12-2022

Impact of Pharmacist-Led Direct Oral Anticoagulant Monitoring on Appropriate Medication Use

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BACKGROUND

- Direct oral anticoagulants (DOACs) are the preferred treatment for patients with venous thromboembolism and atrial fibrillation and are an attractive alternative to vitamin K antagonists in multiple indications for long-term anticoagulation[2].
- Although DOACs require less frequent clinical monitoring than vitamin K antagonists and their standardized dosing is often more convenient for patients, these medications still require monitoring.
- Medication adherence, monitoring renal function, hepatic function and drug interactions are important safety concerns for managing patients on DOAC therapy.
- Previous studies have shown pharmacist can impact monitoring[1], dosing[4] and adherence[5] to DOACs.
- This study aims to evaluate the impact of pharmacist-led anticoagulation services on appropriate dosing and monitoring of DOAC agents compared to other providers in the healthcare system.
- At Parkview Health's Anticoagulation Therapy Unit, patients on DOACs have an initial visit where dosing, renal function, liver function and drug interactions are monitored. Patients are also counseled on adherence, adverse drug reactions and signs or symptoms of adverse events like stroke, VTE or bleeds.
- Follow up visits take place at 4 weeks, 3 months, 6 months, then every 6-12 months based on patient specific factors. At these visits patients are assessed using a DOAC checklist.

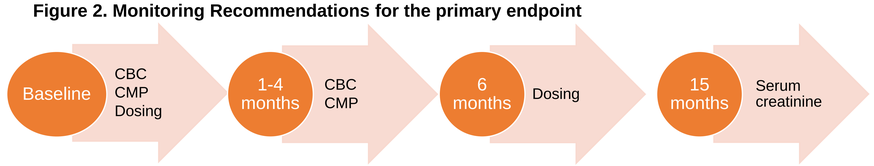
Figure 1. DOAC Checklist

- Tolerability of the medications
- Adherence
- Drug interactions
- Adverse events
- Weight/ BMI
- CBC
- Renal function
- Liver function (annually)

OBJECTIVES

Primary Endpoint: Adherence to recommended frequencies for blood work and dosing including:

Figure 2. Monitoring Recommendations for the primary endpoint



Secondary Endpoint: Incidence of venous thromboembolism, cerebrovascular accident, or clinically relevant bleeding, rate of use of interacting or contraindicated medications at any point of DOAC therapy

METHODS

Timeline	• Retrospective chart reviews were conducted for patients initiated on a DOAC from January 1st, 2019, to May 1st, 2021. Baseline characteristics and follow up labs were collected to assess monitoring of DOAC therapy
Inclusion Criteria	• Patients being monitored by pharmacists in the anticoagulation clinic or a provider in the cardiology clinic • Patients initiated on DOAC therapy within the study timeframe
Exclusion Criteria	• Age <18 years old • Pregnancy • Duration of DOAC <30 days
Data Analysis	• Primary and secondary outcomes were evaluated by chi square tests

RESULTS

Figure 3. Baseline Characteristics

	Pharmacy (n=52)	Cardiology (n=52)
GENDER (%)		
Female	29 (56)	29 (56)
Male	23 (44)	23 (44)
AGE (%)		
18-59	7 (13)	7 (13)
60-79	24 (46)	24 (46)
80+	21 (41)	21 (41)
RACE (%)		
White or Caucasian	45 (86)	45 (86)
Black or African American	4 (8)	4 (8)
Native Hawaiian or Other Pacific Islander	1 (2)	0
Patient Declined	2 (4)	3 (6)
DOAC (%)		
Apixaban	46 (88)	44 (85)
Rivaroxaban	6 (12)	8 (15)
INDICATION (%)		
Atrial Fibrillation	34 (65)	50 (96)
Venous Thromboembolism	18 (35)	2 (4)

Figure 4. Adherence to Monitoring

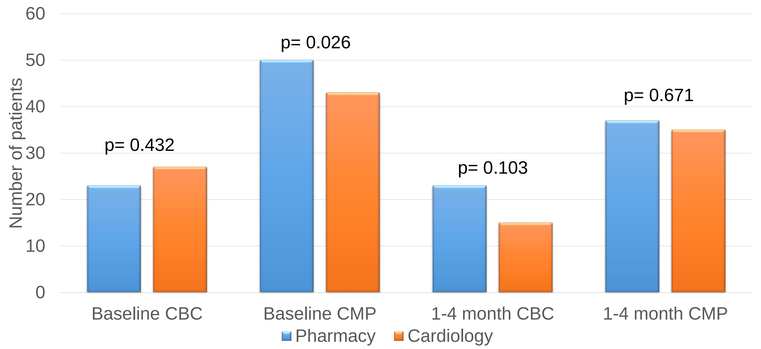


Figure 5. Appropriate Dosing at Baseline and 6 months

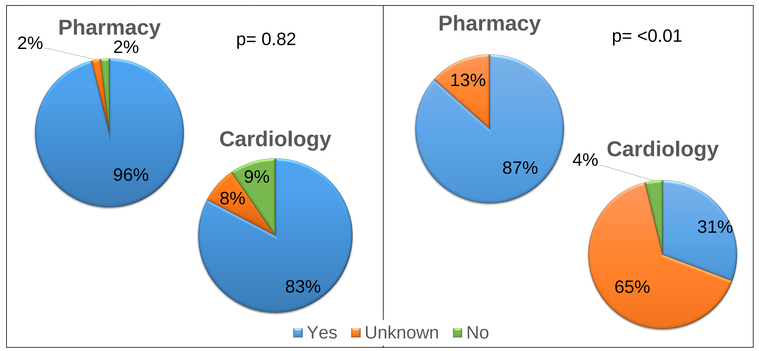


Figure 6. Adverse Events

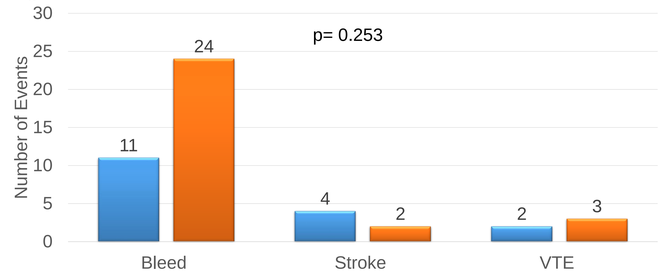
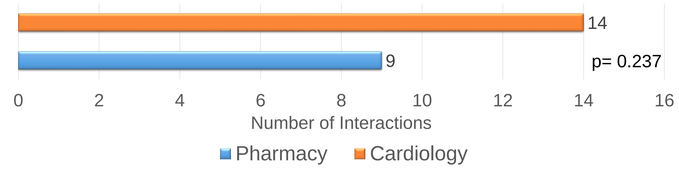


Figure 7. Drug Interactions



DISCUSSION & CONCLUSIONS

Discussion:

- There was no statistical difference of DOAC monitoring between pharmacist-led and cardiology-led monitoring. However, pharmacists had more patients who met adherence to blood work recommendations than providers in the cardiology office.
- Results show appropriate dosing of DOACs at 6 months is significantly different between pharmacist and cardiology management but cannot be used to make any conclusions. This result is skewed due to a large proportion of patients with that lacked follow up labs at that time whether it was serum creatinine, weight or height.
- Pharmacist monitored patients showed fewer bleeding events than physician monitored patients, but there was no significant difference in overall adverse events between the two groups. Incidence of stroke and VTE is expected to be low in this population likely due to the small event rate.
- Patients monitored by pharmacists also had fewer drug interactions than the patients managed by the cardiology office, but there was no statistical difference.

Conclusion:

- Pharmacists adhere well to recommendations for DOAC monitoring, but there was no statistical difference in adherence to monitoring.
- There was more appropriate doing of DOACs at baseline for pharmacists, but with limited data no conclusion can be made about dosing at 6 months.
- Future studies including a larger population size may be able to determine a statistical differences between physician and pharmacist monitoring of DOACs.

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Disclosure

All authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.