



Preventing, Managing, & Thriving with Thrombosis

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 **SAVING LIVES THROUGH EDUCATION AND PREVENTION**

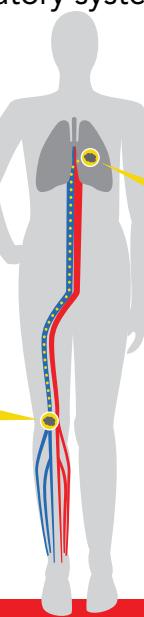


What is thrombosis?

Thrombosis is the formation of a blood clot, known as a thrombus, within a blood vessel. It prevents blood from flowing normally through the circulatory system.

What is deep vein thrombosis (DVT)?

Deep vein thrombosis occurs when a blood clot forms in a major vein, usually in the leg. This blood clot stops blood from flowing easily through the vein, which can lead to swelling, discoloration, and pain in the leg. It is often diagnosed with an ultrasound.



What is a pulmonary embolism (PE)?

A pulmonary embolism is a blood clot that has traveled to the lungs. It often starts as a DVT. A piece of the blood clot can break off and be carried to the lungs. A PE can block the flow of blood to the lungs, causing serious damage to the lungs and affecting a person's ability to breath. This can lead to serious injury and possibly death.



Did you know that blood clots can be fatal or lead to life-long disabilities?

Know the Symptoms:

Deep Vein Thrombosis (Blood Clot in the Legs):

- Discomfort, heaviness, pain, aching, throbbing, itching, or warmth in the extremities
- Skin changes in the leg, such as discoloration, thickening, or ulceration
- Swelling of the legs, ankles, or feet

Pulmonary Embolism (Blood Clot in the Lungs):

- Sudden shortness of breath
- Chest pain
- Rapid or irregular heart rate
- Coughing up blood

If you are experiencing these symptoms, you should seek immediate medical attention.

Know Your Risk:

Blood clots are indiscriminate of age, gender, race, and ethnicity.

- Major trauma, such as an automobile accident, fall, or head injury
- Surgery, especially hip or knee replacement
- Hospitalization
- Genetic or acquired clotting disorder
- Prior blood clot or family history
- Immobility or reduced mobility
- Leg paralysis
- Active cancer/chemotherapy
- Traveling for 4+ hours (via plane, car, or train)
- Elevated estrogen levels from oral contraceptives, pregnancy, or hormone replacement therapy
- Obesity
- Age 70+
- History of heart attack or ischemic stroke
- Acute infection and/or rheumatological disorder

Blood Clots: The First Six Months

A Look at Life with Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE)

If you've recently experienced a PE or DVT, you know that it can be an unnerving experience. It can leave you feeling vulnerable and afraid that you might have another episode.

It's normal to have many questions about what you should expect after a DVT or PE.

Here is a closer look at what the six months after a blood clot can hold:



THE BODY'S RESPONSE

Your body is an amazing machine and it will deal with your blood clot in its own way.

Once a blood clot has occurred, the body can handle it in different ways. Sometimes, the body can absorb the blood clot. The timeline for a clot to be absorbed varies depending on your body's ability to break down the clot, the size of the clot, and location of the clot. It's important to note that blood thinners, like warfarin, are meant to stop clots from getting larger, not necessarily to dissolve them.

In other cases, blood clots aren't absorbed, but the body continues to function around them without any problems.

If you're interested in learning more about how your body is dealing with your blood clot, ask your doctor. They can provide more personalized information.

MEDICATIONS

After being discharged from the hospital, you may be put on an anticoagulant medication for six months or more.

THE FIRST SIX MONTHS

Many patients are initially told that they will be on anticoagulation medicine (also known as “blood thinners”) for the first six months after their blood clot. However, research is showing that blood clots, also known as thrombosis, may be a chronic disease. According to Dr. Samuel Goldhaber, the director of Brigham and Women’s Hospital’s Thrombosis Research Group and president of the North American Thrombosis Forum, people who have had a DVT or PE have a higher risk of developing another blood clot. Because of this, patients may require more than six months of anticoagulation therapy. Ask your doctor how long you will need to take a blood thinner and if you will require extended therapy.

If you’re put on warfarin, you’ll need to make several lifestyle adjustments.

After an initial diagnosis, many patients are put on warfarin. This is a traditional treatment that has been used for several decades. While warfarin is very helpful, it has some challenges.

Patients on warfarin need to visit a clinic regularly to have their INR levels tested. An INR level measures how much time it takes for a patient’s blood to clot. Most patients need to maintain an INR level between 2.0 – 3.0 to be considered in ‘therapeutic range.’

Warfarin works differently for each person and INR levels can change from day to day. There are many patients who struggle to maintain a consistent

INR level, despite their best efforts. In fact, several studies show that only about 60 percent of patients at a clinic have INR levels in the therapeutic range at a time. Anticoagulation management clinics help patients keep their INR levels in the target range. Ask your doctor if they refer patients to an anticoagulation management service.

After experiencing a blood clot, patients should follow up by scheduling an appointment with their primary care physician and establishing a network of care.

INR levels can be affected by any type of lifestyle change, including how much vitamin K a patient is eating. Warfarin works by blocking vitamin K-dependent clotting factors in the blood, so increasing vitamin K levels in the body can make

warfarin less effective. Foods with high levels of vitamin K include kale, spinach, broccoli, green tea, and Brussels sprouts. Patients can still eat these foods, but they need to be consistent in how much they eat each day.

Patients should also be aware of how much alcohol they are drinking while on warfarin. While it is recommended that patients avoid it all together, they should not drink more than one to two drinks per day. Alcohol becomes a problem when it changes how the body metabolizes warfarin.

For some, the need to visit a clinic for INR testing on a regular basis can be inconvenient. Depending on a patient’s insurance coverage, home-testing can be a better option. This involves buying an in-home testing kit, which includes an INR monitor and testing strips similar to those used in clinics. Patients are trained by a medical professional to test

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themselves and then self-report their INR levels to their clinic.

You may be prescribed a DOAC over warfarin.

Many patients are prescribed direct oral anticoagulants (DOACs) instead of warfarin after having a blood clot. While warfarin has dominated the market for the past 50 years, DOACs are now the recommended guideline-approved treatment for thrombosis. These drugs include rivaroxaban, dabigatran, apixaban, and edoxaban. Unlike warfarin, these drugs don't require regular blood draws, have minimal drug and food interactions, and they have a lower risk of bleeding than warfarin.

"We now have four approved alternatives to warfarin called DOACs," explained Dr. Christian Ruff, who works in the cardiovascular division of Brigham and Women's Hospital. "In general, the DOACs are more effective than warfarin and safer, particularly with respect to serious bleeding. DOACs cause half as much fatal and life-threatening bleeding than warfarin. Also they are more convenient than warfarin in that they do not require frequent blood monitoring and can be given safely in fixed doses."

While there are many benefits to DOACs, some doctors and patients have been hesitant to use them. One key concern has been the ability to reverse the effects of the DOACs. Until recently, reversal agents for these drugs weren't available. Today, two reversal agents have been approved by the FDA, idarucizumab and andexanet alfa. Idarucizumab, a once-a-day medication

approved in 2015, reverses dabigatran. It is often used in cases where a patient is experiencing a life-threatening bleed or needs emergency surgery.

"For the factor Xa inhibitors (apixaban and rivaroxaban) there is a reversal agent called andexanet alfa that appears to work really well and is safe," explained Dr. Ruff. "It acts as a decoy, binding to the factor Xa inhibitors and preventing them from exerting their anticoagulant effects."

Andexanet alfa was just approved by the FDA in 2018 to reverse apixaban and rivaroxaban.

To learn more about the specifics of these medications, please see NATF's Anticoagulant Comparison Chart.

When it comes to medication, every patient has a different experience based on their past medical history, their diagnosis, their lifestyle factors, and more. It's important to ask your doctor any questions you have about your personal medication. Pharmacists can also be a valuable resource for questions about different medications and their interactions.

FOLLOW-UP CARE

It's important to schedule follow-up care after your blood clot.

After experiencing a blood clot, patients should follow up by scheduling an appointment with their primary care physician and establishing a network of care. From there, patients may be referred to specialists, such as a cardiologist, hematologist, pulmonologist, or vascular medicine specialist. These specialists can help

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steer patients towards the best treatment for their individual needs. It is especially important for patients to follow up with a doctor if they've had an inferior vena cava (IVC) filter put in their body to stop any clots from traveling to the lungs. Some of these filters are only temporary and a doctor must decide when it's best for it to be removed. They are often removed after a patient's risk for PE or DVT has gone down and the benefits no longer outweigh the risks.

After a clot, patients often believe that a new ultrasound should be part of their follow-up care. They want to see if their DVT has gone away. However, this is not necessary. As mentioned above, the body often absorbs a blood clot or creates a way to work around it. An ultrasound is only necessary if a patient is experiencing new or worsening symptoms, or if a patient is changing medications. Also, many patients retain some residual clot, like a scar, that is absorbed into the wall of the vein but can be seen via ultrasound. This is not necessarily associated with a poor prognosis.

There are genetic tests that can tell you if your family is prone to blood clots.

Patients with DVT or PE may want to get genetic testing done. Genetics can make some patients and their families more likely to get blood clots. This often happens because of a mutation that occurs and is passed through a family line. Two mutations that can cause patients to be more prone to blood clots are Factor V Leiden and the prothrombin gene mutation.

The decision to undergo genetic testing is a personal one that can affect families. If you would like to learn more about this option, please see the National Human Genome Research Institute and talk to your doctor about what resources are available to you.

COMPLICATIONS AFTER A BLOOD CLOT

It's important to pay attention to what your body is telling you.

While many people do not experience another blood clot after they've had their first, patients with a history of blood clots are still at a greater risk than the general public. Patients who have experienced a blood clot already are roughly 25 percent more likely to experience a second episode. The risk goes down over time and varies between patients with provoked and unprovoked blood clots. It's important to watch for the warning signs of a new blood clot.

For a DVT, symptoms include swelling and pain in the legs, especially behind the knee. This pain often feels like a long-lasting cramp. Symptoms for PE are centered in the chest or in the back. They include pain, shortness of breath, fatigue, or coughing up blood.

After a DVT or PE, it's normal for you to experience some discomfort as you recover.

Patients with a DVT often still have swelling and soreness in their legs. They may also experience post-thrombotic syndrome.

Likewise, patients with PE may still experience mild chest pain, back pain, or shortness of breath. The level and length of this discomfort varies greatly between patients. Patients with PE are also at risk for developing chronic thromboembolic pulmonary hypertension (CTEPH). This occurs when a blood clot in the lungs causes high blood pressure.

It can often be difficult to distinguish between the symptoms of a new blood clot and the residual pain from a previous one. Always contact your doctor if you have concerns about new or ongoing symptoms.

COMPRESSION STOCKINGS

Compression stockings can help you deal with uncomfortable swelling after a DVT and can prevent additional problems.

It's normal for patients with DVT to experience swelling in their legs after a blood clot. In order to treat that, many doctors prescribe compression stockings for their patients. These stockings are personalized to each patient's condition, with different patients requiring different types of stockings. Some stockings apply the same amount of pressure to the whole area they cover, while others apply different amounts of pressure to different parts of the leg. There are also different lengths of stockings (knee high or thigh high) and different strengths of stockings (how much pressure the stockings put on your legs).

These stockings help prevent swelling, along with pain. They can also help with post-thrombotic syndrome. Dr.

Goldhaber recommends that patients wear them for two years after their blood clot. It is important to replace compression stockings every 3 months, as the compression does break-down over time.

If your doctor prescribes compression stockings for you, it is important to fill that prescription and not purchase "over the counter" compression stockings, which might be less effective.

ACTIVITIES

You'll get back to doing your favorite things again.

After a DVT/PE, patients want to resume their lives. This can be more difficult for people who enjoy certain physically challenging activities.

One of the most common life-style questions that Dr. Goldhaber gets from his patients in the winter is, "When can I go skiing again?"

Dr. Goldhaber advised that patients on anticoagulants avoid vigorous activities because they have a higher risk of causing bleeding. This can include skiing, boxing, playing football, horseback riding, and a variety of other activities.

However, hope isn't lost. After a six-month period, it may be safe for patients to return to these activities with the approval and guidance of their doctor.

You need to stay active.

While patients may need to wait to resume vigorous activities, it's still important that they stay active and

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exercise. It improves cardiovascular health and helps prevent a recurrent PE or DVT.

"If you've recently been diagnosed with a PE, you may feel short of breath, have chest pain, and/or become easily fatigued when you start exercising. Following a DVT, your leg may be swollen, tender, red, or hot to the touch," explained Dr. Stephanie Lew in A Heart Healthy Tip: How to Safely Start an Exercise Routine After A DVT or PE. "These symptoms should improve over time, and exercise often helps. Walking and exercise are safe to do, but be sure to listen to your body to avoid overexertion."

If you have an activity that you'd like to get back to or if you'd like to start exercising, always consult your doctor before making any changes to your lifestyle or medication.

REFERENCES

For more information on any of the following, please visit NATFonline.org:

- Post-thrombotic syndrome
- NATF's Anticoagulant Comparison Chart
- Chronic thromboembolic pulmonary hypertension (CTEPH)
- Compression stockings
- NATF's in-person and online support groups

YOU ARE NOT ALONE

Blood clots can bring a lot of uncertainty into your life, especially during the first six months after your diagnosis. NATF is here for you. We strive to be a resource that you can rely on throughout your journey. Join us for one of our in-person or online support groups to learn about how other people have handled their experience with blood clots, or consider attending one of our educational events to keep on top of the latest research.

Looking for something else?

We are just a phone call or email away.

Email: Info@natfonline.org

Tel: 617-730-4120



 PREVENTING, MANAGING, & THRIVING WITH THROMBOSIS

“What determines what part of the body gets a blood clot? Why do some blood clots go to the heart, whereas others go to the brain or to the pulmonary arteries?”

The ability to form blood clots is critical for the body to prevent excessive bleeding. When a blood vessel is damaged, cells in the blood called platelets interact with various clotting proteins to form a clot. This effectively “plugs up the hole” to stop the bleeding. Over time, the clot typically dissolves as the body repairs the blood vessel damage. However, in some cases, blood clots may develop inappropriately and become deadly.

Blood clots play a major role in myocardial infarction (MI), or heart attack. Over time, the coronary arteries can develop a buildup of cholesterol, fibrous tissue, and inflammatory cells in a process called atherosclerosis. Important risk factors for this include smoking, hypertension, high cholesterol, and diabetes.

This buildup coalesces in various segments of the arteries in structures called plaques. In some cases, these plaques become unstable and fracture, which triggers the body to form a blood clot at that site. The blood clot may block the coronary artery and starve a portion of the heart muscle of oxygen and nutrients, thus causing an MI.

In deep vein thrombosis (DVT), blood clots develop in the leg or pelvis veins in the absence of obvious damage to the vessel. Within the vessel, a combination of microscopic injury to the vein wall along with abnormal blood flow and a propensity for blood clots all contribute to DVT formation. Inflammation and underlying genetic factors likely predispose people to DVT, and other risk factors such as cancer or immobility also increase risk for DVT. If a portion of the DVT dislodges, it can travel through the veins and relocate in the pulmonary arteries, thereby becoming a pulmonary embolism (PE).

Finally, blood clots also play a role in stroke. When the heart is in normal rhythm, blood flows briskly through each chamber. However, in atrial fibrillation, blood has more opportunity to stagnate in the atria, or top chambers of the heart. With less movement, blood is more prone to clotting, and blood clots may develop in the left atrium of patients with atrial fibrillation. Once they form, they can be pumped out of the heart and into the body's arterial system. Some of the first arteries blood reaches once it leaves the heart

are the arteries to the brain, and a blood clot passing out of the heart and into these arteries can cause a stroke.

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Do you have a question for the expert? Email info@natfonline.org



PREVENTING, MANAGING, & THRIVING WITH THROMBOSIS

“What are direct oral anticoagulants (DOACs) and how are they managed differently from warfarin? I’m concerned that they may not have a specific reversal agent. What do doctors do to manage heavy bleeding or surgery in patients on DOACs?”

For over half a century, vitamin K antagonists, such as warfarin, were the only available oral anticoagulant. Although very effective in reducing stroke in patients with atrial fibrillation and treating and preventing venous thromboembolism, warfarin is one of the most difficult and dangerous drugs we use in clinical practice. The biggest concern is serious bleeding, particularly intracranial hemorrhage which is frequently fatal or results in permanent neurologic disability.

Over the past few years, we now have four approved alternatives to warfarin called DOACs – originally called novel oral anticoagulants but now more commonly referred to as non-vitamin K antagonist oral anticoagulants or direct oral anticoagulants (DOACs). In general, the DOACs are more effective than warfarin and safer, particularly with respect to serious bleeding. DOACs cause half as much fatal and life-threatening bleeding than warfarin. Also, they are more convenient than warfarin in that they do not require frequent

blood monitoring and can be given safely in fixed doses.

Despite the attractiveness of these new agents, adoption has been slow. There are many reasons for this, but one important aspect is the issue of reversal. Although warfarin causes much more serious bleeding than DOACs, physicians and patients are comforted by the notion that they can reverse warfarin with vitamin K and administration of clotting factors. Although the “reversal” of warfarin is a bit of a myth, the lack of an ability to reverse the DOACs is a perceived limitation of these agents. There is now an approved reversal agent for factor IIa inhibitor dabigatran called idarucizumab. It is an antibody to dabigatran and reverses the anticoagulant effect of dabigatran within minutes and has no apparent side effects. For the factor Xa inhibitors [apixaban, edoxaban, rivaroxaban] there is a reversal agent called andexanet alfa. It is specifically approved by the FDA for the reversal of apixaban and rivaroxaban. It acts as a decoy, binding to the factor

Xa inhibitors and preventing them from exerting their anticoagulant effects.

Although certainly these antidotes or reversal agents are a welcomed advance and have given tremendous comfort to physicians and patients, we must remember that serious bleeding with the DOACs is very uncommon, so these agents will need to be used infrequently. For most mild bleeding with DOACs, simply holding 1-2 doses of the drug [they all have very short half-lives] and general supportive measures are all that is needed.

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Do you have a question for the expert? Email info@natfonline.org.

 **PREVENTING, MANAGING, & THRIVING WITH THROMBOSIS**


The Emergency Department For a Recurrent Blood Clot: What to Expect

Taking a trip to the emergency department is something that very few people enjoy doing. It can be very stressful, there's a lot of waiting involved, and it can be costly. However, for many patients it can be a life-saving trip. For patients with deep vein thrombosis or pulmonary embolism, it is especially important that they receive the treatments they need in a timely manner.

If you believe you may have a blood clot, it is important for you to seek treatment, especially if you have a history of deep vein thrombosis (DVT) or pulmonary embolism (PE).

When should you go to the emergency department?

If you've had PE or DVT previously, it can be hard to differentiate between the pain brought on from a previous episode and possible symptoms of a new issue. It is common for patients who have had DVT to experience pain in the affected leg, which can be brought on by post-thrombotic syndrome. Similarly, it is also normal for patients with PE to experience chest pain and shortness of breath while their body is healing.

Dr. Jeremiah Schuur, Director of Quality, Patient Safety and

Performance Improvement for the Department of Emergency Medicine of the Brigham and Women's Hospital, shared his insight on what patients with a history of DVT/PE should watch for.

For patients with a history of DVT, they should be concerned with any changes in their symptoms that concern circulation. This includes losing feeling in the affected leg or profound discoloration of the leg.

For patients with a history of PE, determining if there is a new PE can be difficult.

"In someone who's had PE, there's not an easy way to classify new symptoms," explained Dr. Schuur. "But, a change in or worsening of the patient's symptoms, especially worsened chest pain and shortness of breath, or a patient passing out would be concerning and reasons to go in."

What can you expect if you believe you are having a recurrent pulmonary embolism or deep vein thrombosis?

While every patient's trip to the emergency department is different, there are several things that you can expect when

you visit. First, after waiting to be seen, a medical professional will take your medical history. In order to help your physician provide the best treatment for you, it's important to know all of the medications you're on. Keep an up-to-date list of medications in your wallet, or bring the pill bottles with you. If you're going to a new hospital, bringing copies of your previous DVT/PE images can also be very helpful for your physician.

Once you've provided your medical history, you will then be examined and the physician will decide what steps to take next. They will take into consideration your symptoms and your medical history, including past blood clots.

Imaging is often the next step towards diagnosis. This can happen in several ways.

For DVT, an ultrasound is the most common diagnostic test. This form of imaging uses sound waves to create a picture of the arteries and veins in the leg. Doctors can also order a blood test known as the D-dimer test.

In order to diagnose PE, doctors can use imaging tests such as computed tomography (CT) scans and magnetic resonance imaging (MRI) scans. CT scans are the more popular diagnostic tool, but doctors will avoid using

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Inflammation, Diet, and Health: What You Need to Know

Inflammation is a hot topic in the medical community. It has been shown to increase the risk of thrombosis (blood clots) and cardiovascular disease.

With this knowledge, you can be empowered to take control of your health. By understanding how your behavior contributes to inflammation, you can use this new information to reduce your own risk of developing health issues.

One way you can do that is by monitoring your diet.

The Connection Between Diet and Inflammation

There are many different theories about the connection between different foods and inflammation. While many scientists know there is a connection, the details of the connection have not been discovered yet. Inflammation can be caused by many different factors.

"Inflammation is complicated and there are multiple pathways that are relevant," explained Dr. Dariush Mozaffarian, Dean of Tufts Friedman School of Nutrition Science and Policy. "I think that a lot of this is still in the area that I would call emerging research. There's not a lot that is definitive."

What scientists do know is that inflammation can be triggered by diseases that arise from unhealthy eating habits. According to Dr. Mozaffarian, that knowledge is the most direct and well-established connection between diet and inflammation.

"We know poor nutrition overall causes metabolic dysfunction, in particular insulin resistance and ultimately obesity. Those are major pathways for active inflammation," Dr. Mozaffarian said. "Similarly, a good diet can improve metabolic risk and separately lead to weight loss, which can dramatically improve inflammation."

"Independent of insulin and weight-related pathways, I think there's a lot of theories of possible inflammatory effects of different types of foods," Dr. Mozaffarian remarked, explaining some of the nutrients believed to be involved in controlling inflammation.

"Probably the most studied are Omega 3 fatty-acids, antioxidant vitamins, and newer bioactive flavonoids that are found in cocoa and teas. All of those in experimental models have anti-inflammatory or antioxidant effects and clearly that's important. But, I think we're still trying to understand how that interaction works."

Mediterranean Diet

So what type of diet can help you battle inflammation? Dr. Mozaffarian suggests the Mediterranean diet.

"For general health, I think that the most important thing is to focus on eating healthy foods," he explained. "My simple rule is a high healthy fat Mediterranean diet. This involves a lot of healthy fats from fish, oils, nuts, and plenty of fruits, vegetables, beans, and whole grains. Then, not a lot of packaged or fast foods."

The "Mediterranean diet" mimics the natural diets of people who live along the Mediterranean Sea.

According to the Mayo Clinic, the Mediterranean diet involves:

- "Eating primarily plant-based foods, such as fruits and vegetables, whole grains, legumes, and nuts.
- Replacing butter with healthy fats, such as olive oil and canola oil.
- Using herbs and spices, instead of salt to flavor foods.
- Limiting red meat to no more than a few times a month.
- Eating fish and poultry at least twice a week."



Inflammation, Diet, and Health: What You Need to Know

The diet also involves lifestyle changes, such as getting lots of exercise, eating meals with family and friends, and, surprisingly, drinking red wine in moderation.

A 2013 study published in the *New England Journal of Medicine* tested the power of the Mediterranean diet. Participants were divided into three groups. One group was assigned to eat a Mediterranean diet supplemented with extra-virgin olive oil. The second group was assigned to eat a Mediterranean diet supplemented with nuts. Finally, the third group was assigned to a control diet. All of the study participants had no cardiovascular disease at enrollment but had either type 2 diabetes or at least three major risk factors for cardiovascular disease.

The study found that the Mediterranean diet lowered the risk of cardiovascular disease by 30 percent in trial participants. It also lowered participants' risk of stroke.

Researchers concluded, "in this primary prevention trial, we observed that an energy-unrestricted Mediterranean diet, supplemented with extra-virgin olive oil or nuts, resulted in a substantial reduction in the risk of major cardiovascular events among high-risk persons. The results support the benefits of the Mediterranean diet

for the primary prevention of cardiovascular disease."

Foods to Avoid

By avoiding unhealthy foods, you can stop inflammation before it begins.

"The main things to avoid in the food system are starch, sugar, and salt," explained Dr. Mozaffarian.

Trying to reduce these things can be difficult, because they are found in many different food products. It can help to avoid buying pre-packaged, overly processed foods. When shopping, you should also avoid buying white bread, white rice, and certain pastas, as they all contain high levels of starch.

The worst foods you could have? Soda and candy, according to Dr. Mozaffarian.

"There's no reason ever to have soda," he remarked. "If people want a sweet, have a little bit of ice cream or dark chocolate, have nuts covered in honey, have something that actually has food in it and has other nutrients."

Dark chocolate, he explained, is made from cocoa beans, and ice cream has milk in it. Candies, such as Skittles and gummy bears, have no such natural bases.

Take Control of Your Health

By eating healthy, you can reduce your risk of developing inflammatory-risk factors, such as diabetes and metabolic syndrome. You also reduce your risk of developing bad cholesterol.

Choosing a healthy life will allow you to lay a solid foundation for your future. It's never too late to get started. Take control of your health by embracing nutritious foods and regular exercise. It will help you stay healthy and blood clot-free.

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Exercise: The Surprising Benefits

From signing up for a new gym membership, to restarting a running routine, many people are diving into exercise, but why? What does exercise have to offer?

More than you might think.

The benefits of exercise are deep and go beyond what many might expect. While it's well known that it makes people healthier and helps with weight loss, many people don't truly know what effect their daily exercise routine has on their bodies.

Turn Back the Clock, One Run at a Time

"Introducing exercise at any point in life has the potential to reverse the aging process quite dramatically," explained Dr. Aaron Baggish, the associate director of the Cardiovascular Performance Program at the Massachusetts General Hospital Heart Center. Dr. Baggish specializes in sports cardiology and works closely with a variety of athletes.

One key process behind this "reverse aging" is called autophagy. The increased stress that exercise puts on the body causes cells to increase their levels of autophagy, a process that acts as a recycling system. It takes the worn-out parts of the cell, which are connected to the aging process, and turns

them into energy. The increased levels of autophagy from exercise seem to protect against diseases, such as cancer and neuro-degeneration. Though the process of autophagy has been explored, doctors still don't know the full extent of the benefits it brings.

Exercise can not only reverse the aging process, it could also prolong life. Athletes who work out regularly have strong hearts and slower heartbeats. Why is a slow heart beat healthy? Because there may be a limited amount of them, according to one theory that Dr. Baggish shared. The theory states that the heart has a limited number of beats. Based on that theory, a slower heart rate could increase people's life spans.

Not buying into the theory? Dr. Baggish explained that a lower heart rate is also metabolically more efficient, which is very beneficial for the body.

Beyond physical benefits, exercise is also great for mental health. According to Dr. Baggish, physical activity can be a powerful anti-depressant and can help fight anxiety. Exercise can stimulate the sympathetic nervous system, leading to better sleep, increased alertness, and elevated moods.

"There's no question that exercise is an effective cognitive stimulator," he explained.

Not ready to become a professional athlete? That's okay.

"You actually need relatively little amounts of exercise to get a lot of health benefits," said Dr. Baggish. He described the recommended 150 minutes a week of heartbeat-raising exercise as a "sweet spot." It's the "optimum dose" of exercise that people need in order to get the most health benefits.

Looking to the Future

One of the greatest health threats today is the sedentary lifestyle that people are living.

"We need to get people who are completely inactive to move. Our society is so geared toward promoting physical inactivity," explained Dr. Baggish.

"Everything around us allows us to be inactive if we choose to be."

Looking forward, Dr. Baggish hopes that science can help uncover new ways to make physical activity a greater part of daily living by finding new ways to motivate people.

One possible solution could be new wearables that are on the rise, such as Fitbits and the Apple Watch. Numbers and metrics can be encouraging. Many people enjoy counting their steps and knowing how far they've walked or how many



Exercise: The Surprising Benefits

calories they've burned. Many have even turned it into a game, competing against friends and family by comparing their results, such as who walks the furthest in a day.

While Dr. Baggish believes that numbers and metrics can motivate certain people, he stressed the need for a continued commitment to developing accurate information. He's personally found that devices today tend to have problems accurately measuring how many calories people have burned. This becomes an issue when people are trying to balance how many calories they take in with how many they put out.

Looking forward, he would also like to see devices that can measure oxygen consumption and sweat rates, to help athletes with their training.

Taking Action

Feeling inspired? Now is your time to start exercising. It's never too late to take steps towards a healthier lifestyle. If you're not sure where to begin, even simple walks around your neighborhood can be a good place to start. What really matters is that you're getting your heart pumping.

The key is to get up, get out, and move.

 **SAVING LIVES THROUGH EDUCATION AND PREVENTION**



Stepping into Success: Exercise After a Blood Clot

After experiencing a blood clot, which can appear as a pulmonary embolism (PE), a blood clot in the lungs, or deep vein thrombosis (DVT), a blood clot in the arms or legs, it's important to get back into exercising. For many people, this can be a challenge.

Here are some easy exercises you can do to help you get back to your best self:

Beginner Walking Program

Try to choose a route that is close to home, relatively flat, and has plenty of places to rest along the way. For example, a local park or a shopping mall.

Warm up by walking slowly for 5 minutes.

Week 1: Walk for 5 minutes at a comfortable pace, 3-4 times per day.

Week 2: Walk for 10 minutes, 3-4 times per day.

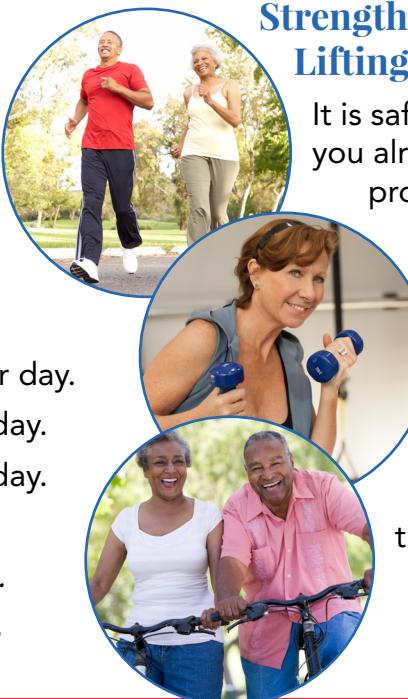
Week 3: Walk for 20 minutes, 3 times per day.

Week 4: Walk for 30 minutes, 2 times per day.

Week 5: Walk for 40 minutes, once daily.

Cool down by walking slowly for 5 minutes.

Your goal is to walk for 30 to 45 minutes, 5 to 7 days per week.



Strength Training with or without Lifting Weights

It is safe to return to your routine if you already have a strength training program. If you want to begin weight training, and have never lifted weights before, it is recommended that you seek professional advice. Ask your primary care physician for a referral to a professional who can create an individualized strength training program for you.

Preventing another blood clot



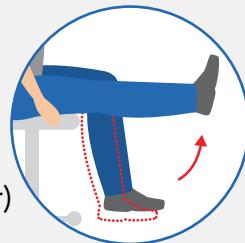
There are many reasons why someone might develop a blood clot. One of those risk factors is long periods of decreased activity,

such as sitting on a plane or in a car for several hours. While there is a very low overall risk of developing a blood clot due to long periods of sitting, periodic movement may help prevent another blood clot. For any plane or car trip longer than 4 hours, if you are safely able to do so, get up from your seat and walk for five minutes every hour or two. In addition, perform the following exercises in your seat every hour.



Ankle Pumps

Sitting in a chair, move your feet up and down as in the picture (30 repetitions/hour)



Knee Extensions

Straighten one knee, then slowly lower your foot to floor, bending your knee. Repeat on your opposite leg. (30 repetitions/hour)



Seated Marching

Sitting in a chair, slowly lift your knee up as much as possible in a marching movement, then slowly lower it. Alternate legs. (30 repetitions/hour)



PREVENTING, MANAGING, & THRIVING WITH THROMBOSIS

A Guide to INR Levels

After being diagnosed with a blood clot (thrombosis), many patients are prescribed warfarin for treatment. Warfarin is a prescription drug that lowers the chance of blood clots developing in the body. This prevents blood clots from forming and causing deep vein thrombosis (DVT), pulmonary embolism (PE), stroke, heart attack, and more. Warfarin works by blocking the formation of vitamin K-dependent clotting factors, substances in the blood that cause clotting.

While warfarin's ability to stop clotting is a major benefit to blood clot patients, it can also cause problems. If it is too effective at stopping the clotting process, it can lead to uncontrolled bleeding. In order to monitor how effective the warfarin treatment is, doctors test a patient's "INR" level.

What does INR stand for?

INR stands for International Normalized Ratio.

Doctors measure a patient's INR level during a PT-INR test. The PT stands for prothrombin time. The test measures how much time it takes for a patient's blood to clot. This test ensures that patients are receiving the dosage of warfarin that is right

for them. If an INR score is too low, a patient can be at risk for a blood clot. However, if the INR is too high, patients could also experience bleeding.

A typical INR score ranges between 2 to 3. The "ideal" INR score can vary from patient to patient.

How often is testing needed?

How often a patient should be tested can vary, depending on how stable their INR level is over time. According to the American Heart Association (AHA), patients should be tested at least once a month and, in some cases, as much as twice a week. This testing often involves going to get their blood drawn at a clinic, but can also be done at home in some cases.

Home testing involves patients using an INR monitor and test strips. Patients are taught how to test their own INR level and then report their INR results to their care team, who can then tell patients if they need to adjust their warfarin dosage.

If you are interested in exploring home testing as an option for your care, talk to your doctor about your options.

What can I do to help keep my INR level where it should be?

First, always listen closely to your doctor's instructions. Patients on warfarin may have their dosages adjusted often, as doctors look to stabilize their INR levels. Always be sure to stay on top of your medication and to take it exactly as your doctor prescribes. For example, if you miss a dose, don't double up next time you take it. It is also key to ensure your doctor knows about all of the other medications you are on, as different medications can interact poorly with warfarin.

When you are at the doctor's office, the information they give you can often be overwhelming. Try bringing a notepad and a pen. Write down what your doctor tells you to ensure you aren't forgetting anything. This is also a great way to remember your questions. If you write them down in your notepad before heading to the doctor's office, you're less likely to forget.

A second major thing patients need to watch is their diet. When you are on warfarin, you need to keep track of foods that may have vitamin K in them. Because warfarin works by blocking vitamin K-dependent



A Guide to INR Levels

clotting factors, increasing your vitamin K intake can make warfarin less effective, lowering your INR level. Foods with high levels of vitamin K include kale, broccoli, and Brussels sprouts.

Your INR level is complex. In addition to vitamin K, any major lifestyle changes can cause your INR level to change. These can range from changing what foods you eat to how much you exercise. Major diet changes, such as starting a new diet or taking new supplements, can cause your INR level to fluctuate. Consulting a doctor is the best way to ensure the lifestyle changes you're making will positively impact your life.

Looking Forward

Starting a new medication always has its challenges and warfarin is no exception. By knowing your INR level and staying on top of your warfarin dosage, you can help maintain a healthy lifestyle.

PREVENTING, MANAGING, & THRIVING WITH THROMBOSIS



Just Relax: The Science Behind Using Meditation to Combat Stress and Improve Your Health

Stress. It's something that everyone deals with in their lives, but too much of it can be unhealthy. It can lead to heart disease, insomnia, high blood pressure, and more.

"The stress response, in and of itself, is not a bad thing," explained Dr. Darshan Mehta, Medical Director at the Benson-Henry Institute for Mind Body Medicine at Massachusetts General Hospital. "It was important for our survival as the human species. If there was an imminent danger in front of us, we were able to muster up resources in a short amount of time. This became known as the fight or flight response."

"Over the past 40 years, we've learned that when that response is chronically activated, the consequences are contributing factors to a whole host of conditions, such as hypertension, respiratory conditions like asthma, and inflammatory bowel disease," he stipulated. Patients managing chronic illnesses, such as blood clots, are especially at risk for being stressed and anxious. They are often balancing the responsibilities of their jobs and families, while also trying to manage their disease.

So how do people manage stress? For many, meditation and mindfulness are the answer.

"There have been a lot of studies done on mindfulness and stress," remarked Jonathan Greenberg, PhD, a Postdoctoral Research Fellow in the Lazar Lab at the Department of Psychiatry at Massachusetts General Hospital and Harvard Medical School. The lab where Dr. Greenberg works studies the impact of yoga and meditation on brain structure and function, as well as cognitive performance. "One of the most well documented effects of mindfulness meditation is that it reduces stress. The most well-known and widely used form of mindfulness intervention is called 'Mindfulness-based stress reduction.'"

Meditation and Mindfulness Magic

Meditation and mindfulness have been found to provide many benefits for those who practice them. Mindfulness is when participants "live in the moment" and are aware of how they're feeling, emotionally and physically, and what they are thinking. It is a way of living, versus meditation, which involves practitioners taking time out of their day to practice.

Both can affect how the body responds to stressful situations and can even change how the brain develops.

"Mindfulness is typically associated with all of the biological aspects of stress reduction, such as a slower breathing rate and lower blood pressure," explained Dr. Greenberg. "It also corresponds with brain changes that we see. The amygdala (which is involved with emotional processing, fear, threat, and anxiety) is one example. When we're afraid, the amygdala is over-activated. Individuals undergoing mindfulness training have been shown to have reduced amygdala activity when confronted with stressors. They have also been shown to return more quickly to baseline. If something stressful occurs, your amygdala activity goes up because you're very stressed, but the amygdala activity returns to its former relaxed state quicker in those attending mindfulness training."

"One of the studies in our lab has shown that reductions in grey matter density in the amygdala following mindfulness training correlate with reductions in stress. That means that the more people reduced their stress, the smaller their amygdala became," Dr. Greenberg continued, explaining the effects that mindfulness and meditation can have on the brain.



Just Relax: The Science Behind Using Meditation to Combat Stress and Improve Your Health

"One of the main things related to mindfulness training is improvements in emotional regulation. Because you practice noticing what you feel and what you think, you're better able to nip the emotion in the bud. So, once the stress begins, you realize it really quickly and are able to regulate it and prevent it from escalating into a full blown stressful reaction."

"Fight or Flight" Vs. "The Relaxation Response"

Stress is an evolutionary mechanism that developed to help keep people safe. When the brain perceives a "threat," the central nervous system triggers the body's "fight or flight" response. The hypothalamus then releases adrenaline and cortisol in order to prepare the body to either fight the threat or run away from it. This response is helpful when people are facing life-threatening situations, but many people experience this response in reaction to everyday, harmless "threats," such as long lines, traffic, heights, or public speaking.

Chronic stress develops when the body stays in this state of "fight or flight" and the central nervous system doesn't return to its normal levels. Meditation and mindfulness help to combat this by triggering the relaxation response.

"The relaxation response was a term that Dr. Herbert Benson coined. He was one of the

thought leaders in the field," Dr. Mehta explained. "It's this counter-stress physiology that can mitigate the negative effects of the stress response when it is chronically activated."

The relaxation response affects the body on an epigenetic level and on a physical level.

"As a clinician, I like to think of three dimensions that the relaxation response would affect," said Dr. Mehta, exploring the ways that the relaxation response can help patients coping with chronic illness. "One, it affects the manifestation of symptoms, such as fatigue, sleep disturbances, and pain. We know that people can affect how they experience these symptoms through the elicitation of the relaxation response. The second is disease progression. For example, we know that the chronic stress response can lead to the progression of diseases such as [diabetes](#), hypertension, or vascular disease. The relaxation response can help combat this. The third dimension is through management of the condition."

Patients experiencing stress are less likely to manage their own health and can experience trouble with self-care tasks, such as taking their medication properly, getting enough [exercise](#), and eating a healthy diet. Using the relaxation response to combat this stress can help patients better cope with their health problems.

Working Meditation into Your Life

Could you use some stress reduction in your life?

Give meditation and mindfulness a try. While there is no right "dose" of meditation, Dr. Mehta recommends that people try to practice 10-20 minutes of meditation daily. "It's like brushing your teeth, it should be an activity of daily living," he explained.

He also recommends people find a group to participate in. "I think having guidance is important, just like any skillful practice," he said.

"Be persistent," encouraged Dr. Greenberg, offering advice similar to Dr. Mehta's. "Try to link it to something that you routinely do every day. It also helps to attend classes, or do it in a group session to help you keep it active in your mind."

Mindfulness classes and meditation groups are available in cities across North America. More and more, doctors are adopting it as a secondary form of treatment to compliment medical therapies. Check with your local hospital or your primary care physician for recommendations of meditation groups near you.

 **PREVENTING, MANAGING, & THRIVING WITH THROMBOSIS**


Yoga: The Medicine You Didn't Know You Needed

Yoga is an ancient Hindu discipline that is centered around holding the body in different positions. While doing yoga, practitioners focus on controlling their breathing, clearing their minds, and challenging their bodies. It brings many people a sense of calm and helps them deal with the anxiety and stress of everyday life.

Many patients with blood clots are not strangers to stress and anxiety. Both can accompany the many unknown factors that come with being diagnosed with deep vein thrombosis (DVT) or pulmonary embolism (PE). Yoga may be a tool to help these patients take back control over their lives.

"Yoga is like moving meditation. You get to move and clear your head. It's amazing what an hour class gives you after you leave," said Jennifer Hedstrom, a yoga practitioner and instructor. "It's just a sense of new beginning and peacefulness. I notice in my own life that I can take a step back and look at things a little differently."

Jennifer started out as an avid runner. However, after being diagnosed with arthritis, she needed to find an exercise that wouldn't harm her joints. That's when she started doing yoga. As a teacher, she now helps her students to embrace both the benefits and challenges that come with practicing yoga.

Embrace the Challenge

Yoga can be challenging, both mentally and physically.

"It's challenging for all different reasons," Jennifer noted. "Some people have a hard time being in an environment that's really quiet, where they're alone with their own thoughts in their heads, or listening to other people breathe next to them, or not being able to talk. That's really hard for people."

Many people avoid yoga because they tell themselves that they can't do it. They may feel like they aren't flexible enough, young enough, or fit enough to practice yoga. However, that isn't the case. Anyone can do yoga if they just give it a try.

"People get confused. They think that because they're not flexible or they're older or they're injured, they can't handle the quicker pace," explained Jennifer. "That's the biggest thing to learn, coming out of the exercise gym world and into the yoga studio. First of all, no one cares what you're doing on your mat. There's no competition with the person next to you. It's just learning to listen to your body and not judge what's going on around you or how you feel that day."

Although a yoga class can have people of different skill levels, instructors have ways of making the class appropriate for everyone.

"We always ask if there are any injuries," said Jennifer. As a yoga instructor, she is there to help each student reach a level of yoga that is personally challenging, without being overwhelming. "For everything we do, there are accommodations, such as dropping knees, dropping arms, changing breathes, or maybe not holding a pose as long."

In addition to accommodations, different types of yoga fit different people's needs. Hatha yoga is a form of yoga that involves slower movements that can be gentler on the body. In comparison, vinyasa yoga is more lively and more movement-intense.

At any point, during any type of yoga class, students can go into a position known as child's pose. This is when a person kneels on the ground and rests their forehead on their yoga mat.

It's a restorative pose that is meant to help yoga practitioners rest.

The Science Behind Yoga

Yoga can help blood clot patients manage their anxiety by causing actual chemical changes in the brain.

It is well known that exercise can help to improve mood and relieve anxiety. Research suggests that yoga could be more powerful at improving mood and relieving anxiety, because it leads to an increase in GABA levels in the brain.



Yoga: The Medicine You Didn't Know You Needed

GABA is a neurotransmitter that helps brain cells communicate with each other. When GABA levels are low, stress and anxiety can develop.

In a 2010 study, ["Effects of Yoga Versus Walking on Mood, Anxiety, and Brain GABA Levels: A Randomized Controlled MRS Study."](#) Dr. Chris Streeter, MD, associate professor of psychiatry and neurology at Boston University School of Medicine, and her research team explored this possibility.

The team compared two groups of participants, with each group made up of healthy people with no significant medical or psychiatric disorders. The first group participated in yoga for 60 minutes, three times a week for twelve weeks. The second group exercised the same amount, but they spent their time walking. Along the twelve weeks, researchers measured each participant's mood and anxiety at weeks zero, four, eight, and twelve. Participants also underwent MRS scans.

The study concluded that, "The 12-week yoga intervention was associated with greater improvements in mood and anxiety than a metabolically matched walking exercise. This is the first study to demonstrate that increased thalamic GABA levels are associated with improved mood and decreased anxiety."

"People in the yoga group reported having increased mood and less anxiety over the course of the study than the walking group," explained Dr. Streeter. However, she cautioned that the value of other forms of exercise

can't be ignored because of the study.

"It doesn't say that yoga is better than walking," cautioned Dr. Streeter, explaining that the environment could affect the quality of the participants' walk. "When you put people in a gym and you have them walk around at two and a half miles an hour...and you have people do yoga in the same gym, in that environment yoga is better. You can't say that a beautiful walk on the beach is the same. It's an entirely different animal. There are different factors involved."

Yoga's Effect on the Parasympathetic Nervous System

In addition to raising the brain's GABA levels, yoga also has a large impact on the parasympathetic nervous system, which works to slow the heart and lower blood pressure. The slow breathing and meditation that comes with yoga is known to strengthen the body's parasympathetic nervous system.

A stronger parasympathetic nervous system helps balance out the body's reaction to stressful situations, triggered by the sympathetic nervous system. The body's sympathetic nervous system raises blood pressure, heart rate, and blood sugar levels during stressful times. This is also known as the body's fight or flight response.

Patients who experience stress-related issues, such as depression or anxiety disorders, usually experience an imbalance, where their sympathetic nervous system is working more than their

parasympathetic nervous system, according to Dr. Streeter.

One study that analyzed the effects of yoga in women with depression and anxiety found that, after attending a two-month yoga class, participants experienced decreased levels of anxiety. Researchers concluded that yoga could serve as a complementary form of therapy for patients with anxiety disorders.

Blood clot patients who experience anxiety, including anxiety attacks, can manage it better if they have a stronger parasympathetic nervous system.

Getting Started

Finding your local yoga studio is only a Google search away.

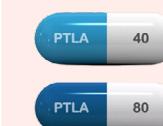
Many studios offer different types of yoga, geared towards different practitioners' needs. Looking to ease into the yoga world? Try a class geared towards beginners or a restorative yoga class. Restorative yoga involves fewer poses and is meant to be relaxing. Would you rather a more physically challenging class? Try hot yoga, where the room is heated to 80 – 100 degrees Fahrenheit.

Other forms of yoga include bikram yoga, hatha yoga, and vinyasa yoga. Each is unique and offers its own challenges.

If you think you would like to start practicing yoga or any other exercise, consult with your doctor before getting started.

Anticoagulant Comparison Chart

Which anticoagulant is right for me? For more information please visit www.natfonline.org

Brand Name What is the name of the drug I am taking?	COUMADIN® (Warfarin Sodium Tablets, USP) Crystalline 1mg, 2mg, 3.5mg, 3mg, 4mg, 5mg, 6mg, 7.5mg, 10mg	Pradaxa® Praxbind® MEER CONTROLE	Xarelto® rivaroxaban tablets	Eliquis® apixaban	Savaysa® (edoxaban) tablets 60mg/30mg	Bevyxxa® betrixaban capsules 80mg 40mg
Generic Is there a generic available?	Yes	Dabigatran	Rivaroxaban	Apixaban	Edoxaban	Betrixaban
FDA Approval When was this drug first approved by the FDA?	Pre-1982 Warfarin was first used in humans in 1954, before the FDA regulated drugs.	October 2010	July 2011	December 2012	January 2015	June 2017
FDA Approved For What conditions is this drug approved for?	Stroke prevention in atrial fibrillation and valve replacements Treatment and prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE)	Stroke prevention in non-valvular atrial fibrillation Treatment and secondary prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE) VTE prevention after hip replacement surgery	Stroke prevention in non-valvular atrial fibrillation Treatment and secondary prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE) VTE prevention after hip and knee replacement surgery	Stroke prevention in non-valvular atrial fibrillation Treatment and secondary prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE) VTE prevention after hip and knee replacement surgery	Stroke prevention in non-valvular atrial fibrillation Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE)	The prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE) in hospitalized medically-ill patients.
Drug Image and Available Drug Strengths	Variable 	75 mg, 110 mg, or 150 mg capsule 	10 mg, 15 mg, or 20 mg tablet 	5 mg or 2.5 mg tablet 	15 mg, 30 mg, or 60 mg tablet 	40 mg or 80 mg capsule 

Anticoagulant Comparison Chart, Continued

Which anticoagulant is right for me? For more information please visit www.natfonline.org

Brand Name What is the name of the drug I am taking?	 Warfarin	  Dabigatran	 Rivaroxaban	 Apixaban	 Edoxaban	 Betrixaban
Dosing Frequency How often do I take this drug?	Once Daily	Twice Daily	Once Daily (following a three week loading period of twice daily for PE and DVT)	Twice Daily (following a one week loading period of 10 mg twice daily for PE and DVT)	Once Daily	Once Daily (following an initial single dose of 160 mg, then 80 mg once daily for 35 to 42 days)
Onset How long does it take for the drug to be working in my body?	Slow: Several Days	Fast: A Few Hours	Fast: A Few Hours	Fast: A Few Hours	Fast: A Few Hours	Fast: A Few Hours
Kidney Function Should my kidney function be considered before starting this drug?	No	Yes Kidney function affects the dosage	Yes Kidney function affects the dosage	Yes Kidney function affects the dosage	Yes Kidney function affects the dosage	Yes Kidney function affects the dosage
Food Effect Do I need to take this drug with food or can this drug be affected by the food I eat?	Yes Speak with your provider about vitamin K intake and warfarin.	No	Yes Xarelto should be taken with the dinner meal.	No	No	Yes Bevyxxa doses should be taken at the same time of day with food.
Drug Interactions How many other drugs may interfere with the way this drug works?	Many	Few	Few	Few	Few	Few
Routine Lab Monitoring Do I need to monitor my anticoagulation level?	Yes	No	No	No	No	No
Reversal Agents Are there agents to reverse major bleeding?	Yes (Vitamin K, Fresh Frozen Plasma, Prothrombin Complex Concentrates)	Yes Praxbind (idarucizumab)	Yes Andexxa (Andexanet alpha)	Yes Andexxa (Andexanet alpha)	Soon (May use Prothrombin Complex Concentrate in emergencies)	Soon (May use Prothrombin Complex Concentrate in emergencies)

