CONDITION

Disseminated intravascular coagulation

Disseminated intravascular coagulation is uncontrolled clotting throughout the bloodstream that can cause both blood clots and serious bleeding.

WHAT IT IS
Widespread abnormal clotting that consumes platelets and clotting proteins

BODY SYSTEM
Blood and circulation

MAIN SYMPTOMS
Unusual bleeding, bruising, breathlessness, confusion

WHAT CAUSES IT
Severe illness, pregnancy complications, cancer, major tissue injury

HOW IT IS DIAGNOSED
Blood counts, clotting tests, fibrinogen, and D-dimer

MAIN TREATMENT
Treating the cause and supporting clotting or organ function

CAN IT BE CURED?
Sometimes - when the underlying trigger resolves

IS IT AN EMERGENCY?
Yes - suspected DIC needs immediate hospital care

LONG-TERM OUTLOOK
Recovery possible; outlook follows the underlying illness

Overview

Disseminated intravascular coagulation, usually called DIC, is a serious problem with the body's clotting system. It develops as a complication of another condition, such as a severe infection, major injury, pregnancy complication, or cancer.

In DIC, the clotting system becomes overactive throughout the bloodstream. Many small blood clots may form inside blood vessels, using up platelets and proteins called clotting factors.

As those supplies run low, the body may be unable to stop bleeding normally. DIC can therefore cause unwanted clotting and bleeding at the same time. Small clots can also reduce blood flow to organs such as the kidneys, lungs, brain, and liver.

DIC may develop quickly over hours or days. Less often, it develops over weeks or months,

particularly with some cancers or large blood-vessel abnormalities. Rapidly developing DIC is a medical emergency treated in hospital.

Symptoms

Symptoms can come from bleeding, unwanted blood clots, reduced blood flow to organs, or the condition that triggered DIC. Someone who is critically unwell may not be able to report symptoms, so the hospital team also watches for physical signs and blood-test changes.

Possible signs of bleeding include:

Possible effects of clotting and reduced organ blood flow include chest pain, breathlessness, confusion, reduced urine output, cold or discoloured fingers and toes, or pain and swelling in a limb.

These symptoms are not specific to DIC. Diagnosis requires assessment of the medical situation and a pattern of blood-test results.

- Oozing from intravenous lines, injection sites, wounds, or drains
- Easy or widespread bruising
- Small red or purple spots under the skin
- Bleeding from the nose, gums, digestive tract, or urinary tract
- Heavier than expected vaginal bleeding
- Blood in vomit, urine, or bowel movements

Causes and risk factors

DIC happens when a major medical problem strongly activates inflammation and clotting throughout the body. The trigger causes the body to produce large amounts of thrombin, an enzyme that helps make blood clots. Systems that normally limit or break down clots may also stop working properly.

Common triggers include severe infections and sepsis, a dangerous reaction to infection that can injure organs. Bacterial infections are well-known triggers, but severe viral, fungal, or parasitic infections may also be involved.

Other possible causes include:

Having one of these conditions does not mean DIC will develop. Risk depends on the nature and severity of the underlying problem.

DIC is not inherited. An inherited bleeding or clotting disorder may affect the medical assessment, but it is different from DIC.

- Major trauma, burns, surgery, or extensive tissue damage
- Pregnancy complications, including placental abruption, amniotic fluid embolism, or severe bleeding around childbirth
- Certain cancers, especially acute promyelocytic leukaemia and some advanced solid tumours
- Severe reactions to an incompatible blood transfusion
- Severe pancreatitis, liver injury, or shock
- Some large blood-vessel abnormalities or vascular tumours
- Certain snakebites or severe toxic reactions

Diagnosis

There is no single blood test that confirms every case of DIC. Diagnosis is based on the underlying medical situation, signs of bleeding or clotting, and a pattern across several tests. Results are often repeated because they can change quickly.

Tests commonly include a platelet count and clotting times. Prothrombin time, reported as PT or INR, measures one part of clotting. Activated partial thromboplastin time, or aPTT, measures another. These times may be longer than expected in DIC, although normal results do not always rule it out.

Fibrinogen is a protein used to make clots. It may fall as DIC progresses but can remain normal early on because inflammation also raises its level.

D-dimer and other fibrin breakdown products show that clots are being formed and broken down. They are often raised in DIC but can also be raised by infection, surgery, pregnancy, cancer, and ordinary blood clots. A raised D-dimer alone does not diagnose DIC.

A blood film may show damaged red blood cells called schistocytes. Kidney, liver, and blood-gas tests help assess organ function.

Clinicians may use a scoring system from the International Society on Thrombosis and Haemostasis. It combines the platelet count, clotting time, fibrinogen, and markers of clot breakdown but must be interpreted in the context of a condition known to cause DIC.[1,2]

Treatment and management

The main treatment is rapid control of the condition causing DIC. This might involve antibiotics and supportive care for sepsis, urgent treatment of a pregnancy complication, cancer treatment, surgery for major tissue injury, or treatment of shock.

Hospital monitoring may include frequent blood tests, blood-pressure checks, urine measurement, and assessment of breathing and organ function. Some people need intensive care, oxygen, mechanical breathing support, dialysis, or medicines to support blood pressure.

Blood products are not given only to correct an abnormal laboratory result. They may be used when there is significant bleeding, a high risk of bleeding, or a necessary invasive procedure.[1,3] Treatment may include platelets or plasma containing clotting factors. Concentrated fibrinogen or cryoprecipitate may be considered when fibrinogen is very low and bleeding is present.

Heparin is an anticoagulant like warfarin or apixaban that reduces clot formation. It is not suitable for every case of DIC. It may be considered when clotting is the main problem, such as in some slower forms of DIC or clear large-vessel clots. Careful assessment is essential because anticoagulants can worsen bleeding.[1,3]

Treatment changes as the balance between bleeding and clotting changes, making repeated examinations and blood tests important.

Complications

DIC can cause heavy or difficult-to-control bleeding from wounds and procedure sites or inside the digestive tract, lungs, brain, or other organs.

Small and large blood clots can reduce circulation. Complications include kidney injury, breathing failure, liver injury, stroke, heart injury, loss of blood supply to a limb, and damage to fingers or toes.

Shock can occur when blood pressure becomes too low to supply the organs properly. DIC can also make surgery, childbirth, trauma, or another critical illness harder to manage.

Risk depends on the cause, how quickly DIC develops, and whether organ injury has already occurred. Abnormal test results alone do not show its full severity.

Prevention

DIC usually cannot be directly prevented because it is an unpredictable complication of

another serious condition. No routine medicine, diet, supplement, or lifestyle change prevents DIC in the general population.

Prompt treatment of infections, major bleeding, pregnancy emergencies, cancer, and severe injuries may reduce the chance that clotting problems will progress. In hospital, people at risk may have repeated blood counts and clotting tests so changes can be recognised early.

If you have a long-term condition associated with slower DIC, follow its monitoring and treatment plan. Do not start aspirin, an anticoagulant, or a supplement intended to affect clotting unless recommended for your specific situation.

Living with it and what to expect

Acute DIC is usually part of a period of serious illness rather than a permanent diagnosis. If the trigger is controlled, platelet levels and clotting tests may improve. Recovery can take days or longer, especially when an organ has been injured.

Some people recover without lasting effects from DIC. Others need rehabilitation, kidney care, wound treatment, or follow-up for complications. The underlying infection, cancer, injury, or pregnancy complication often has a greater effect on long-term health than DIC itself.

Slower, or chronic, DIC may continue while its trigger remains present. It can cause repeated abnormal blood tests, bruising, bleeding, or blood clots. Follow-up may involve a haematology team and the team managing the underlying cause.

DIC can return if the original trigger persists or a new severe trigger occurs, but a previous episode does not mean it will automatically happen again. Before future surgery, cancer treatment, or pregnancy care, tell the healthcare team about the episode.

When to get medical help

Suspected acute DIC needs emergency hospital assessment. If you are outside hospital, call emergency services for heavy or uncontrolled bleeding, vomiting blood, coughing blood, sudden confusion, fainting, severe breathlessness, chest pain, or signs of stroke.

Sudden coldness, severe pain, numbness, or blue-black colour in a hand, foot, finger, or toe also requires emergency care. These signs can mean blood flow is severely reduced.

If you are already in hospital, promptly report new bleeding, increasing bruising, chest pain, breathing difficulty, reduced urine, or new pain and swelling.

Routine follow-up is different from emergency care. After recovery, scheduled visits may

include blood tests, organ-function checks, medicine reviews, and management of the condition that caused DIC. Contact your care team sooner if bruising or bleeding returns, but do not wait for a routine appointment if bleeding is heavy or you feel acutely unwell.

Common questions

Can you survive DIC?

Yes. Recovery is possible, especially when the trigger is treated quickly and organ injury is limited. However, DIC often occurs during severe illness, so the outlook is closely tied to that illness and the person's overall condition.

Why does DIC cause both clotting and bleeding?

The clotting system is activated throughout the bloodstream, creating unwanted clots and using up platelets and clotting proteins. The remaining supply may be too low to control bleeding. Increased breakdown of clots may also add to bleeding.

Is DIC the same as having a blood clot?

No. A typical blood clot is usually limited to one blood vessel, such as a deep vein in the leg. DIC affects the clotting system throughout the body and may cause widespread small clots, bleeding, or both.

Is DIC contagious?

No. DIC cannot pass between people. An infection that triggers it may be contagious, depending on the infection, but DIC itself is not.

Can DIC come back?

It can return if the underlying cause remains active or another major trigger develops. A previous episode does not make recurrence certain. Future risk depends mainly on the condition that caused it.

How quickly does DIC develop?

Acute DIC may progress over hours or days during sepsis, trauma, or a pregnancy emergency. Chronic DIC can develop more slowly and remain partly compensated for weeks or months, particularly with certain cancers or blood-vessel abnormalities.

Sources

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