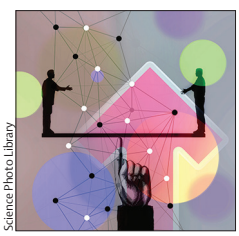
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Art of medicine

The rollercoaster of vaccine-induced immune thrombotic thrombocytopenia



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For more on **vaccine-induced immune thrombotic thrombocytopenia** see **Viewpoint** *Lancet Haematol* 2022; **9:** e73–80

For more on the **trolley problem** see *N Engl J Med* 2018; **379:** 305–07

For more on the **response from the media** see https://www.crikey.com.au/2021/07/23/trashing-astrazeneca-national-sport-not-national-saviour/

"I became a clot doctor for the quiet life!" exclaimed my consultant, our hospital's haemostasis-thrombosis lead, after a hectic vaccine policy meeting. I had been looking forward to the relative stability of haematology training after my previous year as a general medical registrar, enacting ever-shifting COVID-19 policies and caring for patients with COVID-19 during Melbourne's second wave of the pandemic.

However, 2021 would prove neither quiet nor stable for the world's haematologists. Just a month into my training, concerns were raised about a rare but potentially severe complication of the AstraZeneca–Oxford vaccine—vaccine-induced immune thrombotic thrombocytopenia (VITT).

I wonder if this is how it felt to practice medicine at the start of the AIDS epidemic. Fighting an invisible enemy. No idea what would come next. Science unfolding day-by-day.

We engage with and convey uncertainty in medicine all the time, but a novel disease compounded by a medically-complex vaccine complication sent everyone into a dizzying spin. Australia faced a unique quandary. With little community transmission of SARS-CoV-2, people's risk of severe disease was low, especially for younger people. The risk of AstraZeneca–Oxford vaccine-associated VITT was also incredibly low; however, unlike severe COVID-19, the risk of VITT was inversely related to age. No one could predict when mRNA vaccine supplies would arrive (Australia had very few), nor how long we could maintain control of COVID-19.

The Australian Technical Advisory Group on Immunisation (ATAGI) faced the unenviable ethical dilemma of weighing up population-level costs and benefits of vaccine policies (a real-life trolley problem; a hypothetical situation in which a lever can be pulled to divert a runaway railcar from killing five people onto a track where it will instead kill just one). We hoped to avoid severe vaccine complications, but an avoidable death from COVID-19 despite the availability of an effective vaccine is no less tragic. This predicament led to shifting ATAGI advice: initially, that VITT is rare and so the AstraZeneca–Oxford vaccine remains safe for everyone; then only for people older than 50 years; and then only for those older than 60 years. This changing advice rapidly impacted vaccine confidence, exacerbated by media sensationalism; tabloid headlines included "Flirting with DISASTRA" and "AstraZeneca Hospital HELL", featuring a large picture of a retrieved cerebral artery clot from a patient with VITT.

This controversy fell on haematologists' unwitting shoulders. Consultation advice I gave was superseded overnight—all it took was a new paper or changed guideline (guidelines themselves could barely keep up). Conveying changing recommendations with sufficient confidence to gain colleagues' and patients' trust was a challenge, and the volume of referrals increased rapidly, warranting a dedicated haematology vaccine referrals clinic.

Thrombosis and thrombocytopenia are among the most common haematology referrals; now both were potential VITT cases that invited deeper investigation, given our evolving pathophysiological understanding of the condition. Conveying to patients the nuance that VITT, like its cousin heparin-induced thrombocytopenia, was an immune-mediated clotting disorder that did not appear to disproportionately affect those with previous thromboses felt almost cruelly complex for doctors and patients. Many patients found it understandably difficult to accept a vaccine that came with the risk of a thrombotic syndrome, no matter the mechanism. Many clinicians wanted to prescribe aspirin or anticoagulation—we are often reassured by doing something—yet it was difficult to know if this would help.

Perplexingly, many patients who were happy to trust my chemotherapy recommendation for their malignancy were unwilling to follow my vaccine advice, even when the side effects were orders of magnitude rarer. Such are the social overlays, both historical and current, of vaccines.

Many felt they were being discriminated against, offered an inferior vaccine, or treated like second-class citizens because of the age-based allocation. All I could do was listen empathetically (it helped that I received the AstraZeneca–Oxford vaccine myself) and make my guideline-based recommendations as compassionately as possible. It felt, at times, like we (haematologists, immunologists, general practitioners) had unwillingly been made the gatekeepers of the Government's short supply of mRNA vaccines. We assumed the burden of breaking this news to hundreds of patients sent our way hoping for exemptions.

Crystallising this fraught dilemma in front of our eyes, a previously healthy patient presented to our care critically unwell with VITT—a poignant reminder of the human side of our society's wicked ethical conundrum. Thereafter, every time I assured someone how safe the vaccine was, this patient would come to my mind.

Communication and resilience are essential to medicine and haematology, especially in crisis. Being caught in the crossfires of government policy and the scientific, medical, and human storm of VITT was a unique introduction to haematology, but it hasn't put me off. I still love haematology for its scientific and human complexity, but I prefer it without the controversy of 2021.

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