

Blood Disorders

Blood is essential for life. It carries oxygen and nutrients to every part of the body. Blood also fights infections and heals injuries. Therefore, disorders of the blood can have a great effect on your health.

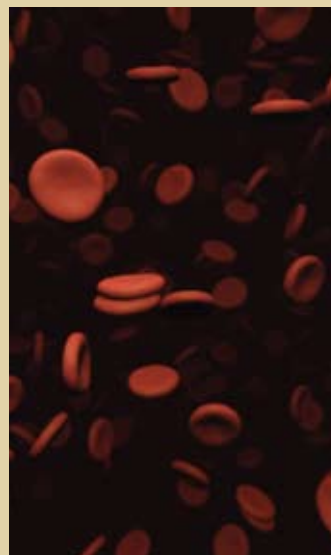
You can protect your health by understanding the symptoms of common blood disorders. If you think you may have one of these conditions, talk to your doctor. With early diagnosis and the right treatment, many women with blood disorders are able to live full and healthy lives.

What is blood?

Blood is made up of several types of cells and proteins:

- **Red blood cells** carry oxygen from the lungs to cells throughout the body.
- **White blood cells** help fight infections.
- **Platelets** help form clots to stop bleeding.
- **Plasma**, the liquid part of blood, contains many types of proteins. These include proteins that help the blood to clot and proteins that protect the body from viruses and infection. Plasma also contains substances such as dissolved salts, sugars, and hormones.

Blood cells are produced by the soft tissue inside your bones, called bone marrow. Your body produces hundreds of billions of new blood cells each day.



Blood disorders

Blood disorders are diseases that affect one or more parts of the blood. The symptoms depend on the part of the blood affected:

- Bleeding disorders prevent the blood from forming clots, which stop bleeding after an injury. (See pages 106 and 107 for more information on different bleeding disorders.)
- Clotting disorders cause blood to clot too easily, creating a condition called thrombophilia (throm-boh-FIL-ee-uh). (See page 109 for more information.)

- Anemia (uh-NEE-mee-uh) is a condition in which the blood has too few healthy red blood cells. (See page 109 for more information.)
- Disorders of the bone marrow, such as leukemia (loo-KEE-mee-uh), may affect the production of blood cells. (See page 58 of the *Cancer* chapter for more information.)

Causes of blood disorders

Many blood disorders are inherited. If you have a history of a blood disorder in your family, you might have a higher risk of developing the disorder yourself or carrying the gene for the disorder. Blood disorders may also be caused by:

- other diseases or conditions
- the side effects of medications
- a lack of certain nutrients in your diet

Blood disorders can be acute or chronic. Acute blood disorders occur suddenly and last a short time. For example, rapid or excessive blood loss may cause acute anemia. Once the bleeding is stopped and blood levels return to normal, the anemia is cured.

A chronic blood disorder is a disorder that develops slowly or lasts a long time. Many chronic disorders, such as sickle



What is coagulation?

Coagulation (koh-ag-yuh-LAY-shuhn)—or clotting—stops bleeding after a blood vessel is injured. There are three steps in this process:

1. The blood vessel narrows, slowing the flow of blood.
2. The platelets begin to “stick” to the site of the injury and form a clot.
3. Clotting factors in the blood help to build the clot and keep it in place. After the bleeding stops, the blood vessel starts to heal, and the clot begins to break down.

Bleeding disorders can disrupt any part of this process.

cell anemia, cannot be cured. But the symptoms can be treated.

It is important to have blood disorders diagnosed and treated as early as possible. Proper treatment can relieve symptoms and prevent complications.

Bleeding disorders

If you have a bleeding disorder, your blood may not clot normally. The chart on pages 106 and 107 describes several common bleeding disorders that affect women.

Causes of bleeding disorders

Some bleeding disorders are inherited, including von Willebrand disease (vWD) and hemophilia (hee-muh-FIL-ee-uh). If there is a history of bleeding problems in your family, talk to your doctor. You may need to be tested.

Other factors that prevent or slow clotting include:

- certain types of drugs—including aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs), antibiotics, and chemotherapy drugs
- a lack of vitamin K
- other disorders, including autoimmune (aw-toh-ih-MYOON) diseases, bone marrow disorders, leukemia, thyroid disease, Cushing syndrome, and liver and renal diseases

Symptoms of bleeding disorders

Bleeding disorders often cause unusual bleeding of the female reproductive system. You may have heavy menstrual bleeding. If you have a reproductive disorder that causes bleeding, such as endometriosis (EN-doh-MEE-tree-OH-suhss), a bleeding disorder can make your symptoms worse. (See page 158 of the *Reproductive Health* chapter for more information.)

Other symptoms of bleeding disorders are:

- bleeding or bruising easily
- bleeding too much or for a long time
- nosebleeds

Getting diagnosed

Mild bleeding disorders often go undiagnosed. Because women normally bleed with menstruation and childbirth, it may be hard for you or your doctor to recognize abnormal bleeding.

Discuss your symptoms with your doctor. You may need to be tested for a bleeding disorder if you:

- have heavy menstrual bleeding
- have a history of bleeding disorders in your family



Pregnancy

Pregnancy boosts levels of proteins that help the blood to clot. This may help control bleeding. However, levels of these clotting proteins will still be lower than normal. If you have a bleeding disorder, you may be at risk for problems during pregnancy such as:

- miscarriage or stillbirth
- bleeding during pregnancy
- heavy bleeding after childbirth

These are symptoms that your menstrual bleeding might be heavier than normal:

- soaking through a pad or tampon every hour for 2 to 3 hours in a row
- blood clots more than 1 inch in diameter
- anemia (See page 109 for more information.)

You may need to consult a hematologist, a specialist in blood disorders, for additional blood tests. Tests for one of the most common disorders, vWD, may be uncertain. You may need repeated testing to find out if you have vWD.

Treating bleeding disorders

Inherited bleeding disorders cannot be cured. But treatments can:

- relieve symptoms
- prevent dangerous bleeding during or after surgery or dental work
- prevent complications during and after pregnancy

The treatments below can reduce blood loss. Your treatment plan will depend on the type of bleeding disorder you have and your symptoms.

- Birth control pills may help reduce menstrual bleeding.
- Desmopressin acetate (dess-moh-PRESS-uhn A-suh-tayt) is a drug that can control menstrual bleeding and prevent excessive bleeding during and after surgery or dental work.

- Antifibrinolytics (an-teye-FEYE-bruhn-uhl-IHT-ihks) are drugs that keep clots from breaking down. They can help reduce menstrual bleeding, nosebleeds, and excess bleeding from surgery or dental work.
- Clotting factor concentrates—medicines that provide extra factors to help blood clot—may improve symptoms when other treatments don't work.

Heavy menstrual bleeding can interfere with your personal and professional life. If the treatments above don't help control this symptom, there are surgeries that can permanently stop menstruation. However, these surgeries will cause you to be unable to get pregnant.

Talk to your doctor about the risks and benefits of treatments. You may need to try several treatments to find out what works best for you.

Common Bleeding Disorders in Women	
von Willebrand Disease (vWD)	
Causes	vWD is the most common inherited bleeding disorder. It is caused by deficiencies or defects in von Willebrand Factor (vWF). vWF is a substance in the blood that helps clots to form.
Symptoms	<ul style="list-style-type: none"> • Heavy bleeding during periods (the most common symptom) • Bruising easily • Prolonged or excessive bleeding after dental work or surgery • Excessive postpartum bleeding
Diagnosis	<ul style="list-style-type: none"> • Blood tests can measure vWF activity in your blood. • Hormones and medications affect vWF levels, making diagnosis difficult. • If you have symptoms but your blood tests are negative for vWD, you may need to be tested again.
Treatments	vWD cannot be cured, but the following treatments may relieve your symptoms: <ul style="list-style-type: none"> • Birth control pills • Desmopressin acetate • Antifibrinolytics • Clotting factor concentrates • Surgery to stop menstruation

Common Bleeding Disorders in Women

Hemophilia Carrier Status	
Causes	Hemophilia is caused by an inherited genetic mutation on the X chromosome. If men inherit this trait, they have hemophilia, a severe bleeding disorder. Women who inherit this mutation are carriers of the disease—they do not have hemophilia, but they may pass the disease on to their children.
Symptoms	Most hemophilia carriers do not have symptoms. Some women have mild bleeding symptoms, such as: <ul style="list-style-type: none"> • Heavy bleeding during periods • Prolonged or excessive bleeding after dental work, surgery, serious injury, or childbirth
Diagnosis	If you have a family history of hemophilia, genetic testing can determine whether you are a carrier.
Treatments	Hemophilia cannot be cured. The following treatments can stop or prevent excessive bleeding: <ul style="list-style-type: none"> • Birth control pills • Desmopressin acetate • Antifibrinolytics • Clotting factor replacement Scientists are studying gene therapy, which may treat, or even cure, hemophilia in the future.
Thrombocytopenia	
Causes	Thrombocytopenia (throm-buh-syt-uh-PEE-nee-uh) is a condition in which there are too few platelets in the blood. It is caused by medications and by other diseases, including: <ul style="list-style-type: none"> • Anemia • Leukemia • HIV • Disorders such as Gaucher’s disease that cause the spleen to become enlarged and trap platelets • Disorders in which platelets break down too quickly
Symptoms	<ul style="list-style-type: none"> • Bruising easily • Heavy bleeding during periods • Bleeding under the skin and bleeding of the gums and digestive tract
Diagnosis	Blood tests can detect low platelet levels. Additional testing may be needed to find the cause.
Treatments	The underlying cause must be treated.

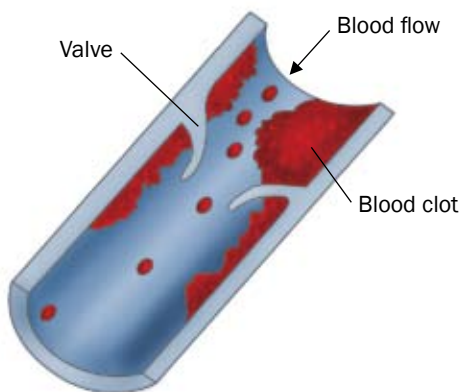
Clotting disorders

If you have a clotting disorder, your blood may clot too easily. This condition is called thrombophilia (throm-boh-FIL-ee-uh). It may cause blood clots to form in veins and sometimes in arteries.

These clots can move through the bloodstream and block small blood vessels.

Causes of thrombophilia

Thrombophilia may be inherited or acquired. Common causes include gene



mutations, protein deficiencies, and certain autoimmune disorders.

If you have thrombophilia, some conditions or drugs can increase your risk of clotting:

- heart failure
- obesity, which puts pressure on veins
- pregnancy
- using the birth control pill or menopausal hormonal therapy

Your risk can also be raised by sitting or lying in one position for a long time, such as during recovery from surgery or sitting still during a long flight.

Symptoms of thrombophilia

The main symptom is clotting in veins or arteries. Clots may cause swelling, pain, or redness.

Thrombophilia may cause blood clots to form in veins deep inside the leg. This is called deep vein thrombosis (throm-BOH-suhss), commonly known as DVT. These clots can break loose and block blood vessels in the lung. This is called a pulmonary embolism (PE). Symptoms of PE are shortness of breath or sharp chest pains, especially when you inhale. Because the clot stops the flow of blood,

PE can damage lung tissue and even cause death.

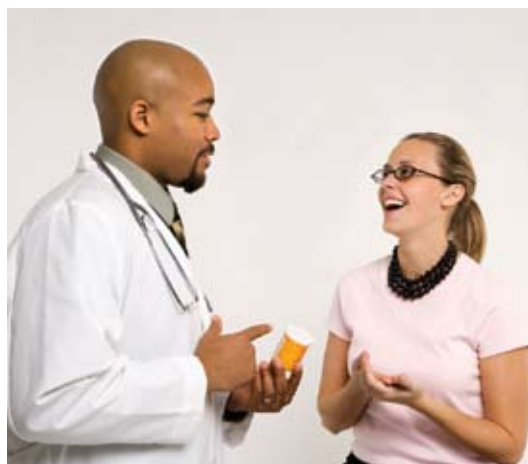
Thrombophilia is a common disorder, affecting about 1 in every 5 Americans. Many people with thrombophilia never develop clots. Because pregnancy and medications that contain hormones increase the risk of blood clots, women are at higher risk for clotting than men.

Getting diagnosed

If you have a personal or family history of blood clots, DVT, or PE, talk to your doctor about whether you should be tested for thrombophilia. You should also talk to your doctor before using the birth control pill, birth control patch, or menopausal hormone therapy. Finding out whether you have the disorder can help you get the proper treatment.

Treating thrombophilia

Inherited thrombophilia cannot be cured. However, blood-thinning drugs prevent excessive clotting. You may need these drugs only when you are at high risk of clots—during pregnancy, for instance. Some women need to take these drugs throughout their lives.



Common Clotting Disorders in Women

Thrombophilia	
Causes	<p>Inherited conditions that cause thrombophilia include:</p> <ul style="list-style-type: none"> • Mutated genes, such as Factor V Leiden (LAY-din) mutation and prothrombin (pro-THROM-bin) 20210 mutation • A lack of certain blood proteins, including protein C, protein S, and antithrombin • Hyperhomocysteinemia (hey-pur-hoh-moh-siss-tuh-NEE-mee-uh), an increase in an amino acid in the blood caused by a mutation in the <i>MTHFR</i> gene <p>Scientists are still studying how genes contribute to thrombophilia. This research may help to improve diagnosis and treatment.</p> <p>Thrombophilia may be caused by some autoimmune disorders (see the <i>Autoimmune Diseases</i> chapter on page 83 for more information about these diseases):</p> <ul style="list-style-type: none"> • Antiphospholipid (an-teye-FOSS-foh-lip-ihd) antibody syndrome • Systemic lupus erythematosus (LOO-puhss ur-ih-thee-muh-TOH-suhss)
Symptoms	<ul style="list-style-type: none"> • Blood clots in veins or arteries, such as deep vein thrombosis • Pulmonary embolism
Diagnosis	Blood tests can diagnose thrombophilia and determine its cause.
Treatments	<ul style="list-style-type: none"> • Blood thinning drugs heparin and warfarin can prevent future clots. • Some women need to take blood thinners only when they are at high risk of a clot. • Some women may need continuous treatment.
Disseminated Intravascular Coagulation (DIC)	
Causes	<p>DIC is a type of acquired thrombophilia. Excessive clotting depletes platelets and clotting factors. DIC may be caused by:</p> <ul style="list-style-type: none"> • Severe infections • Cancer • Pregnancy complications, such as placental abruption (the breaking away of the placenta from the womb) or a dead fetus that remains in the womb <p>This clotting removes platelets and clotting factors from the blood, causing uncontrolled bleeding.</p>
Symptoms	<ul style="list-style-type: none"> • Blood clots throughout the bloodstream • Excessive bleeding
Diagnosis	Blood tests
Treatments	The cause of DIC must be treated. Platelets and clotting factors are administered to control bleeding.

Anemia

Anemia is caused by a lack of healthy red blood cells. It is a common disorder, affecting more than 3 million Americans. Women, especially women of childbearing age, are more likely to have anemia than men. This is because women lose

blood during menstruation and childbirth.

Causes of anemia

There are many different types of anemia and a variety of causes, including:

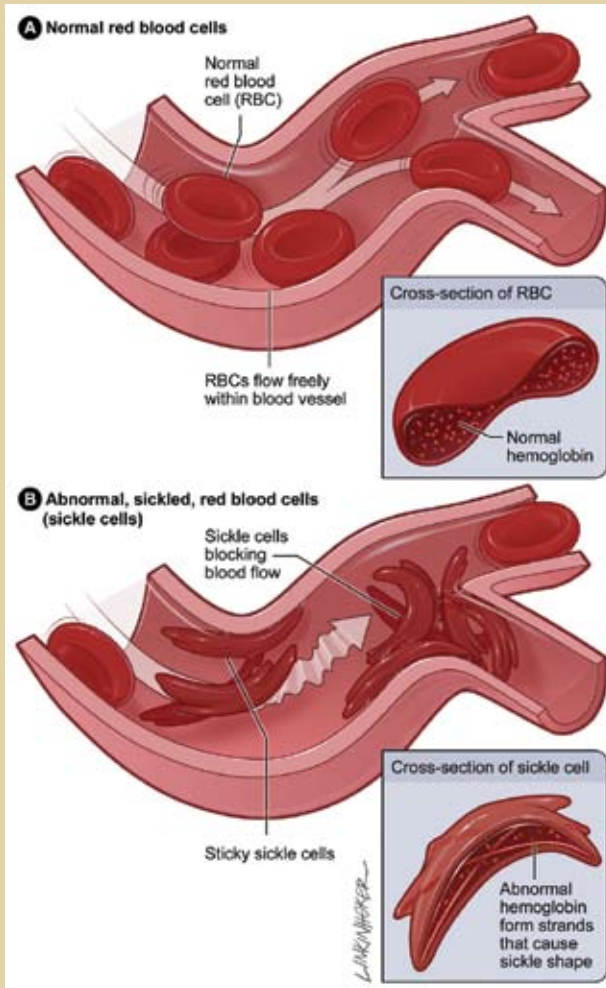
- major blood loss

- lack of iron, vitamin B¹², folic acid, or vitamin C
- diseases that damage bone marrow
- inherited disorders that cause defects in red blood cells
- disorders that cause your immune system to attack red blood cells

Symptoms of anemia

Anemia is a condition in which the number of healthy red blood cells in your blood is lower than normal. This lowers oxygen levels in the blood. If you have mild anemia, you may not have symptoms, or you may have symptoms only when you are physically active.

What is sickle cell disease?



Sickle cell disease is an inherited blood disorder. It causes red blood cells to be crescent-shaped instead of round. These sickle cells break down more quickly than normal cells, causing anemia. Sickle cells may also block blood vessels, a condition called a sickle cell crisis. Crises cause pain and complications such as stroke, infections, and organ damage.

If you inherit two sickle cell genes, one from each parent, you will have sickle cell disease. If you inherit only one gene, you will have the sickle cell trait. Although women with sickle cell trait may not have any symptoms, they can pass the trait on to their children.

People whose ancestors are from sub-Saharan Africa have the greatest risk of the disease.

ILLUSTRATION USED WITH PERMISSION FROM THE NATIONAL HEART, LUNG, AND BLOOD INSTITUTE, NATIONAL INSTITUTES OF HEALTH, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES. ILLUSTRATION: MICHAEL LINKINHOKER, LINK STUDIO, LLC.

Symptoms include fatigue, dizziness, and shortness of breath.

Getting diagnosed

If you experience these symptoms, talk to your doctor. Blood tests can find out whether you have anemia. Additional tests may be needed to find the cause.

Treating anemia

Your treatment will depend on the type of anemia you have. In some cases, treating the cause will cure anemia. Inherited forms of anemia, such as sickle cell disease, cannot be cured, but treatments can relieve the symptoms and prevent complications. Scientists are studying new medicines and treatments such as gene



therapy and bone marrow transplants. These may provide even better treatments for anemia in the future.

Types of Anemia	
Acute blood loss anemia	
Causes	Blood loss may be caused by: <ul style="list-style-type: none"> • Injury • Surgery • Childbirth • Heavy menstrual bleeding • Bleeding from the digestive or urinary tracts
Symptoms	<ul style="list-style-type: none"> • Fatigue • Dizziness • Shortness of breath • Pale skin • Cold hands and feet • Chest pain
Diagnosis	<ul style="list-style-type: none"> • Blood tests are used to diagnose anemia. • Physical exams and other tests may be needed to find the cause of the blood loss.
Treatment	<ul style="list-style-type: none"> • If your anemia is caused by internal bleeding, surgery may be needed to stop the blood loss. • Lost blood may be replaced with a blood transfusion.

Types of Anemia

Iron deficiency anemia

Causes	You may have low iron because of: <ul style="list-style-type: none">• Blood loss• Lack of iron in your diet• Problems absorbing the iron in your diet
Symptoms	<ul style="list-style-type: none">• Fatigue• Dizziness• Shortness of breath• Pale skin• Cold hands and feet• Chest pain• A condition called pica, in which you crave nonfood items (ice, dirt, or paint, for example)• Restless leg syndrome
Diagnosis	<ul style="list-style-type: none">• Blood tests can diagnose anemia.• A physical exam and other tests may be needed to determine the cause.• Because iron deficiency anemia is very common during pregnancy, pregnant women should be tested.
Treatment	Iron deficiency anemia may be treated (and even prevented) by: <ul style="list-style-type: none">• Taking iron supplements, as directed by your doctor• Eating iron-rich foods, such as:<ul style="list-style-type: none">• meat (especially red meat)• eggs• iron-fortified grains and cereals• beans and nuts• dried fruit• dark green, leafy vegetables• Eating foods that contain vitamin C, folate, and vitamin B¹², which help your body absorb iron

Types of Anemia

Sickle cell disease

Causes	<p>Sickle cell disease is an inherited disorder that affects red blood cells.</p> <ul style="list-style-type: none"> • Red blood cells are crescent-shaped, instead of round. • Sickle cells die more quickly than normal cells, causing anemia. • Sickle cells may block blood vessels, leading to painful crises and organ damage.
Symptoms	<ul style="list-style-type: none"> • Fatigue • Pale skin • Jaundice • Shortness of breath • Sickle cell crises (caused by blocked blood vessels)
Diagnosis	<ul style="list-style-type: none"> • Blood tests can determine whether you have sickle cell disease or the sickle cell trait.
Treatment	<p>Treatments include:</p> <ul style="list-style-type: none"> • Hydroxyurea (hey-DRAHK-see-yoo-REE-uh), a drug that can prevent sickle cell crises • Flu shots and vaccinations to prevent infection • Pain medications <p>To prevent crises:</p> <ul style="list-style-type: none"> • Get regular checkups. • Avoid conditions that may trigger a crisis, such as stress and dehydration. • Maintain a healthy lifestyle.
Thalassemia	
Causes	<p>Thalassemia (thal-uh-SEE-mee-uh) is a group of inherited blood disorders that cause defective red blood cells and anemia. These disorders are most common among people from Africa, the Middle East, Southeast Asia, Southern China, and the Mediterranean.</p>
Symptoms	<p>Anemia symptoms may be mild to severe, depending on the type of thalassemia.</p>
Diagnosis	<p>Blood and genetic tests are used to diagnose the disease.</p>
Treatment	<ul style="list-style-type: none"> • Blood transfusions supply healthy red blood cells. • Iron chelation (kee-LAY-shuhn) therapy may be needed to remove iron, which builds up after repeated blood transfusions.

Bone marrow disorders

Some disorders damage bone marrow, where blood cells are produced. This may increase or decrease the number of healthy cells in your blood, causing excessive bleeding or clotting, anemia, or increased fevers and infections.

Myeloproliferative (MEYE-uh-loh-pruh-LIF-uh-ruh-tiv) diseases and myelodysplastic (MEYE-uh-loh-diss-PLASS-tik) syndromes are bone marrow disorders that are most common among older adults.

- Myeloproliferative diseases cause too many blood cells to be produced. These cells may be red blood cells, white blood cells, or platelets.
- Myelodysplastic syndromes reduce the number of healthy blood cells. You may have too few red blood cells, white blood cells, or platelets.

These disorders may turn into leukemia, a cancer that affects the bone marrow. (See page 58 of the *Cancer* chapter for more information.)

Fertility and pregnancy

Many blood disorders cause complications during pregnancy. You may also worry about passing these disorders on to your children. Getting diagnosed before you conceive can help you protect your health and the health of your children. The following chart describes common fertility and pregnancy issues that women with blood disorders may face.



Blood Disorders, Fertility, and Pregnancy

Bleeding disorders

Fertility issues	<ul style="list-style-type: none">• Treatments for heavy menstrual bleeding can interfere with fertility. The effects of the birth control pill are temporary. Surgeries to prevent menstruation, such as hysterectomy or endometrial ablation (destruction of the lining of the uterus), result in permanent sterility. If you plan to become pregnant, ask your doctor about other treatment options.• Women with a family history of hemophilia may worry about passing the disease on to their children. It is important to get tested before you conceive.• If you are a hemophilia carrier, genetic counseling can help you understand your risks and your options.
Pregnancy issues	<ul style="list-style-type: none">• Because pregnancy increases certain clotting proteins in the blood, you may have fewer symptoms during pregnancy.• Women with some types of bleeding disorders have a higher risk of:<ul style="list-style-type: none">• miscarriage and stillbirth• bleeding during pregnancy• excessive bleeding after childbirth• Talk to your doctor about treatments to prevent these complications.

Blood Disorders, Fertility, and Pregnancy

Thrombophilia	
Pregnancy issues	<p>Blood clots more easily during pregnancy. Therefore, women with thrombophilia are at even greater risk of developing clots in blood vessels. Thrombophilia also increases the risk of:</p> <ul style="list-style-type: none">• miscarriages• stillbirth• placental abruption (detachment of the placenta) <p>Pregnant women should be tested for thrombophilia if they have had:</p> <ul style="list-style-type: none">• A blood clot• Family members who have experienced blood clots before the age of 50• The pregnancy complications listed above <p>Treatment with blood thinning drugs such as heparin can help prevent dangerous blood clots and pregnancy complications.</p>
Anemia	
Fertility issues	<ul style="list-style-type: none">• Women who have sickle cell disease or thalassemia—or who carry the genes for these disorders—may worry about passing the diseases on to their children.• Genetic counseling and testing can help you understand your risks and options.
Pregnancy issues	<ul style="list-style-type: none">• Talk to your doctor about whether you need to take iron supplements, change your diet to prevent or treat anemia, or both.• Women need more iron during pregnancy. Therefore, iron deficiency anemia is common, affecting about half of all pregnant women.• You should be tested for anemia during pregnancy, even if you do not have any symptoms.

Living with blood disorders

Blood disorders do not have to interfere with your day-to-day activities, work, or quality of life.

- **Get diagnosed.** If you have a family or personal history of blood disorders or symptoms, talk to your doctor. You may need to be tested.
- **Get the treatment you need.** Although many blood disorders cannot be cured, treatments can relieve your symptoms and help you feel better.
- **Take care of your health.** For some disorders, there are steps you can take to prevent symptoms and dangerous complications.
- **Take care of your emotions.** You may have symptoms, such as heavy menstrual bleeding or fatigue, that affect your life on a daily basis. You may also face fears about your own health or the health of your children. Counseling can help you cope with your disorder and make informed choices about your health. ■

One Woman's Story

In the summer of 2003, my marriage began to unravel, and by December my husband had moved out of our home. In January I began to feel tired and listless, leading my doctor to diagnose me with depression. Agreeing that I had enough to be depressed about, I began taking antidepressants. I realized immediately that depression was not my problem; the antidepressants were making me feel even worse.

For weeks I went to the doctor, spent my lunch hours resting in my car, and was barely able to work. I depended on my coworkers to do most of my work. Finally, one of my coworkers confronted me in tears, worried about me. Out of desperation, and in tears myself, I called a friend who is a physician, although not mine. She took blood samples and found that I was very anemic. She gave me a prescription for iron tablets and asked to see me again in a week. At the end of the week I had not improved at all. In fact, my hemoglobin was dangerously low. At that point she called my doctor, explained the situation, and asked her to admit me to the hospital. Reluctantly, my doctor admitted me, and I spent a week having tests and getting blood transfusions. At the end of the hospital stay we knew I was bleeding somewhere internally—we just didn't know where.

I had my medical records moved to my friend's office and she continued to search for a solution to my bleeding problem. Finally, after I had consulted with an oncologist and received several doses of iron intravenously, it was discovered that I have spots on my intestines that seep blood. The good news was that I could manage the condition. If I never take aspirin, keep a close watch on my hemoglobin, and get transfusions of iron when my hemoglobin is low, I am fine.

My experience shows that you have to trust your instincts and not be afraid to switch doctors to find the answers you need. Anemia can be a sign of a variety of health issues, and I am so glad we were able to get to the root cause of mine.

Jackee

Burlington, North Carolina

Anemia can be a sign of a variety of health issues, and I am so glad we were able to get to the root cause of mine.

For More Information...

Office on Women's Health, HHS

200 Independence Ave SW, Room 712E
Washington, DC 20201

Web site: www.womenshealth.gov/faq/bleed.htm

Phone number: (800) 994-9662,
(888) 220-5446 TDD

Division of Blood Disorders, CDC

1600 Clifton Rd
Atlanta, GA 30333

Web site: www.cdc.gov/ncbddd/hbd

Phone number: (800) 232-4636,
(888) 232-6348 TTY

National Heart, Lung, and Blood Institute Information Center, NIH

PO Box 30105

Bethesda, MD 20824-0105

Web site: www.nhlbi.nih.gov

Phone number: (301) 592-8573,
(240) 629-3255 TTY

National Hematologic Diseases Information Service, NIH

7 Information Way

Bethesda, MD 20892-3571

Web site: www.hematologic.niddk.nih.gov

Phone number: (888) 828-0877

American Society of Hematology

1900 M St NW, Suite 200

Washington, DC 20036

Web site: www.hematology.org

Cooley's Anemia Foundation

330 Seventh Ave, Suite 900
New York, NY 10001

Web site: www.thalassemia.org

Phone number: (800) 522-7222

Iron Disorders Institute

2722 Wade Hampton Blvd, Suite A
Greenville, SC 29615

Web site: www.irondisorders.org

Phone number: (888) 565-4766

National Anemia Action Council

555 E Wells St, Suite 1100

Milwaukee, WI 53202

Web site: www.anemia.org

National Hemophilia Foundation

116 W 32nd St, 11th Floor

New York, NY 10001

Web site: www.hemophilia.org

www.projectredflag.org

Phone number: (800) 424-2634

Sickle Cell Disease Association of America

231 E Baltimore St, Suite 800

Baltimore, MD 21202

Web site: www.sicklecelldisease.org

Phone number: (800) 421-8453

