative numbers may be displayed in the new cases/deaths columns as appropriate. When additional details become available that allow the subtractions to be suitably apportioned to previous days, graphics will be updated accordingly. A record of historic data adjustment made is available upon request by emailing epi-data-support@who.int. Please specify the countries of interest, time period, and purpose of the request/intended usage. Prior situation reports will not be edited; see covid19.who.int for the most up-to-date data. COVID-19 confirmed cases and deaths reported in the last seven days by countries, territories, and areas, and WHO Region (reported in previous issues) are now available at: https://covid19.who.int/table.

'Countries' may refer to countries, territories, areas or other jurisdictions of similar status. The designations employed, and the presentation of these materials do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. Countries, territories, and areas are arranged under the administering WHO region. The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions except, the names of proprietary products are distinguished by initial capital letters.

[1] All references to Kosovo should be understood to be in the context of the United Nations Security Council resolution 1244 (1999). In the map, the number of cases of Serbia and Kosovo (UNSCR 1244, 1999) have been aggregated for visualization purposes.

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