

Reduction of iatrogenic suprathreshold INR from inappropriate warfarin dosing

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INTRODUCTION

Warfarin is associated with greater bleeding risk and morbidity than direct oral anticoagulants (DOACs).

Warfarin use has decreased with more ubiquitous use of DOACs, though warfarin remains the only anticoagulant in certain scenarios, e.g., clinically due to such conditions as valvular atrial fibrillation or socioeconomically due to such reasons as lack of health insurance.

Less frequent use of warfarin has led to diminished trainee and provider familiarity with dosing, exposing patients to increased risk of morbidity.

OBJECTIVE

The goal was to reduce the relative rate of iatrogenic suprathreshold INR by 20% in the post intervention period of April 2022 – March 2023.

METHODS

In the pre-intervention time period (2021 Q2 – 2022 Q1), patients at NYU Langone Hospital – Brooklyn experienced iatrogenic suprathreshold INRs during warfarin administration at a rate of 8.0%, a rate that exceeded peer institutions.

Leveraging existing EMR infrastructure, a clinical pharmacist was tasked with reviewing system lists that displayed any patient receiving warfarin.

The pharmacist would complete two key tasks for each patient:

- 1) determine patient's eligibility to switch from warfarin to DOAC and, if eligible, would discuss the change with the patient, primary team, case manager, and other members of the multidisciplinary team;
- 2) for patients still needing continued warfarin administration, provide education to primary teams about appropriate dosing.

TABLE

Time period	Cases with iatrogenic suprathreshold INR	Denominator cases	Rate of iatrogenic suprathreshold INR
Apr 2021 – Mar 2022 (Pre-intervention)	9	112	8.0%
Apr 2022 – Mar 2023 (Post-intervention)	1	75	1.3%

RESULTS

The clinical pharmacist was able to reduce the rate of patients taking warfarin by 16% in the post-intervention time period (2022 Q2 – 2023 Q1).

The most common reasons patients did not switch were clinical contraindication and patient unwillingness; a number of patients were made aware of social programs to defray DOAC out-of-pocket costs.

The rate of iatrogenic suprathreshold INR decreased by 83% with only a single incident out of 75 patients.

CONCLUSIONS

Leveraging EMR-based system lists and an already staffed clinical pharmacist, our hospital saw a significant reduction in the rate of iatrogenic suprathreshold INR in the setting of warfarin administration.

Many patients were also converted to DOAC, and trainees were exposed to meaningful education about a less commonly used medication.