Research article   **Clinical research**

A study on drug utilization evaluation of anticoagulant therapy INA tertiary care corporate hospital

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ABSTRACT

Objectives

Evaluation of a prospective observational study of the Anticoagulants used in tertiary care hospital, to provide information and correct rationale pertaining to Anticoagulants which also describes various distribution wise of Anticoagulants by age groups, genders, pattern of prescription, drug wise, dose, route, class and department to assess the statistical incidence regarding usage and its right provision.

Methodology

Study site was at SUNSHINE HOSPITALS, conducted for a period of 6 months. Both male and female individuals of age group 16-75years were included.

Results

Study included assessment of utilization of Anticoagulants with total of 200 prescriptions; of which males (54.5%), females (44.67%), age groups of 60-69 (34%) followed by age groups 70-80(27.5%), parenteral SC route (59%) and followed by intravenous route. (38%) and oral route was rare (3%), orthopaedics (64, 32%), followed by cardiology (43, 21.5%), neurology (29, 14.5%), pulmonology (22, 11%).

Conclusion

To conclude with, Anticoagulants are effective drugs in an array of treatment of diseases involving careful consideration of factors such as potency, formulation, responsiveness and cost. Anticoagulanting agents were mostly given in cases of post or pre operative care followed by prophylaxis for thrombosis for better patient outcome.

Keywords: Anticoagulants, Prospective observational, Age groups, Route of administration, Department, Gender difference, Classes, Pattern of prescription, Dose.

INTRODUCTION TO ANTICOAGULANTS

Anticoagulants commonly referred to as blood thinners, are chemical substances that prevent or reduce coagulation of blood, prolonging the clotting time. Some of them occur naturally in blood-eating animals such as leeches and mosquitoes, where they help keep the bite area unclotted long enough for the animal to obtain some blood. As a class of medications, anticoagulants are used in therapy for thrombotic disorders. Oral anticoagulants (OACs) are taken by many people in pill or tablet form, and various intravenous anticoagulant dosage forms are used in hospitals. Some anticoagulants are used in medical equipment, such as test tubes, serum-separating tubes, blood transfusion bags, and dialysis equipment.

Anticoagulants are closely related to anti-platelet drugs and thrombolytic drugs by manipulating the various pathways of blood coagulation. Specifically, anti-platelet drugs inhibit platelet aggregation (clumping together), whereas anticoagulants inhibit the coagulation cascade by clotting factors that happens after the initial platelet aggregation. [16]

Common anticoagulants include warfarin and heparin

Anticoagulant medicines reduce the blood's natural ability to clot. Although it is important for everyone's blood to clot so that bleeding from cuts and other accidents will eventually stop, in some people it is important to slow the clotting process down with anticoagulants.

Anticoagulants sometimes referred to as 'blood thinners, do not affect any other function of blood, such as carrying oxygen or fighting infection. [16]

Gender wise distribution of anticoagulants

OBJECTIVES OF THE STUDY

Primary objective

- To provide a prospective observational study of the Anticoagulants used in a tertiary care hospital.

Secondary objectives

- To identify the safety and efficacy methods.
- To assess the rational drug use.
- To identify the variables like age, gender.

METHODOLOGY

This study was a prospective observational study on Anticoagulants in a tertiary care corporate hospital. In this study we enrolled 200 subjects, which included 109 male patients and 91 female patients who were treated with Anticoagulants among all departments. We were inclined towards the Anticoagulants because they were known to have immense therapeutic effect. They are widely used to treat cloting of blood. Through our project we learnt about the utilization of Anticoagulants that would be helpful to treat patients by carefully optimizing therapy and thereby reducing the risk of any adverse effects and over using of drug on patients. We obtained relevant information necessary for our project and recorded in the patient profile forms. We then studied individual case sheets and observed the incidence of Anticoagulants prescribed in various departments and analyzed them for control use of anticoagulants.

RESULTS

For the period of six months. The following evaluation was made from the collected data.

GENDER	NO. OF PATIENTS	PERCENTAGE
Male	**109**	54.5
Female	91	45.5
MEAN±SD	100±19.7	
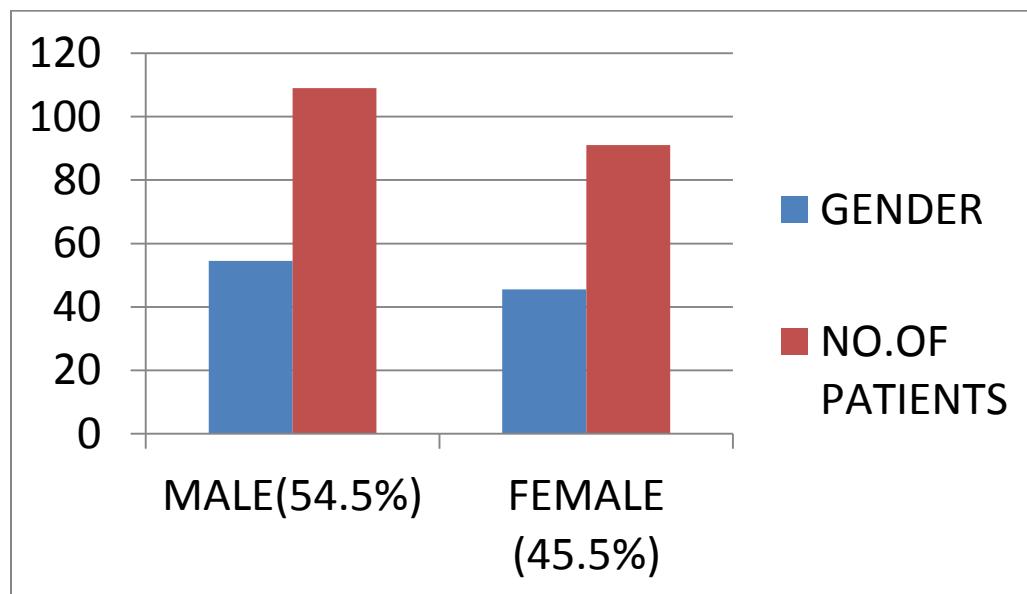
Age group wise distribution of anticoagulants

AGE GROUPS	NO. OF PATIENTS	PERCENTAGE
18-29	**6**	**3**
30-39	7	3.5
40-49	20	10
50-59	44	22
60-69	**68**	**34**
70-79	55	27.5
MEAN±SD	33.3±26	
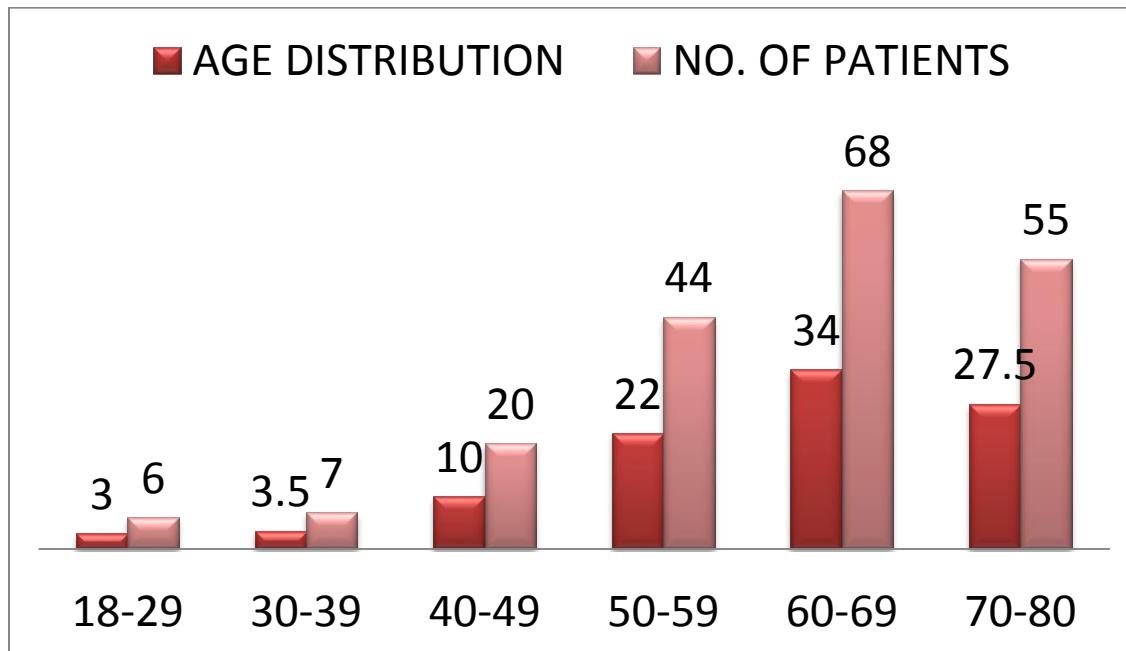
Age group wise distribution of anticoagulants

S.NO.	NO. OF PATIENTS(male)	MALE	NO. OF PATIENTS (female)	FEMALE
18-29	**3**	**2.7**	**3**	**3**
30-39	5	4.5	2	2
40-49	10	9.2	10	10
50-59	25	22	19	20
60-69	**33**	**30.2**	**35**	**38..4**
70-79	33	30.2	22	24
MEAN±SD	**18.3±13.8**		**16.1±13.8**	
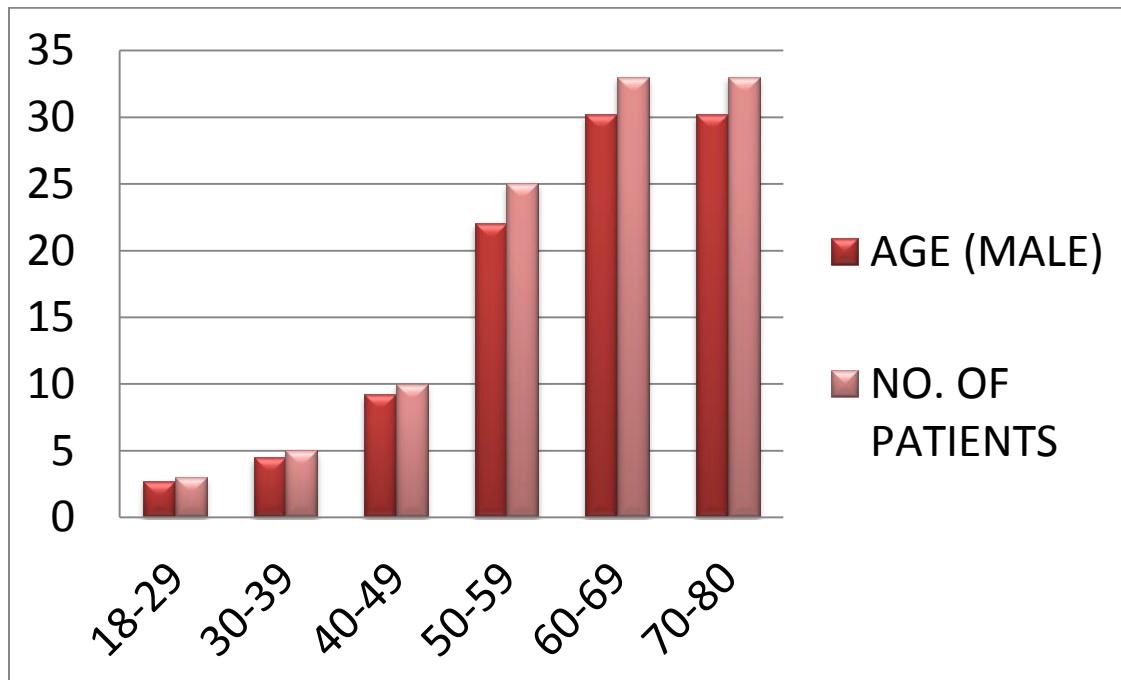
Department wise distribution of anticoagulants

DEPARTMENT	HEPARIN	ENOXAPARIN	P VALUE
CARDILOGY	**23**	20	The p value was found to be **0.6777774**
GARSTROENTEROLOGY	4	6	
NEPHROLOGY	7	2	
GENERAL MEDICINE	6	5	
NEUROLOGY	10	17	
ORTHOPAEDICS	3	**60**	
PULMONOLOGY	**0**	5	
ONCOLOGY	**0**	**1**	
VASCULAR SURGERY	**0**	3	
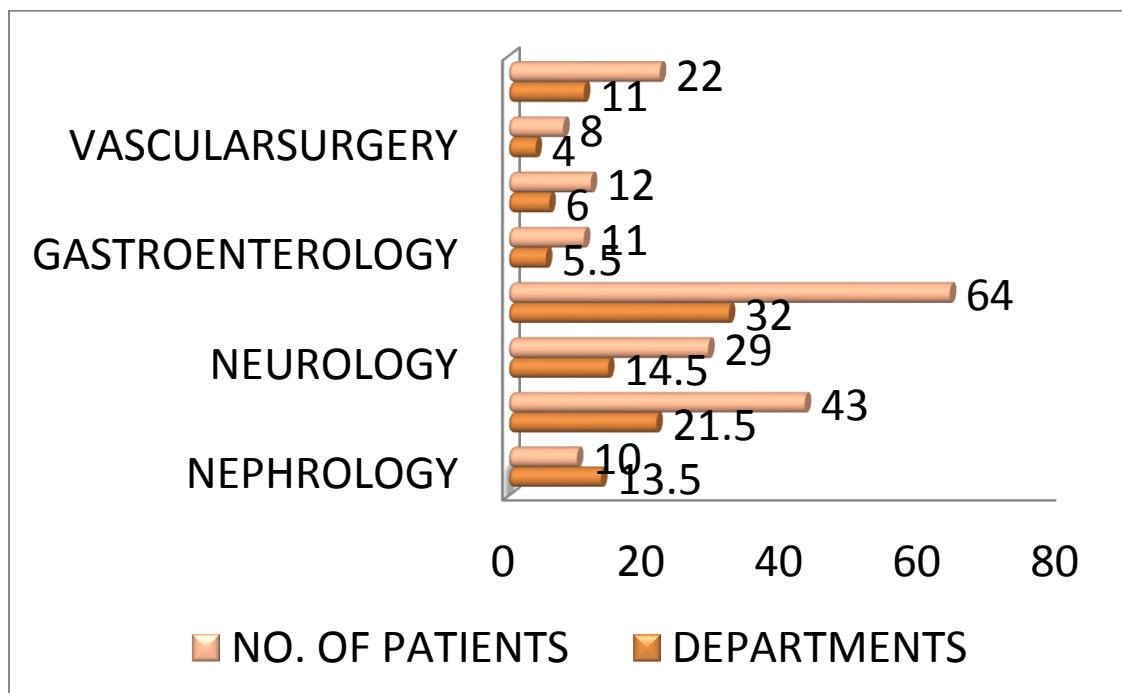
Classes of anticoagulants

CLASS	NO. OF PATIENTS	PERCENTAGE
ORAL	**2**	1
LMWH	**118**	59
UFH	77	38.5
NEWER ANTICOAGULANTS	3	1.5
MEAN±SD	**50±57.3**	

CLASS OF ANTICOAGULANTS USED
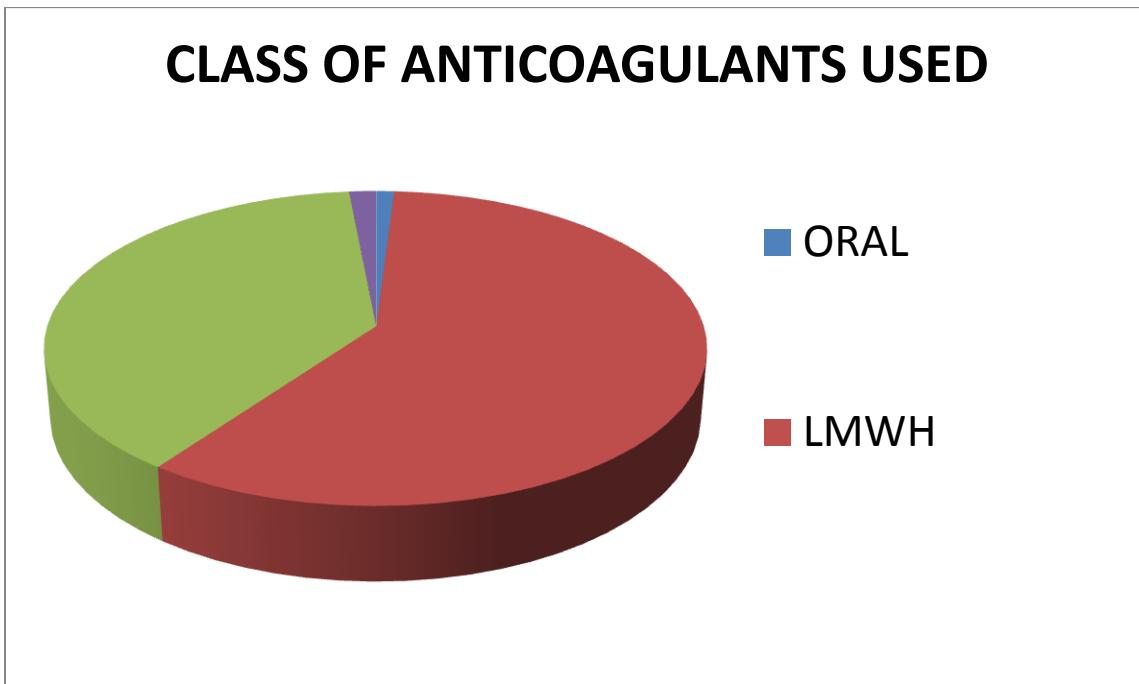
Dose wise distribution of heparin

Table 06

DOSES OF HEPARIN	NO. OF PATIENTS	PERCENTAGE
3000 IU	1	1.5
4000 IU	1	1.5
5000 IU	**73**	97
MEAN±SD	25±41.5	
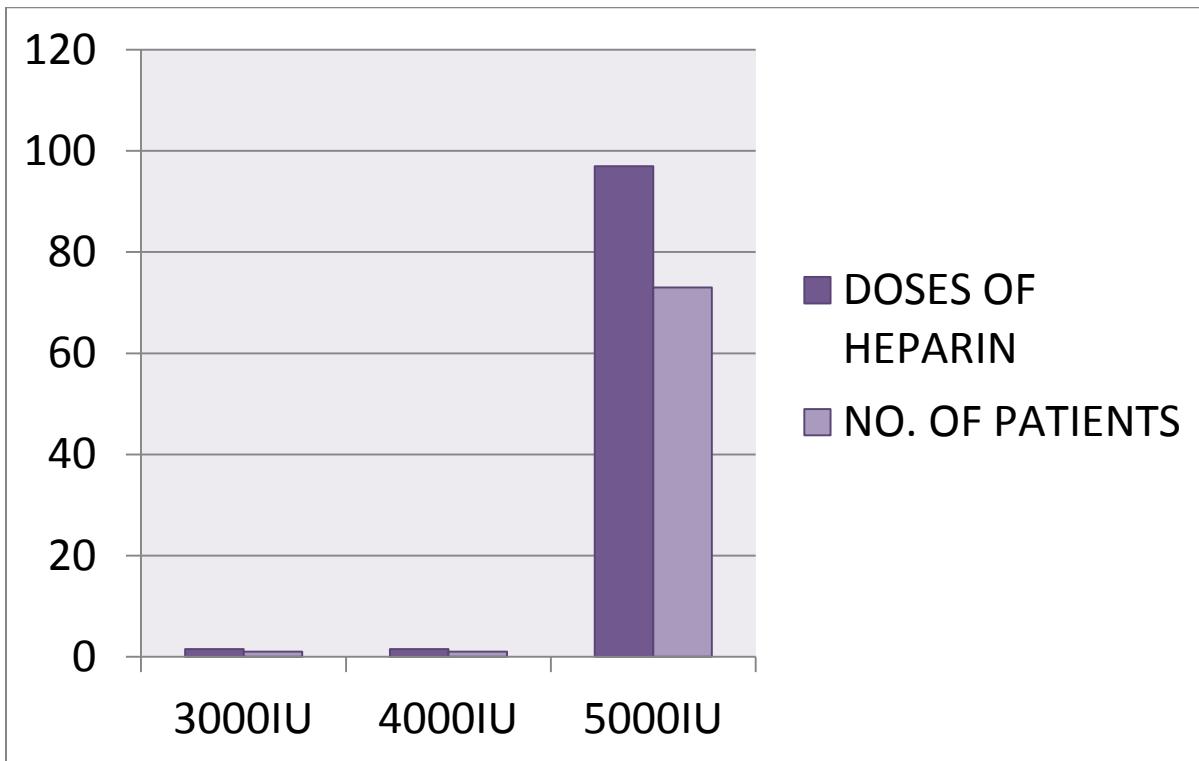
Route wise distribution of heparin

Table 07

ROUTE	NO. OF PATIENTS	PERCENTAGE
SUBCUTANEOUS	29	38.6
IV	**46**	61.4
MEAN±SD	**37.5±12.02**	
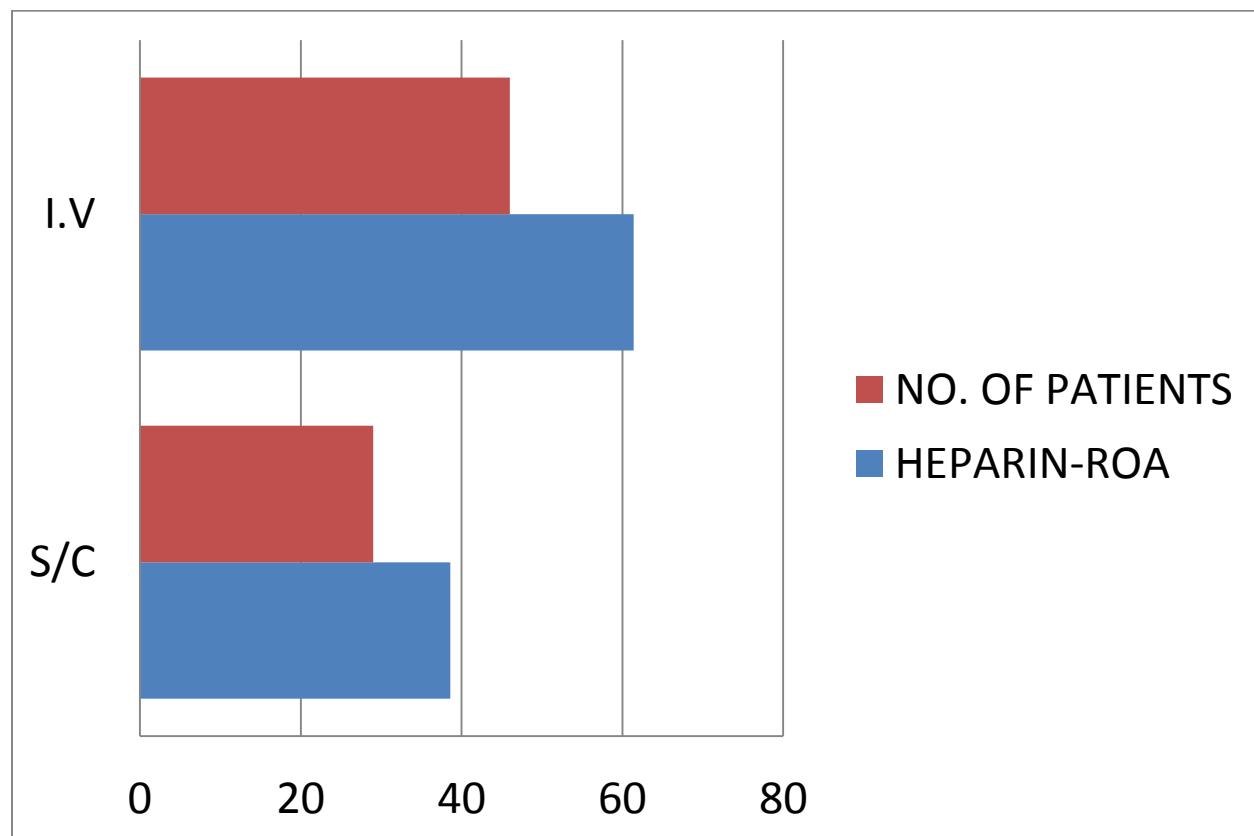
DISCUSSION

- A total of 200 prescriptions were reviewed in a Tertiary Care Corporate Hospital during six months study period and among those 200 prescriptions, 109 were male patients and 91 were female patients, in which males count was higher than that of female.

- Anticoagulant therapy significantly reduces the mortality and recurrence rates associated with VTE and are becoming a standard first-line treatment.

- The data was collected prospectively from 200 in-patients and drug utilization pattern were analysed. In this study demographics characteristics shows males (54.5%) are commonly prescribed with anticoagulants as compared to females (44.67%).

- The maximum number of patients who were prescribed anticoagulants were between the age groups of 60-69 (34%) followed by age groups 70-80(27.5%). The reason for higher incidence of older patients i.e. above 60 years may be due to increased coagubility. This can be attributed to the fact that the age group above 60 years are mainly used for post-operative prophylaxis as the geriatric patients are more likely to be sick & to have more serious illness.

- The use of anticoagulants were found to be maximum in orthopaedics (64, 32%), followed by cardiology (43, 21.5%), neurology (29, 14.5%), pulmonology (22, 11%).

- The use of anticoagulants were Rational in all the cases i.e (200)

- Out of 200 cases, a majority of the drugs were prescribed based on the Brand names (57.5%) followed by Generic names (42.5%). Use of brand names were more frequent and could be as a result of various promotional strategies from different pharmaceutical companies trying to ace their products. Prescribing drugs by generic name would become easy for the hospital to have maintenance over its regulatory stock and would also lower the cost of treatment [29].

- Majority of anticoagulants were prescribed in the parenteral SC route (59%) and followed by intravenous route. (38%) and oral route was rare (3%).

- In majority of cases the drug information was provided to physician (45.4%) followed by nurse (35.7%) and patient (19%).
- The most prescribed parenteral anticoagulants are Enoxaparin (59.5%), heparin (37.5%) followed by fondaparinox sodium (15) and oral anticoagulant nicoumalone (1.5%).
- Out of 75 patients administered heparin, 73 (98%) of the patients had their APTT within the normal ranges and 2 (2%) of the patients had APTT above the normal range
- Among the 119 patients that were prescribed Enoxaparin, 110 (92.5 %) of the patients had their PT values within the normal range and 9

(7.5%) of the patients showed a little increase in PT value but INR values were found to be within the range.
- The P value for the comparision of heparin and enoxaparin use in different departments was found to be P=0.6777403.
- The P value for the comparision of use of anticoagulants in males and females with reference to different departments was found to be P=0.04467413.
- Anticoagulating agents were mostly given in cases of post or pre operative care followed by prophylaxis for thrombosis.

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