Targeting thrombotic threats with a steward pharmacist

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INTRODUCTION

Anticoagulants are the mainstay of treatment for venous thromboembolism and stroke prevention in atrial fibrillation. Bleeding risks can be increased with errors around prescribing and administration of anticoagulants, which occur frequently and are preventable.

The implementation of an Anticoagulation Stewardship (ACS) service since October 2020 at Northern Health has been in place to manage these risks. ACS pharmacist, with the support of the Clinical Thrombosis Fellow and Consultant Haematologist, reviews high risk patients prescribed anticoagulation for the management of venous thromboembolism. The service aims to ensure appropriate medication selection, monitoring and dose adjustments as per protocols and patient-specific parameters.

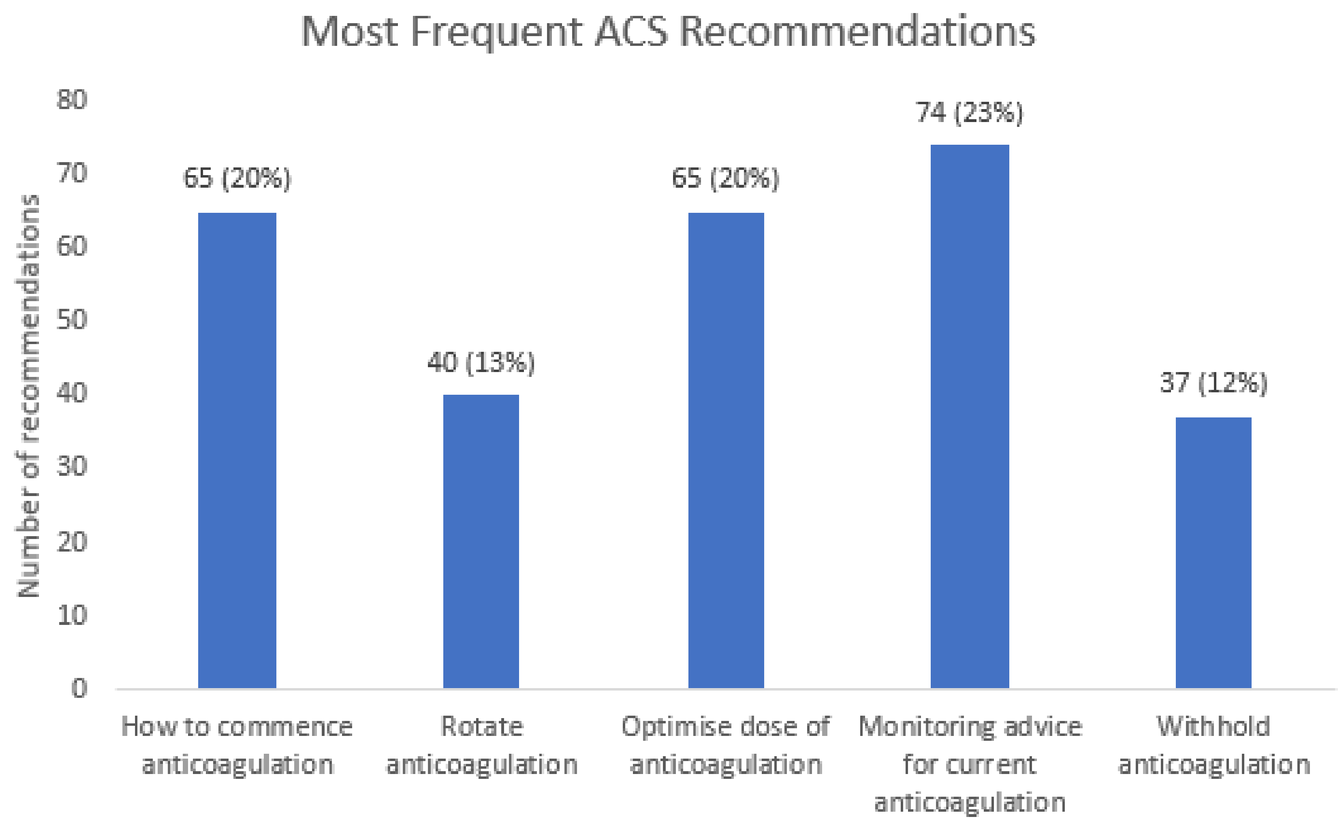
AIM

To review the outcomes of the ACS service with regards to

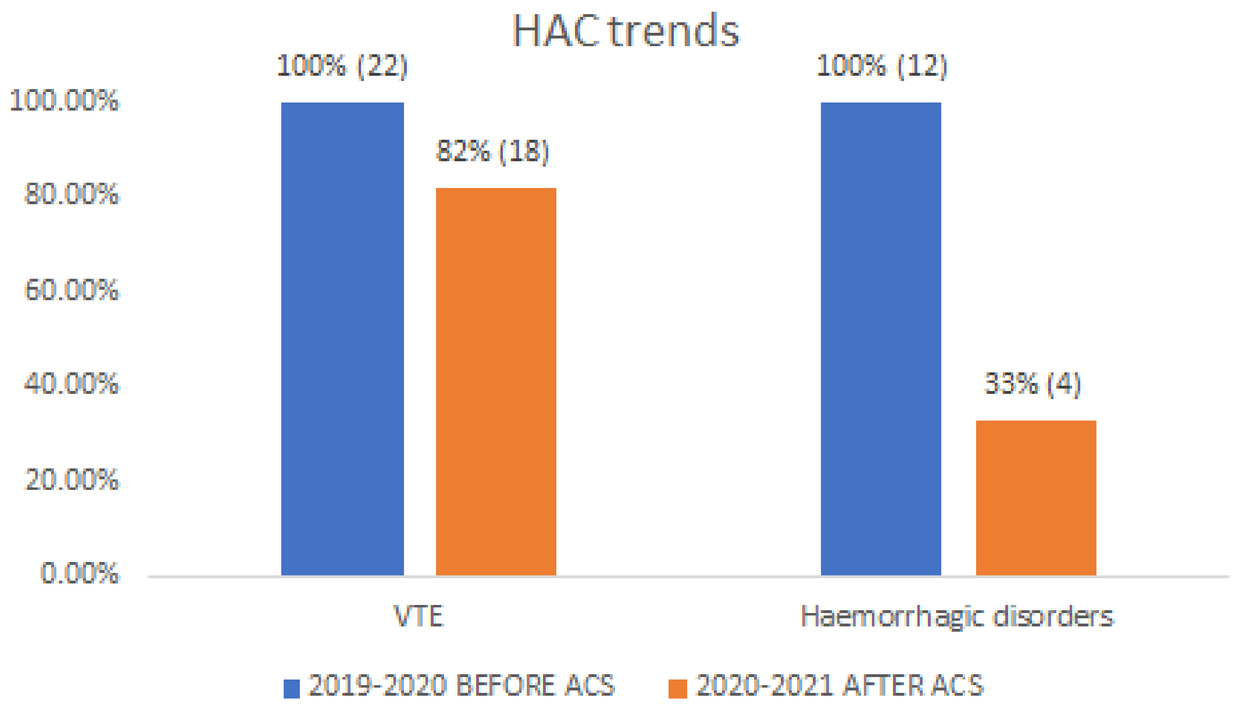
- Recommendations made to optimise anticoagulation use for inpatients at Northern Health
- Review the trends in VTE and anticoagulated related hospital acquired complications (HAC)
- Review the trend rate of INR >4 trend for patients prescribed warfarin therapy

METHOD

A 12-month retrospective analysis of the database of inpatient referrals to ACS (October 2020 – September 2021), review of VTE and anticoagulation-related hospital acquired complication (HAC) and the rate of INR recorded above four for patients on warfarin therapy was conducted. This was compared to the preceding 12 months prior to the implementation of ACS. The inpatient database included an analysis of patient demographics (i.e. age, gender, weight, renal function) and the most common recommendations made by the ACS team. The Northern Health Quality and Safety reporting portal was used to analyse trends in HACs and the Northern Health Pathology service INR database was used to analyse the trends in INR recorded above four over the reporting period. All data was exported and analysed using Microsoft Excel.



Graph 1: The most common recommendations made by the ACS service at the time of patient review.



Graph 2: Hospital Acquired Complication for VTE and anticoagulant-related events

RESULTS

PATIENT DEMOGRAPHICS:

216 patients reviewed by ACS

69yrs median age#

88.1kg median weight*

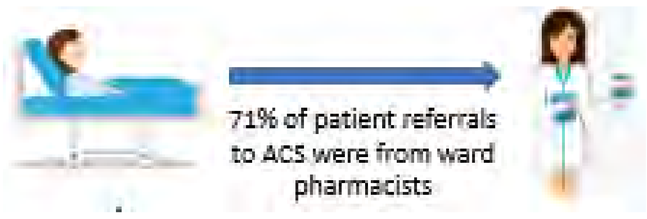
31% (n=66) patients >100kg

39% (n=84) patients eGFR <60mL/min/1.73²

46% (n=99) females

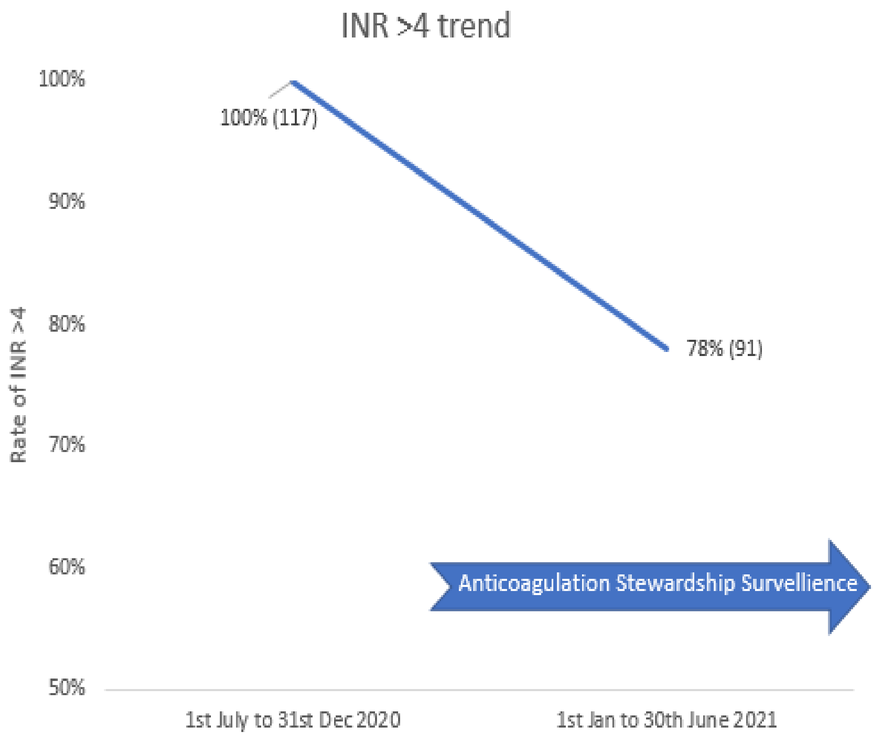
#Age range 21-97 years

**Body weight range 30-260kg*



DISCUSSION

The ACS service provides governance, advice and education about anticoagulation to clinicians and patients at Northern Health. Quality and Medication Safety improvement initiatives are discussed at VTE and Anticoagulation committee. Clinicians refer patients' who are deemed high thrombotic or bleeding risk as defined in our local protocol to the ACS team for review. Patient referrals received by the ACS team are reviewed to ensure evidence-based prescribing and administration of anticoagulants, in order to reduce preventable harm and optimise patient outcomes. Over the 12-month review period of 216 patients, the most common recommendations by the ACS team are presented in Graph 1 and these recommendations were largely for patients requiring adjustment to anticoagulation therapy based on extremes of body weight, impaired renal function, interacting medicine or when interruption to therapy was required to reduce bleeding and thrombotic risk. Since the implementation of ACS, a downward trend in VTE and anticoagulant-related HACs has been observed (Graph 2), where patient risk of a bleed or thrombotic event occurring during hospital stay has improved. The ACS pharmacist reviews recorded INRs daily and escalates patients identified to have INR>4 to the clinician and provides management advice. A downtrend in the rates of INR>4 for patients on warfarin therapy has been observed (Graph 3) since implementing INR monitoring by ACS.



Graph 3: Rates of INR above 4 for patients on warfarin therapy

CONCLUSION

Overall, the ACS has improved the organisational HAC performance and patient care using a multidisciplinary approach. The availability of the service should be expanded to include after-hours, and be considered for other organisations.