



OBJECTIVE:

To assist health care professionals in the diagnosis and management of Vaccine-Induced Prothrombotic Immune Thrombocytopenia (VIPIT).

BACKGROUND:

Vaccines are a critical tool in the management of the COVID-19 pandemic resulting from SARS-CoV-2. Several vaccines have been rapidly developed and subsequently approved by Health Canada and deployed across Canada. Among those is the ChAdOx1 nCoV-19 vaccine (AZD1222) developed at Oxford University and produced by AstraZeneca and the Serum Institute of India.

Recently, after widespread vaccination with the AstraZeneca vaccine in Europe, there have been reports of some vaccine recipients developing unusual thrombotic events and thrombocytopenia. Investigators have concluded that the AstraZeneca vaccine is associated with development of a prothrombotic disorder that clinically resembles heparin-induced thrombocytopenia (HIT). [See **Clinical Guide Heparin Induced Thrombocytopenia.**]

DIAGNOSIS OF VACCINE-INDUCED PROTHROMBOTIC IMMUNE THROMBOCYTOPENIA (VIPIT):

Patients presenting with the following blood clotting symptoms should be asked about their vaccine history:

- a persistent and severe headache
- focal neurological symptoms or visual changes, including blurred or double vision, or episodes suspicious for seizure
- shortness of breath
- abdominal or chest pain
- swelling and redness in a limb
- pallor and coldness in a limb.

If their vaccination falls within the period of 4 – 20 days prior to presentation, a complete blood count (CBC) should be drawn. If the platelet count is $< 150 \times 10^9/L$ and the vaccination window is between 4 and 20 days, the patient should be evaluated at their nearest emergency department for suspected VIPIT. Patients whose vaccination was not within the 4 – 20 day period or whose platelet count is $\geq 150 \times 10^9/L$ are unlikely to have VIPIT.

Patients with suspected VIPIT should go on to have a D-dimer level and a blood film. In cases where there is strong clinical suspicion of VIPIT, patients should also have diagnostic imaging to investigate for blood clots (including appropriate imaging to rule out cerebral vein sinus thrombosis (CVST), if the patient presents with a persistent and severe headache, nausea/vomiting, visual changes, focal neurological deficits or episodes suspicious for seizures. **It is prudent to note that imaging to rule out CVST includes both parenchymal imaging and vascular imaging**, either with a CT head/CT venogram,

or MR head/MR venogram and **that this potential diagnosis should be investigated urgently with same-day neuroimaging**. It is not known whether VIPIT, like HIT, is associated with arterial thromboses, but arterial clots should be considered if patients have consistent symptoms. An elevated D-dimer, a normal blood film (apart from thrombocytopenia), and confirmation of a blood clot on diagnostic imaging makes the diagnosis of VIPIT presumptive. The confirmatory diagnosis of VIPIT is made by testing for HIT. [See **Clinical Guide Heparin Induced Thrombocytopenia**].

Figure 1: Decision Tree for Diagnosing and Ruling Out VIPIT

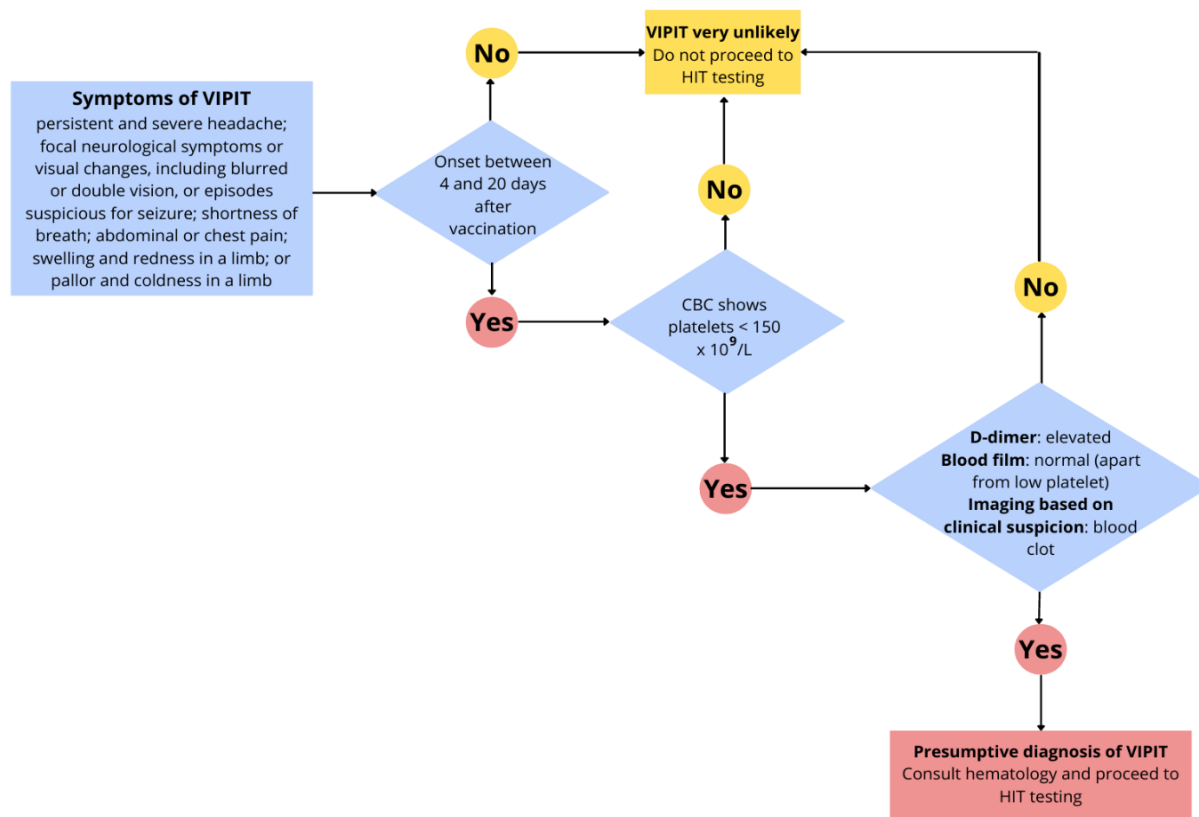


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MANAGEMENT OF VACCINE-INDUCED PROTHROMBOTIC IMMUNE THROMBOCYTOPENIA (VIPIT)

Given the uncommon nature of VIPIT, at the time of presumptive diagnosis, clinicians should refer for an urgent hematology consultation. Patients with presumptive and confirmed VIPIT should be treated similarly to HIT.

Treating Blood Clots in Patients with Presumptive or Confirmed VIPIT

- No heparin
- No platelet transfusions
- First line anticoagulants: direct oral anti-Xa inhibitors (e.g. rivaroxaban, apixaban, edoxaban)
- Consult hematologist
- IVIG 1g/kg daily for at least 2 days for severe or life-threatening thrombosis.

[See also **Clinical Guide Heparin Induced Thrombocytopenia**].

NOTE: All suspected adverse events following immunization (AEFI), including thrombosis, and both presumptive and confirmed VIPIT, should be reported using the provincial AEFI form and sent to the local Public Health Unit.

OTHER RELEVANT THROMBOSIS CANADA CLINICAL GUIDES AND RESOURCES:

Clinical Guides:

- Cerebral Venous Thrombosis
- Heparin Induced Thrombocytopenia

Resources:

- COVID-19 Vaccines and Blood Clots FAQs

REFERENCES:

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Greinacher A, Thiele T, Warkentin TE, Weisser K, Kyrle P, Eichinger S. A Prothrombotic Thrombocytopenic Disorder Resembling Heparin-Induced Thrombocytopenia Following Coronavirus-19 Vaccination. Research Square Preprint. DOI: <https://doi.org/10.21203/rs.3.rs-362354/v1> Accessed March 31, 2021

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