COVID-19 Results Briefing

The Eastern Mediterranean Region

April 7, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in the Eastern Mediterranean Region. The model was run on April 7, 2022, with data through April 4, 2022.

Current situation

Reported cases, hospital admissions, and deaths continue to decline in the region. Some countries, such as Lebanon, Morocco, and Oman, have an effective R above 1. This may be an early sign of BA.2-related increases in transmission or the impact of rapid behavioral changes. Our models do not suggest a substantial BA.2 surge in the region, but even if one occurs, the European experience suggests it will last approximately 3 weeks. However, the situation may change due to Ramadan gatherings.

Looking ahead to the emergence of new variants that may be more severe than Omicron, there are several strategies for the region to pursue. First, maintain surveillance with a focus on early detection of new variants and monitoring of when any new variant may arrive in a country. Second, ensure that there is widespread access to effective antivirals in advance of a new and potentially more severe variant. To date, there appears to be more policy discussion of vaccination and boosters than there is of antivirals; this imbalance should be corrected. Third, time the delivery of boosters for the elderly and those with comorbidities to have maximum impact on the next new variant. There is not sufficient evidence at this time that BA.2 spread warrants a broader push on a fourth booster except in those at high risk. Fourth, when and if transmission begins increasing substantially, individuals at risk should consider wearing a mask and socially distancing. Finally, special efforts and messaging should be used for prayers and break-fast during Ramadan to help people to celebrate this month safely and avoid COVID infections.

- Daily infections in the last week decreased to 359,000 per day on average compared to 394,000 the week before (Figure 1.1). Daily hospital census in the last week (through April 4) decreased to 4,400 per day on average compared to 5,300 the week before.
- Daily reported cases in the last week decreased to 10,000 per day on average compared to 11,000 the week before (Figure 2.1).
- Reported deaths due to COVID-19 in the last week decreased to 68 per day on average compared to 100 the week before (Figure 3.1).
- Total deaths due to COVID-19 in the last week decreased to 330 per day on average compared to 420 the week before (Figure 3.1). This makes COVID-19 the number 11 cause of death in the Eastern Mediterranean Region this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 4.8 times larger than the reported number of deaths.
The daily rate of reported deaths due to COVID-19 is greater than 4 per million in no countries and no subnational locations (Figure 4.1).

The daily rate of total deaths due to COVID-19 is greater than 4 per million in no countries and no subnational locations (Figure 4.2).

We estimate that 73% of people in the Eastern Mediterranean Region have been infected at least once as of April 4 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in three countries and no subnational locations (Figure 7.1).

The infection-detection rate in the Eastern Mediterranean Region was close to 3% on April 4 (Figure 8.1).

Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figures 9.1–9.5). We estimate that the Alpha variant is circulating in 21 countries and six subnational locations, that the Beta variant is circulating in 19 countries and two subnational locations, that the Delta variant is circulating in 22 countries and seven subnational locations, that the Gamma variant is circulating in 20 countries and five subnational locations, and that the Omicron variant is circulating in 22 countries and seven subnational locations.

Trends in drivers of transmission

Mobility last week was 44% higher than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 15% of baseline in no countries and no subnational locations.

As of April 4, in the COVID-19 Trends and Impact Survey, 26% of people self-report that they always wore a mask when leaving their home compared to 27% last week (Figure 13.1).

There were 104 diagnostic tests per 100,000 people on April 4 (Figure 15.1).

As of April 4, seven countries and no subnational locations have reached 70% or more of the population who have received at least one vaccine dose, and four countries and no subnational locations have reached 70% or more of the population who are fully vaccinated (Figure 17.1). 49% of people in the Eastern Mediterranean Region have received at least one vaccine dose, and 43% are fully vaccinated.

In the Eastern Mediterranean Region, 73.7% of the population that is 12 years and older say they would accept a vaccine for COVID-19. Note that vaccine acceptance is calculated using survey data from the 18+ population. This is up by 0.3 percentage points from last week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 34% in Somalia to 100% in Qatar (Figure 19.1).

In our current reference scenario, we expect that 373.1 million people will be vaccinated with at least one dose by August 1 (Figure 20.1). We expect that 47% of the population will be fully vaccinated by August 1.
Projections and scenarios

We produce three scenarios when projecting COVID-19. The reference scenario is our forecast of what we think is most likely to happen:

- Vaccines are distributed at the expected pace. Brand- and variant-specific vaccine efficacy is updated using the latest available information from peer-reviewed publications and other reports.
- Future mask use is the mean of mask use over the last seven days.
- Mobility increases as vaccine coverage increases.
- Omicron variant spreads according to our flight and local spread model.
- 80% of those who have had two doses of vaccine (or one dose for Johnson & Johnson) receive a third dose at six months after their second dose.

The 80% mask use scenario makes all the same assumptions as the reference scenario but assumes all locations reach 80% mask use within seven days. If a location currently has higher than 80% use, mask use remains at the current level.

The third dose scenario is the same as the reference scenario but assumes that 100% of those who have received two doses of vaccine will get a third dose at six months.

Projections

Infections

- Daily estimated infections in the reference scenario will decline to 173,490 by August 1, 2022 (Figure 22.1).
- Daily estimated infections in the 80% mask use scenario will decline to 11,260 by August 1, 2022 (Figure 22.1).
- Daily estimated infections in the third dose scenario will decline to 102,550 by August 1, 2022 (Figure 22.1).

Cases

- Daily estimated cases in the reference scenario will rise to 10,190 by April 10, 2022 (Figure 22.2).
- Daily estimated cases in the 80% mask use scenario will decline to 670 by August 1, 2022 (Figure 22.2).
- Daily estimated cases in the third dose scenario will decline to 1,650 by August 1, 2022 (Figure 22.2).

Hospitalizations

- Daily hospital census in the reference scenario will decline to 2,070 by August 1, 2022 (Figure 22.3).
• Daily hospital census in the **80% mask use scenario** will decline to 150 by August 1, 2022 (Figure 22.3).

• Daily hospital census in the **third dose scenario** will decline to 1,290 by August 1, 2022 (Figure 22.3).

Deaths

• In our **reference scenario**, our model projects 344,000 cumulative reported deaths due to COVID-19 on August 1. This represents 3,000 additional deaths from April 4 to August 1. Daily reported COVID-19 deaths in the **reference scenario** will decline to 10 by August 1, 2022 (Figure 22.4).

• Under our **reference scenario**, our model projects 2,114,000 cumulative total deaths due to COVID-19 on August 1. This represents 21,000 additional deaths from April 4 to August 1 (Figure 22.5).

• In our **80% mask use scenario**, our model projects 342,000 cumulative reported deaths due to COVID-19 on August 1. This represents 1,500 additional deaths from April 4 to August 1. Daily reported COVID-19 deaths in the **80% mask use scenario** will decline to zero by August 1, 2022 (Figure 22.4).

• In our **third dose scenario**, our model projects 343,000 cumulative reported deaths due to COVID-19 on August 1. This represents 2,500 additional deaths from April 4 to August 1. Daily reported COVID-19 deaths in the **third dose scenario** will decline to 10 by August 1, 2022 (Figure 22.4).

• Figure 23.1 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.

• At some point from April through August 1, no countries will have high or extreme stress on hospital beds (Figure 24.1). At some point from April through August 1, one country will have high or extreme stress on intensive care unit (ICU) capacity (Figure 25.1).
Model updates

Vaccine confidence data are from The Delphi Group at Carnegie Mellon University and University of Maryland COVID-19 Trends and Impact Surveys, in partnership with Facebook. In our previous estimates of the proportion of the population that is 12 years and older who would receive the COVID-19 vaccine if available, we included survey responses of “yes, probably” and “yes, definitely” when asked “If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated?” In our analysis of vaccine uptake, we have seen that vaccination rates have largely plateaued at the level implied by the “yes, definitely” response level. Therefore, we have updated our estimates of willingness to accept the vaccine to include only survey responses of “yes, definitely.”
Figure 1.1: Daily COVID-19 hospital census and estimated infections

Figure 2.1: Reported daily COVID-19 cases, moving average
Table 1: Ranking of total deaths due to COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

<table>
<thead>
<tr>
<th>Cause name</th>
<th>Weekly deaths</th>
<th>Ranking</th>
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<tbody>
<tr>
<td>Ischemic heart disease</td>
<td>15,912</td>
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<tr>
<td>Neonatal disorders</td>
<td>7,028</td>
<td>2</td>
</tr>
<tr>
<td>Stroke</td>
<td>6,729</td>
<td>3</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>3,385</td>
<td>4</td>
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<tr>
<td>Road injuries</td>
<td>2,935</td>
<td>5</td>
</tr>
<tr>
<td>Cirrhosis and other chronic liver diseases</td>
<td>2,806</td>
<td>6</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>2,501</td>
<td>7</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>2,403</td>
<td>8</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td>2,386</td>
<td>9</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>2,315</td>
<td>10</td>
</tr>
<tr>
<td>COVID-19</td>
<td>2,294</td>
<td>11</td>
</tr>
</tbody>
</table>

Figure 3.1: Smoothed trend estimate of reported daily COVID-19 deaths (blue) and total daily deaths due to COVID-19 (orange)
Daily COVID-19 death rate per 1 million on April 4, 2022

Figure 4.1: Daily reported COVID-19 death rate per 1 million

Figure 4.2: Daily total COVID-19 death rate per 1 million
Cumulative COVID-19 deaths per 100,000 on April 4, 2022

**Figure 5.1: Reported cumulative COVID-19 deaths per 100,000**

**Figure 5.2: Total cumulative COVID-19 deaths per 100,000**
Figure 6.1: Estimated percent of the population infected with COVID-19 on April 4, 2022

Figure 7.1: Mean effective R on March 24, 2022. Effective R less than 1 means that transmission should decline, all other things being held the same. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past.
Figure 8.1: Percent of estimated COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model. Due to measurement errors in cases and testing rates, the infection-detection rate can exceed 100% at particular points in time.
Estimated percent of circulating SARS-CoV-2 for primary variant families on April 4, 2022

**Figure 9.1: Estimated percent of new infections that are Alpha variant**

![Map showing the estimated percent of new infections that are Alpha variant](image1)

**Figure 9.2: Estimated percent of new infections that are Beta variant**

![Map showing the estimated percent of new infections that are Beta variant](image2)
Figure 9.3: Estimated percent of new infections that are Delta variant

Figure 9.4: Estimated percent of new infections that are Gamma variant
Figure 9.5: Estimated percent of new infections that are Omicron variant
**Figure 10.1: Infection-fatality rate on April 4, 2022.** This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.
Critical drivers

Table 2: Current mandate implementation

| Region                        | Primary school closure | Secondary school closure | Higher school closure | Entry restrictions for some non-residents | Entry restrictions for all non-residents | Curfew for businesses | Individual movements restricted | Individual curfew | Gathering limit: 6 indoor, 10 outdoor | Gathering limit: 10 indoor, 25 outdoor | Gathering limit: 25 indoor, 50 outdoor | Gathering limit: 50 indoor, 100 outdoor | Gathering limit: 100 indoor, 250 outdoor | Restaurants closed | Bars closed | Restaurants / bars closed | Restaurants / bars curbside only | Gyms, pools, other leisure closed | Non-essential retail closed | Non-essential workplaces closed | Stay home order | Stay home fine | Mask mandate | Mask mandate fine |
|-------------------------------|------------------------|--------------------------|-----------------------|------------------------------------------|--------------------------------------|----------------------|----------------------------------|-------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|-----------------|---------------|----------------|---------------------|----------------|----------------------|--------------------------|--------------------------|----------------|----------------|----------------|----------------|
| Afghanistan                   |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Bahrain                       |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Djibouti                      |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Egypt                         |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Iran (Islamic Republic of)    |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Iraq                          |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Jordan                        |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Kuwait                        |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Lebanon                       |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Libya                         |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Morocco                       |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Oman                          |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Pakistan                      |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Palestine                     |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Qatar                         |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Saudi Arabia                  |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Somalia                       |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Sudan                         |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Syrian Arab Republic          |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Tunisia                       |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| United Arab Emirates          |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |
| Yemen                         |                         |                          |                       |                                          |                                      |                      |                                 |                   |                                      |                                      |                                      |                                      |                                      |                 |               |                |                     |                |                      |                          |                          |               |               |                |                     |

Legend:
- Mandate in place (imposed this week)
- Mandate in place (updated from previous reporting)
- Mandate imposed in some subnational locations (imposed this week)
- Mandate imposed in some subnational locations (updated from previous reporting)
- No mandate (lifted this week)
- No mandate (updated from previous reporting)

*Not all locations are measured at the subnational level.
Figure 11.1: Trend in mobility as measured through smartphone app use, compared to January 2020 baseline
Figure 12.1: Mobility level as measured through smartphone app use, compared to January 2020 baseline (percent) on April 4, 2022
Figure 13.1: Trend in the proportion of the population reporting always wearing a mask when leaving home

Figure 14.1: Proportion of the population reporting always wearing a mask when leaving home on April 4, 2022
Figure 15.1: Trend in COVID-19 diagnostic tests per 100,000 people

Figure 16.1: COVID-19 diagnostic tests per 100,000 people on April 4, 2022
### Table 3: Estimates of vaccine effectiveness for specific vaccines used in the model at preventing severe disease and infection

We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website.

<table>
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<th>Vaccine</th>
<th>Ancestral Severe disease</th>
<th>Ancestral Infection</th>
<th>Alpha Severe disease</th>
<th>Alpha Infection</th>
<th>Beta Severe disease</th>
<th>Beta Infection</th>
<th>Gamma Severe disease</th>
<th>Gamma Infection</th>
<th>Delta Severe disease</th>
<th>Delta Infection</th>
<th>Omicron Severe disease</th>
<th>Omicron Infection</th>
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<td>94%</td>
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<td>94%</td>
<td>69%</td>
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<td>94%</td>
<td>69%</td>
<td>71%</td>
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<td>64%</td>
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<td>61%</td>
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<td>86%</td>
<td>72%</td>
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<td>88%</td>
<td>85%</td>
<td>67%</td>
<td>45%</td>
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</table>
Percent of the population having received at least one dose (17.1) and fully vaccinated against SARS-CoV-2 (17.2) by April 4, 2022

Figure 17.1: Percent of the population having received one dose of a COVID-19 vaccine

Figure 17.2: Percent of the population fully vaccinated against SARS-CoV-2
Figure 18.1: Trend in the estimated proportion of the population that is 12 years and older that has been vaccinated or would definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.

Figure 19.1: Estimated proportion of the population that is 12 years and older that has been vaccinated or would definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.
Figure 20.1: Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated.

Figure 21.1: Percent of people who are immune to Delta or Omicron. Immunity is based on protection due to prior vaccination and infection(s). Moreover, variant-specific immunity is also based on variant-variant specific protection.
Projections and scenarios

**Figure 22.1:** Daily COVID-19 infections until August 01, 2022 for three scenarios

**Figure 22.2:** Daily COVID-19 reported cases until August 01, 2022 for three scenarios
Figure 22.3: Daily COVID-19 hospital census until August 01, 2022 for three scenarios
Figure 22.4: Reported daily COVID-19 deaths per 100,000

The Eastern Mediterranean Region
Figure 22.5: Total daily COVID-19 deaths per 100,000
Figure 23.1: Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available, last model update in brackets: Delphi from the Massachusetts Institute of Technology (Delphi) [April 7, 2022], the SI-KJalpha model from the University of Southern California (SIKJalpha) [April 7, 2022]. Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from available locations in that region.
Figure 24.1: The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered low stress, 5-9% is considered moderate stress, 10-19% is considered high stress, and 20% or greater is considered extreme stress.
Figure 25.1: The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered low stress, 10-29% is considered moderate stress, 30-59% is considered high stress, and 60% or greater is considered extreme stress.
More information

Data sources:
Mask use and vaccine confidence data are from the The Delphi Group at Carnegie Mellon University and University of Maryland COVID-19 Trends and Impact Surveys, in partnership with Facebook. Mask use data are also from Premise, the Kaiser Family Foundation, and the YouGov COVID-19 Behaviour Tracker survey.

Genetic sequence and metadata are primarily from the GISAID Initiative. Further details available on the COVID-19 model FAQ page.

A note of thanks:
We wish to warmly acknowledge the support of these and others who have made our COVID-19 estimation efforts possible.

More information:
For all COVID-19 resources at IHME, visit http://www.healthdata.org/covid.
To download our most recent results, visit our Data downloads page.