Acute malnutrition in 2021

Over 10 million children to suffer from acute malnutrition in 2021: UNICEF
Severe acute malnutrition is the most extreme and visible form of under
nutrition (The Tribune: 20201231)
https://www.tribuneindia.com/news/health/over-10-million-children-to-suffer-from-acute-
malnutrition-in-2021-unicef-191855

Over 10 million children to suffer from acute malnutrition in 2021: Unicef
Photo for representation only. Source: iStock.

More than 10 million children in the Democratic Republic of the Congo (DRC), northeast
Nigeria, the Central Sahel, South Sudan and Yemen will suffer from acute malnutrition in 2021,
the UN Children's Fund (Unicef) said.

All of these countries and regions are experiencing "dire humanitarian crises", while also
grappling with intensifying food insecurity, the coronavirus pandemic and, with the exception
of the Central Sahel, "a looming famine", the Unicef said in a statement on Wednesday.

"For countries reeling from the consequences of conflicts, disasters and climate change, Covid-
19 has turned a nutrition crisis into an imminent catastrophe," Unicef Executive Director
Henrietta Fore said.

"Families already struggling to feed their children and themselves are now on the brink of
famine. We can't let them be the forgotten victims of 2020," she added.

Severe acute malnutrition is the most extreme and visible form of under nutrition.

Children with severe acute malnutrition have very low weight for their height and severe
muscle wasting.

It is a major cause of death in children under five, and its prevention and treatment are critical
to child survival and development.
Through 2020, in spite of Covid-19 challenges, Unicef and its partners continued to deliver lifesaving assistance to the most vulnerable children and their families in the hardest to reach areas through adjustments on the existing programs to maintain and increase access.

With the situation feared to worsen in 2021, Unicef called on humanitarian actors on the ground in these countries as well as the international community to urgently expand access to and support for nutrition, health and water and sanitation services for children and families.

Unicef has appealed for more than $1 billion to support its lifesaving nutrition programs for children in countries affected by humanitarian crises over 2021. — IANS

Oxford COVID-19 vaccine

Oxford COVID-19 vaccine may become the first to get Indian regulator’s nod for emergency use (The Tribune: 20201231)


Indian regulator waiting for UK to give emergency authorisation of ‘Covishield’

Oxford COVID-19 vaccine may become the first to get Indian regulator’s nod for emergency use

With preparations underway for a possible vaccine-rollout by January, the Indian drug regulator is looking at the UK, which sources believe may give its nod to the Oxford COVID-19 vaccine next week, before deciding on giving emergency use authorisation to the Serum Institute that is manufacturing the shots here.

Once the UK drug regulator gives its approval to the Oxford vaccine, the expert committee on COVID-19 at the CDSCO will hold its meeting and thoroughly review the safety and immunogenicity data from the clinical evaluations conducted abroad and in India before granting any emergency authorisation for the vaccine here, official sources said.

The process of granting emergency use approval for Bharat Biotech’s COVID-19 vaccine ‘Covaxin’ may take time as its phase 3 trials are still underway, while Pfizer is yet to make a presentation.

“Going by this, Oxford vaccine ‘Covishield’ is likely to be the first to be rolled out in India,” a source said.

Serum Institute of India (SII) last week also had submitted some additional data required by the Drug Controller General of India (DCGI), the sources said.
Amid fears about the mutated variant of SARS-CoV-2 detected in the UK, government officials recently said that it will have no impact on the potential of emerging vaccines that are being developed in India and other countries.

Bharat Biotech, Serum Institute of India (SII) and Pfizer had applied to the Drugs Controller General of India (DCGI) seeking emergency use authorisation for their COVID-19 vaccines early this month.

The subject expert committee (SEC) on COVID-19 of the Central Drugs Standard Control Organisation (CDSCO) on December 9 had sought additional safety and efficacy data for COVID-19 vaccines of SII and Bharat Biotech after deliberating upon their applications.

The application by the Indian arm of US pharmaceutical firm Pfizer was not taken up for deliberation as the company had sought more time for making a presentation before the committee.

The Pfizer vaccine has already been approved by several countries including the UK, the US, and Bahrain.

While considering SII’s application, the SEC had recommended that the firm should submit an updated safety data of phase 2 and 3 clinical trials in the country, immunogenicity data from the clinical trial in the UK and India, along with the outcome of the assessment of the UK Medicines and Healthcare products Regulatory Agency (MHRA) for grant of EUA.

As for Hyderabad-based Bharat Biotech, “after detailed deliberation, the committee recommended that the firm should present the safety and efficacy data from the ongoing phase 3 clinical trial in the country for further consideration”, the SEC had said.

The Pune-based SII, the world’s largest vaccine manufacturer, has made a collaboration with the University of Oxford and AstraZeneca to manufacture the vaccine.

The SII has already manufactured 40 million doses of the vaccine, under the at-risk manufacturing and stockpiling licence from the DCGI, officials recently had said. --- PTI

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**Visualising breath**

**Scientists develop new method for visualising breath to evaluate face masks**

The novel system images temperature differences between exhaled breath and the surrounding air to estimate how far the breath travels before being dispersed into the surrounding air(The Tribune: 20201231)


Scientists develop new method for visualising breath to evaluate face masks
A new method for visualising the air exhaled while someone is speaking or singing could shed light on how diseases such as COVID-19 spread, and help evaluate the effectiveness of face masks, according to a study.

The novel system, described in the journal Applied Optics, images temperature differences between exhaled breath and the surrounding air to estimate how far the breath travels before being dispersed into the surrounding air.

According to study author Thomas Moore from Rollins College in the US, the new technique can also be used to study the details of how breath flows from the mouth while speaking or singing, which could be useful for music instruction and speech therapy.

Originally developed to study the flow of air through musical instruments such as organ pipes, Moore said he began imaging the breath of people speaking and singing.

“I realised that by scaling up my existing system, I could likely determine how far the breath extends and how effective masks may be in limiting the extent of the breath,” he added.

While most existing approaches used to image exhaled breath require expensive equipment and can image only a relatively small area, Moore said the new design used common commercially available optical components to overcome these limitations.

The new technique, Moore explained, was based on the fact that the speed of light changed depending on the temperature of air it passed through.

“As breath is warmer than the surrounding air, the light transmitted through the exhaled air arrives at the camera slightly sooner than light that did not pass through it,” which he said “can be used to create images of the air”.

According to Moore, the technique can reveal new information that may affect how we approach distancing and masking requirements, especially when outdoors.

“The pandemic has caused an economic catastrophe for many musicians, and any information we can give them that will help them get back to work is important,” he added. PTI

**Coronavirus situation in India**

**Easing off: On coronavirus situation in India (The Hindu: 20201231)**

https://www.thehindu.com/opinion/editorial/easing-off-on-coronavirus-situation-in-india/article33439727.ece

India’s COVID-19 case and fatality rates have fallen from the peaks reached in September. As 2020 draws to a close, Indians will look forward to the new year with wariness and hope after suffering one of the worst years in history, health-wise (nearly 1,48,000 registered deaths
due to COVID-19) and economically (loss of livelihoods). The pandemic continues to rage —
daily infections and deaths are scaling fresh peaks in Europe, the U.S. is closing in on 20 million
confirmed cases and 3.4 lakh deaths and in some countries in Latin America, cases have
remained high and are rising. In contrast, while India still registers the highest number of daily
infections and deaths in Asia, the daily rate has come down significantly to a seven day rolling
average of less than 24,000 cases and 250 deaths between December 20-26, from the peak of
close to a lakh and more than a 1,000 deaths a day in mid-September. These are much lower
numbers compared to the U.S. and comparably fewer than those registered in the larger
countries in Europe and Latin America. India still tests a middling number: 732 tests and 15.8
confirmed cases per million people, compared to the rest of the world. The testing numbers
have fallen slightly in the past month, but the significant drop in recorded deaths suggests that,
rather than experiencing a new peak in daily infections and deaths, India still remains in the
“down phase” since the September peak. That the case and death curves are headed further
south is a good sign for the health infrastructure.

While no other country barring the U.S. has reached or crossed the per day peak of nearly one
lakh cases that India registered in September, the lower number of cases registered recently
even as the country eased its physical distancing measures and travel restrictions and went
through a festive season might come as a surprise. But as virologists Jacob John and M.S.
Seshadri have argued, the peaking in September denoted the pandemic’s widespread nature in
urban and semi-urban areas and was reflected even more apparently in the ICMR’s
serosurveys. These serosurveys revealed a much higher number of undetected infections, many
of them asymptomatic, before the September peak. As the virus ravaged the urban centres and
spread to rural areas, the virologists estimated that nearly a third of the population had already
been exposed, indicating that half of the “herd immunity” level required to end the spread had
already been reached by mid-September. This explains why daily case and fatality rates stay
low and also suggests that after India begins its vaccination drive, the epidemic should ease
further and could become endemic. This does not lessen the dangers of local outbreaks and the
complications of the spread of new variants from abroad. The standard safety measures —
mask wearing, hand hygiene, absence of crowding and renewed testing and tracing — must
remain.

Covid Strain (The Asian Age: 20201231)

Ox-AZ vaccine UK

What you need to know about the Ox-AZ vaccine UK authorities approved the Oxford- (Hindustan Times: 20201231)

https://epaper.hindustantimes.com/Home/ArticleView

AstraZeneca vaccine with the two full-dose regimen, which was deemed to be 62% effective according to early data. While it falls short of the 95% efficacy seen by the mRNA vaccines approved till now, it passes the 50% bar set by most regulators. AstraZeneca CEO Pascal Soriot was quoted as saying that his firm had a “winning formula” to rival the efficacy rates of around 95% shown by vaccines developed by Pfizer and Moderna. Below is a look at how the vaccine works and how it fares against others till now.
Covid-19: What you need to know today (Hindustan Times: 20201231)

https://epaper.hindustantimes.com/Home/ArticleView

It’s December 31, the end of the year, and India may be just a day away from approving a vaccine.

The Subject Expert Committee (SEC) of the Central Drugs Standard Control Organisation (CDSCO) reviewed on Wednesday data submitted by Serum Institute of India and Bharat Biotech as sought by it in its last meeting. In that meeting, in response to SII’s emergency use authorisation application for Covishield (the name given by the company to the vaccine developed by AstraZeneca/Oxford that it is manufacturing here), the committee asked for more data on safety and efficacy. SEC also indicated that it would wait for an approval of the AstraZeneca/Oxford vaccine by the UK drug regulator, Medicines and Healthcare products Regulatory Agency (MHRA). The data was submitted last week, and on Wednesday morning, MHRA approved the vaccine (the Phase 3 trials were carried out in the UK and Brazil; Indian phase 3 trials are ongoing, and it is believed that some of the interim findings from that are part of the data submitted by the company).

Bharat Biotech is also believed to have submitted some data although it isn’t clear whether this includes interim findings from its ongoing Phase 3 trials.

SEC has said it will meet again on Friday. It’s possible that an approval for Covishield could come the same day.

This means India could start vaccinating people as early as next week if everything else is in place.

A combination of circumstances and events has made this possible, but no one could have scripted it better – to end what may well be the worst year of this millennium with an inexpensive locally made vaccine which is easy to transport and store is the best of all possible outcomes. The new year will be more about vaccines and vaccination than anything else (even the new strain, which, as expected, has surfaced in more places and people in India). As The Who sang, “Got a feeling ’21, is going to be a good year.”

The UK has said it will start vaccinating people with the AstraZeneca/Oxford shot on Monday. Phase 3 trials have shown the vaccine to be 62% effective when two full doses are administered. That compares unfavourably with the 95% efficacy shown by vaccines from Pfizer and Moderna, but over the weekend, AstraZeneca’s CEO told The Sunday Times that the company has submitted more data to the UK drugs regulator that shows that its efficacy “after two doses, is up there with everybody else”. This data is yet to be published, but 62% efficacy is not all that bad – indeed, if AstraZeneca/Oxford had been the first to declare the results of Phase 3 trials, and put out an efficacy number of 62%, the news would have been met rapturously.
Ravaged by a new mutant strain of Sars-CoV-2 – the seven-day average of daily cases in the country is nearing 40,000; the tally for December 29 was around 53,000 – the UK has taken the brave (and radical) decision of giving one shot of the two two-shot vaccines it has approved (Pfizer/BioNTech and AstraZeneca/Oxford) to as many people as possible, instead of stocking up for scheduled second shots. This could mean an increase in the time between the two shots to as much as 12 weeks, instead of the recommended four. The UK’s decision will affect the efficacy of the vaccines for sure – only detailed studies will show to what extent – but the country’s hand may have been forced by the surge in cases that has already overwhelmed its health system. India may be tempted to follow suit, but given that the seven-day average of daily cases is at a six-month low, the country would do well to stick to its plan of administering two shots of the vaccine to 300 million people in its primary priority group (the deadline to do this is June). Serum Institute expects to increase its capacity to 100 million doses a month by March and 300 million doses by July.

The challenges posed by the pandemic are not over, and 2021 will see more challenges related to what will be the world’s biggest vaccination drive, but a dashboard of vaccinations will be a welcome addition to HT’s Covid-19 database.

**Severe virus attacks**

**New research may explain severe virus attacks on lungs (New Kerala: 20201231)**


In a new study, researchers have describe how different kinds of immune cells, called macrophages, develop in the lungs and which of them may be behind severe lung diseases.

The study, which was published in Immunity, may contribute to future treatments for COVID-19, among other diseases.

The researchers at Karolinska Institute in Sweden said that the structure of the lungs exposes them to viruses and bacteria from both the air and the blood. Macrophages are immune cells that, among other things, protect the lungs from such attacks.

But under certain conditions, lung macrophages can also contribute to severe lung diseases, such as chronic obstructive pulmonary disease (COPD) and COVID-19.

To date, research on the development of human lung macrophages has been limited.

Macrophages can have different origins and develop, among other things, from white blood cells, monocytes, that are divided into different genetically determined main types. In humans, two of these are "classical" CD14+ monocytes and "non-classical" CD16+ monocytes.
In a new study at Karolinska Institute, researchers have used a model to study the development of lung macrophages directly in a living lung. This has been combined with a method to study gene activity in individual cells, RNA sequencing, and thereby discovered how blood monocytes become human lung macrophages.

"In our study, we show that classical monocytes migrate into airways and lung tissue and are converted into macrophages that protect the health and function of the lungs. We have also identified a special kind of monocyte, HLA-DRhi, which is an intermediate immune cell between a blood monocyte and an airway macrophage. These HLA-DRhi monocytes can leave the blood circulation and migrate into the lung tissue," said Tim Willinger, Associate Professor at the Department of Medicine, Huddinge, Karolinska Institute, who led the study.

The non-classical monocytes, however, develop into macrophages in the many blood vessels of the lungs and do not migrate into the lung tissue.

In an infection with the novel coronavirus, SARS-COV-2, which causes COVID-19, researchers believe that protective, anti-inflammatory macrophages are replaced by pro-inflammatory lung macrophages from blood monocytes.

"The existence of these blood monocyte-derived macrophages has been shown in other studies to correlate with how severely ill a person becomes in COVID-19 and how extensive the damage to the lungs is. Patients with severe COVID-19 also have fewer HLA-DRhi monocytes in their blood, probably because they move away from the blood into the lungs," said Tim Willinger.

"Given their important role in rapid inflammatory responses, our results indicate that future treatments should focus on inflammatory macrophages and monocytes to reduce lung damage and mortality from severe COVID-19," added Willinger.

**Blood oxygenation**

**What causes blood oxygenation to drop in many Covid patients? (New Kerala: 20201231)**


The decreased arterial blood oxygen levels in many Covid-19 cases could be caused by infection in carotid bodies by SARS-CoV-2, the virus responsible for the pandemic, says a new study.

Carotid bodies, located on either side of the neck next to the carotid artery, detect the drop in blood oxygen and send signals to the brain to stimulate the respiratory centre.
The new research, detailed in the journal Function, relies on experiments that have revealed a high presence of the enzyme ECA2, the protein the coronavirus uses to infect human cells, in the carotid body.

One of the physiopathological characteristics of Covid-19 that has most baffled the scientific and medical community is what is known as "silent hypoxemia" or "happy hypoxia".

Patients suffering this phenomenon, the causes of which are still unknown, have severe pneumonia with reduced arterial blood oxygen levels -- known as hypoxemia.

Patients with "silent hypoxemia" often suffer a sudden imbalance, reaching a critical state that can be fatal.

In patients with Covid-19, the coronavirus circulates in the blood.

Therefore, in this study researchers from the University of Seville in Spain suggest that infection of the human carotid body by SARS-CoV-2 in the early stages of the disease could alter its ability to detect blood oxygen levels, resulting in an inability to "notice" the drop in oxygen in the arteries.

If this hypothesis, which is currently being tested in new experimental models, is confirmed, this would justify the use of activators of the carotid body independent of the oxygen sensing mechanism as respiratory stimulants in patients with Covid-19.

COVID-19 control policies

New study analyzes most effective COVID-19 control policies (New Kerala: 20201231)


The researchers from the University of Toronto, Rotman School of Management probed about the most effective ways to control the spread of COVID-19 that have been already by the policymakers around the globe.

With the arrival of effective vaccines for the COVID-19 virus, the end of the pandemic is on the horizon but in the short term, the virus continues to spread.

A new study published by PLOS ONE examines the effectiveness of COVID-19 control policies in 40 jurisdictions including countries and U.S. states.

Among the conclusions is that significant social costs must be incurred to reduce the growth of the virus to negative. In most jurisdictions examined, policies with a lesser social impact
including cancellation of public events, restrictions of gatherings to fewer than 100 people, and recommendations to stay at home, are not enough in themselves to control COVID-19.

Socially intolerable measures such as stay-at-home orders, targeted or full workplace, and school closings are also required till the infection ends.

The study used a model to generate estimates of the marginal impact of each policy in a jurisdiction after accounting for the overall portfolio of policies adopted by the jurisdiction, the levels at which the policies are implemented, the rigorousness of compliance within the jurisdiction, the jurisdiction's COVID-19 infections, COVID-19 deaths, and excess deaths, and the performance of the portfolio of policies in other jurisdictions.

Eleven categories of COVID-19 control policies were examined including school closings, workplace closings, cancellation of public events, restrictions on gatherings, the closing of public transport, stay-at-home requirements, restrictions on internal movement, international travel controls, public information campaigns, testing, and contact tracing.

Alzheimer's disease

Google Glass-like device could zap Alzheimer's disease (New Kerala: 20201231)


Could alleviating Alzheimer's symptoms be one day as easy as wearing a Google Glass-like device? It could, if new research led by the University of Otago (New Zealand) bears fruit.

The researches are focusing on stimulating humans' sense of smell to prevent conditions such as Alzheimer's disease associated with memory problems.

The olfactory system, or sense of smell, is known to be dysfunctional in the early stages of Alzheimer's and Parkinson's disease.

It is also shown that proper olfactory function can play a key role in regaining consciousness after brain injuries.

The Otago research centres around a wearable concept prototype -- similar to Google Glasses -- which produces small electronic pulses on the skin to stimulate the olfactory nervous system.

"Olfactory nerves have terminals deep in the brain regions which influence memory and navigation," said lead author Yusuf Ozgur Cakmak, Associate Professor at Otago's Department of Anatomy.
"We're hopeful this method will help stimulate these networks to alleviate symptoms or suppress the progression of Alzheimer's disease to Dementia. It also has potential to help coma recovery and Parkinson's disease."

Cakmak said that their promising early results, published in the journal Frontiers in Neuroscience, can pave the way for developing the world's first non-invasive, wearable electrical stimulation system to target the olfactory regions.

Modulation of the olfactory regions has been attempted successfully with electrical stimulation previously, either directly - intraoperatively through the nasal bones -- or indirectly through the vagus nerve.

This research sought to develop a means of delivering electrical stimulation to the olfactory region in a non-invasive fashion and in a way that is simpler, easier, and less cumbersome.

"Applying this treatment via a headset on a hair-free zone that can be worn in daily routine instead of more invasive treatments makes this method unique," Cakmak said.

The multiple electrode configurations developed by the researchers were tested with the aid of electrical field modelling that was validated with direct human brain recordings during brain surgery.

The research team is collaborating with New York-based company Soterix Medical, a leading provider of non-invasive neuromodulation and brain monitoring technology.

The international team plans to test their wearable stimulator in a clinical trial soon.

**Vaccine (Hindustan: 20201231)**

[https://epaper.livewhindustan.com/imageview_545437_86162428_4_1_31-12-2020_0_i_1_sf.html](https://epaper.livewhindustan.com/imageview_545437_86162428_4_1_31-12-2020_0_i_1_sf.html)
ऑक्सफोर्ड टीका ब्रिटेन में मंजूर, भारत में इंतजार

ब्रिटेन सरकार ने ऑक्सफोर्ड टीका की मंजूरी दी है, जबकि भारत सरकार इसकी मंजूरी की है। ब्रिटेन में टीका दिखाई देने लगी है। ब्रिटेन के संयुक्त राष्ट्र सुरक्षा बोर्ड (सीबीसी) के संशोधक ने कहा कि टीका स्थायी तथा सुरक्षात्मक है।

भारत में टीका की मंजूरी दी जाएगी, लेकिन उसका लाभ भारत में होगा। ब्रिटेन सरकार ने टीका का लाभ भारत में ही देने का निर्णय लिया है। ब्रिटेन के सीमांतों के लिए टीका का लाभ भारत में ही होगा।

“यह उत्तराह बढ़ाने वाली ख़बर है। अब भारतीय नियमकों से भी अनुमति का इंतजार है।”

- अदाल चतुरवाला, सीएम इंडियाना