

EDUCATION MODULE

Oral Anticoagulants: What Women Need to Know



Sponsored by Boehringer-Ingelheim

This module specifically addresses oral anticoagulants. Although other options, such as IV and other injectable anticoagulants, are sometimes used in the outpatient setting, this educational resource is limited to oral anticoagulants only.



© 2015. WomenHeart: The National Coalition for Women with Heart Disease.

www.womenheart.org

Sponsored by Boehringer-Ingelheim

Oral Anticoagulants: What Women Need to Know

ISBN 13: 978-1-57931-292-3

Curriculum Development: ToucanEd, Inc.

Table of Contents

How to Use this Education Module	5
Oral Anticoagulants: What Women Need to Know.....	7
Objective 1: Explain what anticoagulants are and why they are used.....	9
Resources for Objective 1	
Anticoagulants (handout)	11
Objective 2: Describe individual considerations around the decision to use anticoagulants	13
Resources for Objective 2	
Considerations about Using Anticoagulants	15
Objective 3: Describe lifestyle recommendations for thriving on anticoagulants	17
Resources for Objective 3	
Thriving on Anticoagulants.	19
Objective 4: Explain what to ask your doctor about anticoagulants.....	21
Resources for Objective 4	
Different Types of Oral Anticoagulants.....	23
Talking to Your Doctor about Anticoagulants.....	25
Pre-Test	27
Post-Test	29
Pre-Post-Test Key	31
References	33

How to Use this Education Module

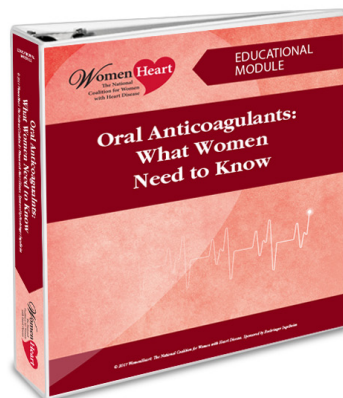
The Oral Anticoagulants: What Women Need to Know education module developed by WomenHeart: The National Coalition for Women with Heart Disease is an educational tool for use by *WomenHeart Champion* Support Network Coordinators in monthly Support Network meetings for women living with heart disease. The purpose of this module is to help women living with heart conditions understand how anticoagulants work, and recognize the importance of their personal commitment to managing their treatment. This module specifically addresses oral anticoagulants. Although other options, such as IV and other injectable anticoagulants, are sometimes used in the outpatient setting, this educational resource is limited to oral anticoagulants only.

Module Organization

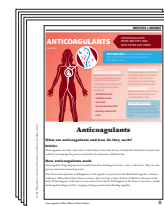
This module is organized by objectives. The objectives identify what attendees should know and be able to do as a result of the presentation. Each objective provides guidance for presenting the information, and identifies the education materials you will need to use.

The materials are:

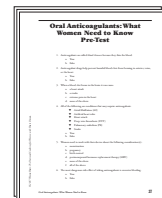
- ♥ background resources
- ♥ infographic cards
- ♥ objective handouts



Binder



Handouts



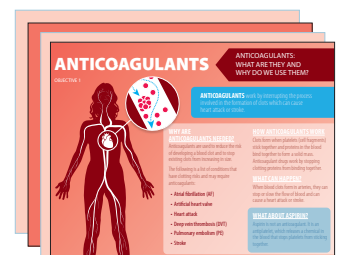
Pre-Test and Post-Test



Resource CD



Video DVD



Infographic Cards

Module Contents

Binder

The binder is designed to keep the entire education module (including the DVD, CD, pre-test, post-test, lesson steps, infographics, and objective handouts) in one easy-to-use place.

DVD

The DVD is the opening presentation to engage attendees.

The patient education video features interviews with professionals who are experts in women's cardiovascular health and women heart patients.

CD

The CD contains all print materials (pre-test, post-test, infographics, and objective handouts) in PDF format for reproduction. It is possible to print in black and white or in color.

Pre-Test and Post-Test

Use these tests to help WomenHeart evaluate the effectiveness of this education module. The test results compare differences in attendee knowledge before and after the education presentation. These tests will indicate what attendees have learned.

The tests are based on surveys of ten assessment items in multiple-choice or true-false format. The items are the same for both tests. Have attendees take the pre-test anonymously before the presentation. Collect the pre-tests and administer the post-test after the presentation, also completed anonymously. Send both sets of tests to WomenHeart at 1100 17th Street, NW, Suite 500, Washington, DC 20036 within a week after your Support Network meeting.

Infographic Cards

Infographic cards are found in the pocket of the binder. They are used to assist in the discussion of key points for objectives. Copies of the infographics are found on some of the handouts.

Objective Handouts

Objective handouts are used to provide attendees with take-home information on key points in the program. The handouts are found in the binder and on the CD.

EDUCATION MODULE

Oral Anticoagulants: What Women Need to Know



Introduction

This module is designed to provide an instructional framework for *WomenHeart Champion* Support Network Coordinators in their Support Network setting. This module focuses on the use, and risks of anticoagulants for women who are living with heart conditions.

The goal of this module is to help women living with heart conditions understand how anticoagulants work, and recognize the importance of their personal commitment to managing their treatment. This module specifically addresses oral anticoagulants. Although other options, such as IV and other injectable anticoagulants, are sometimes used in the outpatient setting, this educational resource is limited to oral anticoagulants only.

This module is intended to provide participants with the knowledge and skills they need to:

- ♥ Explain what anticoagulants are and why they are used.
- ♥ Describe individual considerations around the decision to use anticoagulants.
- ♥ Describe lifestyle recommendations for thriving on anticoagulants.
- ♥ Explain what to ask your doctor about anticoagulants.



Time

1 hour (This is an estimate of total time. The module can be completed at your own pace, so it may take longer.)



Preparation

This module is organized into four objectives. Each objective has supporting materials to help deliver the information. Infographic cards, which can be displayed during the presentation, accompany each objective. Before conducting the presentation, be sure to review the infographic cards for each objective.

This module also contains objective handouts for each participant. Please print copies of the handouts so each participant will have a full set of information to use during discussions and to take home. You will find the objective handouts on the **Oral Anticoagulants: What Women Need to Know** Resource CD.

Print one pre-test and one post-test for each attendee.



Pre-Test and Post-Test

Distribute the pre-test for participants to complete. Emphasize to participants that they will take both the pre-test and post-test anonymously. Explain that the goal is to determine what participants know about the topic before the presentation and to see what they have learned as a result of the presentation.



Video Presentation

Time: 10 minutes



Materials: DVD— **Oral Anticoagulants: What Women Need to Know**

1. Explain the video.

Before showing the video, explain that participants will be watching interviews with *WomenHeart Champions* who are living with heart conditions that require the use of anti-coagulants. These interviews help us understand a woman's journey using anticoagulants and how women can effectively care for themselves to enhance their quality of life.

2. Assign writing task.

Tell participants to be prepared to write down at least two important things they learn from watching the video.

3. Show and discuss the video.

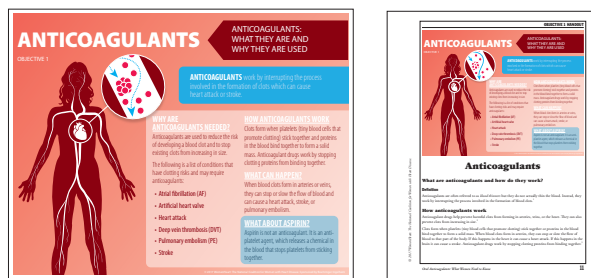
Gather any reactions.

Ask for volunteers to share at least one important thing they learned.



Objective 1: Explain what anticoagulants are and why they are used.

Time: 10 minutes



Materials for Objective 1

Review

- ♥ Objective handout

Distribute

- ♥ Anticoagulants (objective handout)

Display/Show

- ♥ Anticoagulants: What They are and Why They are Used (infographic card)

1. Describe the meaning of anticoagulants.

Ask participants if they have heard the word *blood thinners* before? This is often used to describe anticoagulants. After a few responses, explain the meaning of anticoagulants for participants. Emphasize that anticoagulants do not actually *thin* the blood, they prevent clotting.

Distribute the **Anticoagulants** objective handout and show the **Anticoagulants: What They are and Why They are Used** infographic card. Explain how anticoagulants work and why people need them. As noted on the handout and the infographic card, emphasize that aspirin is not an anticoagulant but an antiplatelet agent.

2. Discuss infographic card.

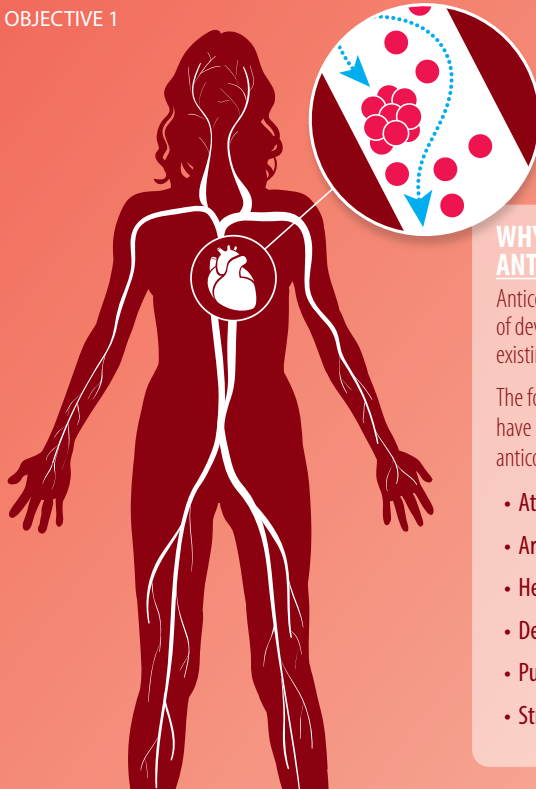
Use the infographic and handout to further discuss anticoagulants. Explain that anticoagulants can be life-saving drugs for women who are at risk of developing a blood clot. They may also stop an existing clot from increasing in size.

Review the list of conditions that may require the use of anticoagulants. Allow participants to share any thoughts they have about this **Anticoagulants** objective handout.

ANTICOAGULANTS

OBJECTIVE 1

**ANTICOAGULANTS:
WHAT THEY ARE AND
WHY THEY ARE USED**



ANTICOAGULANTS work by interrupting the process involved in the formation of clots which can cause heart attack or stroke.

WHY ARE ANTICOAGULANTS NEEDED?

Anticoagulants are used to reduce the risk of developing a blood clot and to stop existing clots from increasing in size.

The following is a list of conditions that have clotting risks and may require anticoagulants:

- Atrial fibrillation (AF)
- Artificial heart valve
- Heart attack
- Deep vein thrombosis (DVT)
- Pulmonary embolism (PE)
- Stroke

HOW ANTICOAGULANTS WORK

Clots form when platelets (tiny blood cells that promote clotting) stick together and proteins in the blood bind together to form a solid mass. Anticoagulant drugs work by stopping clotting proteins from binding together.

WHAT CAN HAPPEN?

When blood clots form in arteries or veins, they can stop or slow the flow of blood and can cause a heart attack, stroke, or pulmonary embolism.

WHAT ABOUT ASPIRIN?

Aspirin is not an anticoagulant. It is an anti-platelet agent, which releases a chemical in the blood that stops platelets from sticking together.

© 2017 WomenHeart: The National Coalition for Women with Heart Disease. Sponsored by Boehringer Ingelheim

Anticoagulants

What are anticoagulants and how do they work?

Definition

Anticoagulants are often referred to as *blood thinners* but they do not actually thin the blood. Instead, they work by interrupting the process involved in the formation of blood clots.¹

How anticoagulants work

Anticoagulant drugs help prevent harmful clots from forming in arteries, veins, or the heart. They can also prevent clots from increasing in size.²

Clots form when platelets (tiny blood cells that promote clotting) stick together or proteins in the blood bind together to form a solid mass. When blood clots form in arteries, they can stop or slow the flow of blood to that part of the body. If this happens in the heart it can cause a heart attack. If this happens in the brain it can cause a stroke. Anticoagulant drugs work by stopping clotting proteins from binding together.³

Why do people need anticoagulants?

Anticoagulants are prescribed for patients who are at risk of developing a blood clot. They are also prescribed for treatment of an existing blood clot to stop it from increasing in size.⁴

The following is a list of conditions that have clotting risks and may require anticoagulants:

- ♥ Atrial fibrillation (AF)
- ♥ Artificial heart valve
- ♥ Heart attack
- ♥ Deep vein thrombosis (DVT)
- ♥ Pulmonary embolism (PE)
- ♥ Stroke

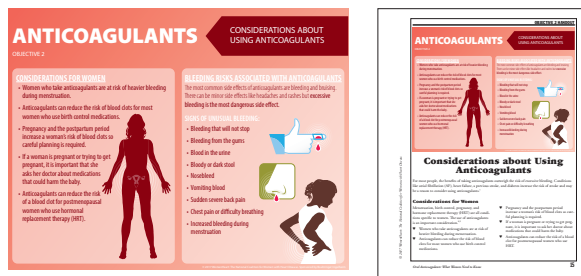
What about aspirin?

Aspirin is not an anticoagulant. It is an antiplatelet agent which releases a chemical in the blood that stops platelets from sticking together. When platelets in the blood stick together, it causes clotting. Aspirin can have side effects, and may not be appropriate for people with certain conditions. Antiplatelet agents, like aspirin, can help prevent strokes and heart attacks but are not as effective for people with atrial fibrillation (AF). Warfarin and newer anticoagulant medications are better at preventing pooled blood in the heart from clotting.⁵



Objective 2: Describe individual considerations around the decision to use anticoagulants.

Time: 15 minutes



Materials for Objective 2

Review

- ♥ Objective handout

Distribute

- ♥ Considerations about Using Anticoagulants (objective handout)

Display/Show

- ♥ Considerations about Using Anticoagulants (infographic card)

1. Discuss decisions about using anticoagulants.

Explain that while the use of anticoagulants can be very beneficial, there are circumstances when the effects of an anticoagulant can pose risks or be harmful. Examples include surgery or injuries where clotting is important. Women need to assess their own specific considerations in order to decide whether to use anticoagulants or not.

2. Considerations for women.

Show the **Considerations about Using Anticoagulants** infographic and distribute the objective handout. Women have special considerations regarding menstruation, pregnancy, birth control, and postmenopausal hormone replacement therapy (HRT). Explain that some studies have shown that women suffer more bleeding problems than men when receiving anticoagulants for blood clots but, other studies have not found this to be true. Women are prescribed medications less frequently for anticoagulation even though many women with atrial fibrillation have an equal or higher risk of stroke than men.⁶

3. Discuss the risks of living on anticoagulants.

Anticoagulants can be a life-saving measure for women who suffer with different types of heart conditions or stroke. However, there are risks associated with the regular use of anticoagulants as well. Using the **Considerations about Using Anticoagulants** infographic explain that the most dangerous side effect is excessive bleeding. Review the signs of unusual bleeding. Ask participants if there are any questions.

4. Work with your doctor.

Women need to work with their doctor to make a decision about taking anticoagulants. For most people, the benefits of taking anticoagulants outweigh the risk of excessive bleeding. Use the following to help participants understand the issues.

- ♥ Am I a fall risk? Falling can cause external and internal bleeding, which can pose serious risks when taking an anticoagulant.
- ♥ Am I a stroke risk? If so, anticoagulants may help to control blood clots from forming or increasing in size.
- ♥ Do I have a health condition that puts me at risk for clotting? If so, anticoagulants may help to control blood clots from forming.
- ♥ What is the recovery and prognosis from a fall vs. a stroke? You will need to work closely with your doctor to weigh the relative risks of each

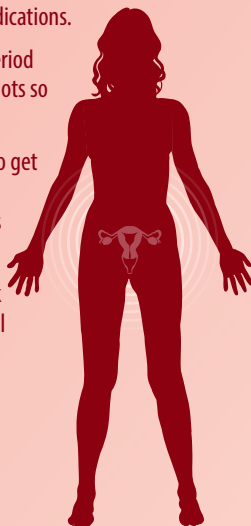
ANTICOAGULANTS

OBJECTIVE 2

CONSIDERATIONS ABOUT USING ANTICOAGULANTS

CONSIDERATIONS FOR WOMEN

- Women who take anticoagulants are at risk of heavier bleeding during menstruation.
- Anticoagulants can reduce the risk of blood clots for most women who use birth control medications.
- Pregnancy and the postpartum period increase a woman's risk of blood clots so careful planning is required.
- If a woman is pregnant or trying to get pregnant, it is important that she asks her doctor about medications that could harm the baby.
- Anticoagulants can reduce the risk of a blood clot for postmenopausal women who use hormonal replacement therapy (HRT).



BLEEDING RISKS ASSOCIATED WITH ANTICOAGULANTS

The most common side effects of anticoagulants are bleeding and bruising. There can be minor side effects like headaches and rashes but **excessive bleeding is the most dangerous side effect.**

SIGNS OF UNUSUAL BLEEDING:

- Bleeding that will not stop
- Bleeding from the gums
- Blood in the urine
- Bloody or dark stool
- Nosebleed
- Vomiting blood
- Sudden severe back pain
- Chest pain or difficulty breathing
- Increased bleeding during menstruation



© 2017 WomenHeart: The National Coalition for Women with Heart Disease. Sponsored by Boehringer Ingelheim

Considerations about Using Anticoagulants

For most people, the benefits of taking anticoagulants outweigh the risk of excessive bleeding. Conditions like atrial fibrillation (AF), heart failure, a previous stroke, and diabetes increase the risk of stroke and may be a reason to consider using anticoagulants.⁷

Considerations for Women

Menstruation, birth control, pregnancy, and hormone replacement therapy (HRT) are all conditions specific to women. The use of anticoagulants is an important consideration.^{8,9}

- ♥ Women who take anticoagulants are at risk of heavier bleeding during menstruation.
- ♥ Anticoagulants can reduce the risk of blood clots for most women who use birth control medications.

- ♥ Pregnancy and the postpartum period increase a woman's risk of blood clots so careful planning is required.
- ♥ If a woman is pregnant or trying to get pregnant, it is important to ask her doctor about medications that could harm the baby.
- ♥ Anticoagulants can reduce the risk of a blood clot for postmenopausal women who use HRT.

Bleeding Risks Associated with Anticoagulants

The most common side effects of anticoagulants are bleeding and bruising. This is why monitoring is so important. Bleeding can occur for a variety of reasons including accidents, falls, surgery, and medication interactions. There can also be minor side effects like headaches and rashes but excessive bleeding is the most dangerous side effect.¹⁰

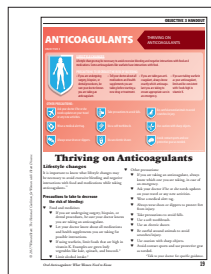
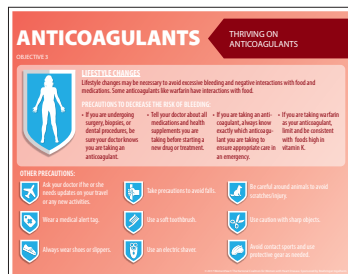
Signs of unusual bleeding:¹¹

- ♥ Bleeding that will not stop
- ♥ Bleeding from the gums
- ♥ Blood in the urine
- ♥ Bloody or dark stool
- ♥ Nosebleed
- ♥ Vomiting blood
- ♥ Sudden severe back pain
- ♥ Chest pain or difficulty breathing
- ♥ Increased bleeding during menstruation



Objective 3: Describe lifestyle recommendations for thriving on anticoagulants.

Time: 10 minutes



Materials for Objective 3

Have

- ♥ Several packages of stickie notes

Review

- ♥ Objective handout

Distribute

- ♥ **Thriving on Anticoagulants** (objective handout)

Display/Show

- ♥ **Thriving on Anticoagulants** (infographic card)

1. Discuss ways to avoid excessive bleeding.

Excessive bleeding is the major risk when taking anticoagulants. Explain the importance of lifestyle choices to avoid excessive bleeding. Show the **Thriving on Anticoagulants** infographic and distribute the objective handout. Review each of the precautions. Ask participants to share any other ideas.

2. Create “Things I’m Prepared to Do” notes.

Hand out stickie notes to participants. After the lesson discussion give each participant several stickie notes (at least 3). Have them anonymously write the lifestyle precautions they are prepared to make on the stickies (one per stickie). Then place them around the room. Give participants some time to walk around to see what others wrote.

ANTICOAGULANTS

THRIVING ON ANTICOAGULANTS

OBJECTIVE 3



LIFESTYLE CHANGES

Lifestyle changes may be necessary to avoid excessive bleeding and negative interactions with food and medications. Some anticoagulants like warfarin have interactions with food.

PRECAUTIONS TO DECREASE THE RISK OF BLEEDING:

- If you are undergoing surgery, biopsies, or dental procedures, be sure your doctor knows you are taking an anticoagulant.
- Tell your doctor about all medications and health supplements you are taking before starting a new drug or treatment.
- If you are taking an anticoagulant, always know exactly which anticoagulant you are taking to ensure appropriate care in an emergency.
- If you are taking warfarin as your anticoagulant, limit and be consistent with foods high in vitamin K.

OTHER PRECAUTIONS:



Ask your doctor if he or she needs updates on your travel or any new activities.



Take precautions to avoid falls.



Be careful around animals to avoid scratches/injury.



Wear a medical alert tag.



Use a soft toothbrush.



Use caution with sharp objects.



Always wear shoes or slippers.



Use an electric shaver.



Avoid contact sports and use protective gear as needed.

© 2017 WomenHeart: The National Coalition for Women with Heart Disease. Sponsored by Boehringer Ingelheim

Thriving on Anticoagulants

Lifestyle changes

It is important to know what lifestyle changes may be necessary to avoid excessive bleeding and negative interactions with food and medications while taking anticoagulants.¹¹

Precautions to take to decrease the risk of bleeding:

- ♥ Food and medicines
 - ♥ If you are undergoing surgery, biopsies, or dental procedures, be sure your doctor knows you are taking an anticoagulant.
 - ♥ Let your doctor know about all medications and health supplements you are taking for possible interactions.
 - ♥ If using warfarin, limit foods that are high in vitamin K. Examples are green leafy vegetables like kale, spinach, and broccoli.*
 - ♥ Limit alcohol intake.*

♥ Other precautions:

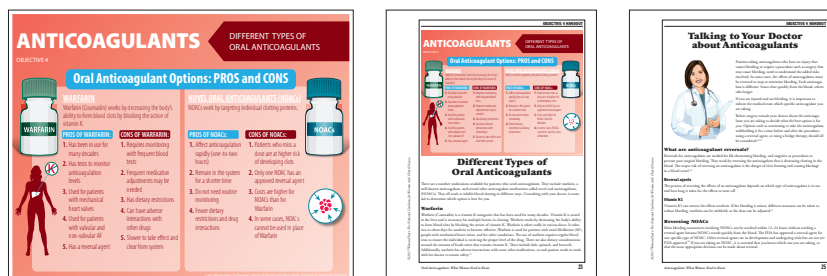
- ♥ If you are taking an anticoagulant, always know which one you are taking, in case of an emergency.
- ♥ Ask your doctor if he or she needs updates on your travel or any new activities.
- ♥ Wear a medical alert tag.
- ♥ Always wear shoes or slippers to protect feet from injury.
- ♥ Take precautions to avoid falls.
- ♥ Use a soft toothbrush.
- ♥ Use an electric shaver.
- ♥ Be careful around animals to avoid scratches/injury.
- ♥ Use caution with sharp objects.
- ♥ Avoid contact sports and use protective gear as needed.

*Talk to your doctor for specific guidance.



Objective 4: Explain what to ask your doctor about anticoagulants.

Time: 10 minutes



Materials for Objective 4

Review

- ♥ Objective handout

Distribute

- ♥ Different Types of Oral Anticoagulants (objective handout)
- ♥ Talking to Your Doctor about Anticoagulants (objective handout)

Display/Show

- ♥ Different Types of Oral Anticoagulants (infographic card)

1. Discuss the types of oral anticoagulants.

Explain that anticoagulants play an important role for individuals living with blood clotting conditions. Distribute the **Different Types of Oral Anticoagulants** objective handout. Discuss each of the different types of oral anticoagulants. Explain that there are pros and cons to each type. Women need to work with their doctor to determine what is best for them.

These include:

- ♥ Warfarin (Coumadin)
- ♥ Novel Oral Anticoagulants (NOACs)

2. Discuss reversals and bridging.

When a woman is injured or will have surgery, bleeding is a major risk. In these cases there are ways to reverse this effect of the anticoagulant with medications called *reversal agents*. Distribute the **Talking to Your Doctor about Anticoagulants** objective handout. Allow participants time to read the sections on Reversals and Bridging.

Address the following questions:

- ♥ What are *reversals*?
- ♥ When are reversals needed?
- ♥ What are reversal agents?
- ♥ What is *bridging*?
- ♥ Is bridging needed?
- ♥ How is heparin used?

3. Discuss talking with your doctor about anticoagulants.

Tell participants that knowing more about anticoagulants will help them know what to ask when in the doctor's office.

Review each of the following questions, then ask participants if they have ideas for other questions.

- ♥ Do I need to take anticoagulants?
- ♥ What type of anticoagulant is best for me?
- ♥ What are *reversals*?
- ♥ When might reversals be needed?
- ♥ What is *bridging*?
- ♥ What is the risk of a blood clot when I stop anticoagulants before surgery?
- ♥ What is the risk if I continue anticoagulants during surgery?
- ♥ When should I stop taking my anticoagulant medication?
- ♥ When can I start using it again after surgery?
- ♥ Do I need a different type of anticoagulant?

ANTICOAGULANTS

OBJECTIVE 4

DIFFERENT TYPES OF
ORAL ANTICOAGULANTS

Oral Anticoagulant Options: PROS and CONS



WARFARIN

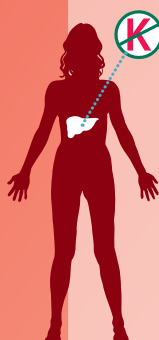
Warfarin (Coumadin) works by decreasing the body's ability to form blood clots by blocking the action of vitamin K.

PROS OF WARFARIN:

1. Has been in use for many decades
2. Has tests to monitor anticoagulation levels
3. Used for patients with mechanical heart valves
4. Used for patients with valvular and non-valvular AF
5. Has a reversal agent

CONS OF WARFARIN:

1. Requires monitoring with frequent blood tests
2. Frequent medication adjustments may be needed
3. Has dietary restrictions
4. Can have adverse interactions with other drugs
5. Slower to take effect and clear from system



NOVEL ORAL ANTICOAGULANTS (NOACs)

NOACs work by targeting individual clotting proteins.

PROS OF NOACs:

1. Affect anticoagulation rapidly (one-to-two hours)
2. Remain in the system for a shorter time
3. Do not need routine monitoring
4. Fewer dietary restrictions and drug interactions

CONS OF NOACs:

1. Patients who miss a dose are at higher risk of developing clots
2. Only one NOAC has an approved reversal agent
3. Costs are higher for NOACs than for Warfarin
4. In some cases, NOACs cannot be used in place of Warfarin



© 2017 WomenHeart: The National Coalition for Women with Heart Disease. Sponsored by Boehringer Ingelheim

Different Types of Oral Anticoagulants

There are a number medications available for patients who need anticoagulants. They include warfarin, a well-known anticoagulant, and several other anticoagulant medications called novel oral anticoagulants, (NOACs). They all work to inhibit blood clotting in different ways. Consulting with your doctor is essential to determine which option is best for you.

Warfarin

Warfarin (Coumadin) is a vitamin K antagonist that has been used for many decades. Vitamin K is stored in the liver and is necessary for multiple factors in clotting. Warfarin works by decreasing the body's ability to form blood clots by blocking the action of vitamin K. Warfarin is taken orally in various doses. It takes two-to-three days for warfarin to become effective. Warfarin is used for patients with atrial fibrillation (AF), people with mechanical heart valves, and for other conditions. The use of warfarin requires regular blood tests to ensure the individual is receiving the proper level of the drug. There are also dietary considerations around the amount of foods eaten that contain vitamin K. These include kale, spinach, and broccoli. Additionally, warfarin has adverse interactions with some other medications, so each patient needs to work with her doctor to ensure safety.¹²

Novel Oral Anticoagulants (NOACs)

Novel oral anticoagulants (NOACs) provide additional treatment options. They work by targeting individual clotting proteins (Factor Xa or thrombin). Because they target one protein while preserving others, they can lessen some of the risk of bleeding.

There are several types of NOACs. They can reduce stroke risk, and the development of embolism (obstruction of a blood vessel), and most NOACs have fewer serious bleeding complications than warfarin. Most are recommended for non-valvular AF; they are not recommended for patients with mechanical heart valves.

NOACs do not require monitoring with regular blood tests and they reach effective levels quickly (often in one-to-two hours). They have few drug-to-drug interactions and fewer negative dietary interactions than warfarin. Since NOACs activate rapidly and leave the blood quickly, missing even one dose can be dangerous. NOACs can have side effects so consulting with your doctor about them is essential.^{13,14}

Talking to Your Doctor about Anticoagulants



Patients taking anticoagulants who have an injury that causes bleeding or require a procedure such as surgery that may cause bleeding, need to understand the added risks involved. In some cases, the effects of anticoagulants must be reversed to stop or minimize bleeding. Each anticoagulant is different. Some clear quickly from the blood, others take longer.

If you are injured and are bleeding, it is important to inform the medical team which specific anticoagulant you are taking.

Before surgery consult your doctor about the anticoagulants you are taking to decide what the best option is for you. Options such as continuing to take the anticoagulant, withholding it for a time before and after the procedure, using a reversal agent, or using a bridge therapy, should all be considered.^{15,16}

What are anticoagulant reversals?

Reversals for anticoagulants are needed for life-threatening bleeding, and surgeries or procedures to prevent post surgical bleeding. They work by reversing the anticoagulant that is decreasing clotting in the blood. The major risk of reversing an anticoagulant is the danger of clots forming and causing blockage in a blood vessel.¹⁷

Reversal agents

The process of reversing the effects of an anticoagulant depends on which type of anticoagulant is in use and how long it takes for the effects to wear off.

Vitamin K1

Vitamin K1 can reverse the effects warfarin. If the bleeding is minor, different measures can be taken to reduce bleeding, warfarin can be withheld, or the dose can be adjusted.¹⁸

Reversing NOACs

Most bleeding occurrences involving NOACs can be resolved within 12–24 hours without needing a reversal agent because NOACs recede quickly from the blood. The FDA has approved a reversal agent for one specific type of NOAC. Other reversal agents are in development and undergoing trials but are not yet FDA approved.¹⁹ If you are taking an NOAC, it is essential that you know which one you are taking, so that the most appropriate decision can be made about reversal.

What about bridging?

Bridging is a process that uses a drug such as intravenous heparin or subcutaneous low molecular weight heparin (a fast-acting anticoagulant) to *bridge* the time it takes warfarin to start or stop working.

An example of bridging would be when warfarin—which can take days to clear from the blood—is stopped prior to surgery. Bridging with intravenous heparin or subcutaneous low molecular weight heparin works quickly and is started prior to surgery and is used after surgery until warfarin takes affect again.²⁰

Each patient needs to discuss this option with their doctor. The decision to bridge depends on many factors, including the diagnosis, the risk of bleeding and clotting, and other patient factors. The BRIDGE study conducted in 2015 concluded that not using bridging for certain atrial fibrillation (AF) patients resulted in less risk of major and minor bleeding than using subcutaneous low molecular weight heparin as a bridge. The study found that forgoing bridging had comparable results to bridging to prevent blood clots.²¹

What are Pre-surgery and Post-surgery Considerations?

When a patient taking an anticoagulant needs to have surgery, it is very important to review options with the doctor.²²

Questions to ask your doctor:

- ♥ What is the risk of a blood clot when I stop using anticoagulants before surgery?
- ♥ What is the risk for bleeding if I continue to use anticoagulants during surgery?
- ♥ When should I stop taking my anticoagulant medication?
- ♥ When can I start using it again after surgery?
- ♥ Do I need a different type of anticoagulant?

Oral Anticoagulants: What Women Need to Know Pre-Test

1. Anticoagulants are called *blood thinners* because they thin the blood.
 - a. True
 - b. False
2. Anticoagulant drugs help prevent harmful blood clots from forming in arteries, veins, or the heart.
 - a. True
 - b. False
3. When a blood clot forms in the brain it can cause:
 - a. a heart attack
 - b. a stroke
 - c. extreme pain in the heart
 - d. none of the above
4. All of the following are conditions that may require anticoagulants.
 - ♥ Atrial fibrillation (AF)
 - ♥ Artificial heart valve
 - ♥ Heart attack
 - ♥ Deep vein thrombosis (DVT)
 - ♥ Pulmonary embolism (PE)
 - ♥ Stroke
 - a. True
 - b. False
5. Women need to work with their doctor about the following consideration(s):
 - a. menstruation
 - b. pregnancy
 - c. birth control
 - d. postmenopausal hormone replacement therapy (HRT)
 - e. none of the above
 - f. all of the above
6. The most dangerous side effect of taking anticoagulants is excessive bleeding.
 - a. True
 - b. False

-
7. Some of the lifestyle changes that may be necessary while taking anticoagulants include limiting foods that are high in vitamin A, limiting alcohol intake, using a soft toothbrush and avoiding contact sports.
- True
 - False
8. There are two types of anticoagulants. They are:
- warfarin and coumadin
 - warfarin and novel oral anticoagulants (NOACs)
 - aspirin and warfarin
 - none of the above
9. Reversal agents are medications that women who are using anticoagulants may need because of bleeding due to:
- injury
 - surgery
 - all of the above
 - none of the above
10. Which of the following questions is NOT a good one to ask your doctor about anticoagulants?
- Do I need to take anticoagulants?
 - What type of anticoagulant is best for me?
 - When might reversals be needed?
 - What is the risk of a blood clot when I stop taking anticoagulants before surgery?
 - All are good questions.
 - None are good questions.

Oral Anticoagulants: What Women Need to Know

Post-Test

1. Anticoagulants are called *blood thinners* because they thin the blood.
 - a. True
 - b. False
2. Anticoagulant drugs help prevent harmful blood clots from forming in arteries, veins, or the heart.
 - a. True
 - b. False
3. When a blood clot forms in the brain it can cause:
 - a. a heart attack
 - b. a stroke
 - c. extreme pain in the heart
 - d. none of the above
4. All of the following are conditions that may require anticoagulants.
 - ♥ Atrial fibrillation (AF)
 - ♥ Artificial heart valve
 - ♥ Heart attack
 - ♥ Deep vein thrombosis (DVT)
 - ♥ Pulmonary embolism (PE)
 - ♥ Stroke
 - a. True
 - b. False
5. Women need to work with their doctor about the following consideration(s):
 - a. menstruation
 - b. pregnancy
 - c. birth control
 - d. postmenopausal hormone replacement therapy (HRT)
 - e. none of the above
 - f. all of the above
6. The most dangerous side effect of taking anticoagulants is excessive bleeding.
 - a. True
 - b. False

-
7. Some of the lifestyle changes that may be necessary while taking anticoagulants include limiting foods that are high in vitamin A, limiting alcohol intake, using a soft toothbrush and avoiding contact sports.
 - a. True
 - b. False
 8. There are two types of anticoagulants. They are:
 - a. warfarin and coumadin
 - b. warfarin and novel oral anticoagulants (NOACs)
 - c. aspirin and warfarin
 - d. none of the above
 9. Reversal agents are medications that women who are using anticoagulants may need because of bleeding due to:
 - a. injury
 - b. surgery
 - c. all of the above
 - d. none of the above
 10. Which of the following questions is NOT a good one to ask your doctor about anticoagulants?
 - a. Do I need to take anticoagulants?
 - b. What type of anticoagulant is best for me?
 - c. When might reversals be needed?
 - d. What is the risk of a blood clot when I stop taking anticoagulants before surgery?
 - e. All are good questions.
 - f. None are good questions.

Oral Anticoagulants: What Women Need to Know

Pre-Post Test Key

1. Anticoagulants are called *blood thinners* because they thin the blood.
 - a. True
 - b. False**
2. Anticoagulant drugs help prevent harmful blood clots from forming in arteries, veins, or the heart.
 - a. True**
 - b. False
3. When a blood clot forms in the brain it can cause:
 - a. a heart attack
 - b. a stroke**
 - c. extreme pain in the heart
 - d. none of the above
4. All of the following are conditions that may require anticoagulants.
 - ♥ Atrial fibrillation (AF)
 - ♥ Artificial heart valve
 - ♥ Heart attack
 - ♥ Deep vein thrombosis (DVT)
 - ♥ Pulmonary embolism (PE)
 - ♥ Stroke
 - a. True**
 - b. False
5. Women need to work with their doctor about the following consideration(s):
 - a. menstruation
 - b. pregnancy
 - c. birth control
 - d. postmenopausal hormone replacement therapy (HRT)
 - e. none of the above
 - f. all of the above**
6. The most dangerous side effect of taking anticoagulants is excessive bleeding.
 - a. True**
 - b. False

-
7. Some of the lifestyle changes that may be necessary while taking anticoagulants include limiting foods that are high in vitamin A, limiting alcohol intake, using a soft toothbrush and avoiding contact sports.
- a. True
 - b. False**
8. There are two types of anticoagulants. They are:
- a. warfarin and coumadin
 - b. warfarin and novel oral anticoagulants (NOACs)**
 - c. aspirin and warfarin
 - d. none of the above
9. Reversal agents are medications that women who are using anticoagulants may need because of bleeding due to:
- a. injury
 - b. surgery
 - c. all of the above**
 - d. none of the above
10. Which of the following questions is NOT a good one to ask your doctor about anticoagulants?
- a. Do I need to take anticoagulants?
 - b. What type of anticoagulant is best for me?
 - c. When might reversals be needed?
 - d. What is the risk of a blood clot when I stop taking anticoagulants before surgery?
 - e. All are good questions.**
 - f. None are good questions.

References

1. NHS Choices, Staff, “Anticoagulant Medicines,” www.nhs.uk/conditions/Anticoagulant-medicines/Pages/Introduction.aspx, June 2015, page 1
2. WomenHeart, The Importance of Medication Adherence for Women Living with Heart Disease Education Module, “Heart Medications and What They Do,” 2015, page 21
3. NHS Choices, “Anticoagulant Medicines,” page 1
4. Anticoagulation Europe, Staff, “Anticoagulation Therapy,” <http://www.anticoagulationeurope.org/conditions/anticoagulation-therapy>, 2011, page 1
5. Brown, Jennifer, PhD, Everyday Health, “Better Blood Thinners, Less Aspirin in Atrial Fibrillation Guidelines,” <http://www.everydayhealth.com/atrial-fibrillation/treatment/new-guidelines-for-afib-patients-better-blood-thinners-less-aspirin/>, July 2016, page 1
6. Daneshvar, Mitra, Desai, Nayan, Andriulli, Ortman, Matthew, Journal of the American College of Cardiology, Volume 65, Issue 10, “Differences in Treatment for Patients with Heart Failure Complicated by Atrial Fibrillation by Sex: A Get With the Guidelines-Heart Failure (GWTG-HF) Study,” <http://www.sciencedirect.com/science/article/pii/S0735109715603771>, March 2015, page 1
7. NHS Choices, “Anticoagulant Medicines,” page 2
8. James, Andra, MD, Stop the Clot.org, “Women’s Health-Blood Clots,” https://www.stopthe-clot.org/learn_more/womens_health_faqs.htm, 2015, pages 1–2
9. US Department of Veterans Affairs, “Special Considerations for Women of Reproductive Age on Anticoagulation,” https://www.index.va.gov/search/va/va_search.jsp?SQ=www.pbm.va.gov&QT=Anticoagulants+specialconsiderations+for, January 2012, page 1
10. NHS Choices, Staff, “Anticoagulant Medicines—Side Effects,” <http://www.nsh.uk/Conditions/Anticoagulant-medicines/Pages/Side-effects.aspx>, 2015, page 1
11. Anticoagulation.com.au, Staff, “Living Safely with Your Anticoagulant,” <http://anticoagulation.com.au/Anticoagulants/Livingsafelywithyouranticoagulant/tabid/203/Default.aspx>, November 2014, page 1
12. American Heart Association, Staff, “A Patients Guide to Taking Warfarin,” http://www.heart.org/HEARTORG/Conditions/Arrhythmia/PreventionTreatmentofArrhythmia/A-Patients-Guide-to-Taking-Warfarin_UCM_444996_Article.jsp#.WOZ_CqJw-Uk, 2014, pages 1–2
13. Wadhera, Rishi, Russell, Cori, Piazza, Gregory, AHA Journals, Circulation, “Warfarin Versus Novel Oral Anticoagulants,” <http://circ.ahajournals.org/content/130/22/2191>, 2014, pages 2–3
14. Mayo Clinic, Staff, Clinical Updates, “New Anticoagulation Options for Patients with Nonvalvular Atrial Fibrillation,” <http://www.mayoclinic.org/medical-professionals/clinical-updates/cardiovascular/new-anticoagulation-options-for-patients-with-nonvalvular-atrial-fibrillation>, October 2016, pages 1–2
15. Daley, Brian, MD, MDA, FACS, Medscape, “Perioperative Anticoagulation Management,” <http://emedicine.medscape.com/article/285265-overview>, May 2016, page 9
16. Kinman, Tricia, Healthline, “Anticoagulant and Antiplatelet Drugs,” <http://www.healthline.com/health/anticoagulant-and-antiplatelet-drugs#overview1>, June 2013, page 2

-
17. Mehrota, Abhi, MD, MBA, FACEP, Burr, Timothy, MD, Hatfield, Leah, PharmD, BCPS, Kessler, Chad, MD, MHPE, AHC Media, “Oral Anticoagulation Reversal,” <https://www.ahcmedia.com/articles/138609-amtocpagi;atopm-reversal>, September 2016, pages 4–5
 18. Hanley, J.P, Journal of Clinical Pathology, “Warfarin Reversal,” www.ncbi.nlm.nih.gov/pmc/articles/PMC1770479/, March 2004, pages 2, 9
 19. Huisman, Menno, MD, PhD, Fanikos, John, RPh, MBA, The American Journal of Medicine, “Idarucizumab and Factor Xa Reversal Agents: Role in Hospital Guidelines and Protocols,” Elsevier, Inc., 2016, pages 1–3
 20. American Heart Association Journals, Circulation, Staff, “Bridging Anticoagulation,” <https://circ.ahajournals.org/content/125/12/e496>, 2012, pages 1–3
 21. Douketis, James, MD, Spyropoulos, Alex, MD., Kaatz, Scott, DO, Becker Richard, MD, Caprini, Joseph, MD, Dunn, Andrew, MD, Garcia, David, MD, Jacobson, Alan, MD, Jaffer, Amir, MD, MBA, Kong, David, MD, Schulman, Sam, MD, PhD., Turpie, Alexander, MB, Hasselblad, Vic, PhD., Ortel, Thomas MD, PhD, “Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation,” <http://www.nejm.org/doi/full/10.1056/NEJMoa1501035>, August, 2015, pages 1, 2, 4
 22. Weinberg, Ido, MD, Angiologist.com Vascular Medicine, “Blood Thinners and Surgery,” <http://www.angiologist.com/thrombosis-section/blood-thinners-and-surgery/>, May 2011, pages 1–2