

Week 4 Concepts: Clotting

Coagulation Modifiers

Prepare: Coagulation Modifiers

Coagulation Modifiers

Coagulation modifiers are a group of medications that both promote and prevent clot formation as well as lysing a preformed clot and reversing the action of anticoagulants.

Warfarin

Warfarin is an anticoagulant medication whose mechanism of action is to prevent clot formation by inhibiting particular clotting factors.

Coagulation Modifier Drugs

Coagulation modifier drugs is a class of medication that includes medications?

heparin

aspirin

acetaminophen

warfarin

Self Check: Hemostasis Review

Coagulation Cascade System

The coagulation cascade system is triggered by an injury to a blood vessel, which then triggers either an intrinsic or an extrinsic pathway of intricate steps, each step triggering the next when clotting factors are/is activated. The ultimate result of this system is a large concentration of fibrin.

Reverse of the Coagulation Process

The reverse of the coagulation process is the fibrinolytic system. Fibrinolysis is the breakdown of thrombi. This is an important part of hemostasis in order to prevent excessive coagulation, blocked blood vessels, or mobilized thrombi called an embolus.

Self Check: Coagulation Modifier Drugs

Coagulation Modifiers

The coagulation modifier drugs are broken down into several subclasses or categories based on their hemostasis reversal or promotion action. Which items are mechanisms of action for this class of drug? Select all that apply.

Thrombus prevention

Thrombus mobilization

Lysing of a preformed thrombus

Anticoagulation reversal

Thrombus promotion

Antiplatelet reversal

Self Check: Mechanism of Action

Mechanism of Action

Which one of these coagulation modifier drugs has a mechanism of action that is to lyse a thrombus that has already formed? Match it to its subclass.

	Medication	Subclass
Mechanism of Action	Alteplase	Thrombolytic

Reversal Drug

Which of these medications is a coagulation modifier whose subclass is a reversal drug? Select all that apply.

aminocaproic acid

apixaban

protamine sulfate
vitamin K

Reflect: Coagulation Modifiers

Antifibrinolytics

What is another term for antifibrinolytics?

- Antithrombotics
- Antiplatelets
- Hemorheologics
- Hemostatics

Promoting Coagulation

A coagulation modifier drug whose mechanism of action is to promote coagulation of the blood is called a(n) _____ and is used to _____.

antifibrinolytic, manage excessive bleeding

anticoagulant, prevent clot formation

thrombolytic, lyse clots that have already formed

antiplatelet, interfere with platelet function

Anticoagulants

What is another term for anticoagulant?

- Hemostatics
- Antiplatelets
- Hemorheologics
- Antithrombotics
- Antifibrinolytics

Coagulation Modifier Drugs and Subclasses

Match the coagulation modifier drug's subclass to the correct medications. Note: Several of the subclasses have more than one medication listed as correct choices.

Anticoagulants	<ul style="list-style-type: none">• Enoxaparin• Heparin• Warfarin• Dabigatran• etexilateapixaban
Antiplatelets	<ul style="list-style-type: none">• clopidogrel bisulfate• abciximab
Thrombolytics	<ul style="list-style-type: none">• alteplase
Antifibrinolytics	<ul style="list-style-type: none">• aminocaproic acid
Hemorheologics	<ul style="list-style-type: none">• pentoxifylline
Reversal Drugs	<ul style="list-style-type: none">• coagulation factor Xa (recombinant)• idarucizumab• protamine sulfate• phytonadione

Reversal and Coagulation Modifier Drugs

Choose the correct word(s) from the drop-down list to complete the following statements regarding reversal drugs

Protamine sulfate is the reversal drug for heparin.

Phytonadione is the reversal drug for warfarin.

Idarucizumab is the reversal drug for dabigatran etexilate.

Coagulation factor Xa (recombinant) is the reversal drug for rivaroxaban.

Indications for Use

Match the indications for use of coagulation modifying drugs by dragging the class on the right to the correct description.

Antiplatelet drugs inhibit platelet aggregation and formation of platelet plugs, which are helpful in preventing heart attacks and strokes.

Hemorrhagic drugs alter platelet function without interfering with normal platelet activity.

Thrombolytic drugs are a classification of drugs that are used to break down clots or thrombi that have formed.

Antifibrinolytic drugs are hemostatic drugs that promote blood coagulation for conditions of excessive bleeding.

Hemostasis Vocabulary

From the drop-down menu, select the term that best fits the definition.

The process of thrombi formation - **Coagulation**

A clot forming substance that is the result of the coagulation system, which also triggers the fibrinolysis system - **Fibrin**

The process of thrombi breakdown - **Fibrinolysis**

A rare genetic disorder in which certain factors needed for coagulation and hemostasis are inadequate or nonexistent - **Hemophilia**

Any process that stops bleeding - **Hemostasis**

Use of compression to achieve hemostasis - **Mechanical means of hemostasis**

Use of clamping or cauterization to achieve hemostasis - **Surgical means of hemostasis**

Use of coagulation modifier drugs to achieve hemostasis - **Pharmacologic means of hemostasis**

A mobilized thrombus - **Embolus**

Blood clot - **Thrombus**

Subclasses

Match the coagulation modifier drug's subclass to its mechanism of action.

Prevent clot formation by inhibiting particular clotting factors	Anticoagulants
Prevent clot formation by interfering with platelet function	Antiplatelets
Lyse clots that have already formed	Thrombolytics
Promote the coagulation of blood	Antifibrinolytics
Reduce blood viscosity	Hemorheologics
Act as antagonists to the other medications	Reversal drugs

Anticoagulants (warfarin; heparin)

Prepare: Anticoagulants

Actions of Anticoagulants

Anticoagulants perform which of the following actions?

Act directly on platelet aggregation

Prevent thrombosis

Breakdown fibrin

Lyse pre-formed

clots

Anticoagulant Subclasses

Which of these anticoagulants belongs to the subclass heparins?

clopidogrel

warfarin

rivaroxaban