

A PATIENT RESOURCE GUIDE

# Preventing Blood Clots After Knee or Hip Replacement Surgery

Prevention and Treatment  
of Thromboembolism  
for Patients

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# How to Use This Workbook

This resource guide provides resources to physicians, hospitals, and patients to increase awareness of who is at risk for deep vein thrombosis (DVT) and pulmonary embolism (PE) after knee or hip replacement surgery, what symptoms to look for, and what can be done to prevent DVT and PE. This resource provides engaging and easy-to-understand educational tools to help patients manage deep vein thrombosis and avoid pulmonary embolism.

Use the worksheets in each chapter to remember and record important information about your health and lifestyle. There are links to additional resources to offer more support for you and your family on the back cover.

## Guiding Your Way

Throughout this *Patient Resource Guide*, use these interactive features to add to your learning experience:



**Open PDF.** Download or print pages that help you manage your health. To use this tool, install the free Adobe Acrobat Reader (<http://get.adobe.com/reader/>).



**Audio.** Listen to the audio version of the pages you are viewing. To use this, make sure you have the most recent free copy of Adobe Flash Player (<http://get.adobe.com/flashplayer/>).



**Play.** Play videos and animations by pressing the play button.



**Highlighted Text.** Click on any highlighted text (in red) and you will see a definition of that word.



**Learning Checks.** Check what you have learned throughout this *Guide*.



**Help.** Click the help button on the Menu Bar to get help using this *Guide*.



# Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE)

## About Hip and Knee Replacement

Joint replacement is becoming more common, and hips and knees are the most frequently replaced joints. According to the Centers for Disease Control

and Prevention (CDC), 332,000 total hip replacements are performed in the United States each year. In a recent year, 542,000 total knee replacements were performed. Hip or knee replacement is a surgical procedure in which the diseased or damaged parts of the hip or knee joint are removed and replaced with new, artificial parts. The new joint, called a **prosthesis**, can be made of plastic, metal, or both.



## Understanding Veins and Arteries

The ongoing flow of blood from the heart to the body and back to the heart again is called circulation. Blood vessels carry blood throughout your body.

**Veins** are the vessels that return blood that is lacking oxygen from the tissues back to the heart.

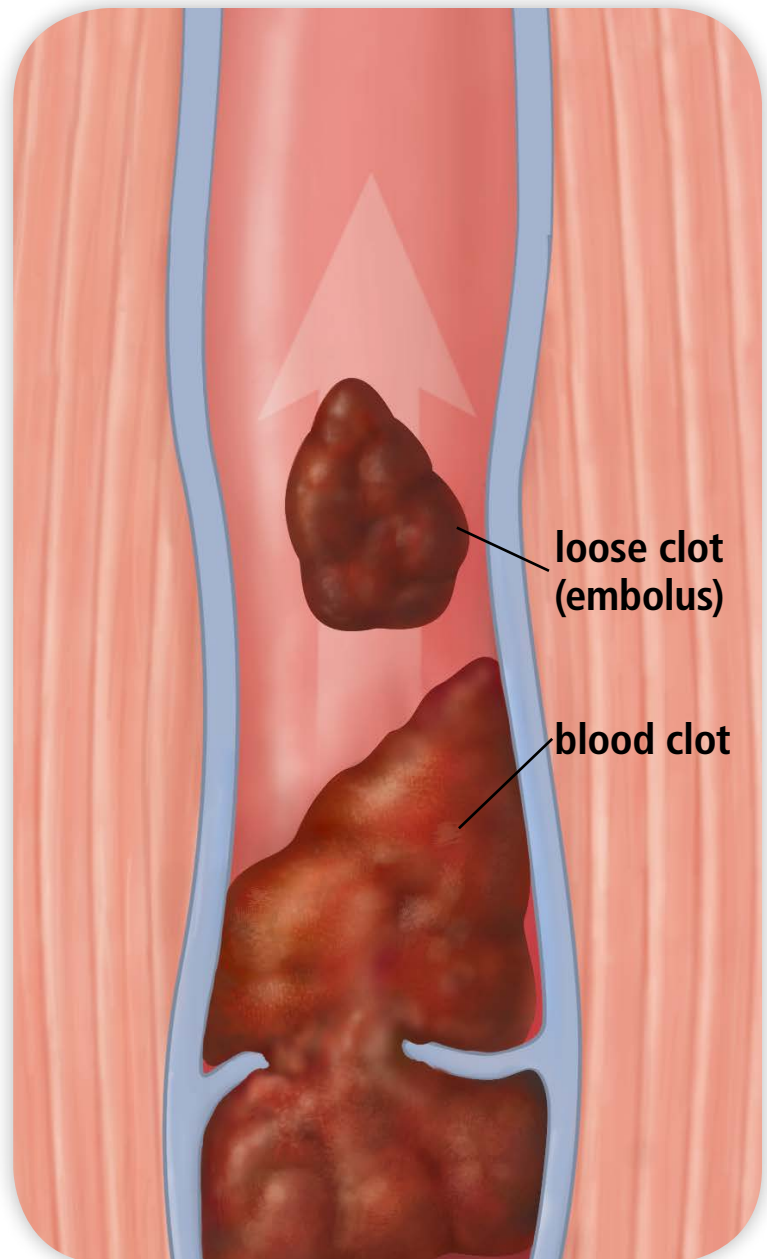
**Arteries** are blood vessels that carry blood away from the heart. While most arteries carry blood with oxygen, there are two exceptions to this norm, the **pulmonary** and the **umbilical arteries**.

## What are blood clots?

When a blood vessel is injured, the cells of your blood bond together to form a **blood clot**. The blood clot helps you stop bleeding. Blood clots are good when they help seal a cut to stop bleeding. But sometimes, a blood clot can form when it is not needed. This type of blood clot can cause health problems or even death.

**Deep vein thrombosis** (throm-BO-sis), or DVT, is a blood clot that forms in a vein deep in the body. DVT is the most common kind of blood clot people have after surgery for a hip or knee replacement. Most people who have one of these major surgeries are less active for several days or weeks after the surgery. This can cause blood flow to slow down, which increases the risk for a blood clot. People with a DVT may not have any symptoms and may not know they have one.

As many as 4 people out of 10 who do not receive medicine to prevent blood clots develop a DVT within one or two weeks of having major hip or knee surgery. Taking medicine or using a device to prevent blood clots may lower the risk of developing a DVT after hip or knee surgery to 1 or 2 people out of 10.





PLAY VIDEO  
Deep Vein Thrombosis

## What is Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE)?

Blood clots occur when blood thickens and clumps together. Most DVTs occur in the lower leg or thigh. They also can occur in other parts of the body.

A blood clot in a deep vein can break off and travel through the bloodstream. The loose clot is called an **embolus** (EM-bo-lus). It can travel to an artery in the lungs and block blood flow. **This condition is called pulmonary embolism, or PE.**

PE is a very serious condition. It can damage the lungs and other organs in the body and cause death.

Blood clots in the thighs are more likely to break off and cause PE than blood clots in the lower legs or other parts of the body. Blood clots also can form in veins closer to the skin's surface. However, these clots won't break off and cause PE.

**Learning Check!** Click the button to take a short quiz on what you've learned in Chapter 1.

# Causes and Risk Factors

## What Causes DVT and PE?

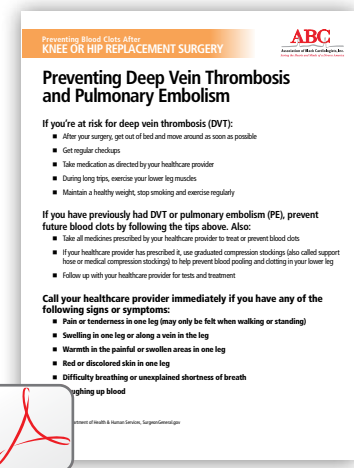
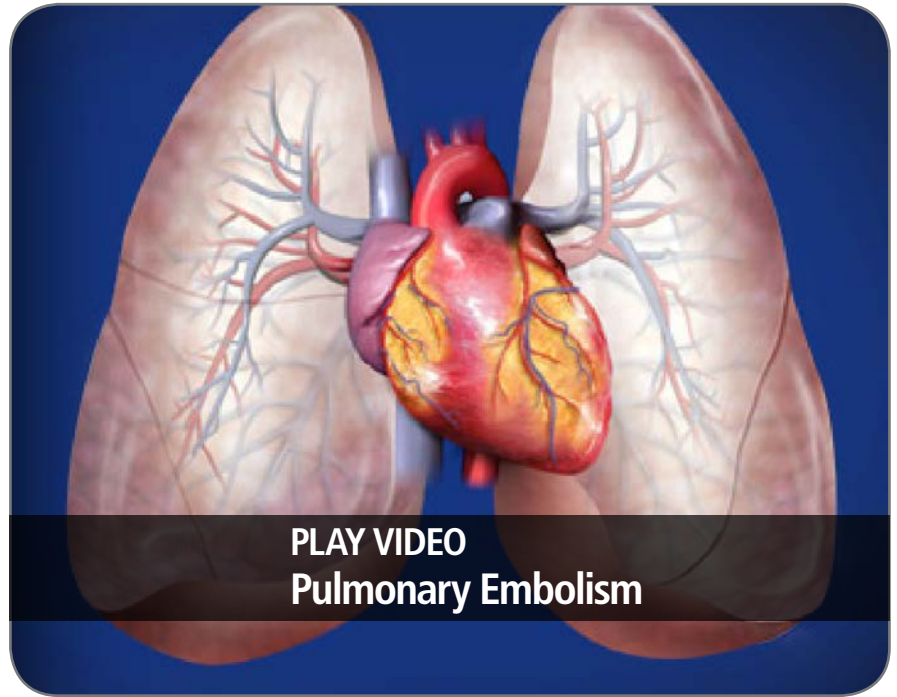
Blood clots can form in your body's deep veins if:

- Damage occurs to a vein's inner lining.** This damage may result from injuries caused by physical, chemical, or biological factors. Such factors include surgery, serious injury, inflammation, and an immune response.

- Blood flow is sluggish or slow.**

Lack of motion can cause sluggish or slow blood flow. This may occur after surgery, if you're ill and in bed for a long time, or if you're immobile while traveling for a long time.

- Your blood is thicker or more likely to clot than normal.** Certain inherited conditions increase blood's tendency to clot. This also is true of treatment with **hormone therapy** or birth control pills.



**Preventing DVT and Pulmonary Embolism**  
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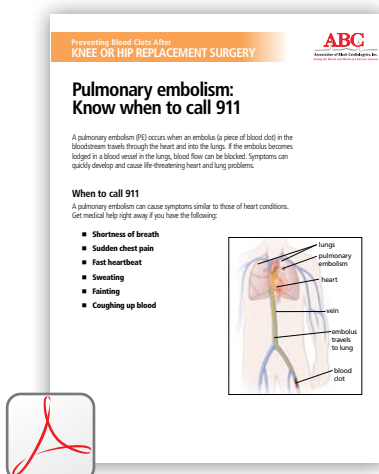
# Controlling Risk Factors

## What are DVT and PE Symptoms?

The signs and symptoms of deep vein thrombosis (DVT) may be related to DVT itself or to pulmonary embolism (PE). See your healthcare professional right away if you have signs or symptoms of either condition. Both DVT and PE can cause serious, possibly life-threatening complications if not treated.

**Deep Vein Thrombosis:** Only about half of the people who have DVT have signs or symptoms. These signs and symptoms occur in the leg affected by the deep vein clot. They include:

- **Swelling of the leg or along a vein in the leg**
- **Pain or tenderness in the leg, which you may feel only when standing or walking**
- **Increased warmth in the area of the leg that's swollen or in pain**
- **Red or discolored skin on the leg**



## Pulmonary Embolism: Know When to Call 911

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**If you have any of these DVT symptoms, call your healthcare provider:**

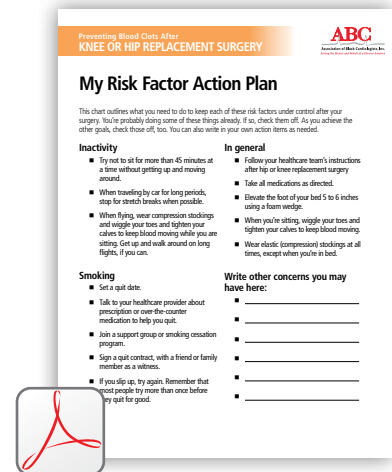
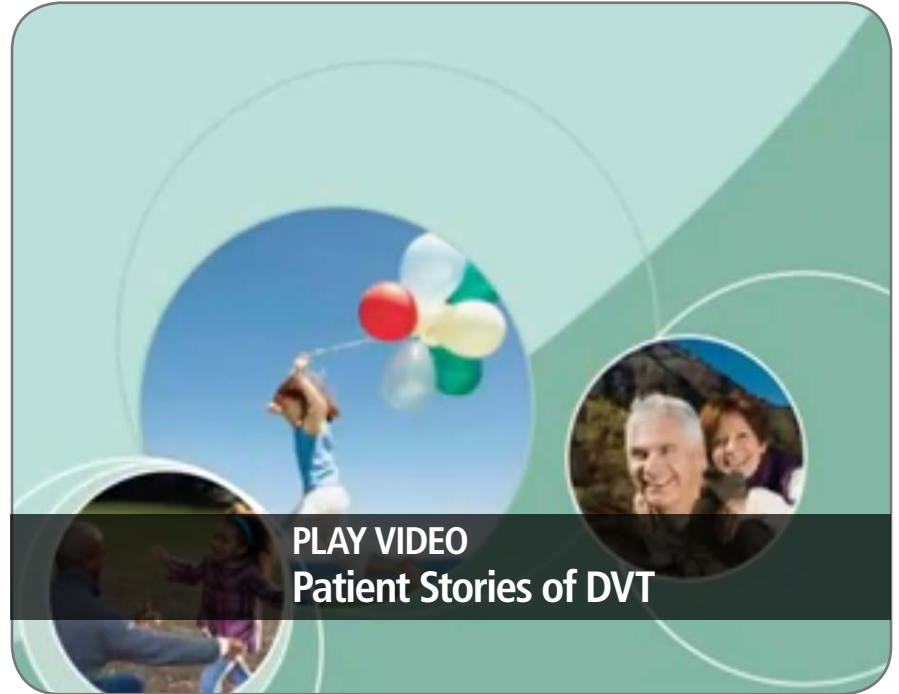
- **Swelling, pain, or both, often in one leg**
- **Sudden, continuous pain deep in the muscle**
- **Worsening ache when you are active or when you stand still for a long time**



## Who is at Risk?

Anyone can develop a deep vein thrombosis. However, the following risk factors make the condition more likely to occur:

- **Recent surgery, including hip or knee replacement**
- **Being inactive for a long period (such as when you're bedridden due to illness)**
- **Immobility due to plane rides or long car rides**
- **Injury to a vein caused by a trauma, a broken bone, **inflammation**, or surgery**
- **Family history of blood clots**
- **Cancer and certain cancer treatments**
- **Smoking**
- **Other factors such as older age, pregnancy, taking birth control or hormone replacement, having another vein problem, smoking while using oral contraceptives, or being overweight can also put you at higher risk for DVT.**
- **Use of pacemakers or central venous **catheters** or injecting drugs use can be risk factors for DVTs, specifically in the upper extremities.**



## My Risk Factor Action Plan

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# How to Prepare for Surgery

## Why Preparing for Recovery Helps

Preparing for your knee or hip replacement helps make your recovery faster and smoother. You can even prepare for your rehabilitation, or rehab. This is the program you'll follow after surgery. It will help you strengthen and use your new knee or hip.

The more in shape you are before surgery, the sooner you'll be able to get back to activities you enjoy. Help recover faster by:

- **Strengthening and stretching your leg muscles.** This helps to support the knee as it heals. It also gives you a head start on rehab.
- **Preparing to use a walker or crutches.** Learn to use walking aids before surgery. This will help you get up and around sooner. Strengthening your upper body can also make it easier to use walking aids.
- **Preparing your home.** Make some simple arrangements at home. These can prevent falls. They can also make daily tasks easier as you recover. This includes moving objects you'll need within reach and asking in advance for help with certain chores.



## You and Your Team

Your healthcare team may include:

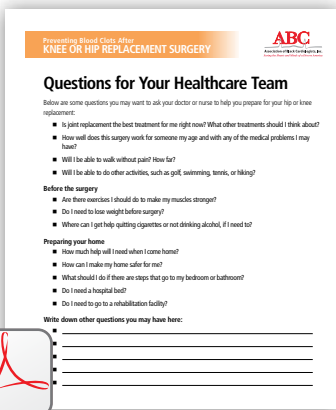
- A **physical therapist (PT)**. He or she will design an exercise program to build strength and aid recovery.
- An **occupational therapist (OT)**. He or she will help you make daily activities safer and easier during recovery.
- An **orthopedic surgeon**. He or she will perform the surgery and oversee your care.
- A **nurse or case manager**. He or she will coordinate your care.

# Understanding Your Role

When it comes to preparing for recovery, much of the work is up to you. So make time each day for the exercises you've been given. Always follow the instructions that your physical therapist or surgeon gives you.

Before you go to the hospital for surgery, set up your home to make your recovery and life easier when you come back. Do this well in advance of your surgery. Ask your doctor, nurse, or physical therapist about getting your home ready.

You may need help bathing, using the toilet, cooking, running errands, shopping, going to the doctor, and exercising. If you do not have someone to help you at home for the first 1 or 2 weeks after surgery, ask your doctor or nurse about having a trained caregiver come to your home to help you. This person can also check the safety of your home and help you with your daily activities.



**Questions for Your Healthcare Team**  
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# Questions for Your Healthcare Team

Below are some questions you may want to ask your doctor or nurse to help you prepare for your surgery, especially hip or knee replacement:

- Is joint replacement the best treatment for me right now? What other treatments should I think about?
- How well does this surgery work for someone my age and with any of the medical problems I may have?
- Will I be able to walk without pain? How far?
- Will I be able to do other activities, such as golf, swimming, tennis, or hiking?

## Before the surgery

- Are there exercises I should do to make my muscles stronger?
- Do I need to lose weight before surgery?
- Where can I get help quitting cigarettes or not drinking alcohol, if I need to?

## Preparing your home

- How much help will I need when I come home?
- How can I make my home safer for me?
- What should I do if there are steps that go to my bedroom or bathroom?
- Do I need a **hospital bed**?
- Do I need to go to a rehabilitation facility?

**Learning Check!** Click the button to take a short quiz on what you've learned in Chapter 3.

# How to Stay Active After Surgery

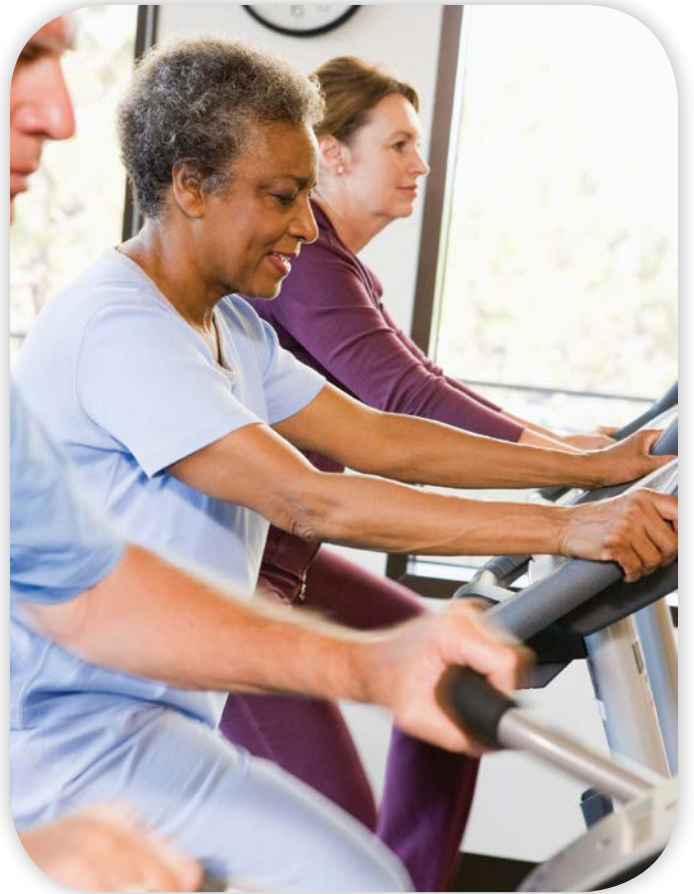
After any operation, you'll have some side effects. There is usually some pain with surgery. There may also be swelling and soreness around the area that the surgeon cut. Your surgeon can tell you which side effects to expect.

There can also be complications. These are unplanned events linked to the operation. Some complications are infection, too much bleeding, reaction to **anesthesia**, or accidental injury. Some people have a greater risk of complications because of other medical conditions.

You should have received physical therapy while you were in the hospital or at a rehabilitation center before going home from the hospital.

## What to Expect at Home

Getting out of bed and walking as soon as possible can prevent most of the problems that develop after hip or knee surgery. For this reason, it is very important to stay active and follow the instructions your doctor gave you.



You may have bruises around your incision. These will go away. It is normal for the skin around your incision to be a little red. It is also normal to have a small amount of watery or dark bloody fluid draining from your incision for several days.

It is not normal to have foul smell or drainage that lasts more than the first 3 to 4 days after surgery. It is also not normal when the wound starts to hurt more after leaving the hospital.

## Activity

Do the exercises your physical therapist taught you. Your doctor and physical therapist will help you decide when you do not need crutches, a cane, or a walker anymore.

Ask your doctor or physical therapist about when to start using a stationary bicycle and swimming as extra exercises to build your muscles and bones.

Try not to sit for more than 45 minutes at a time without getting up and moving around.

- Do not sit in low chairs that put your knees higher than your hips. Choose chairs with armrests to make it easier to stand up.
- Sit with your feet flat on the floor, and point your feet and legs outward a little. Do not cross your legs.

Do not bend at the waist or the hips when you put your shoes and socks on. Do not bend down to pick up things from the floor.

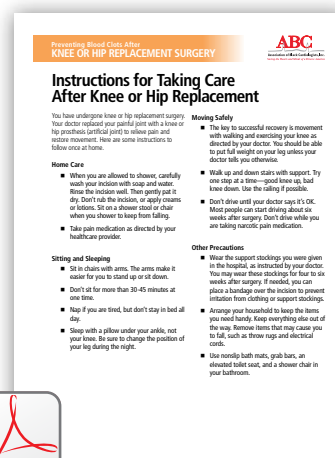
Use a raised toilet seat for the first couple of weeks. Your doctor will tell you when it is OK to use a regular toilet seat. Do not sleep on your stomach or on the side you had your surgery.

## What are the Warning Signs of a Blood Clot in Your Lungs?

Blood clots that form in the veins in your legs, arms, and groin can break loose and move to other parts of your body, including your lungs. A blood clot in your lungs is called a pulmonary embolism. If this happens, your life can be in danger. Go to the emergency room or call 911.

A blood clot may have gone to your lungs if you suddenly have:

- Hard time breathing
- Chest pain
- A fast heartbeat
- Fainting spells
- A mild fever
- A cough, with or without blood



**Taking Care After Surgery**  
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# Instructions for Taking Care After Knee or Hip Replacement

You have undergone knee or hip replacement surgery. Your doctor replaced your painful joint with a knee or hip prosthesis (artificial joint) to relieve pain and restore movement. Here are some instructions to follow once at home.

## Home Care

- When you are allowed to shower, carefully wash your incision with soap and water. Rinse the incision well. Then gently pat it dry. Don't rub the incision, or apply creams or lotions. Sit on a shower stool or chair when you shower to keep from falling.
- Take pain medication as directed by your healthcare provider.

## Sitting and Sleeping

- Sit in chairs with arms. The arms make it easier for you to stand up or sit down.
- Don't sit for more than 30-45 minutes at one time.
- Nap if you are tired, but don't stay in bed all day.
- Sleep with a pillow under your ankle, not your knee. Be sure to change the position of your leg during the night.

## Moving Safely

- The key to successful recovery is movement with walking and exercising your knee as directed by your doctor. You should be able to put full weight on your leg unless your doctor tells you otherwise.

- Walk up and down stairs with support. Try one step at a time—good knee up, bad knee down. Use the railing if possible.
- Don't drive until your doctor says it's OK. Most people can start driving about six weeks after surgery. Don't drive while you are taking narcotic pain medication.

## Other Precautions

- Wear the support stockings you were given in the hospital, as instructed by your doctor. You may wear these stockings for four to six weeks after surgery. If needed, you can place a bandage over the incision to prevent irritation from clothing or support stockings.
- Arrange your household to keep the items you need handy. Keep everything else out of the way. Remove items that may cause you to fall, such as throw rugs and electrical cords.
- Use nonslip bath mats, grab bars, an elevated toilet seat, and a shower chair in your bathroom.
- Until your balance, flexibility, and strength improve, use a cane, crutches, a walker, handrails, or someone to help you.
- Keep your hands free by using a backpack, fanny pack, apron, or pockets to carry things.
- Prevent infection. Ask your doctor for instructions if you haven't already received them. Any infection will need to be treated immediately with antibiotics. Call your doctor right away if you think you might have an infection.

- Tell your dentist that you have an artificial joint and take antibiotics as prescribed before any dental work.
- Tell all your healthcare providers about your artificial joint before any medical procedure.
- Maintain a healthy weight. Get help to lose any extra pounds. Added body weight puts stress on the knee.
- Take any medication you may have been given after surgery. This may include blood-thinning medications to prevent blood clots or antibiotics to prevent infection.



## Preventing Deep Vein Thrombosis

Preventing DVT means improving blood flow back to your heart. Talk to your doctor about a program of regular exercise, which can help. Elevate your legs whenever they feel swollen or heavy. Also, follow these tips:

- Elevate the foot of your bed 5 to 6 inches using a foam wedge.
- When you're sitting, wiggle your toes and tighten your calves to keep blood moving.
- Wear elastic (compression) stockings at all times, except when you're in bed.
- Compression stockings: Stockings made of strong elastic gently squeeze your calf and leg to increase blood flow. Stockings come in full-leg or calf lengths. Full-leg stockings may be difficult and uncomfortable to put on and take off.
- Intermittent pneumatic compression devices: Leg coverings inflate and deflate with an air pump to squeeze your legs throughout the day and night.
- Venous foot pumps: Foot covers inflate and deflate with an air pump to increase the blood flow in your legs.

**Learning Check!** Click the button to take a short quiz on what you've learned in Chapter 4.

# Resources

## **American Academy of Orthopaedic Surgeons**

847-823-7186

[www.aaos.org](http://www.aaos.org)

## **American College of Cardiology (ACC)**

800-253-4636, ext. 5603

[www.acc.org](http://www.acc.org)

## **American Diabetes Association (ADA)**

703-549-1500 • 800-DIABETES

[www.diabetes.org](http://www.diabetes.org)

## **American Heart Association**

800-242-8721

[www.heart.org](http://www.heart.org)

## **American Stroke Association**

a division of The American Heart Association

888-4STROKE (888-478-7653)

[www.StrokeAssociation.org](http://www.StrokeAssociation.org)

## **Association of Black Cardiologists, Inc. (ABC)**

800-753-9222

[www.abc cardio.org](http://www.abc cardio.org)

## **Association of Black Psychologists**

301-449-3082

[www.abpsi.org](http://www.abpsi.org)

## **Cardiosmart**

[www.cardiosmart.org](http://www.cardiosmart.org)

## **National Heart, Lung, and Blood Institute**

NHLBI Information Center

301-592-8573

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

## **National Diabetes Information Clearinghouse (NDIC)**

800-860-8747

[diabetes.niddk.nih.gov](http://diabetes.niddk.nih.gov)

## **National Medical Association**

202-347-1895

[www.nmanet.org](http://www.nmanet.org)

## **National Stroke Association**

800-STROKES (800-787-6537)

[www.stroke.org](http://www.stroke.org)

## **The Society for Cardiovascular Angiography and Interventions (SCAI)**

800-992-7224

[www.scai.org](http://www.scai.org)

**And now, please tell us what you think about this workbook!**

We need your suggestions to make sure that this has everything you need to know to manage your health in the best way possible. Go to our online survey

**[https://www.surveymonkey.com/s/ABC\\_DVT\\_PE](https://www.surveymonkey.com/s/ABC_DVT_PE)**

and answer just a few questions. It will only take a few minutes of your time.

**Thank you for your help!**