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Covid Vaccine Hesitancy & Safety 2021

5 A's

Access: To support uptake, ensure ease of access including the convenience of the service, its location and clinic times.

Affordability: Removing any out of pocket costs for the vaccine and vaccination services strongly affects uptake [5]. Time itself is a cost barrier to vaccination/cost of travel and fear of job security can result in a 'reduced willingness'

Awareness: Practical knowledge about the vaccine recommendation and understanding about the groups recommended to have a vaccine improves uptake. Awareness needs to address barriers to understanding. To reduce inequities in vaccine uptake, consumers must have access to health resources that are comprehensible, culturally tailored and are appropriate for the consumer's health literacy skills [6].

Acceptance: Concerns about the safety and effectiveness of a vaccine (including adverse effects) and lack of confidence in vaccine benefits, can all affect uptake. A high perceived severity of a disease increases intention to vaccinate [7, 8]. Acceptance can also be affected by trust in providers, and for adults, formative childhood vaccination experiences [9].

Activation: This refers to the strategies that help people to act on good intentions and vaccinate - the final 'nudge' [4]. Effective strategies to activate include reminders via SMS, email/letter, or app. An opportunistic recommendation from a provider can also activate a person to be vaccinated.

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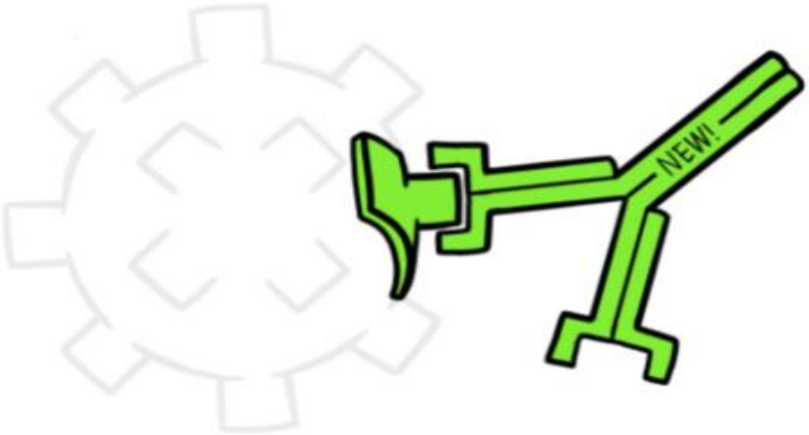
How do vaccines work?

VACCINE

NEW ANTIBODY



A VACCINE is a tiny weakened non-dangerous fragment of the organism and includes parts of the antigen. It's enough that our body can learn to build the specific antibody. Then if the body encounters the real antigen later, as part of the real organism, it already knows how to defeat it.

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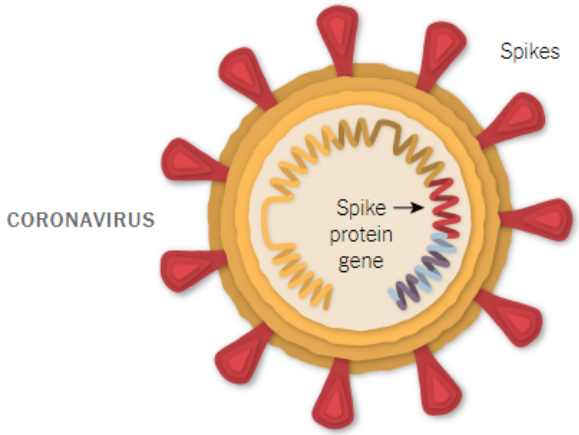
Astra Zeneca Vaccine

A Piece of the Coronavirus

The SARS-CoV-2 virus is studded with proteins that it uses to enter human cells. These so-called spike proteins make a tempting target for potential vaccines and treatments.



The Oxford-AstraZeneca vaccine is based on the virus's genetic instructions for building the spike protein. But unlike the Pfizer-BioNTech and Moderna vaccines, which store the instructions in single-stranded RNA, the Oxford vaccine uses double-stranded DNA.

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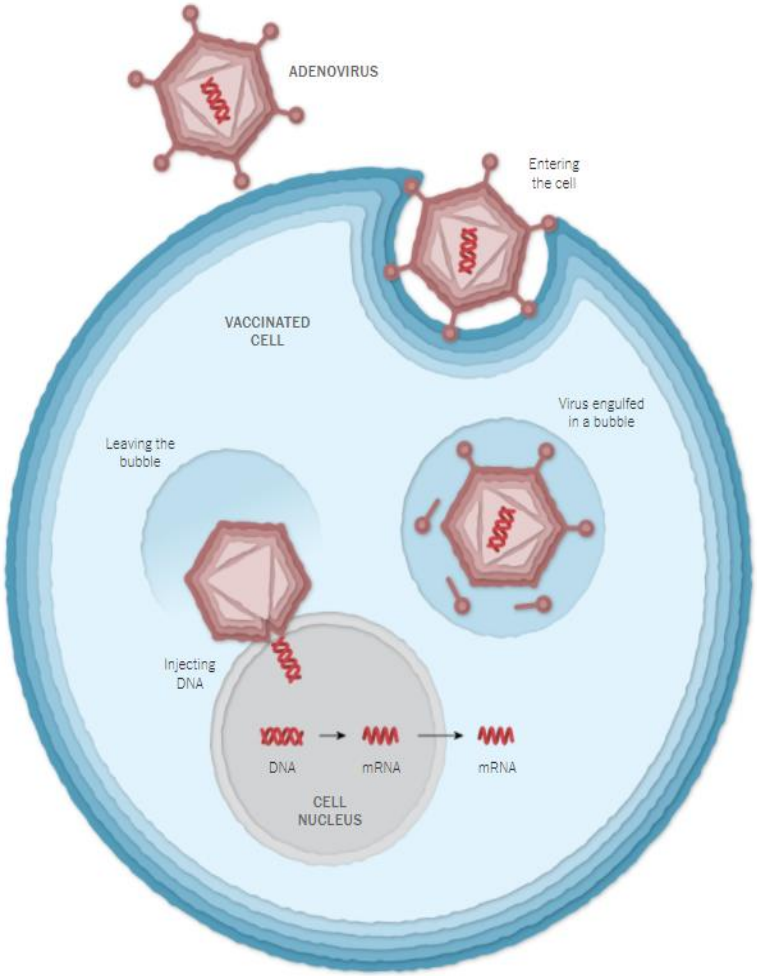
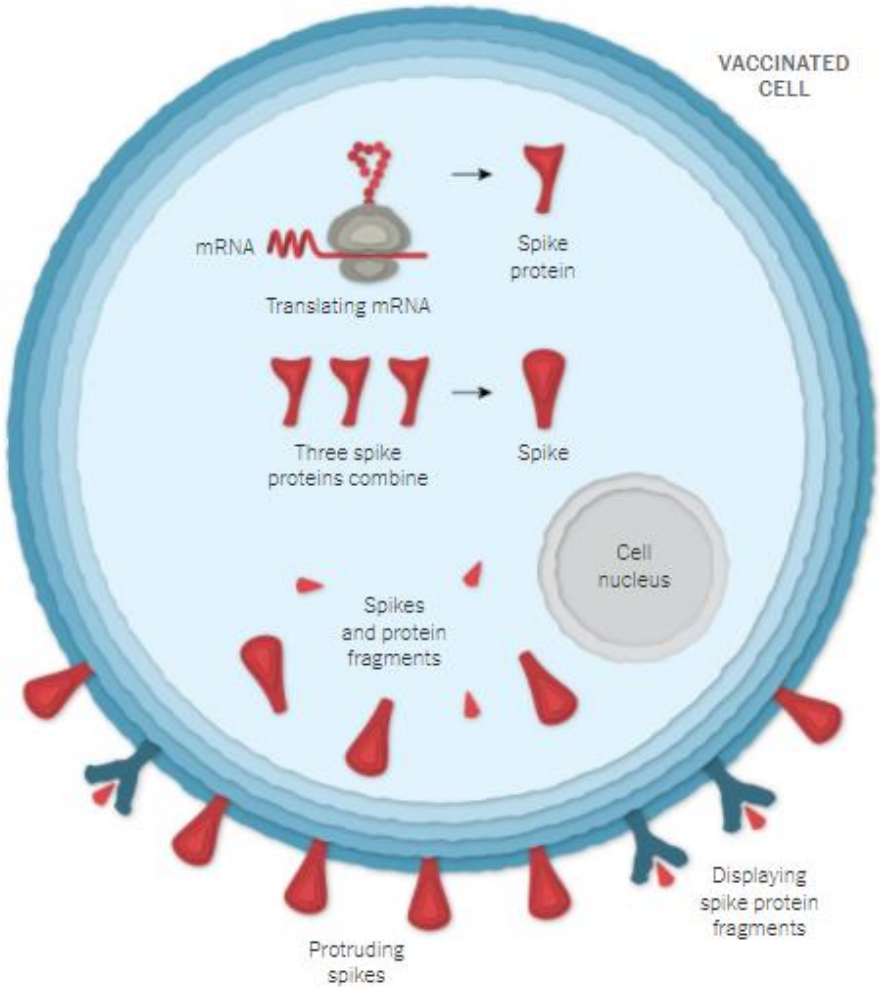
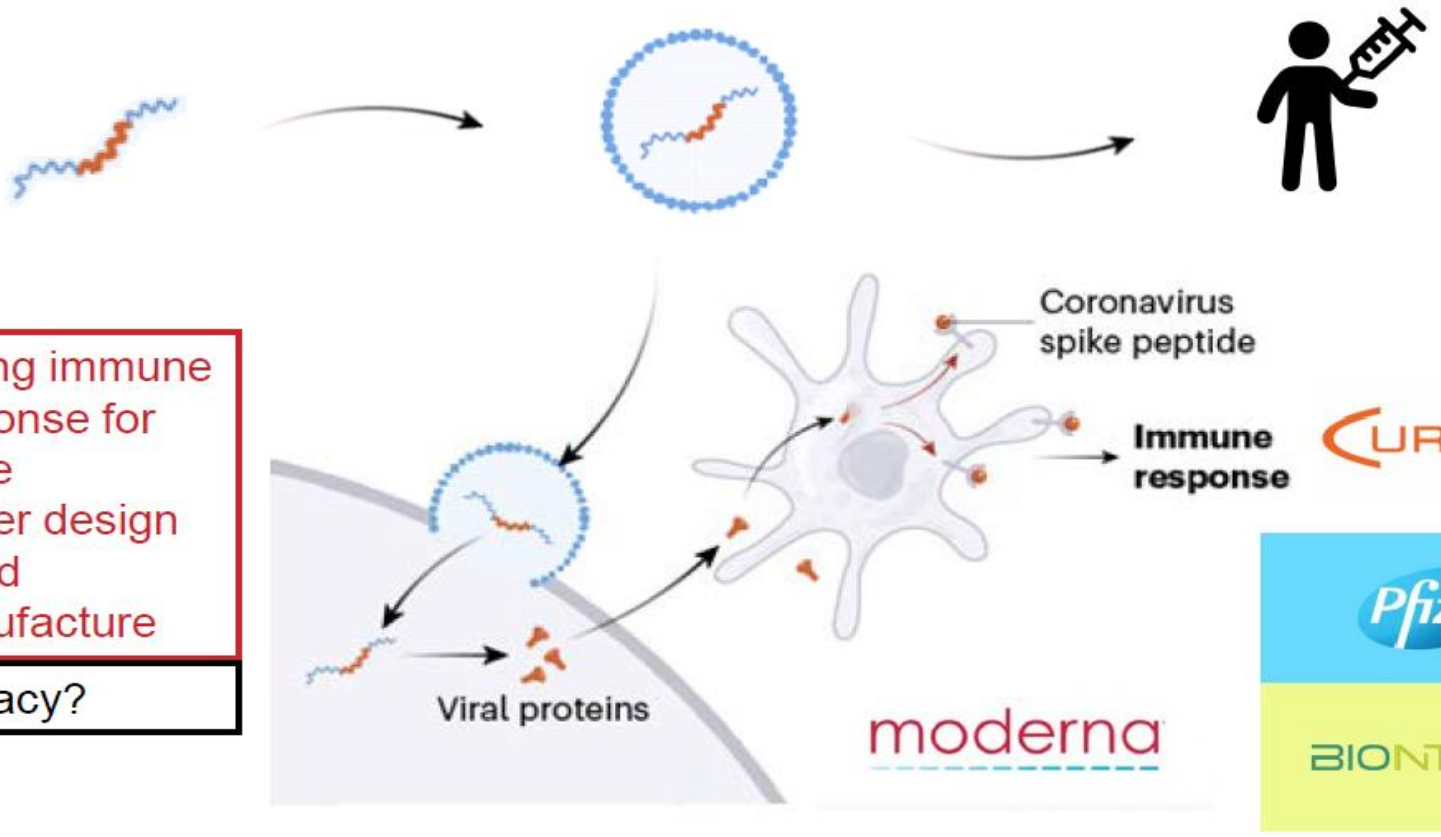
Astra Zeneca





mRNA vaccines



Strong immune response for some
Easier design
Rapid manufacture

Efficacy?

Diagram: Callaway, E. (2020). The race for coronavirus vaccines: a graphical guide. *Nature*, https://www.nature.com/articles/d41586-020-01221-y
Image from the Noun Project

How mRNA COVID-19 Vaccines Work

Understanding the virus that causes COVID-19.
Coronaviruses, like the one that causes COVID-19, are named for the crown-like spikes on their surface, called **spike proteins**. These **spike proteins** are ideal targets for vaccines.

What is mRNA?
Messenger RNA, or mRNA, is genetic material that tells your body how to make proteins.

What is in the vaccine?
The vaccine is made of mRNA wrapped in a coating that makes delivery easy and keeps the body from damaging it.

How does the vaccine work?
The mRNA in the vaccine teaches your cells how to make copies of the **spike protein**. If you are exposed to the real virus later, your body will recognize it and know how to fight it off.

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Ingredients

What's in the Pfizer jab?

- Nucleoside-modified messenger RNA — **active ingredient**
- ((4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl) bis(2-hexyldecanoate) (ALC-0315) — **lipid casing**
- 2-[(polyethylene glycol)-2000]-N,N-ditetradecylacetamide (ALC-0159) — **lipid casing**
- Distearoylphosphatidylcholine (DSPC) — **lipid casing**
- Cholesterol — **lipid casing**
- Potassium chloride — **salt**
- Monobasic potassium phosphate — **salt**
- Sodium chloride — **salt**
- Dibasic sodium phosphate dihydrate — **salt**
- Sucrose — **sugar**
- Water for injections

What's in the AstraZeneca jab?

- Recombinant, replication-deficient chimpanzee adenovirus vector — **active ingredient**
- Histidine — **amino acid**
- Histidine hydrochloride monohydrate — **amino acid salt**
- Sodium chloride — **salt**
- Magnesium chloride hexahydrate — **salt**
- Disodium edetate (EDTA) — **salt**
- Sucrose — **sugar**
- Ethanol absolute — **alcohol**
- Polysorbate 80 — **surfactant**
- Water

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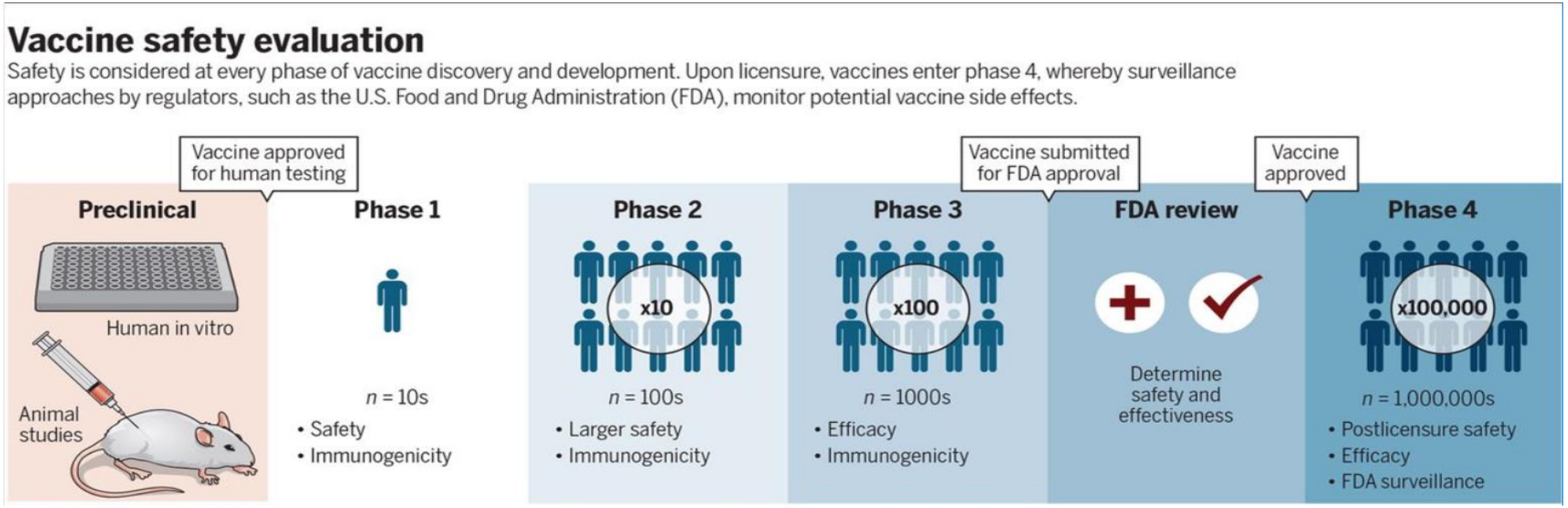
Vaccine Safety – Phase 4



Vaxtracker
Monitoring Vaccine Safety

AusVaxSafety
An NCIRS led collaboration

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Vaccine Safety

Vaxtracker
Monitoring Vaccine Safety

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An NCIRS led collaboration

National COVID-19 vaccine safety surveillance

Report No. 59 • 12 July 2021
Surveillance of COVID-19 vaccinations from 22 February 2021
Data provided by Vaxtracker, SmartVax and CVMS (data up to 12 July 2021 at 12 AM AEDT)

NO SAFETY SIGNALS DETECTED

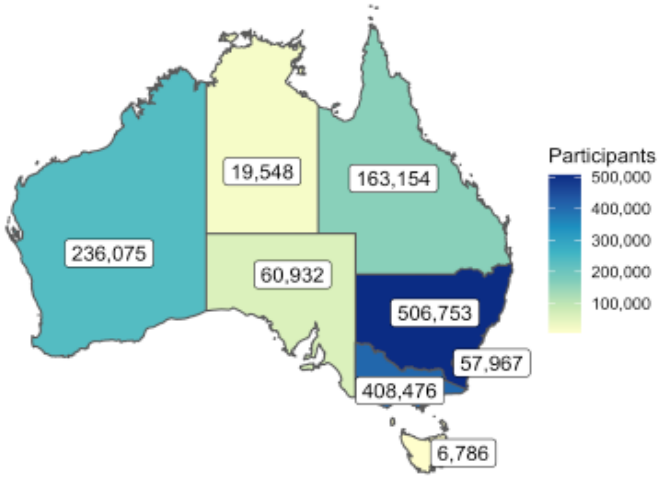
2,284,635 surveys sent Australia wide*

1,459,691 participants (63.9% response rate)

53.2% of participants reported no adverse event

46.8% of participants reported any adverse event

0.9% of participants reported visiting a doctor or emergency department

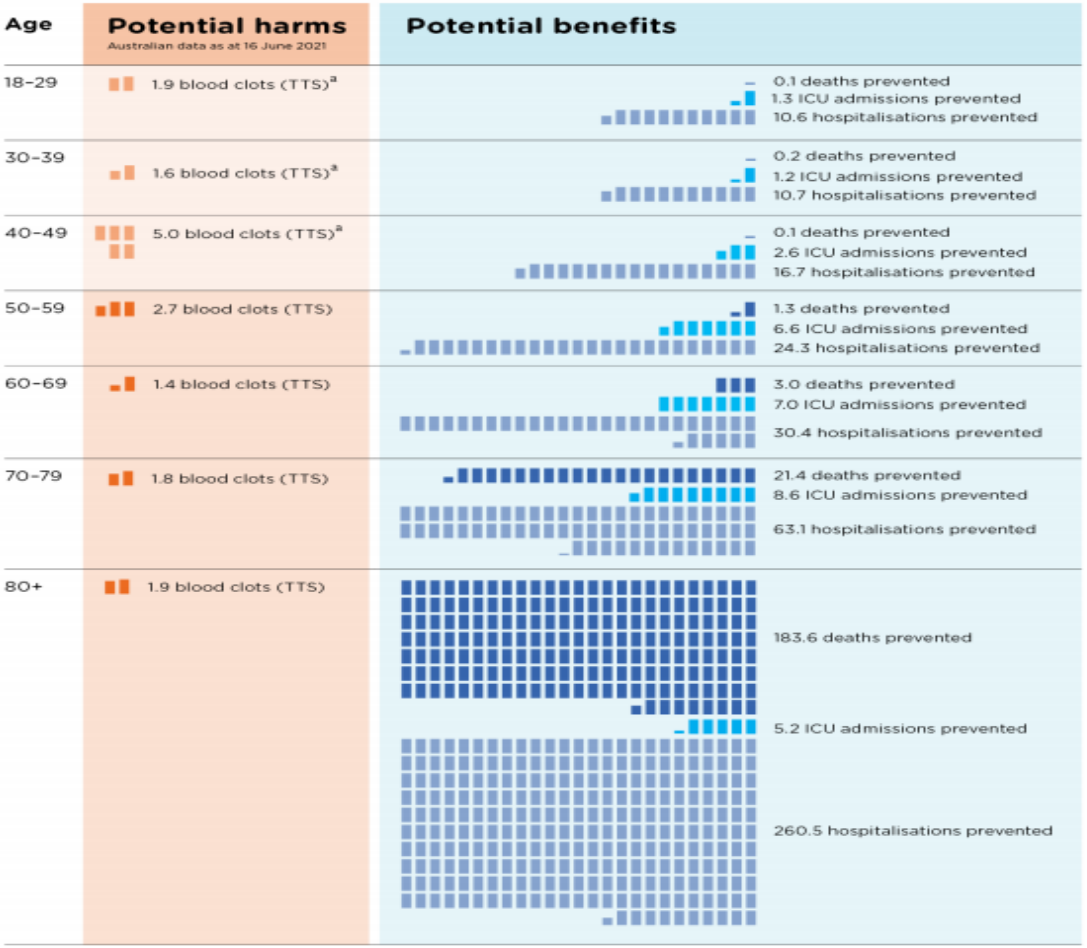


*Surveys sent on Day 3 post vaccination. NOTE: Adverse events are self-reported, have not been clinically verified, and do not necessarily have a causal relationship with the vaccine.

Medium exposure risk in the Australian context

Scenario 2: Infection rate similar to second wave of COVID-19 in Victoria
(275 infections per 100,000 people in a 16-week period)

For every 100,000 AstraZeneca vaccinations



TTS = thrombosis with thrombocytopenia syndrome. Includes probable and confirmed cases, and a range of health care presentations (including hospitalisations, ICU admissions and deaths).

a Estimates of risk are uncertain as rates are based on small numbers of vaccinations in people under 50 in Australia

[Weighing up the potential benefits against risk of harm from COVID-19 Vaccine AstraZeneca (health.gov.au)]

TGA

Table 2: Total confirmed and probable TTS cases to date by age and CDC classification

Age	Total cases	CDC classification†		
		Tier 1	Tier 2	Not classified
<30 years	1	-	1	-
30-39	1	1	-	-
40-49	4	4	-	-
50-59	22	10	6	6
60-69	15	4	5	6
70-79	21	7	5	9
80+	11	3	4	5
All ages	76 (36 men, 40 women)	29	21	26

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TGA

Table 3: Time to onset, treatment and outcomes for TTS cases*

Time to onset/ diagnosis (days)	Median (range)	12 (1-54)
Treated in ICU	At any point	22
	Currently	6
Outcome	Discharged	52
	In hospital	22
	Fatal	2

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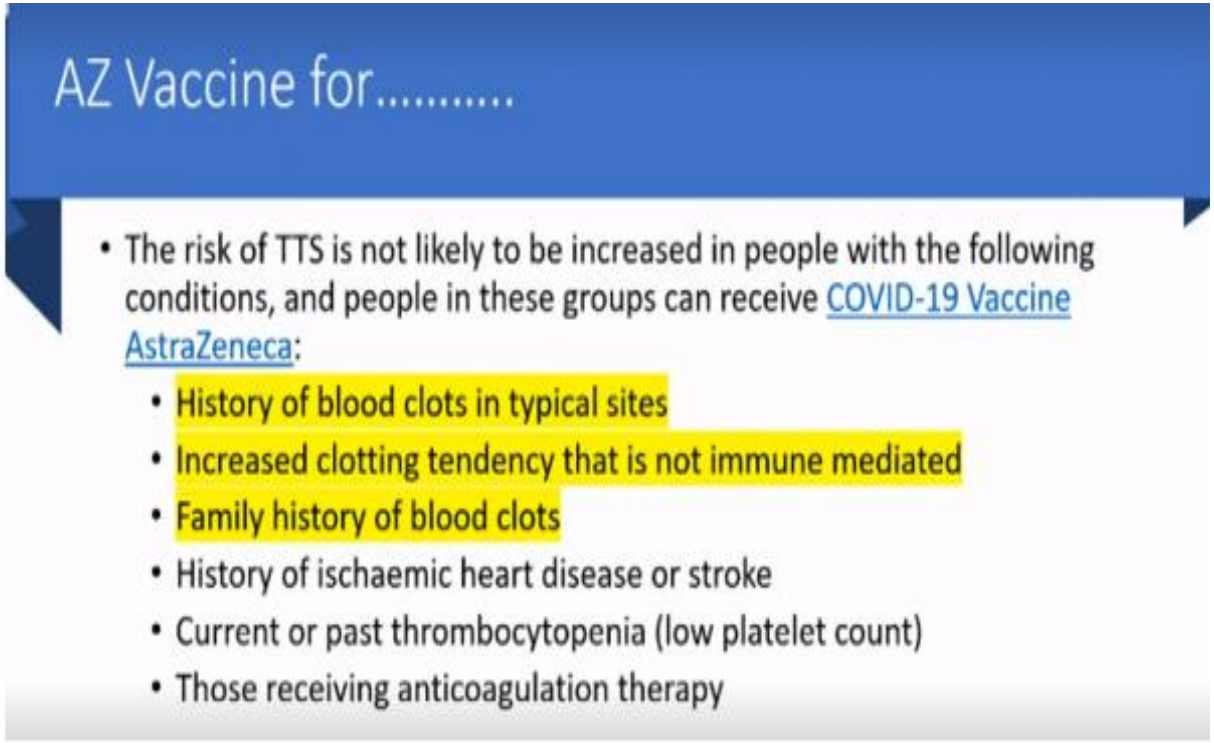
Astra Zeneca can be given to people with history of Blood Clots



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Heuristics

- Understanding the mental shortcuts people make and the values they bring to weighing risks
- Heuristics to process risk information. These are mental shortcuts that allow them to make rapid judgements when dealing with large volumes of information.[12]
- Some people anticipate negative emotions because of a decision and thus avoid taking that course (“anticipated regret”)
- People prefer to accept an outcome from doing nothing (not getting vaccinated) than an outcome from doing something (vaccinating) (“omission bias”),
- Avoid taking risks when the outcome is uncertain (“ambiguity aversion”).

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Vaccine hesitancy

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How to talk to friends and family feeling unsure about COVID-19 vaccines - ABC News

Does vaccine stop transmission?

Impact of vaccination on household transmission of SARS-COV-2 in England

A large study of COVID-19 transmission involving more than 365,000 households with a mix of vaccinated and unvaccinated members

Conclusions
Both reduce likelihood of household transmission by 40-50% from individuals diagnosed with COVID-19 after vaccination.

35bf4bb1-6ade-d3eb-a39e-9c9b25a8122a (khub.net)

nature medicine

Initial report of decreased SARS-CoV-2 viral load after inoculation with the BNT162b2 vaccine

Researchers identified nearly 5,000 cases of breakthrough infection in previously vaccinated people

Determined how much virus was present in their nose swabs.

Compared to unvaccinated people, the amount of virus detected was significantly lower in those who got vaccinated.

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