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### Neurological symptoms indicate higher risk of Covid death

#### ► Study finds Covid-19 patients in hospital with brain-related symptoms have worse results

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Coronavirus patients in hospitals who show neurological symptoms are six times more likely to die than those without, a study found.

Researchers also said that neurological complications were twice as likely in those who had pre-existing brain, spinal cord and nerve diseases, chronic migraines, dementia or Alzheimer's disease.

"Very early on in the pandemic, it became apparent that a good number of people who were sick enough to be hospitalised also developed neurological problems," said Sherry Chou, lead author and associate professor of critical care medicine, neurology and neurosurgery at the University of Pittsburgh.

"A year later, we are still fighting an unknown, invisible enemy and, like in any battle, we need intel. We have to learn as much as we can about the neurological impacts of Covid-19 in patients who are actively sick and in survivors."

The neurological symptoms of Covid-19 associated with a six-fold increase in the risk of dying range from the seemingly innocuous, such as a loss of smell, to major events such as strokes.

Meanwhile, the World Health Organisation said that the B1617 variant spreading in India appeared to be more contagious than other viral strains.

"As such, we are classifying this as a variant of concern at the global level," said the WHO's Covid-19 lead, Maria Van Kerkhove.

The organisation said the strain may also have some resistance to antibodies, but it was too early to say whether this meant resistance to protection provided by vaccines.

Government ministers in Britain and Germany gave fears of vaccine resistance as their reason for imposing travel bans on India.

There is a deadly link between Covid-19 and the brain, a new study published yesterday suggests.

The Global Consortium Study of Neurological Dysfunction in Covid-19 says hospital patients with clinically diagnosed neurological signs are six times more likely to die than those without.

"Very early on in the pandemic it became apparent that a good number of people who were sick enough to be hospitalised also developed neurological problems," said Dr Sherry Chou, lead author and associate professor of critical care medicine, neurology and neurosurgery at the University of Pittsburgh School of Medicine and the University of Pittsburgh Medical Centre.

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The study spans 133 adult patient sites in all regions of the globe, bar Antarctica.

Among one group of 3,744 adult hospital patients, 82 per cent had reported neurological symptoms or had neurological conditions diagnosed.

Four out of 10 patients reported having headaches, and about three out of 10 said they lost their sense of smell or taste.

Of the clinically diagnosed syndromes, acute encephalopathy was most common, affecting almost half of the patients, followed by coma (17 per cent) and stroke (6 per cent).

Despite early concern about the virus's ability to attack the brain, causing meningitis and brain swelling, those events were very rare, occurring in less than one per cent of patients.

"Acute encephalopathy is by far the most common symptom that we see in the clinic," Dr Chou said.

"Those patients may be in an altered sensory state or have impaired consciousness, or they don't feel like themselves and act confused, delirious or agitated."

The study also found that having a pre-existing neurological condition of any kind – from brain, spinal cord or nerve diseases to chronic migraines, dementia or Alzheimer's disease – is the strongest predictor for developing Covid-related neurological

complications, doubling the risk.

In addition, having any neurological symptom related to the virus, regardless of its severity, increased the chances of death sixfold.

And when patients beat the odds and recover, their longterm health outlook is still uncertain.

“Even if the pandemic is eradicated, we are still talking about millions of survivors who need our help,” Dr Chou said.

“It is important to find out what symptoms and health problems those patients are facing, and there is still plenty of work for years to come.”

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DR SHERRY CHOU

Study lead author

Pharmaceutical company Pfizer is increasing capacity for Covid-19 vaccines to be able to provide at least 3 billion doses by next year as it anticipates “durable demand” for the shots.

The company has so far shipped 430 million doses of the vaccine it developed in partnership with Germany’s BioNTech to 91 countries, chairman and chief executive Albert Bourla said on an investor call last week.

“Based on what we have seen, we believe that a durable demand from our Covid-19 vaccine, similar to that of the flu vaccines, is a likely outcome,” said Mr Bourla.

“We want to be a long-term partner to health authorities around the world in their ongoing efforts to combat Covid-19, including their planning for an ongoing pandemic vaccination approach that is fit-for-purpose to local requirements.”

Pfizer said revenue from the Covid-19 vaccines contributed \$3.5 billion to its quarterly revenue of \$14.6bn, which was 45 per cent higher than in the same period last year and more than analysts’ expectations. First-quarter profit also rose by 45 per cent to \$4.88bn.

On Monday, the US Food and Drug Administration authorised the use of the Pfizer-BioNTech vaccine on children aged 12 to 15 years old.

Acting FDA commissioner Janet Woodcock said the decisions “allows for a younger population to be protected from Covid-19, bringing us closer to returning to a sense of normality and to ending the pandemic.”

The FDA previously granted an emergency use authorisation for the Pfizer-BioNTech vaccine to people aged 16 and older.

Pfizer’s partner in the Covid-19 vaccine, BioNTech, reported a €1.13bn (\$1.37bn) first-quarter profit on Monday as revenue surged to €2.05bn, up from

€27.7 million in the same period last year. The companies have so far signed orders for 1.8 billion doses for delivery this year, as well as a number of contracts for delivery “for 2022 and beyond”, said BioNTech.

Mr Bourla told investors last week that Pfizer expects revenue of \$26bn from its Covid-19 vaccine this year, with the company’s full-year guidance for total sales raised to between \$70.5bn and \$72.5bn.

“We are in discussions with a number of countries around the world for multi-year contracts for the potential supply of Covid-19 vaccine doses during 2022 and beyond,” he said.

The company recently signed an agreement with the UK to supply 60 million extra doses this year, with Israel to supply millions of doses next year and with Canada to supply 125 million doses next year and in 2023, with an option to supply 60 million more by 2024.

Pfizer’s shares were up 0.71 per cent to \$39.86 at the close of trading on Monday, giving it a market value of \$222.35bn. After last week’s results, JP Morgan raised its sales estimate for the company, saying it expects Pfizer to sell about \$31bn of Covid-19 vaccines this year and \$21bn in 2022, although it maintained its current target price of \$40 on the company.

“We expect Covid vaccine sales to remain a focal point for the company and we still see room for upside to both Pfizer’s 2021 guidance as well as consensus sales in 2022. That said, we continue to forecast a meaningful step down in sales in 2023 and beyond,” a note from analysts, including managing director Chris Schott, said.

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