Heparin prescribing patterns for VTE prophylaxis: Is it time to reinvigorate local guidelines?

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Introduction

- Pharmacological VTE prophylaxis using unfractionated heparin (UFH) as opposed to low molecular weight heparin (LMWH) is:
  - 8 times more likely to cause Heparin-induced thrombocytopenia (HIT)
  - 50% more expensive (average cost/day)
- Current hospital guidelines recommend UFH be reserved for special populations (severe renal impairment, increased risk of bleeding)
- Local concerns prompting this study:
  - UFH is one of the most expensive unfunded medicines used at PAH (expenditure ~$440,000/yr)
  - Anecdotal evidence suggests some prescribers prefer UFH over LMWH for VTE prophylaxis
  - PAH uses a disproportionate amount of UFH compared to other comparable sites
  - PAH scores poorly on Health Roundtable data for VTE event rates compared to comparable sites

Aim

Describe local pharmacological VTE prophylaxis use patterns & determine the appropriateness of prescribing against local guidelines

Methods

- Retrospective cohort study (Apr-Oct 2021)
- Single site (1,038-bed metropolitan tertiary referral hospital)
- Inpatient digital prescribing records (subcutaneous UFH or LMWH orders) extracted & randomised sample retained for review
- Audit tool developed, piloted & used for data collection
- Purpose-built databases (Excel and Stata) used for secure data storage
- Thematic & statistical analysis (descriptive and inferential) undertaken

	n	%		n	%
Study population	308	100	**Renal impairment (eGFR)**		
Admission category			*Severe (<30)*	12	3.9
Surgical	160	52	*Moderate (30-60)*	61	20
Medical	148	48	**Extremes of weight**		
Female	133	43	*Underweight (<50kg)*	20	6.5
Elderly (85yrs+)	13	4.2	*Obese (BMI 30-40)*	61	20
Increased bleeding risk*	37	12	*Morbidly obese (BMI >40)*	28	9.1

*Major trauma, recent high bleeding risk procedure, CNS bleed <3mths, or intracranial/spinal lesion

Table 1: *Study population characteristics*

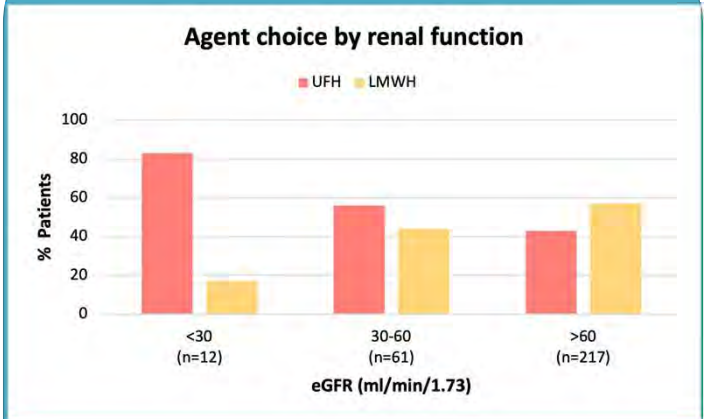

Figure 2*: Agent choice by renal function*

Results

- n=308 admitted patients prescribed VTE prophylaxis (***Table 1***)
- UFH used more often in surgical patients (p<0.0001)
- UFH used more often in patients with eGFR<30 (p=0.016) (***Fig. 2***)
- Trend toward LMWH use in patients with eGFR>30 (p=0.109) (***Fig. 2***)
- LMWH used more often in patients with eGFR>60 (p=0.0147) (***Fig. 2***)
- Obesity (BMI>30) did not influence agent choice (p=0.450)
- 36% of morbidly obese patients (BMI>40) received weight-adjusted dosing (59% UFH, 0% LMWH)
- LMWH was indicated in 68% of patients prescribed UFH
- Highest rates of non-adherence to local prescribing guidelines was observed in the general surgery population

Conclusion

- VTE prophylaxis prescribing guidelines aren't being followed hospital-wide, & specific targets for improvement were identified:
  - High rates of questionable UFH use in certain settings
  - Use of UFH in moderate renal impairment
  - Lack of dose adjustment in obesity
- A multifaceted campaign to improve prescribing is warranted (e.g. local guideline review, clinician education & ward imprest changes)