Information on Thrombosis with thrombocytopenia (TTS) that we need to include on the CoRiCal interactive website

Associate Professor John Litt, Flinders University & Associate Professor Anoop Enjeti, School Of Medicine and Public Health, University of Newcastle, NSW and Calvary Mater Newcastle Hospital
John Litt is a retired academic GP and public health physician. Anoop Enjeti is a haematologist and current president of the Thrombosis and Haemostasis society of Australia and New Zealand (THANZ)

What is thrombosis with thrombocytopenia syndrome (TTS)?

This is a rare side effect of the AstraZeneca COVID-19 vaccine. It can be very serious and can cause long-term disability and death. Comirnaty (Pfizer mRNA COVID vaccine) is not associated with a risk of TTS.

The condition causes thrombosis (blood clotting) and thrombocytopenia (low blood platelet counts). It is different from general clotting disorders such as deep vein thrombosis (DVT) or pulmonary embolism (PE).

TTS can occur at different parts of the body, including the brain (called cerebral venous sinus thrombosis) and in the abdomen (idiopathic splanchnic vein thrombosis; portal vein thrombosis). The low level of blood platelets can potentially cause bleeding

Thrombosis is the formation of a blood clot, which prevents blood flowing normally through the body. While thrombosis is usually a normal response to prevent bleeding (e.g. following injury), in this case this process is abnormal.

Thrombocytopenia is a condition in which you have a low blood platelet count. Platelets (thrombocytes) are blood cells that help blood clot. Platelets stop bleeding by clumping and forming plugs in injured blood vessels.

TTS is rare. It is currently estimated to affect about 1-2 per 100,000 people who receive the AstraZeneca COVID-19 vaccine. But for those under 50 years of age, the rate is currently estimated to be higher. These estimates are based on the small numbers of people who have been vaccinated in Australia but are similar to rates seen in some countries overseas. They will be updated as further information become available.

In the COVID risk calculator model, we need to provide a comparison of the risks of these rare types of blood clots in those people who have not had a COVID vaccine.

This includes two groups of atypical blood clots

- Those who have had COVID and develop atypical blood clots
- Those in the population who have not had a COVID vaccine or COVID and develop an atypical blood clot like cerebral sinus venous thrombosis (CSVT) or portal vein thrombosis (PVT)

The comparators (both cerebral sinus venous thrombosis (CSVT) and portal vein thrombosis (PVT)) have been selected as:

- these type of thromboses (clots) form a significant part of the rare clotting response to mainly the AstraZeneca COVID vaccine.

- they occur in the population in those who have had COVID and also in those who have not had COVID

- PVT was selected for inclusion as it is the most common of the atypical blood clots/thromboses and occurs post-COVID

On advice from the Thrombosis and Haematology Association of Australia and New Zealand (THANZ) we have not included cases of venous thrombosis more commonly seen in the lower limbs and lungs. There are measurement issues when including these types of clots which make a the picture difficult to interpret.