

# DRUGS AFFECTING BLOOD COAGULATION


## Anticoagulant drugs





# Specific Objectives

At the end of the class the students will be able to

- Describe the procedure of administration of anticoagulants
  - Explain the Nurses' responsibilities in the administration of anticoagulants
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# Ct-- HEPARIN - INJECTION

- The overall advantage in the use of these LMW heparins appears to be in the decreased need for monitoring patients in comparison to heparin. Differences of opinion exist and further testing will determine whether these will continue to be used.
- The first LMW heparin, enoxaparin, has been approved for preventing blood clots following hip replacement surgery.

# Ct-- HEPARIN - INJECTION

- USES:
- This medication is used --
- to prevent and treat blood clots.
- to treat blood clots in the lungs/legs.
- It may also be used to prevent blood clots after surgery, during dialysis, when collecting blood samples, or when a person is unable to move for a long time.
- Heparin helps to keep blood flowing smoothly by making a certain natural substance in your body (anti-clotting protein) work better.

## Available as-

- Wockhardt UK is one of only two suppliers of **unfractionated heparins** to the UK market, with a wide range of injectable presentations including the following:

### **Heparin Sodium**

- 1,000 I.U./ml    1ml, 5ml, 10ml, 20ml ampoules and 5ml vials
- 5,000 I.U./ml    1ml, 5ml ampoules and 5ml vials
- 25,000 I.U./ml    0.2ml, 1ml ampoules and 5ml vials

## Available as-

- **Heparin Sodium for Flushing**
- 10 I.U./ml 5ml ampoules
- 100 I.U./ml 2ml ampoules

## **Heparin Calcium**

- 25,000 I.U./ml 0.2ml ampoules

**Ampoules contain a preservative-free solution.**  
**Vials contain a preserved solution.**

## Ct-- HEPARIN - INJECTION

### HOW TO USE:

- This medication is given by injection by a health care professional.
- Learn all preparation and usage instructions for this product. Before using this product, check it visually for particles or discoloration. If either is present, do not use the liquid.
- Check that you are using the correct strength and dose before injecting this medication.
- Do not inject this medication into a muscle.

# Ct-- HEPARIN - INJECTION

## Ct--HOW TO USE:

- clean the injection site with rubbing alcohol before injecting each dose.
- change the location of the injection site daily
- Dosage are based on medical condition, weight, and response to treatment.



# Ct-- HEPARIN - INJECTION

## Ct--HOWTO USE:

- Advice to Use this medication regularly in order to get the most benefit from it. To help you remember, use it at the same times each day. continue using this medication even if you feel well.
- Do not suddenly stop taking this medication without consulting your doctor.
- Your doctor may direct you to switch to an anticoagulant taken by mouth (e.g., warfarin). Use this medication and any new medication exactly as directed by your doctor.

## SIDE EFFECTS-- HEPARIN INJECTION :

- Sudden numbness or weakness, especially on one side of the body;
- Sudden headache, confusion, problems with vision, speech, or balance;
- Pain or swelling in one or both legs;
- Trouble breathing; or
- Fever, chills, runny nose, or watery eyes.

## Ct--SIDE EFFECTS--HEPARIN INJECTION :

### Less serious side effects may include:

- Mild pain, redness, warmth, or skin changes where the medicine was injected;
- Mild itching of your feet; or
- Bluish-colored skin.
- Mild pain/redness/irritation at the injection site may occur. If any of these effects persist or worsen, tell your doctor or pharmacist promptly.

# Warfarin----- oral anticoagulant

**Brand names-----**Coumadin® ,Pronounced as(war' far in) .

**Action of Warfarin--** ('blood thinners'). It works by **decreasing the clotting ability of the blood.**

## **Uses**

- To prevent blood clots from forming or growing larger in your blood and blood vessels.

# Indications of Warfarin

It is prescribed in patient with---

- Irregular heartbeat, with prosthetic (replacement or mechanical) heart valves, and who have suffered a heart attack.
- To treat or prevent venous thrombosis (swelling and blood clot in a vein) and pulmonary embolism (a blood clot in the lung).

## Administration of warfarin

Warfarin comes as a tablet to take by mouth.

- It is usually taken once a day with or without food.
- Take warfarin at around the same time every day.
- Follow the directions on prescription label carefully, and confirm if you do not understand.
- Advice to take warfarin exactly as directed. Do not take more or less of it or take it more often than prescribed by your doctor.

## Ct-- Administration of warfarin

- Call your doctor immediately if you give more than your prescribed dose of warfarin.
- Your doctor will probably start patient on a low dose of warfarin and gradually increase or decrease dose based on the results of blood tests.
- Make sure you understand any new dosing instructions .

## Ct-- Administration of warfarin

- Advice to continue to take warfarin even if you feel well.
- Advice patient not to stop taking warfarin without talking to your doctor.
- Advice patient This medication may be prescribed for other uses; ask your doctor or pharmacist for more information.



## Special precautions should which follow

- Before giving warfarin,
- Assess patient for
- **Allergic to warfarin** or any other medications.
- **Taking two or more medications** that contain **warfarin** at the same time.
  
- what **prescription** and **nonprescription medications**, **vitamins**, and **nutritional supplements** are taking or plan to take, especially **antibiotics**; **aspirin** or **aspirin-containing** products and other nonsteroidal anti-inflammatory drugs such as **ibuprofen (Advil, Motrin)** and **naproxen (Aleve, Naprosyn)**;

## Ct-Special precautions

- heparin;
- medications for cancer, cholesterol, colds and allergies, depression, diabetes, digestive problems (including ulcers and heartburn), gout, heart disease, mental illness, pain, seizures,
- thyroid problems, and tuberculosis; oral contraceptives (birth control pills); streptokinase; ticlopidine; or urokinase. Many other medications may also interact with warfarin,

## Ct-Special precautions

- **What herbal or botanical products he is taking, especially** bromelains, coenzyme Q10 (Ubidecarenone), cranberry products, danshen, dong quai, garlic, Ginkgo biloba, ginseng, and St. John's wort.. **Do not start or stop taking** any herbal products without talking to your doctor.
- **or an indwelling catheter (a flexible plastic tube that is placed into the bladder to allow the urine to drain out).**
- **if she is pregnant, or might be pregnant, or plan to become pregnant while taking warfarin. Warfarin may harm the fetus.**
- **breast-feeding.**

## Ct-Special precautions

- If he/she is **having surgery**, including dental surgery, or any type of medical or dental procedure advice
- Advice to follow your doctor's directions carefully and keep all appointments with the laboratory if your doctor orders blood tests to find the best dose of warfarin.
- Assess for have ever drunk large amounts of alcohol. Advice to patient not to take warfarin. Avoid drinking alcohol while you are taking this medication.
- Assess for receiving any an immunization, such as a flu shot, or any other injection into a muscle,

## if you forget a dose

- Advice patient to take the missed dose as soon as you remember it, if it is the same day that you were to take the dose. Do not take a double dose the next day to make up for a missed one.
- Talk to your doctor if you miss a dose of warfarin.

## side effects of warfarin

- Warfarin may cause side effects. Advice patient to tell your doctor if any of these symptoms are severe or do not go away:
- gas
- change in the way things taste
- tiredness
- pale skin
- loss of hair
- feeling cold or having chills

## Special instructions to patient

- If you experience any of the following symptoms, or those listed in the **IMPORTANT WARNING** section, **call your doctor immediately:**
  - hives ,rash ,itching
  - difficulty breathing or swallowing
  - swelling of the face, throat, tongue, lips, or eyes
  - hoarseness
  - chest pain or pressure
  - swelling of the hands, feet, ankles, or lower legs

## Ct---Special instructions to patient

- fever ,infection
- nausea ,vomiting ,diarrhea ,loss of appetite
- pain in the upper right part of the stomach
- yellowing of the skin or eyes
- flu-like symptoms
- joint or muscle pain ,difficultly in moving any part of your body
- feelings of numbness, tingling, pricking, burning, or creeping on the skin
- painful erection of the penis that lasts for hours



## Ct---Special instructions to patient

- **necrosis or gangrene** (death of skin or other body tissues). Call your doctor immediately if you notice a purplish or **darkened color to your skin**, skin changes, **ulcers**, or an **unusual problem in any area of your skin or body**,
- or if you have a **severe pain that occurs suddenly**, or **color or temperature change** in any area of your body.

## Ct---Special instructions to patient

- Call your doctor immediately if your toes become painful or become purple or dark in color. You may need medical care right away to prevent amputation (removal) of your affected body part.
- Warfarin may cause other side effects. Call your doctor if you have any unusual problems while taking this medication.

## In case of emergency/overdose warfarin

- In case of overdose, **call your local poison control center at 1-800-222-1222**. If the victim has collapsed or is not breathing, **call local emergency services at 911**.
- **Symptoms of overdose may include:**
  - **bloody or red, or tarry bowel movements**
  - **spitting or coughing up blood**

## Ct- In case of emergency/overdose warfarin

- heavy bleeding with your menstrual period
- pink, red, or dark brown urine
- coughing up or vomiting material that looks like coffee grounds
- small, flat, round red spots under the skin
- unusual bruising or bleeding
- continued oozing or bleeding from minor cuts .

## Other information which patient should know

- Carry an **identification card** or **wear a bracelet stating that you take warfarin**. Ask your pharmacist or doctor how to obtain this card or bracelet. **List your name, medical problems, medications and dosages, and doctor's name and telephone number on the card.**
- Tell all your healthcare providers that you take warfarin.
- Do **not let anyone else take your medication**. **Ask your pharmacist any questions you have about refilling your prescription.**

## Ct--Other information which patient should know

- It is important for you to keep a written list of all of the prescription and nonprescription (over-the-counter) medicines you are taking, as well as any products such as vitamins minerals, or other dietary supplements.
- You, should bring this list with you each time you visit a doctor or if you are admitted to a hospital. It is also important information to carry with you in case of emergencies.

# IMPORTANT WARNING !!!:

- Warfarin may cause severe bleeding that can be life-threatening and even cause death.
- Ask your patient if you have or have ever had a blood or bleeding disorder; bleeding problems, especially in your stomach or your esophagus (tube from the throat to the stomach), intestines, urinary tract or bladder, or lungs; )
- High blood pressure; heart attack; angina (chest pain or pressure);

# ct--IMPORTANT WARNING !!!:

- **Heart disease**; pericarditis (swelling of the lining (sac) around the heart); endocarditis (**infection of one or more heart valves**); **a stroke or ministroke**;
- **Aneurysm** (weakening or tearing of an artery or vein);
- **Anemia** (low number of red blood cells in the blood); **cancer; chronic diarrhea; or kidney, or liver disease**. Also tell your doctor if you fall often or have had a **recent serious injury or surgery**.



## **Common Oral And Parenteral Anticoagulants: Adverse Reactions**

- **Bleeding**
- **Nausea, vomiting, abdominal cramping, diarrhea**
- **Alopecia**
- **Rash or urticaria**
- **Hepatitis, jaundice, thrombocytopenia, blood dyscrasias**

# common Oral And Parenteral Anticoagulants: Contraindications/Precautions

- **Contraindicated in patients:**
  - Hypersensitivity to drugs, active bleeding, hemorrhagic disease, tuberculosis, leukemia, uncontrolled hypertension, GI ulcers, recent surgery of the eye or CNS, aneurysms, severe renal, hepatic disease; During lactation
- **Used cautiously in patients with:**
  - Fever, heart failure, diarrhea, diabetes, malignancy, hypertension, renal or hepatic disease, psychoses, depression
  - Potential site for bleeding or hemorrhage
- **Women of child bearing age:** Use a reliable contraceptive to prevent pregnancy.

## strategies to reduce anticoagulant errors and provide safe care:

- **H --Hold orders-----** -If more than one anticoagulant is ordered, if labs are abnormal or there is compromised renal function.
- **E---Education-----** Ongoing continuing education on anticoagulant management is critical to safe practice.
- **P--- Protocols-----** Standardize documentation to avoid abbreviations, use standard weight-based heparin protocol for each infusion. Standardize IV heparin concentrations.

## strategies to reduce anticoagulant errors and provide safe care:

- **A---Assistance with calculations**--Always ask a colleague to independently double check your drug calculation prior to administration, or check with the pharmacy if dosage seems incorrect.
- **R---Reversal Agents**----- Know the standard protocol for reversal agents (Protamine is the reversal agent for Heparin) and be prepared for the need to rapidly administer reversal agents if necessary.
- **I-- IV Tips**----- Use smart pumps, bar coding and standard premixed solutions to improve IV safety.