CONDITION

Hemophilia A

Hemophilia A is an inherited condition in which low factor VIII levels make bleeding last longer.

WHAT IT IS
Inherited bleeding condition caused by low factor VIII

BODY SYSTEM
Blood and circulation

MAIN SYMPTOMS
Easy bruising, prolonged bleeding, joint bleeds, muscle bleeds

WHAT CAUSES IT
Usually an inherited F8 gene change

HOW IT IS DIAGNOSED
Clotting tests and factor VIII activity testing

MAIN TREATMENT
Preventive clotting-factor or non-factor therapy

CAN IT BE CURED?
No - treatment controls bleeding risk

IS IT AN EMERGENCY?
Sometimes - after head injury or uncontrolled bleeding

LONG-TERM OUTLOOK
Often near-normal lifespan with effective ongoing care

Overview

Hemophilia A is a bleeding condition caused by too little working clotting factor VIII. Factor VIII is a protein that helps the blood form a stable clot after an injury. Without enough of it, bleeding may continue longer or restart after it seemed to stop.

Hemophilia A does not usually make you bleed faster than someone else. The main problem is that your body has more difficulty keeping a clot in place. Bleeding can happen after an injury, operation or dental procedure. In more severe hemophilia, it can also begin without an obvious cause.

The condition is usually inherited and is present from birth. It commonly affects males, but females who carry an F8 gene change can also have low factor VIII levels and significant bleeding.

Hemophilia A ranges from mild to severe according to the amount of working factor VIII in the blood. Severity usually remains in the same category throughout life, although bleeding patterns can change with age, activity, treatment and other health conditions.

Regular care matters because repeated bleeding into joints or muscles can cause lasting damage. Modern preventive treatments can greatly reduce bleeding and allow many people to lead active lives.

Symptoms

Symptoms depend partly on the factor VIII level. People with mild hemophilia may not notice a problem until an operation, major injury or tooth removal. Moderate or severe hemophilia is more likely to cause bleeding after minor injuries or without a clear trigger.

Possible symptoms include:

Joint bleeds often affect the ankles, knees or elbows. Early signs can include tingling, stiffness or warmth before swelling becomes visible. Young children may avoid using a limb, limp or become unusually unsettled.

Bleeding inside the skull is uncommon but serious. Symptoms can include a worsening headache, repeated vomiting, unusual sleepiness, confusion, weakness, a seizure or loss of consciousness. These symptoms require emergency care.

- Bruises that are large, frequent or raised
- Bleeding that continues or restarts after an injury
- Prolonged bleeding after surgery, dental work or injections
- Painful, swollen or warm joints
- Deep muscle pain, swelling or tightness
- Blood in urine or stool
- Frequent or prolonged nosebleeds
- Heavy menstrual bleeding or increased bleeding after childbirth

Causes and risk factors

Hemophilia A is usually caused by a change in the F8 gene, which contains the instructions for making factor VIII. The gene is on the X chromosome, one of the chromosomes involved in biological sex.

A male with an affected X chromosome will usually have hemophilia because he has only one X chromosome. A female with one affected X chromosome is often described as a carrier. However, carriers can have low factor VIII levels and bleeding symptoms. Some females have factor levels low enough to meet the definition of hemophilia.

A father with hemophilia passes his affected X chromosome to all his daughters and none of his sons. A mother who carries the gene change has a chance of passing it to each child. The exact outcome differs according to which chromosome the child inherits.

Hemophilia can appear in a family with no previous history. This may happen because the gene change is new or because earlier relatives carried it without being diagnosed.

The inherited condition is different from acquired hemophilia A . Acquired hemophilia happens when the immune system unexpectedly makes antibodies against factor VIII, usually later in life. It has different causes, bleeding patterns and treatment.

Diagnosis

Diagnosis begins with your bleeding history and family history. Blood tests then measure how well the clotting process works.

An activated partial thromboplastin time , or aPTT, is often prolonged in hemophilia A. However, this screening test cannot confirm the condition by itself, and mild hemophilia may not always produce a clearly abnormal result.

A factor VIII activity test confirms whether the level is low and helps classify hemophilia as mild, moderate or severe. Other tests may be needed to rule out von Willebrand disease and other causes of a low factor VIII level.

Genetic testing can identify the F8 gene change in many families. It may clarify inheritance, help test relatives and support planning before pregnancy. Genetic counselling can help you understand what the result means without pressuring you toward a particular decision.

If treatment does not work as expected, testing may look for a factor VIII inhibitor . This is an antibody that blocks replacement factor VIII. A specialized blood test measures the inhibitor.

Treatment and management

Hemophilia is usually managed through a specialist hemophilia treatment centre. Care may involve hematology, nursing, physiotherapy, dentistry, genetics and psychological support.

Factor VIII replacement places the missing clotting protein into the bloodstream. It can be

given to prevent bleeds, called prophylaxis, or to treat a bleed when it occurs. Products differ in how long they remain active.

Emicizumab is a non-factor medicine given under the skin. It acts as a bridge between other clotting proteins and helps the blood clot without replacing factor VIII. It is used to prevent bleeding in people with hemophilia A, including some people who have inhibitors. It affects the interpretation of certain clotting tests, so emergency teams and laboratories need to know when someone takes it.

Desmopressin may temporarily raise factor VIII in some people with mild hemophilia A. A supervised test is often used to find out whether it works well enough for that person. Antifibrinolytic medicines may also help protect clots in areas such as the mouth or nose.

People with inhibitors may need bypassing medicines, immune tolerance treatment or emicizumab. Treatment is planned by a specialist because some combinations of medicines can increase the risk of harmful clotting.

Gene therapy is available for selected adults in some countries. It delivers a working copy of the factor VIII gene to liver cells. It may reduce bleeding and the need for regular factor treatment, but results and durability differ. It also requires ongoing liver and factor-level monitoring and is not considered a guaranteed cure.

A written bleeding plan should explain which treatment you use and what to do after an injury. Before surgery, dental work or another invasive procedure, the hemophilia team can arrange a plan to control bleeding.

Some medicines, including aspirin and certain anti-inflammatory painkillers like ibuprofen or naproxen , can increase bleeding. Do not stop a prescribed medicine on your own, but check with your hemophilia team or pharmacist before starting new medicines or supplements.

Complications

Repeated bleeding into a joint can damage its lining, cartilage and bone. This is called hemophilic arthropathy. It may lead to long-term pain, reduced movement and muscle weakness. Preventing bleeds and treating them promptly lowers this risk.

A deep muscle bleed can press on nerves or blood vessels. Depending on its location, it may cause numbness, weakness or reduced blood flow. Bleeding in the neck or throat can affect breathing, while bleeding in the abdomen can cause significant blood loss.

Some people develop inhibitors against replacement factor VIII. Inhibitors make standard factor treatment less effective and require a different treatment plan.

Chronic pain and limits on physical activity can affect sleep, school, work and emotional health. Physiotherapy and pain management should be adapted to hemophilia rather than based only on general joint-pain advice.

Modern factor products have strong safeguards against infection. People treated decades ago with plasma-derived products may have been exposed to hepatitis or HIV before effective screening and virus-removal methods were introduced. Their follow-up needs may therefore differ.

Prevention

Inherited hemophilia A cannot currently be prevented. Nothing a parent did during pregnancy caused the F8 gene change.

Many bleeding episodes and complications can be prevented or reduced. Preventive treatment is especially important for people at risk of spontaneous or repeated bleeds. Regular reviews help check bleeding frequency, joint health, treatment technique and whether inhibitors have developed.

Exercise supports muscles and joints, which may reduce injury risk. Lower-impact activities are often easier to manage, but choices should reflect your treatment coverage, skills and health. A hemophilia physiotherapist can help with safer participation rather than advising you to avoid all sport.

Protective equipment, good dental care and prompt treatment of injuries are also useful. Carrying medical identification helps emergency teams recognize hemophilia quickly.

Living with it and what to expect

Hemophilia A is lifelong, and the underlying factor VIII deficiency does not gradually improve. Bleeding risk can still change over time because of treatment, activity, joint damage, other medicines and health conditions.

Children with severe hemophilia may begin preventive therapy early. As they grow, they can gradually learn to recognize bleeds, handle medicines and explain the condition to teachers or coaches. Transition to adult care should include increasing independence without abruptly removing family support.

Most people can attend school, work, travel, exercise and have relationships and children. Planning is often needed around treatment supplies, travel insurance, dental care, pregnancy, operations and physically demanding activities.

Treatment burden can be significant. Regular injections, concern about bleeding and uncertainty around inhibitors or gene therapy can affect emotional well-being. Support from a treatment centre, counsellor or hemophilia community may help.

Joint pain should not be accepted as unavoidable. A new painful joint may be bleeding, while persistent pain may reflect earlier joint damage or another problem. Assessment helps separate these causes and guide treatment.

Long-term outcomes are generally much better with consistent preventive care than without it. Individual experiences remain different, especially where treatment access is limited or inhibitors and established joint damage are present.

When to get medical help

Seek emergency care after a significant head injury, even if you initially feel well. Also get emergency help for:

Use your prescribed emergency treatment if your hemophilia plan tells you to, but do not delay emergency assessment. Tell the emergency team that you have hemophilia A, what treatment you use and whether you have an inhibitor.

Contact your hemophilia team promptly for a suspected joint or muscle bleed, repeated nosebleeds, blood in urine or stool, or bleeding that keeps returning.

Routine follow-up is appropriate for reviewing preventive treatment, new bruising patterns, ongoing joint discomfort, menstrual bleeding, dental planning or an upcoming procedure. Arrange the procedure with the hemophilia team in advance rather than waiting until the day.

- A severe or worsening headache, repeated vomiting or confusion
- Unusual sleepiness, weakness, a seizure or loss of consciousness
- Bleeding in the neck or throat, trouble breathing or trouble swallowing
- Severe abdominal, back or groin pain
- Bleeding that remains heavy or does not respond to your emergency plan
- A painful, swollen muscle with numbness, weakness or a cold limb
- A major injury or suspected internal bleeding

Common questions

Is hemophilia A the same as hemophilia B?

No. Hemophilia A involves factor VIII, while hemophilia B involves factor IX. Symptoms can look similar, but blood tests distinguish them and treatments are not interchangeable.

Can women and girls have hemophilia A?

Yes. Females who carry an F8 gene change may have low factor VIII and clinically important bleeding. Some have levels within the hemophilia range. Symptoms such as heavy periods, bleeding after childbirth or prolonged surgical bleeding deserve proper assessment.

Can hemophilia A skip a generation?

It can appear to skip generations when someone carries the gene change but has few symptoms. It can also occur without a known family history because of a new gene change or an unrecognized carrier in the family.

Can I play sports with hemophilia A?

Many people can. Regular activity improves strength, balance and joint health. The safest choice depends on your bleeding pattern, joint condition and preventive treatment. High-impact or collision activities carry more injury risk and need individual discussion with your hemophilia team.

Will a small cut make me bleed to death?

Usually not. Small surface cuts often respond to firm pressure and ordinary first aid. The greater concern is prolonged bleeding, deep muscle or joint bleeding, and bleeding inside the head, neck or abdomen.

Does gene therapy cure hemophilia A?

Gene therapy may increase factor VIII levels and reduce the need for regular treatment in selected adults. It does not work equally for everyone, its effect may lessen over time, and long-term monitoring remains necessary. It is not currently considered a certain cure.

Sources

- Centers for Disease Control and Prevention. About Hemophilia
- World Federation of Hemophilia. WFH Guidelines for the Management of Hemophilia , 3rd edition. Haemophilia . 2020;26(Suppl 6):1-158
- National Library of Medicine, GeneReviews. Hemophilia A
- US Food and Drug Administration. HEMLIBRA (emicizumab-kxwh) prescribing information
- US Food and Drug Administration. ROCTAVIAN (valoctocogene roxaparvovec-rvox) prescribing information