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Editorial commentary

We are entering into a fascinating new phase of the pandemic, as the response given to the crisis has never been so diverse globally.

While some countries have achieved pretty high levels of vaccination of their target populations in the span of 9 months, others are either struggling to access vaccines or to roll out campaigns nationwide.

In some areas, overall vaccination coverage is supposed to have lessened the number of hospitalizations and fatalities (i.e. European Union), while in others, low vaccination rates are unable to show effect, yet, on communities and healthcare activity. From a public health standpoint, some governments are mandating either vaccination or corona pass/health certificates as a prerequisite to return to work (i.e. USA, Italy) while others are not conceiving imposing any requirements for employees for the time being. Some are eventually withdrawing most of their public health measures, including digital health passes, to return to as normal as possible social life (i.e. Denmark), while a few remain in indefinite lockdowns (i.e. the Philippines).

As organizations are contemplating resuming office work, business travel and corporate events globally, the challenge of acknowledging this diversity of response has never been so high.

More than ever during this pandemic the need to move from a blanket response to a bespoke one, adapted to each country, province or even county, is becoming a reality.

On the top of these public health measures, understanding the challenges brought by the variants of the coronavirus adds to the complexity to implement measures which are proportionate to the local impact and severity of the outbreak.

This note will hopefully help you gauge the reality of their effect and reinforce the need to promote vaccination as the ultimate way to control the pandemic.

Location	Total vaccine doses administered per 100 people	Percentage of population fully vaccinated	Daily new cases per million (7-day average)	Total cases per million	Daily new deaths per million (7-day average)	Total deaths per million people
Global	72.66 (+16%)	29.9%	70.38 (-15%)	28,527.73 (+7%)	1.12 (-11%)	588.02 (+5%)
Asia	81.82 (+19%)	32.2%	44.75 (-20%)	15,551.79 (+8%)	0.72 (-26%)	231.05 (+9%)
Africa	8.72 (+33%)	3.4%	13.56 (-47%)	5,857.16 (+8%)	0.38 (-37%)	147.71 (+8%)
Europe	102.71 (+7%)	49.9%	164.47 (-5%)	76,528.38 (+5%)	2.16 (+21%)	1,599.06 (+3%)
North America	97.99 (+8%)	44.3%	297.19 (-4%)	82,548.04 (+9%)	4.30 (+36%)	1,689.99 (+6%)
Oceania	66.70 (+39%)	45.95%	26.59 (+69%)	3,393.71 (+37%)	0.28 (-12%)	42.97 (+14%)
South America	90.30 (+20%)	34.5%	55.05 (-46%)	85,695.85 (+2%)	1.76 (-40%)	2,626.78 (+2%)

Table 1: International SOS, COVID-19 data globally and continental, data from 12 - 13 September compared with data from 18 - 20 August (1)

Global, regional, and local situation

The global trend continues upward at a steady rate: more than 224.65 million confirmed COVID-19 cases and more than 4.64 million deaths recorded to date. The leading contributors to the total number of COVID-19 cases on a by country basis now are the USA, India, Brazil, the United Kingdom, Russia, France, Turkey, Iran, Argentina, Colombia, Spain, Italy, Indonesia, Germany, Mexico, Poland, South Africa, Ukraine, the Philippines and Peru with the United Kingdom having surpassed Russia, and Iran having surpassed both Argentina and Colombia.

Worldwide, it would seem that the circulation of the virus is slightly slowing down with 554,210.57 million daily new cases reported on the 12th of September 2021 compared to 655.144.00 daily new cases reported on August the 19th 2021. The same is true for death rates which are beginning to decrease with 1.12 daily new fatalities per million people recorded on the 20th of August 2021 compared to 1.26 fatalities per million people recorded on the 12th of September 2021.

Just a few weeks and months ago, we witnessed COVID-19 spread with alarming ease across a cluster of nations in South America, overwhelming hospitals systems and killing thousands of people daily. Suddenly, the region that had been the epicentre of the pandemic is now starting to breathe again. The continent has seen its new daily cases of COVID-19 fall in nearly every nation since mid-June 2021. Indeed, Brazil, Argentina, Chile, Peru, Colombia and Uruguay who experienced dramatic surges of cases at the beginning of the year due to uneven and lax containment measures, are now seeing their new daily cases drop sharply. The phenomenon has been intriguing to some experts as these nations have not been reinforcing containment measures and the Delta variant has been similarly to countries worldwide, been dominant in the region. This phenomenon could be explained by an increase in the vaccination rate in the region. In addition, the region has not faced challenges related to hesitancy as other countries, such as the United States are facing quite strongly.

Number of new cases in Africa have been slowly decreasing compared to previous fortnight due to a decrease of infections in countries that were experiencing recently a resurgence of cases such as South Africa, Namibia, Botswana, Zambia and Mozambique. However, their neighbouring country, Angola, is experiencing an increase in its daily new cases which will soon surpass the pic seen during the second wave in May of 2021. West Africa is also starting to just recently show slow signs of relief, but a few days / weeks is required in order to be able to truly confirm the decreasing trend.

Both Europe as a whole and the European Union are seeing daily cases decline since the last fortnight, including Russia which however continues to report a high number of daily new cases (17 000 on a 7-day average). France, and Spain are experiencing a steep decrease in number of new cases contrary to the United Kingdom which experienced an increase in its new infections in the last month. The later seem to have started to decrease however in the last few days.

The Middle East is now showing a decline overall, including Iran and Iraq (however numbers of daily new cases remain high in these countries).

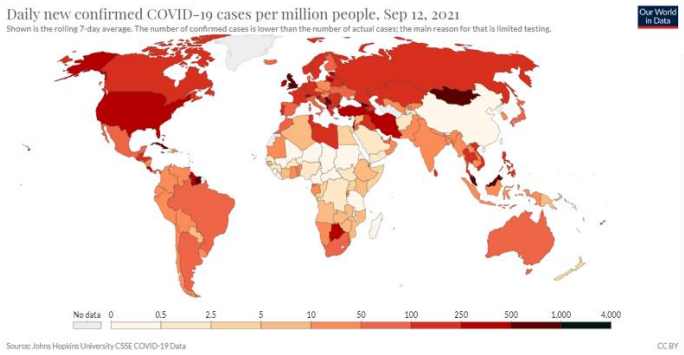

Figure 1: Our World in Data, Daily new confirmed COVID-19 cases per million people (1).

Vaccines

In comparison to last fortnight note, an additional vaccine is now being used, as such, there are currently 22 vaccines being used in at least one country (2). Seven of these vaccines have been approved for emergency use by the World Health Organisation (WHO), and 60 other vaccines (an additional 18 from last fortnight) are currently at the latest stage of clinical development worldwide.

To date, 192 countries continue vaccinating people using approved vaccines. Globally, 5.72 billion doses of the vaccine have been administered and 30.99 million are now administered each day. 42% of the world population has received at least one dose, with more than 29.87% fully vaccinated.

Unfortunately, disparities in the international distribution of vaccines continue to compromise global progress, and only 1.9% of people in low income countries have received at least one dose.

The European Union hit a milestone recently with around 70% of adults in the EU having been fully vaccinated against the coronavirus, which puts the bloc among the world's leaders in vaccinations despite a slow start. Taking children and teenagers (aged 12 and above) into account, more than 60% of the overall E.U. target population has been fully vaccinated compared to just 44% in the United States. It is important to note however that disparities remain between EU countries with the Eastern countries being quite behind: for example, in Bulgaria only 20% of the population of adults have been vaccinated with the biggest challenge being disinformation, poor trust in institutions and a lack of a robust communication strategy.

Vaccination coverage has reached 55% in South America which is now leading North America. In Africa, the share of people having been inoculated remains quite small (5.6%). (figure 2).

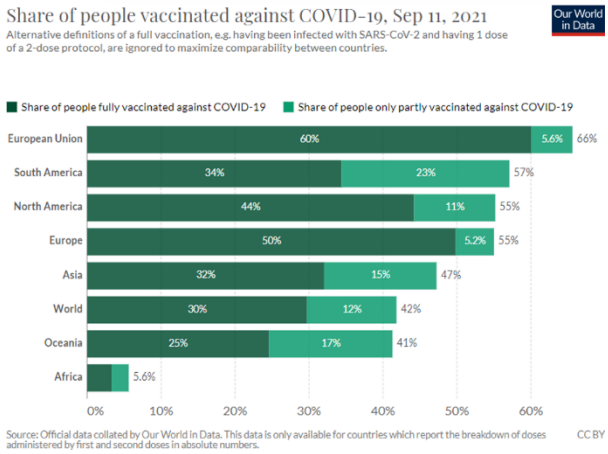

Figure 2: Our World in Data, Share of people who have been partially and fully vaccinated (1).

Tracking SARS-CoV-2 variants and their implications

Some Context: What is a variant?

Before diving into the subject, it's important to understand why viruses mutate in the first place.

To infect someone, a virus takes over a host cell and uses it to replicate itself. Sometimes during the replication process, mutations are made. A virus with one or more mutations is referred to as a variant. Most of the time, variants do not affect a virus's physical structure, and in those instances, they eventually disappear. However, there are certain cases when a mutation impacts part of a virus's genetic makeup that does change its behaviour.

According to the U.S Centers for Disease Control (CDC) a change in behaviour can alter: the rate of transmission, deadliness and the ability to potentially infect someone with natural or vaccine-induced immunity.

Now, what do we know about SARS-CoV-2 variants?

Genetic variants of SARS-CoV-2 have been emerging and circulating around the world throughout the COVID-19 pandemic. Viral mutations and variants are routinely monitored worldwide through sequence-based surveillance, laboratory studies and epidemiological investigations.

The WHO (followed by Health Agencies around the world) developed a Variant Classification scheme that defines three classes of SARS-CoV-2 variants (3):

1. Variant of Interest (VOI)

A variant of Interest is a variant with specific genetic markers that are predicted to affect transmission, diagnostics, therapeutics or immune escape. There is usually evidence that it is the cause of an increased proportion of cases or unique outbreak clusters. However, it has limited prevalence or expansion within populations.

There are currently five VOIs that are being monitored by the WHO: eta, iota, kappa, lambda and the latest VOI added to the list which is the MU variant. However, none of these have been classified as a Variant of Concern.

What do we know so far about the MU variant that has recently made the news?

The MU variant was first identified in Colombia in January 2021. It has since been detected in about 40 countries but is thought to currently be responsible for only 0.1% of infections globally (4) Mu has been much more prevalent in Colombia than anywhere else. When looking at coronavirus samples that have been genetically sequenced, 33% of those analysed in Colombia have been mu though no mu samples have been recorded there in the past four weeks which suggests that the variant is no longer circulating in Colombia.

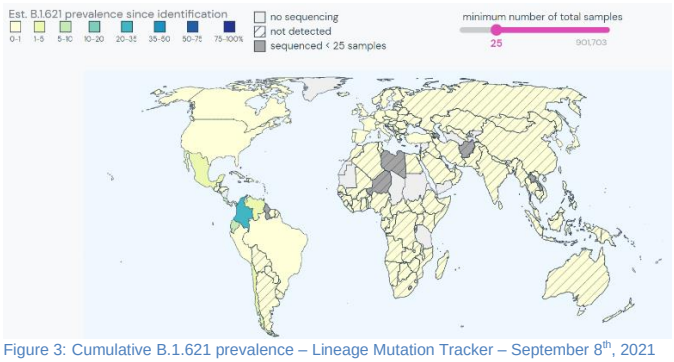

Figure 3: Cumulative B.1.621 prevalence – Lineage Mutation Tracker – September 8th, 2021

However, it looks like the variant is circulating in nearby South American Countries: 9% of samples analysed in Ecuador have been mu, 5% in Costa Rica, 3% in Venezuela and 1% in both Mexico and Chile (See Figure 3 above).

It would also seem that in the total samples sequenced per day in the world, less and less samples have turned out to be Mu over the last month (See Figure 4 Below). Indeed, it would seem that the circulation of the Mu of variant is decreasing globally.

Figure 4: Average daily B.1.621 prevalence globally– Lineage Mutation Tracker – September 8th, 2021

To those asking, how dangerous is the Mu variant? The key questions that you rather ask are:

- Is the Mu variant more transmissible than the currently dominant variant Delta?
- Can the Mu variant cause more severe disease?

- Can the Mu variant evade pre-existing immunity? (i.e. from vaccination against COVID-19)

To date, we only have limiting snapshots of answers to these questions. It is still thus unknown whether or not the Mu's mutations will translate into an increased infection and disease, hence the need for further analysis and studies on the subject matter.

So, what does this all mean?

Well, when a variant is designated of interest, the WHO carries out a comparative analysis of the characteristics of the new variant, assessing how it compares to others that are also being monitored by asking its member states to gather information on the variant's incidence and effects. This is currently underway.

To be honest, it is a numbers game. Every time the virus reproduces inside someone, there's a chance of it mutating and a new variant emerging. It's a random process, a bit like rolling dice. The more you roll, the greater the chance of new variants appearing. **The main way to stop variants is global vaccination**.

2. Variant of Concern (VOC)

A variant for which there is evidence of an increase in transmissibility, more severe disease (e.g., increased hospitalizations or deaths), significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures. There are currently four variants of concern listed in the table below, the latest being the Delta variant which is actually the most dominant variant in the world (Figure 5 below developed by International SOS):

Indicators	Variants			
	ALPHA – B.1.1.7 20I/S:501Y.V1 Identified in UK	BETA – B.1.351 20H/S:501Y.V2 Identified in SA	GAMMA – P.1 20J/S:501Y.V3 Identified in BZ	DELTA – B.1.617.2 21A/S:478K Identified in India
Increase in average effective reproduction R (transmission)	+29%	+25%	+38%	+97%
Ability to escape the immune system ?	NO	++++	++	Risk of reinfection+++
Efficacy of vaccines	YES	YES	AFTER TWO DOSES?	AFTER TWO DOSES!

3. Variant of High Consequence (VHC)

Finally, the third and last classification scheme is the variant of High Consequence. A variant of high consequence has clear evidence that prevention measures or medical countermeasures (MCMs) have significantly reduced effectiveness relative to previously circulating variants. A variant of high consequence would require notification to WHO under the International Health Regulations, reporting to CDC, an announcement of strategies to prevent or contain transmission, and recommendations to update treatments and vaccines. **Currently, there are no SARS-CoV-2 variants that rise to the level of high consequence.**

News and literature updates

Breakthrough cases: infections after vaccination against COVID-19

A recent study published (5) earlier this month by the Lancet examined risk factors and disease profile of post-vaccination SARS-Cov-2 infection in UK users of the COVID Symptom Study application. Even though COVID-19 vaccines show excellent efficacy in clinical trials and effectiveness in real-world data, some people still become infection with the virus after vaccination. The study aimed at identifying risk factors for post-vaccination COVID-19 infection and describe the characteristics of post-vaccination illness.

This is the first observational study to investigate the characteristics of SARS-CoV-2 infection after first and second COVID-19 vaccinations. Vaccination compared to no vaccination was found to be associated with reduced odds of hospitalisation or reduced odds of having more than 5 symptoms in the first week of illness following the first or second dose, and reduced odds of long-duration (>28 days) symptoms following the second dose. It would appear that almost all symptoms were reported less frequently in infected vaccinated than in infected unvaccinated individuals.

So, what was found to be associated with increased risk of infection post vaccination? Frailty in older adults (60 years and above) as well as comorbidities such as obesity.

The study concludes that "some individuals still become infected with COVID-19 after vaccination, but data suggests that frail, older adults and those living in more deprived areas are at increased risk".

The study also found that most infected vaccinated individuals are asymptomatic, this. **What does this imply for your organisation? This puts forward the relevance of post-vaccination policies and highlights the need to continue putting in place for the moment protective measures for those at risk of post-vaccination infection such as physical distancing, face covering etc.**

Have you heard? Mosquito-borne dengue is back in India thanks to COVID-19

Last week, in Firozabad India, a team of the National Centre for Disease Control (NCDC) identified a dengue outbreak in the district. On the 13th of September, 12 000 people are bedridden with a viral fever and 114 people have died, including 88 children (6). The deaths have continued despite fogging and door-to-door surveys to drain out stagnant water. The authorities have launched a campaign to destroy mosquito breeding grounds. Just as during the previous COVID-19 wave that hit India a couple months back, government hospitals are scrambling to arrange beds. Residents are scrambling to find treatment as prices in private hospitals have skyrocketed.

This current outbreak is the **worst outbreak that Uttar Pradash's known in years** and is a **direct effect of the COVID-19 pandemic** as it has halted mosquito elimination drives in much of India and many patients have avoided seeking care out of fear of getting infected with COVID-19.

Additional information

Go to the International SOS Pandemic site to get the latest newest data and information on the Covid-19 pandemic: COVID-19 (internationalsos.com)

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