



Politics Federal Coronavirus pandemic

The race for a vaccine started with Disease X

News that a 'vaccine' might be available in Australia as early as the start of 2021 caused a wave of excitement this week. But don't go booking your overseas travel just yet.



Australia has inked a letter of intent with UK-based drug company AstraZeneca to access the vaccine being developed by Oxford University. **David Rowe**

Ronald Mizen Reporter

Aug 22, 2020 - 12.00am



The development of the Oxford University coronavirus vaccine – which offers Australia's best hope of returning to a level of normality – began long before anyone had heard of COVID-19. It started with Disease X.

In 2017, a coalition of governments, universities, research institutions and philanthropic organisations formed the view that a major global pandemic was a matter of when, not if, and they wanted to be prepared.

Showing a level of prescience that perhaps explains his tenure atop the list of the world's richest people, Microsoft founder and philanthropist Bill Gates poured \$US100 million into the group known as the Coalition for Epidemic Preparedness Innovations (CEPI) and issued a stern warning.

"We ignore the link between health security and international security at our peril," Gates said during a speech at the Munich Security Conference in February 2017. He added that "the preventive capacity of a vaccine won't help if a pathogen has already spread out of control".



Oxford University's Sarah Gilbert has been working on developing vaccines for more than two decades. **John Cairns**

Back then, no one knew what form a future threat might take. Scientists adopted a broad approach that would, when the time came, allow them to adapt quickly to fight what they designated Disease X.

Scott Morrison's announcement this week that Australia had signed a letter of intent with UK-based drug company AstraZeneca to access the vaccine being developed by Oxford University was built on this early work.

But while the announcement buoyed spirits, no one should be rushing to book an overseas holiday; experts agree Australia is unlikely to see a mass vaccination campaign for another six to 12 months.

"Early next year is probably the earliest that we're feasibly looking at," UNSW professor Raina MacIntyre says.

Under the agreement – the final details of which are still being negotiated – Australia is to gain access to enough vaccine for the whole population.

The announcement followed growing criticism from the federal Opposition that Australia was "well behind the game" in securing a vaccine supply.

"It would be unconscionable to have a vaccine developed and being distributed around the world and our government not having taken the advanced steps necessary to get supply," Labor's Chris Bowen said.

It remains unclear whether Australia will manufacture the vaccine domestically or import it in bulk and then produce individual doses.

Leading Australian vaccine manufacturer CSL is working closely with the University of Queensland on its own coronavirus vaccine, based on different technology, which the company says remains its "top priority".

"We are currently in discussions with AstraZeneca and the Australian government to assess whether it is possible to provide local manufacturing support for the Oxford University/AstraZeneca vaccine," CSL says.

But other companies are also clamouring to put their hands up. Two Australian biomanufacturing companies, Luina Bio and Thermo Fisher Scientific, have suggested their Queensland-based manufacturing facilities as an alternative.

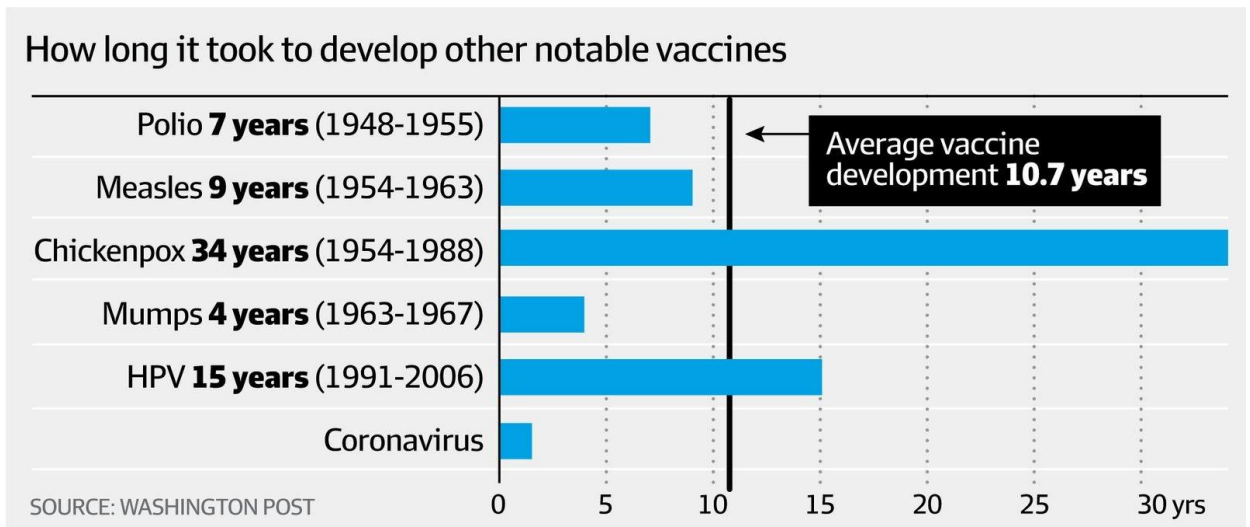
**RELATED****Government closes in on vaccines for 25m Australians****RELATED****Coronavirus vaccine to be 'as mandatory as possible': PM**

The Oxford vaccine is in phase three trials – designed to measure how safe and effective the drug is at reducing death and serious illness from COVID-19 – and is one of the most advanced in terms of testing.

Results from the first round of human trials published in medical journal *Lancet* last month were encouraging; but phase three testing has a failure rate of about 40 per cent.

Despite the odds, Buttery is confident the Oxford vaccine has a high chance of success, and his optimism stems from the research started in 2017 to combat Disease X.

"They said, 'we want to develop platform technologies that we can plug whatever the pandemic bug is, into,'" Buttery says. Platform technologies are vehicles for the delivery of vaccines for unknown diseases.



Whatever the final form of the agreement between the government and AstraZeneca – which will include distribution, timing and the price – the government is confident it will be finalised sooner rather than later.

And while there remain hurdles, the fact health officials are planning a mass vaccine rollout within 18 months of a new virus emerging is unprecedented.

"Normally it takes us somewhere between eight and 13 years to develop a vaccine," Professor Jim Buttery, head of infection and immunity at Monash Children's Hospital, says.

Buttery says vaccines for the human papillomavirus and the rotavirus took 15 years to develop. The goal for COVID-19 is 18 months.

But the odds are in favour of success. About 167 vaccines are under development globally, 29 of which are in the human testing phase.

Even with only 10 per cent of drug trials proceeding through the necessary three-phase testing process, experts expect at least a dozen or more viable vaccines to become available over the short-to-medium term.

"There's a really active pipeline of a lot of vaccine candidates coming through," Murdoch Children's Research Institute Associate Professor Nigel Crawford says.

But most experts are confident a staged approach over several months could be easily managed. In 2020 alone, the government secured more than 16 million doses of the flu vaccine which were distributed across the country.

Should the vaccine pass its final tests, people will be vaccinated in order of priority, likely starting with health workers and the most vulnerable.

Macintyre says younger people, who are known to be the biggest spreaders of the virus, should follow. "If you stop transmission, you're stopping death," she says.

The final order will be determined by a new body, the COVID-19 Vaccines and Treatments for Australia – Science and Industry Technical Advisory Group, which is led by Health Department secretary and [former chief medical officer Brendan Murphy](#). The group held its first meeting this week.

Whether a successful vaccine allows the world to return to a pre-COVID-19 normality is still uncertain and depends on a range of factors. Vaccines can achieve two possible outcomes: they can confer sterilising immunity, or they can provide protection.

The former means the immune system is able to stop a pathogen, including viruses, from replicating within the body. The latter simply protects a person against the virus but they remain able to spread it to others.

"The perfect vaccine would be one that protects you against disease," Buttery says. "Hopefully, it would also protect you against getting infected in the first place so you're not silently passing it on to someone."

**RELATED****New frontrunner in the race for a vaccine**

COVID-19 vaccines in development

University of Oxford/AstraZeneca (UK)

- Made from adenovirus, weakened version of the common cold, which infects chimpanzees
- Phase 3 trials started in Brazil, planned for UK and the US

Sinovac Biotech (China)

- An inactivated vaccine like the flu vaccine, based on the dead version of the pathogen that causes the disease
- Not as protective as live vaccines, might require booster shots

Moderna/National Institute of Allergy and Infectious Diseases (US)

- Uses messenger RNA to prompt the immune system to recognise the coronavirus, not yet used in any approved vaccines
- This type of vaccine is typically fast to manufacture but can cause adverse reactions
- Started its phase 3 trial in the US

Sinopharm (China)

- Another inactivated vaccine
- Started its phase 3 trial in Abu Dhabi

CanSino Biologics/Beijing Institute of Biotechnology (China)

- Uses a weakened adenovirus, but one that infects humans not chimpanzees.
- Planning a phase 3 trial outside China

Pfizer/BioNTech/Fosun Pharmaceutical (US/Germany/China)

- Like Moderna vaccine, uses messenger RNA
- Phase 3 trial planned to start this month and regulatory review for as early as October

Johnson & Johnson's Janssen Pharmaceutical Companies (US)

- Developed from a weakened adenovirus
- Will begin phase 3 trials in September

University of Queensland/CSL

- Molecular technology allows the immune system to recognise then neutralise virus
- In phase 1 trials, most advanced in Australia

SOURCE: FINANCIAL REVIEW

CEPI backed the development of several vaccine technologies, including the the "chimpanzee adenovirus-vectored vaccine" on which the Oxford University vaccine is based; the "molecular clamp vaccine", which is the basis for the University of Queensland's vaccine; and the "messenger RNA vaccine" being developed by the US National Institute of Allergy and Infectious Diseases.

The mRNA vaccine has also started phase-3 trials. This month US President Donald Trump signed a \$US1.53 billion (\$2.1 billion) deal to buy up to 500 million doses from pharmaceutical giant Moderna.

Even once a vaccine candidate is developed and approved, the task of distributing it to the entire population remains significant.

"The last time any country had experienced doing that was with smallpox and that was eradicated in 1980," Macintyre says. "No country has living experience among the medical workforce of mass vaccination."



RELATED

Why the vaccine may not be the end of the virus

Experts say we shouldn't bank on the Oxford vaccine conferring sterilising immunity. It is likely to be more like a flu vaccine that protects against serious disease, but only works for about two-thirds of the population.

While it is not clear which category the Oxford vaccine falls into, Morrison said it would be ["as mandatory as you can make possible"](#); and that's what will be needed if we're ever going to put this virus behind us.

How the coronavirus is changing markets, business and politics.

Coronavirus: Need to know. Our daily reporting, in your inbox.

SIGN UP NOW

Save

Share

License article

READ MORE

[Coronavirus pandemic](#)

[Vaccination](#)

[CSL Limited](#)

[Scott Morrison](#)

[Illness](#)



Ronald Mizen

Reporter

Ronald Mizen is a reporter for the Australian Financial Review based in our Parliament House bureau in Canberra. *Connect with Ronald on [Twitter](#). Email Ronald at ronald.mizen@afrr.com*

LATEST IN FEDERAL[Live Coronavirus pandemic](#)**Victoria reports 116 new cases, 15 deaths**

Victoria has reported 116 new coronavirus cases, the lowest figure since July 5 - there were also 15 deaths; Legal experts warn "disproportionate" hard border closures could be illegal; federal parliament returns today. Follow updates here.

Aug 24, 2020 | Ronald Mizen and Natasha Boddy

[Exclusive Coronavirus pandemic](#)**No JobKeeper exemptions for profitable firms**

The Morrison government has softened its plans to extend industrial relations exemptions to firms which no longer qualify for JobKeeper.

Aug 24, 2020 | Phillip Coorey

[Superannuation](#)**Young to bear brunt of \$100b hit from early super scheme**

Young and low-paid workers will comprise the bulk of a \$100 billion shortfall in retirement savings resulting from the government's early release super scheme.

Aug 24, 2020 | Ronald Mizen

[Coronavirus pandemic](#)**Open borders accelerate jobs recovery: Treasury**

The strongest return to work has occurred in NSW, whose success in keeping most borders open while tackling any resurgence of COVID-19 has led to Scott Morrison describing it as the 'gold standard'.

Aug 23, 2020 | Phillip Coorey

[Australian War Memorial](#)**'Dangerous precedent': Architects seek War Memorial redevelopment halt**

The peak body for Australia's architects say demolition of a key element of the Australian War Memorial will damage the nation's heritage.

Aug 23, 2020 | Tom McIlroy

LATEST STORIES

[Retail](#)**Super Retail Group profit falls 21pc after one-off costs**

21 mins ago

[Street Talk](#)**Emeco raising \$150m; Macquarie, Goldman Sachs on ticket**

27 mins ago

[Health insurance](#)**NIB profit plunges as COVID boost fails to materialise**

29 mins ago

[Mining](#)**Rio Tinto scraps executive bonuses after gorge debacle**

37 mins ago

MOST VIEWED IN POLITICS

- 1** **Live / Victoria reports 116 new cases, 15 deaths**
- 2** **No JobKeeper exemptions for profitable firms**
- 3** **Young to bear brunt of \$100b hit from early super scheme**
- 4** **Open borders accelerate jobs recovery: Treasury**
- 5** **Disproportionate border closures 'could be illegal'**

**THE AUSTRALIAN
Financial Review Magazine****Houghton wine legacy brings forgotten grapes back into fashion**

Max Allen



Tiny houses that offer the perfect pandemic escape

The most powerful woman in fashion you've never heard of

BOSS

Companies should come clean on sexual harassment NDAs: super funds

Sally Patten



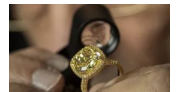
'Every day is like Christmas' at Australia Post

Why boards should be reviewing non-disclosure policies

Life & Leisure

Got a spare \$900k? This rare diamond is up for grabs

Dan F. Stapleton



Australian whiskies for everyday sharing (rather than avid collecting)

Where to go for your post-lockdown holiday

LUXURY

The unlikely beauty company that sells 17 products a minute

Lauren Sams



Australian designers join forces to win Chinese hearts

Allbirds adds apparel to its billion-dollar line-up

The Daily Habit of Successful People

MY ACCOUNT 

SUBSCRIBE 

ABOUT US 

CONTACT 

MAGAZINES 

COLUMNS 

MARKETS DATA 

LISTS 

EVENTS 

OUR NETWORK 

TERMS AND CONDITIONS 

© Copyright 2020 The Australian Financial Review

Site Map