

**EPHI, NATIONAL DATA MANAGEMENT CENTER FOR HEALTH (NDMC):- QUICK UPDATE ON COVID-19, 058<sup>th</sup>**

**This update summarizes:**

- ***ETHIOPIA'S COVID-19 SITUATION UPDATE***
- ***GLOBAL AND REGIONAL BURDEN OF COVID-19***
- ***THE ANALYSIS OF GROUND FACTS AND COUNTRY REPORTS ABOUT COVID-19 DEATHS***
- ***ORGAN SPECIFIC LONG TERM COVID-19 MANIFESTATIONS***
- ***EFFECT OF SARS-COV-2 INFECTION TO HUMAN PANCREATIC 1  $\beta$ -CELLS***
- ***THE COVID-19 VACCINE MISINFORMATION AND DISINFORMATION***

**ETHIOPIA'S COVID-19 SITUATION UPDATES.**

- Since the last brief (May 13 April 2021), 3,230 new confirmed corona virus disease 2019 (COVID-19) cases and 100 new deaths have been reported nationally. To date, a total of 267597 COVID-19 cases and 4038 related deaths (case fatality rate (CFR): 1.51) have been reported from 9 regions and 2 city administrations in the country. Compared to the cases and deaths reported a week ago, the national cumulative case increment remained stable while the deaths showed increment at a rate of 2%.
- There are 41,521 active cases currently, of which 524 (1.31%) of them are critical. So far 222,560 cases have recovered from COVID-19, out of which 7,752 recoveries were over the last one week period which increased by 3% compared to the last week (Fig 1).

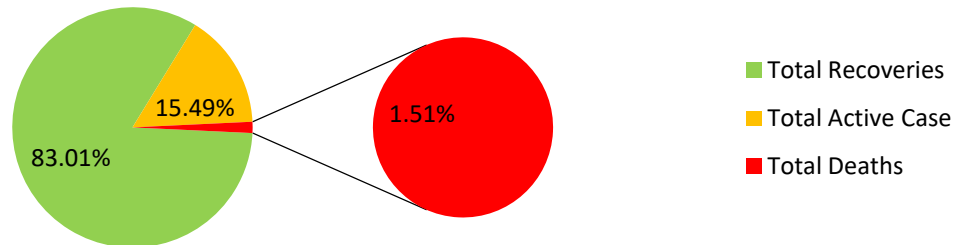


Fig 1: Proportions of active cases, recoveries and death as of May 20, 2021.

- The total number of tests done to date is 2,666,416. Among 31,742 laboratory samples tested over the last one week duration, 3,230 of them tested positive for COVID-19, yielding a positivity rate of 10.2%.

### **Case Management and Infection Prevention Control (Ipc).**

- This week, May 13- May 20, 2021, there are 7732 newly recovered cases bringing the total number of COVID-19 recovered cases to 222, 560.
- There are 524 patients in severe condition as of May 20, 2021 and all the other patients are on medical care in stable condition.

### **Home Based Isolation and Care (HBIC).**

Since Home Based Isolation and Care (HBIC) is started in Ethiopia:

- A total 181, 591 COVID-19 confirmed cases are followed in the HBIC as of May 20, 2021.
- 168,349 of them have recovered in the HBIC as of May 20, 2021.
- 14,461 cases are currently on HBIC.
- 32 COVID-19 related deaths have occurred in the HBIC.
- 2094 cases have been transferred from treatment centers to HBIC.
- 843 cases have been transferred from HBIC to treatment centers.

### **EPHI and FMOH COVID 19 response highlights of the week /trainings and supply.**

- There is on-going distribution of PPE, Viral Transport Media (VTM), swabs, pharmaceuticals and other medical supplies to isolation and treatment centers.

### **References**

1. *Public Health Emergency Operations Centers (PHEOC), Ethiopia.*
2. [https://twitter.com/lia\\_tadesse](https://twitter.com/lia_tadesse).
3. <http://www.covid19.et/covid-19/>.
4. *EPHI's PHEM daily COVID-19 SITREP report.*

### **GLOBAL AND REGIONAL BURDEN OF COVID-19.**

- Globally the total number of cases is extended to 165,352,128 as of May 20, 2021. A total of 145,622,019 cases recovered and 3,426,411 people died since the beginning of the outbreak. Globally, in a week time, from May 13 to 20, 2021, COVID-19 cases increased by 2.6% and deaths by 2.4%. In the past week, Asia is the leading in terms of cases followed by Europe

and North America. Europe continued to be become a lead in terms of the number of deaths followed by North and South America (Table 1).

Table 1. Global cases and deaths reported as of May, 2021.

	<b>COVID cases</b>	<b>Weekly % change</b>	<b>deaths</b>	<b>Weekly % change</b>
Global	165,352,128	2.6	3,426,411	2.4
Europe	46,294,181	1.1	1,054,859	1.2
Asia	39,310,994	0.8	880,950	0.7
North America	47,896,643	5.8	625,851	6.7
South America	27,030,739	2.9	736,221	3.0
Africa	4,752,251	1.1	127,287	1.3
Oceania	66,599	2.2	1,228	0.8

- USA has recorded the highest number of cases 0.6% (33,586,136 to 33,785,775 cases) and 0.6% (597,785 to 601,567 deaths) that accounts 20.4% of the total global cases and carried 17.6% of global deaths as of May 20, 2021, showed declining trend.
- India is the 2<sup>nd</sup> highest in terms of cases in a week time by 8.7% (23,703,665 to 25,771,405) and deaths by 11.1% (258,351 to 287,156).
- Brazil became the 2<sup>3d</sup> rand worldwide with increased number of cases in a week time by 2.4% (15,361,686 to 15,735,485) and deaths by 2.6% (428,256 to 439,379).
- Turkey ranked 4<sup>th</sup> globally with 5,151,038 cases and 45,419 deaths.
- Russia ranked 5<sup>th</sup> globally with 4,965,676 cases and 116,965 deaths.
- The line share of Africa to the global COVID-19 pandemic was 2.9% and 3.7% of the global cases and deaths as of May 20). The cases in the continent have increased by 1.1% in a week time (4,699,194 to 4,752,251 cases). Similarly, the total number of deaths in Africa has increased from 125,704 to 127,287 showing 1.3%. Total recoveries stand at 4,282,157.
- South Africa is the leading in the continent with 1,617,840 cases and 55,340 deaths. Morocco (515,758 cases, 9,106 deaths), Tunisia (328,528 cases, 11,971 deaths), Ethiopia (267,597 cases, 4,038 deaths) and Egypt (248,078 cases, 14,441 deaths) are the most four leading countries next to South Africa in reporting COVID-19 cases in Africa. (See table below).

Table 2: Cases and deaths reported in selected African countries as of May, 2021.

Africa	May 13		May 20	
	Cases	Deaths	Cases	Deaths
South Africa	1,602,031	54,968	1,617,840	55,340
Morocco	514,432	9,088	515,758	9,106
Tunisia	324,103	11,637	328,528	11,971
Ethiopia	264,367	3,938	267,597	4,038
Egypt	240,927	14,091	248,078	14,441

- In East African, COVID-19 cases and deaths have shown fast progress. As of March, Ethiopia and Kenya continued to be the major drivers of the COVID 19 burden in east African countries.

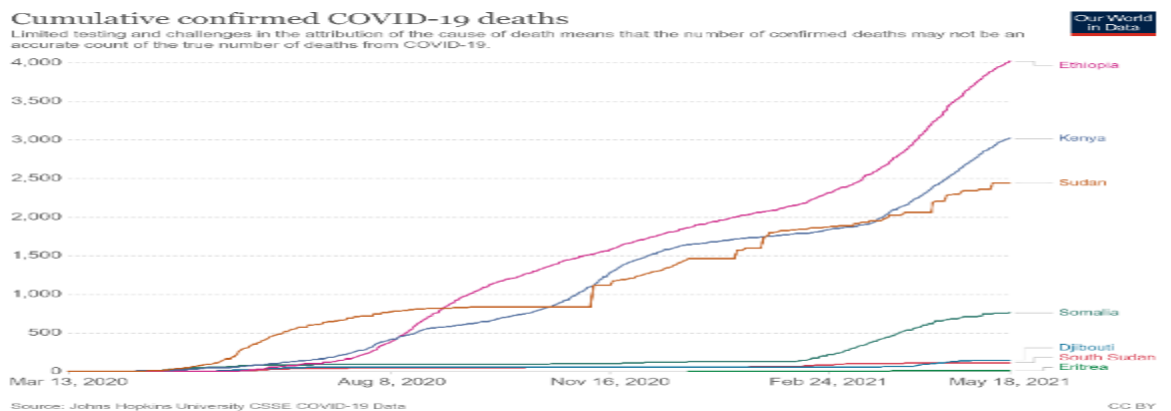
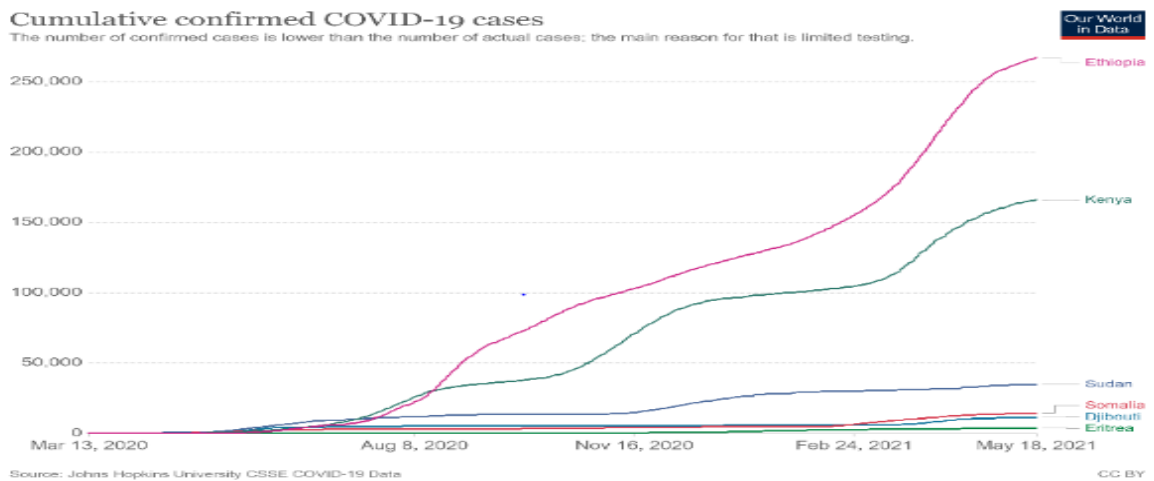


Figure2: The burden of COVID-19 in Eastern African countries.

**References**

1. John Hopkins, Corona Virus Resources <https://coronavirus.jhu.edu/map.html>

2. *Worldometer, Corona Virus* <https://www.worldometers.info/coronavirus/>
3. *Africa CDC: COVID 19 Surveillance;* <https://au.int/covid19>
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## THE ANALYSIS OF GROUND FACTS AND COUNTRY REPORTS ABOUT COVID-19 DEATHS

- Globally, COVID-19 has caused approximately 6.9 million deaths, more than double what official numbers show, according to a new analysis by the Institute for Health Metrics and Evaluation (IHME) at the University Of Washington School Of Medicine. IHME found that COVID-19 deaths are significantly underreported in almost every country. The updated analysis shows that the United States has had more COVID-19 deaths to-date than any other country, a total of more than 905,000. By region, Latin America and the Caribbean and Central Europe, Eastern Europe and Central Asia were hardest hit in terms of total deaths. This figure only includes deaths caused directly by the SARS-CoV-2 virus, not deaths caused by the pandemic’s disruption to health care systems and communities.
  - “As terrible as the COVID-19 pandemic appears, this analysis shows that the actual toll is significantly worse,” said Dr. Chris Murray, IHME’s director. “Understanding the true number of COVID-19 deaths not only helps us appreciate the magnitude of this global crisis, but also provides valuable information to policymakers developing response and recovery plans.”

Table 3. The 20 countries with the highest number of total COVID-19 deaths, March 2020–May 2021.

Country	Total COVID-19 deaths	Reported COVID-19 deaths
United States of America	905,289	574,043
India	654,395	221,181
Mexico	617,127	217,694
Brazil	595,903	408,680
Russian Federation	593,610	109,334
United Kingdom	209,661	150,519
Italy	175,832	121,257
Iran	174,177	72,906
Egypt	170,041	13,529
South Africa	160,452	54,390
Poland	149,855	68,237
Peru	147,765	62,739
Ukraine	138,507	46,737
France	132,680	105,506
Spain	123,786	85,365
Germany	120,729	83,256
Indonesia	115,743	45,938
Japan	108,320	10,390
Romania	87,649	28,382
Kazakhstan	81,696	5,620

- Many deaths from COVID-19 go unreported because countries only report deaths that occur in hospitals or in patients with a confirmed infection. In many places, weak health reporting systems and low access to health care magnify this challenge.
- IHME’s analysis found that the largest number of unreported deaths occurred in countries that have had the largest epidemics to-date. However, some countries with relatively smaller epidemics saw a large increase in the death rate when accounting for unreported deaths. This analysis shows that they may be at greater risk for a wider epidemic than previously thought.
- “Many countries have devoted exceptional effort to measuring the pandemic’s toll, but our analysis shows how difficult it is to accurately track a new and rapidly spreading infectious disease,” Murray said. “We hope that today’s report will encourage governments to identify and address gaps in their COVID-19 mortality reporting, so that they can more accurately direct pandemic resources.” Moving forward, IHME’s COVID-19 modeling, which forecasts the potential course of the pandemic over the next several months, will be based on these estimates of total COVID-19 deaths. IHME’s modeling is updated weekly and can be accessed at [covid19.healthdata.org](https://covid19.healthdata.org).

### **Cumulative total COVID-19 death rate by May 3, 2021**

#### Methodology

- These estimates are based on IHME’s long-standing methodology for measuring the burden of diseases on a global scale. Since 1990, the Global Burden of Disease study has measured the total human cost of diseases.
- IHME estimated total COVID-19 deaths by comparing anticipated deaths from all causes based on pre-pandemic trends with the actual number of all-cause deaths during the pandemic. This “excess mortality” figure was then adjusted to remove deaths indirectly attributable to the pandemic (for example, due to people with non-COVID conditions avoiding health care facilities) as well as deaths averted by the pandemic (for example, declines in traffic deaths due to lower mobility).

### **Generating predictions of total covid-19 mortality for all locations**

- Using the same model described in the previous section that relates the ratio of excess mortality to reported COVID-19 mortality as a function of the IDR and location-specific intercept, we predict the ratio of total COVID-19 mortality to reported COVID-19 mortality

for all locations between March 2020 and May 2021. These predictions are a function of the cumulative IDR and location fixed effects and capture, through the Bayesian cascade, location-specific variation in the ratios.

- Figure3: shows a map of the predicted ratio of total COVID-19 deaths to reported COVID-19 deaths for March 2020 to May 2021. Ratios range from very high levels in many Eastern European and Central Asian countries to ratios that are much closer to 1 in several high-income countries. Notably, for most countries in sub-Saharan Africa, which have to date reported relatively low numbers of COVID-19 deaths, we are estimating that the ratios range from about 1.6 to 4.1, suggesting that the total number of COVID-19 deaths in the region is several times higher than previously thought. Similarly, India, the country with the most recent severe wave of cases and deaths, is estimated to have an overall ratio of 2.97, which implies that the total COVID-19 death toll to date is much higher than what has been reported.

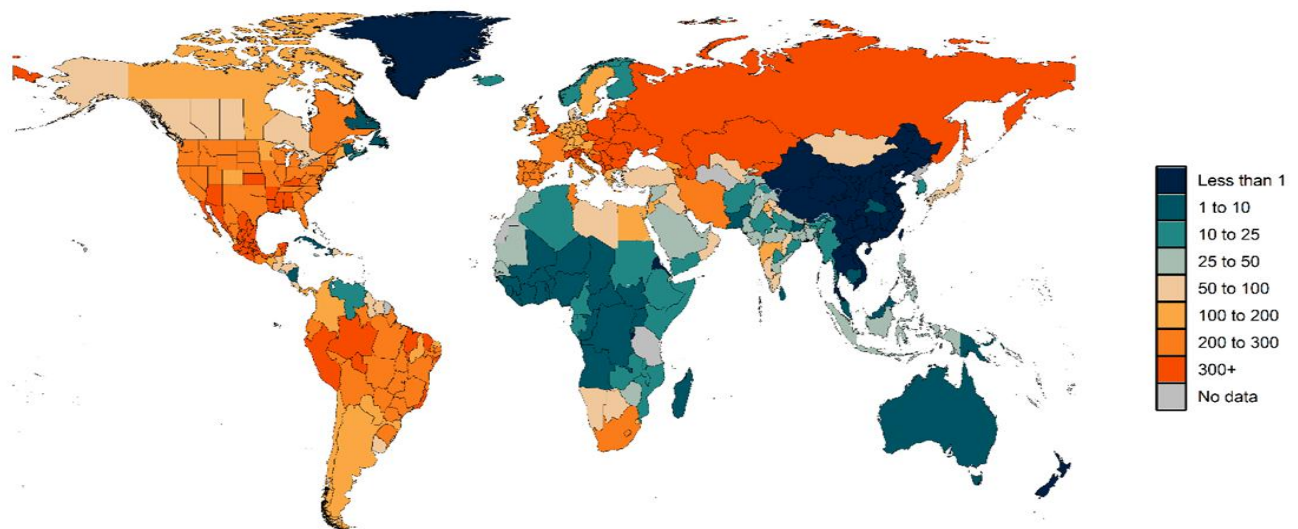


Figure 3: Ratios of total COVID-19 deaths to reported COVID-19 deaths.

## Reference

1. *Publication date: May 6, 2021, New analysis from IHME highlights the true toll of the pandemic.*

## ORGAN SPECIFIC LONG TERM COVID-19 MANIFESTATIONS

- COVID-19 is a multisystem disease with long term consequences. Long term sequelae from COVID-19 may involve the lungs, cardiovascular system, nervous system, blood and immune system, gastrointestinal system and liver, eyes, skin, musculoskeletal and endocrine systems with a negative impact on mental health, well-being and quality of life.

### Cardiovascular System

- Among COVID-19 survivors, 5%-29% complain of chest pain, dyspnoea, or palpitations post-recovery, even 6 months after the acute infection.
- Late cardiac magnetic resonance (CMR) findings indicative of subacute myocarditis have been also reported in COVID-19 patients. After 24-71 days of recovery, CMR studies suggest myocardial inflammation or scarring in 15% to 60% of patients, even those who were asymptomatic or experienced only mild symptoms of acute disease.
- Late cardiovascular complications were found in 80% of children with multisystem inflammatory syndrome associated with SARS-CoV-2 infection
- Existing evidence suggests an increased rate of major adverse cardiovascular events in recovered COVID-19 patients after a median follow-up of 140 days. Myocardial injury was detected in 30% of patients at 3-month follow-up after COVID-19 infection. Moreover, postural orthostatic tachycardia syndrome has been observed in recovered patients who still experience significant disability even 6-8 months after acute infection.

### Central nervous system (CNS)

- The most common self-reported neurologic symptoms post COVID-19 include headache, vertigo/dizziness, anosmia/ageusia/hypogeusia/dysgeusia, insomnia, memory impairment and inability to concentrate.
- Less common late manifestations include ischemic stroke, intracranial haemorrhage, encephalitis, encephalopathy, seizures, peripheral neuropathies and autoimmune acute demyelinating encephalomyelitis.
- A retrospective cohort study among 236,379 patients in the USA showed that the estimated incidence of a neurological or psychiatric diagnosis in the following 6 months post COVID-19 was approximately 33% with 12% of patients diagnosed for the first time with neurological or psychiatric disorders. The estimated incidence was even higher, roughly 46%, for severely ill patients admitted to ICU



### **Hematopoietic system**

- The cumulative incidence of thrombosis and haemorrhage at day 30 post discharge were reported to be 2.5% and 3.7% respectively in the USA

### **Endocrine and Reproductive System**

- Direct invasion of SARS-CoV-2 to the pancreas, via ACE2 which is highly expressed in pancreatic tissue, contributes to pancreatic damage and hyperglycaemia, which can be further exacerbated by corticosteroids. Long-term follow-up is needed to evaluate for late-onset DM in patients without such history who developed hyperglycaemia in the acute phase of COVID-19.
- The long-term effects of SARS-CoV-2 on the reproductive system are largely unknown. Ovarian function could be affected by autoimmune disorders, whereas testes express ACE2 and can serve as a deposit for SARS-CoV-2

### **Reference**

1. Eleni K, Maria G, Rachel S H, et.al. *Epidemiology and organ specific sequelae of post-acute COVID19: A Narrative Review, Journal of Infection, 14 May 2021, <https://www.sciencedirect.com/science/article/pii/S0163445321002474>.*

### **EFFECT OF SARS-COV-2 INFECTION TO HUMAN PANCREATIC 1 $\beta$ -CELLS**

- Currently, coronavirus disease 2019 (COVID-19) is an ongoing pandemic infection caused by the positive-sense RNA virus, Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2).
- The initial findings related to SARS-COV-2 was focused on the effect on respiratory and cardiovascular tract manifestations.
- Recently other organ dysfunctions have been observed, mainly in the kidney, pancreas, intestine, reproductive, and olfactory epithelia.
- In addition clinical studies suggested a significant increase in new-onset hyperglycemia, diabetic ketoacidosis (DKA), and diabetes in patients with COVID-19
- Previous studies showed that patients with pre-existing diabetes are at higher risk of developing severe COVID-19. The reason was not clear for the development of severe severe COVID-19. The reason of this showed in recent studies that:-

- ✓ The SARS-CoV-2 receptor, ACE2, and related entry factors transmembrane serine protease 2 (TMPRSS2, neuropilin 1 (NRP1), and TRFC (transferrin receptor) are expressed in  $\beta$ -cells, with selectively high expression of NRP1.
- ✓ SARS-CoV-2 infects human pancreatic  $\beta$ -cells in patients who succumbed to COVID-19 and selectively infects human islet  $\beta$ -cells *in vitro*.
- ✓ SARS-CoV-2 infection attenuates pancreatic insulin levels and secretion and induces  $\beta$ -cell apoptosis, each rescued by NRP1 inhibition.
- ✓ Phospho-proteomic pathway analysis of infected islets indicates apoptotic  $\beta$ -cell signaling, similar to that observed in Type 1 diabetes (T1D). this result SARS-CoV-2 can directly induce  $\beta$ -cell killing; causing cell death and reduced insulin secretion, exacerbating diabetes in patients.
- ✓ Generally Diabetic patients are at risk for severe COVID-19, in addition, the virus may further damage insulin-secreting  $\beta$ -cells.
- ❖ Therefore it is recommended to give attention to the follow-up and evaluation of patients with COVID-19 related to their serum glucose level.
- ❖ Another recommendation is to emphasize the prevention of SARS-CoV-2 infection for all populations especially for diabetic patients by using different modalities for instance face mask utilization and also priorities should be given during vaccination.

## Reference

1. [https://www.reddit.com/r/COVID19/?f=flair\\_name%3A%22Academic%20Report%20](https://www.reddit.com/r/COVID19/?f=flair_name%3A%22Academic%20Report%20)
2. <https://doi.org/10.1016/j.cmet.2021.05.013>

## THE COVID-19 VACCINE MISINFORMATION AND DISINFORMATION

- Misinformation and disinformation regarding COVID-19 and vaccination against it may be contributing to vaccine hesitancy. Social media outlets have reportedly made efforts to limit false information, yet untruths related to COVID-19 persist viral online.
- The major social media companies are facing wide criticism for failing to deal with vaccine misinformation on their platforms. In response, the likes of Facebook and Twitter and Google (which owns YouTube) have stated that they will take more action against false and misleading information about covid-19 vaccines.

- This initiative is undeniably positive, but these policy updates will not cover many types of posts that have the potential to lead to vaccine hesitancy.
- This assessment provides a brief basic coverage to assist public healthcare providers and activists in correcting a growing body of misinformation surrounding COVID-19 vaccines. To date, just over hundreds of millions COVID-19 immunizations have been administered worldwide.
- In late 2020, up to one-third or more of people surveyed both globally indicated they might refuse the first COVID-19 vaccines when released through emergency use authorization. Their concerns included questions about vaccine efficacy, potential side effects, or speeding through regulatory approval processes.
- Even among healthcare workers, high rates of COVID-19 vaccine hesitancy were recorded. Another issue was the politicization of COVID-19 vaccines, or suspicions circulating among different community linked to poverty, racism and population control.
- Currently, organizations dedicated to antivaccine activities exploit COVID-19 vaccine hesitancy to fuel discord or discredit vaccine efficacy and safety. Ultimately, halting transmission may require at least 70% to 80% vaccine coverage, which is being compromised by the misinformation.
- For years, a central but false tenet of the antivaccine lobby has been that vaccines are not adequately tested for safety. Internationally, phase 3 trials were well-powered studies of 30,000 to 60,000 human volunteers, equivalent to other large vaccine clinical trials required to license vaccines . An “average vaccine” requires a several-years timeline beginning with the preclinical phase , whereas COVID-19 vaccine programs completed clinical testing leading to emergency use authorization in less than a year.
- The truth is that the research on COVID-19 vaccines did not first begin just in 2020, but instead built on a decade of previous research on coronaviruses, leading to proof-of-concept for the spike protein as a lead vaccine target. Therefore, when Chinese scientists placed the SARS-2 coronavirus genomic sequence on preprint servers in January 2020, it was possible to quickly adapt previous vaccine concepts to this new virus pathogen. A second accelerant was the use of new mRNA and adenovirus technologies allowing a fast turnaround time from elucidating the genomic sequence to making early prototype vaccines.

- Moreover, the speed component was building factories for vaccine manufacturing in parallel with clinical testing. Known as manufacturing “at risk”, this is in contrast to traditional approaches in which vaccines might typically go through full approval before embarking on manufacture. Finally, the first COVID-19 vaccines are already being released through emergency use authorization mechanisms due to the lengthy time often required for formal approval of a biologics license application (BLA). American, European, and British national regulatory authorities undertook extensive measures to approximate full BLA approval both in terms of adequately assessing COVID-19 vaccines for efficacy and safety, and inspection of vaccine manufacturing facilities. Ultimately, the COVID-19 vaccines are expected to complete the full licensure process.

## References

1. *Basch, C. H., Meleo-Erwin, Z., Fera, J., Jaime, C., & Basch, C. E. (2021). A global pandemic in the time of viral memes: COVID-19 vaccine misinformation and disinformation on TikTok. Human Vaccines & Immunotherapeutics, 1-5.*
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3. *Kreps, S., Dasgupta, N., Brownstein, J. S., Hswen, Y., & Kriner, D. L. (2021). Public attitudes toward COVID-19 vaccination: The role of vaccine attributes, incentives, and misinformation. npj Vaccines, 6(1), 1-7.*