



The information in this pamphlet is for adults, who are not pregnant.

Heparin-induced thrombocytopenia (HIT)

What is heparin-induced thrombocytopenia (HIT)?

Heparin-induced thrombocytopenia – or HIT – is a serious drug reaction to heparin. If this reaction occurs the chance of developing a blood clot may be higher.

Heparin is a medication given to people to prevent blood clots. It is a ‘blood thinner’. Blood thinners do not actually thin your blood. They increase the time it takes for your blood to clot and so prevents blood clots from developing.

Heparin is usually given to patients in the hospital by an injection under the skin or through an IV line into a vein. There are two types of heparin:

- low molecular weight heparin (LMWH) - dalteparin (Fragmin) or enoxaparin (Lovenox)
- standard or unfractionated heparin (UFH)

What is the chance of developing heparin-induced thrombocytopenia (HIT)?

You may develop HIT after taking heparin for 4 to 5 days. Your risk will depend on the type of heparin, and when and why you are taking it.

HIGH RISK

- you are taking UFH after surgery or after an injury

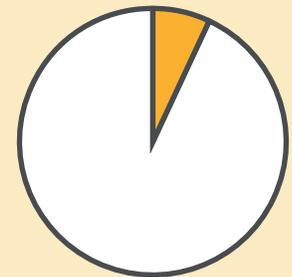
INTERMEDIATE RISK

- you are taking UFH
- you are taking a mix of UFH and LMWH or UFH and fondaparinux (another type of blood thinner)
- you are taking LMWH after major surgery or a major injury

LOW RISK

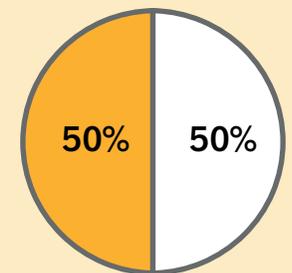
- you are taking LMWH
- you are taking LMWH after minor surgery or a minor injury
- you are taking fondaparinux (another type of blood thinner)

About 1 to 70 out of 1000 people taking heparin may develop HIT



70 per 1000

Up to half of the people with HIT may develop a blood clot which could lead to losing a leg or death



What are the symptoms of heparin-induced thrombocytopenia (HIT)?

Some people have symptoms and some people do not.

Some people have these symptoms:

- swelling, pain, warmth, heaviness, or redness in a leg
- chest pain
- shortness of breath
- racing heart
- change in colour of skin
- rash or sore where heparin was given
- stroke



What tests will your health care provider use to test for heparin-induced thrombocytopenia?

4Ts score

Your health care provider will check for signs and symptoms of HIT.

A blood test to measure platelet count will also be done. Platelets help blood to clot, if the count is low it may be a sign of HIT.

The health care provider will calculate a 4Ts score based on the signs, symptoms and the test. The higher the score the more likely you have HIT and more tests will need to be done. A low score means you likely do not have HIT.

Immunoassay test

This is a type of blood test. The test measures whether there are heparin antibodies in the blood. Antibodies in the blood likely means a person has HIT.

These antibodies may increase the chance of a serious blood clot.

Some immunoassays are called an ELISA.

Functional assay test

This is a type of blood test to measure heparin antibodies in the blood.

These tests are not available in all hospitals and need to be analysed in a special lab.

If the 4Ts score is high and the immunoassay test is high, a functional assay test may not need to be done.

The American Society of Hematology has recommended what tests should be done. The health care provider should do the 4Ts score first. Then if the score is intermediate or high, people should receive the immunoassay test. If the immunoassay test is positive, then a functional assay test may be done if available.

RECOMMENDATION 2.1

Like all tests, these tests are not perfect. The tests may miss people who have HIT. If health care providers follow the recommended testing, about 10 out of 1000 patients will be missed who actually have HIT.

10 per 1000



When are the tests done and what treatments are given?

Heparin-induced thrombocytopenia happens in phases. The tests that are done and the treatments given depend on the phase.

Phase 1: Suspected HIT

Your health care provider thinks you might have HIT

- The health care provider will assess you using the 4Ts score

RECOMMENDATION 2.1 [↗](#)

- If your 4Ts score is low, your treatments will stay the same but the health care provider will test you again if things change

RECOMMENDATION 2.2 [↗](#)

RECOMMENDATION 2.3 [↗](#)

- If your 4Ts score is intermediate or high, an immunoassay test will be done

RECOMMENDATION 2.1 [↗](#)

- If the immunoassay test is positive, a functional assay test may be done

RECOMMENDATION 2.1 [↗](#)

Phase 2: Acute HIT

Your tests are positive for HIT

- You have a high risk of developing a blood clot, called a thromboembolism
- You will stop taking heparin and start another type of blood thinner

RECOMMENDATION 3.1 [↗](#)

- The other type of non-heparin blood thinner may be
 - argatroban by IV
 - bivalirudin by IV
 - danaparoid by IV
 - fondaparinux shot
 - direct oral anticoagulant (DOAC) – apixaban, dabigatran or rivaroxaban pills

Phase 3 and 4: Subacute HIT (A or B)

Your platelet count is back to normal, but the other tests may still be positive

- You may be at risk of developing a blood clot, called a thromboembolism
- You will take a non-heparin blood thinner
- You may take a direct oral anticoagulant (DOAC) instead of a vitamin K antagonist (warfarin) pill

RECOMMENDATION 3.9 [↗](#)

- You may take a direct oral anticoagulant (DOAC) such as apixaban, dabigatran or rivaroxaban pills

Phase 5: Remote HIT

Your platelet count is normal and the other tests are normal

- The results of both the immunoassay and functional assay tests are normal
- You are no longer at risk of developing a thromboembolism
- You may be discharged from hospital
- If you still need to be on a blood thinner, you will take a non-heparin blood thinner, such as:
 - bivalirudin by IV
 - danaparoid by IV
 - fondaparinux shot
 - direct oral anticoagulant (DOAC) pills
 - vitamin K antagonist (warfarin) pills

RECOMMENDATION 7.1 [↗](#)

- You may have to carry or wear an emergency identifier



Emergency identifier or medical alert bracelet



3 months

If you had HIT in the last 3 months, it is suggested that you carry or wear an emergency identifier, such as a medical alert bracelet or pendant.

RECOMMENDATION 8.1.A [↗](#)

The identifier should include the name of the drug (heparin), the reaction to the drug (HIT), and the date you were diagnosed with HIT



3 months
or more

If you had HIT more than 3 months ago, it is suggested that you not carry a HIT emergency identifier

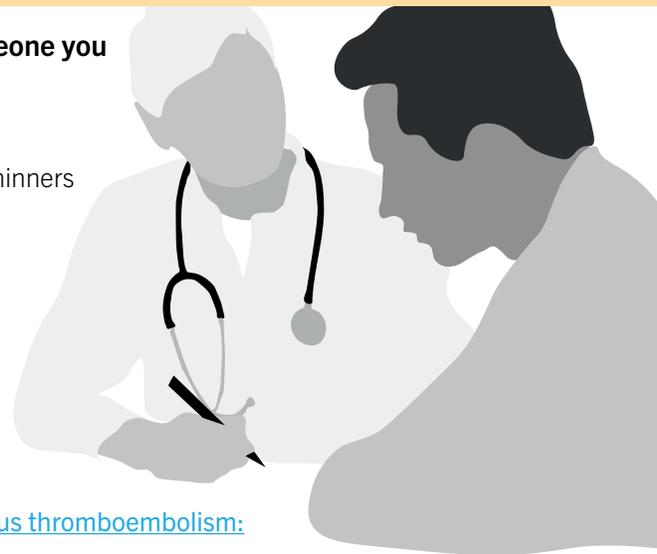
RECOMMENDATION 8.1.B [↗](#)

Even if you don't wear a medical alert bracelet or pendant, you should always tell your health care provider that you had HIT and have an allergy to heparin.

SPEAK WITH YOUR HEALTH CARE PROVIDER

To understand more about HIT and what may happen to you or someone you care for, you can speak to a health care provider about

- the risk of having HIT
- the chance of getting better by stopping heparin and taking other blood thinners
- the chance of bleeding
- the chance of a serious blood clot that could lead to amputation or death
- the chance of having HIT again
- the right time to wear or carry an emergency identifier
- the costs



Link to the guidelines:

[American Society of Hematology 2018 guidelines for management of venous thromboembolism: heparin-induced thrombocytopenia](#)

Adam Cuker, Gowthami M. Arepally, Beng H. Chong, Douglas B. Cines, Andreas Greinacher, Yves Gruel, Lori A. Linkins, Stephen B. Rodner, Sixten Selleng, Theodore E. Warkentin, Ashleigh Wex, Reem A. Mustafa, Rebecca L. Morgan, Nancy Santesso; American Society of Hematology 2018 guidelines for management of venous thromboembolism: heparin-induced thrombocytopenia. *Blood Adv* 2018; 2 (22): 3360–3392.

doi: <https://doi.org/10.1182/bloodadvances.2018024489>

Funding and conflicts of interest:

Funding for this patient version and the original version of the guideline was provided by the American Society of Hematology. The contributors to this version had no conflicts of interest.

Date: 21 December 2021

