2018

Evaluation of a pharmacist direct oral anticoagulant (DOAC) monitoring service

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The speaker has no actual or potential Conflict of Interest in relation to this presentation

Anticoagulation Clinic Background

- Pharmacist led clinics
- 9 Clinics total
- Study was piloted in two clinics
  - Piloted clinics monitor 3500 patient visits/year

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BACKGROUND

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Oral Anticoagulants (OACs) [1]

Warfarin:

- Competitively inhibits VKORC1
- Dosing is patient specific to target a goal INR
- Can be used in renal dysfunction and obese patients
- Many drug and food interactions

DOACs

- Reversibly inhibits factor Xa or thrombin
- Set dosing based on renal function and indication
- Not studied well in patients with renal dysfunction or obese patients
- Fewer drug interactions present

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DOACs [1]

	Apixaban	Rivaroxaban	Edoxaban	Dabigatran
Non-valvular atrial fibrillation	Yes	Yes	Yes	Yes
Venous Thrombosis	Yes	Yes	Yes	Yes
Venous Thrombosis Following a Total Hip or Knee Arthroplasty	Yes	Yes	No	Only Total Hip

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DOAC Misconceptions [2]

Misconception	Reality
“DOACs are easy”	• Dose adjustments are often not well understood and not done • Transitions within oral anticoagulants is complicated
“No monitoring is needed”	• Renal and hepatic monitoring is required for dose adjustments • CBC is required to assess bleeding
“No drug or food interactions”	• Fewer interactions than warfarin, though still present
“Easy for patients”	• Cost and adherence is often a barrier

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Switching Between OACs [1]

Warfarin → DOAC	DOAC → DOAC	DOAC → Warfarin
• Stop warfarin and start DOAC when INR below threshold	• Start new DOAC when next dose of previous DOAC was scheduled	• Stop DOAC and begin parenteral anticoagulation + warfarin

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Monitoring Parameters for DOACs[1]

- No routine coagulation testing
- Recommended Labs:
  - Complete Blood Count (CBC)
  - Serum creatinine (SCr)
  - Liver function tests (LFTs)

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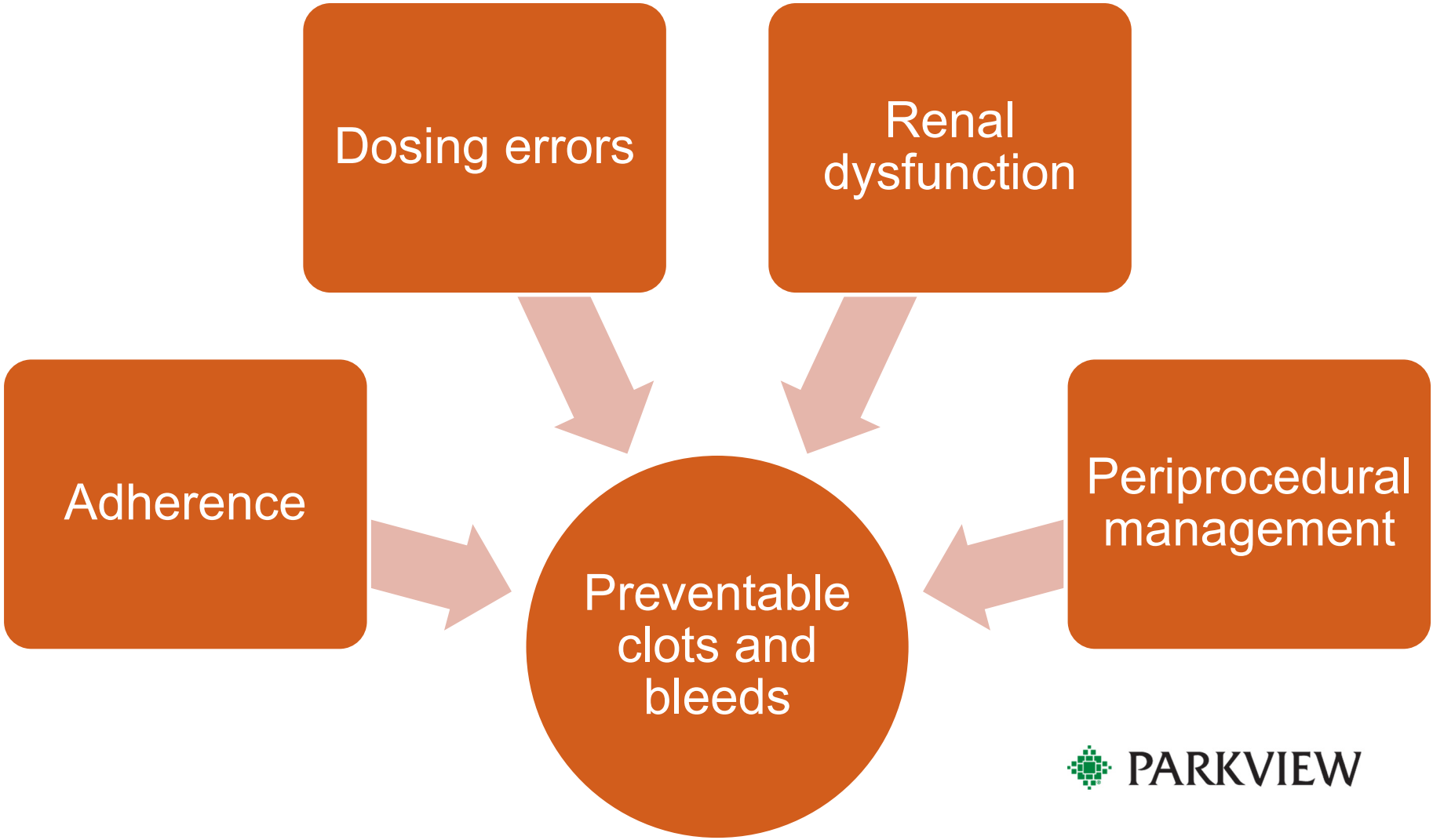
DOAC Monitoring [3,5]



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Pharmacist DOAC Clinics Primary Literature [3]

- Design
  - Single center, retrospective, observational, matched cohort analysis
- Outcomes:
  - Primary: Percentage of patients with appropriate DOAC therapy at baseline and 3-6 months
  - Secondary: Mean medication possession ration (MPR)
- Results:
  - Primary: More appropriate DOAC and dose compared to usual care (93% vs 79.1, p=0.009)
  - Secondary: The mean MPR was 91.8% vs 79.3% (p=0.0014)

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Pharmacist DOAC Clinics Primary Literature [4]

- Design
  - Retrospective chart review
- Outcomes:
  - Total number of potential patients reviewed
  - Total number of patients switched to a DOAC
- Results:
  - A total of 539 patients were identified with 87 patients seen in the anticoagulation clinic
  - A total of 74.7% patients were switched to a DOAC
  - Remaining patients either refused DOAC therapy or had a relative contraindication to a DOAC

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Pharmacist DOAC Clinics Primary Literature [3-4]

	Oertel, et al.	Uppuluri, et al.
Design	• Continued follow up • Included new and follow up DOAC patients	• Single visit with a 2 week telephone follow up • Included only non-valvular atrial fibrillation patients on warfarin
Outcomes	• Percentage of patients on appropriate DOAC therapy • Mean MPR	• Number of patients reviewed and transitioned to a DOAC
Results	• Greater percentage of patients on appropriate DOACs and dose • Higher MPR	• Small portion of warfarin patients qualified to transition to a DOAC

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Published DOAC Clinic Designs [2, 6-7]

Option 1: Clinic Appointments	Option 2: Phone Appointments	Option 3: Phone and Clinic Appointments
1 Month	1 Month	2 Weeks
3 Months	3 Months	3-6 Months
6 or 12 Months	Every 3-12 Months	Every 3-6 Months PRN
Every 6-12 Months		

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Self Assessment Question #1

Due to insurance coverage, a patient needs to be switched from apixaban to rivaroxaban for non-valvular atrial fibrillation. Please select the appropriate transition.

A. Overlap apixaban and rivaroxaban for at least 3 days
B. Discontinue apixaban and initiate rivaroxaban when the next dose of apixaban would be due
C. Stop rivaroxaban and initiate apixaban 6 hours later
D. None of the options are correct

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Self Assessment Question #2

A patient presents to the anticoagulation clinic for DOAC monitoring, and is wondering which labs she needs to get done. What would be an appropriate response?

A. CBC and CMP
B. CBC and PT/INR
C. CMP and aPTT
D. aPTT and PT/INR

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PARKVIEW DOAC MONITORING SERVICE

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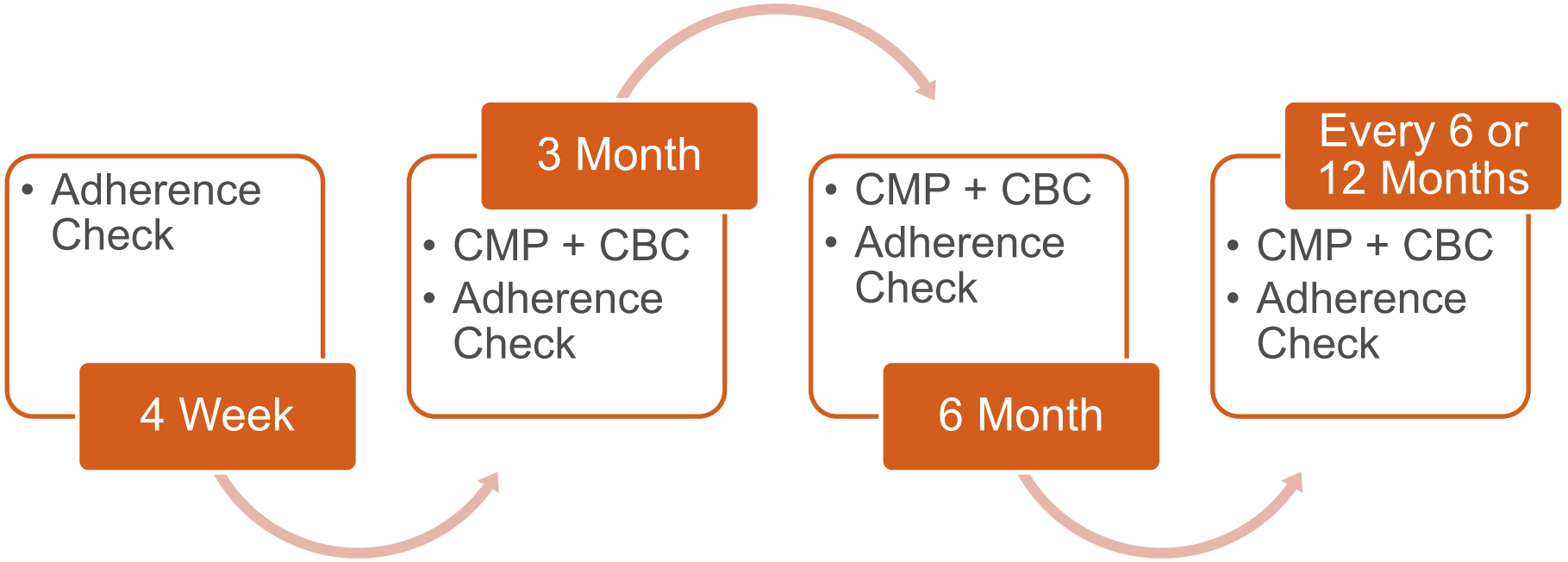
Workflow



Started service 11/2019

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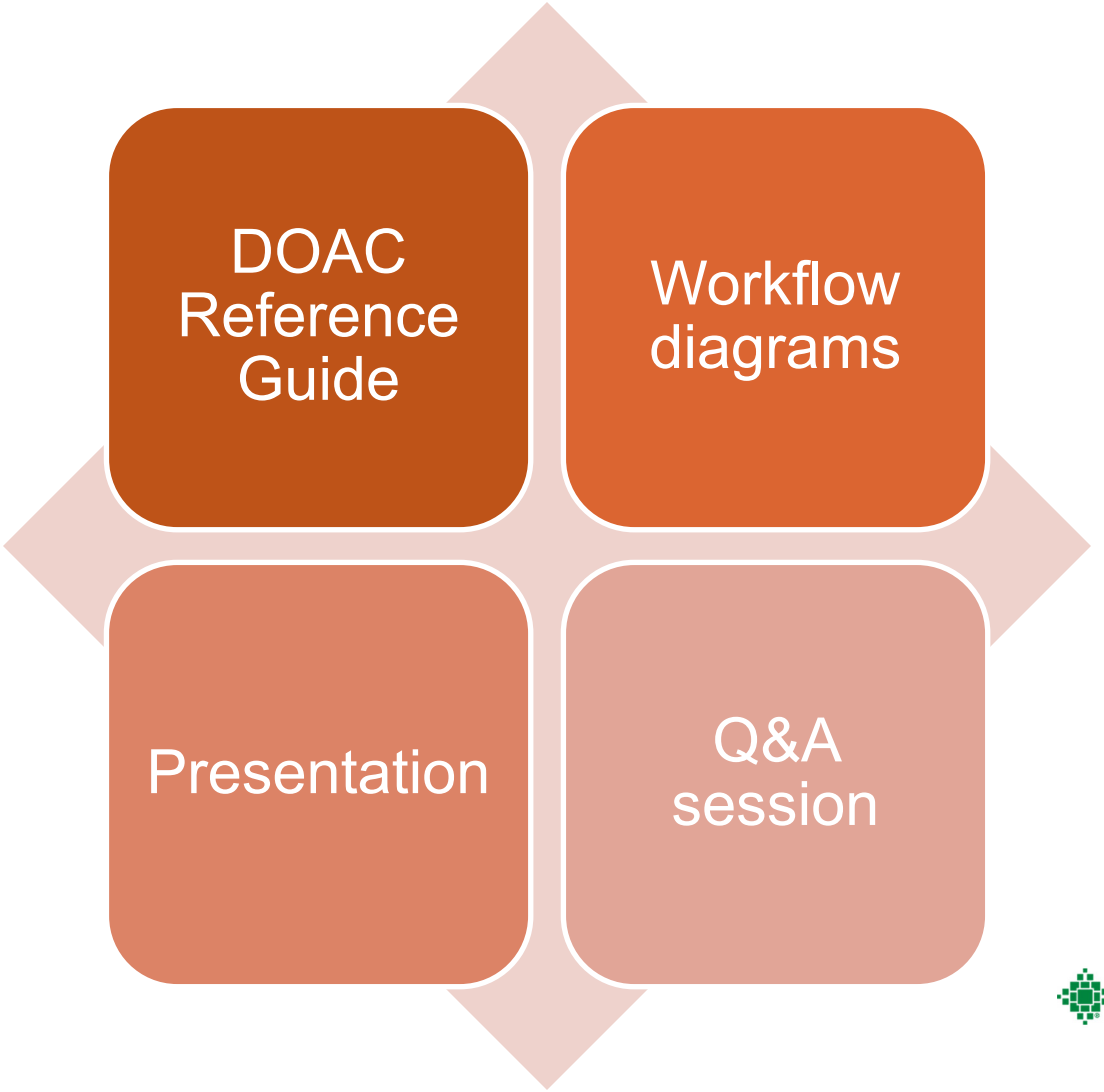
Pharmacy Team Education



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New Service Outreach

- Reviewed all current warfarin patients with a time in therapeutic range (TTR) <50%
- Provided education to the providers and clinical staff members regarding new service

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Study Design

- Purpose:
  - Review the impact of a pharmacist DOAC monitoring service
- Methods:
  - Retrospective chart review

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Inclusion/Exclusion Criteria

Inclusion

- FDA approved DOAC indication
- CrCl >30 mL/min
- Child-Pugh Class A or better

Exclusion

- BMI >50
- Pregnant or breastfeeding
- Hemodialysis

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Endpoints

- Primary:
  - Evaluate the number of patients managed on DOAC therapy
- Key secondary:
  - Number of patients requiring dose adjustments
  - Number of patients transitioned back to warfarin
  - Patient adherence
  - Safety events

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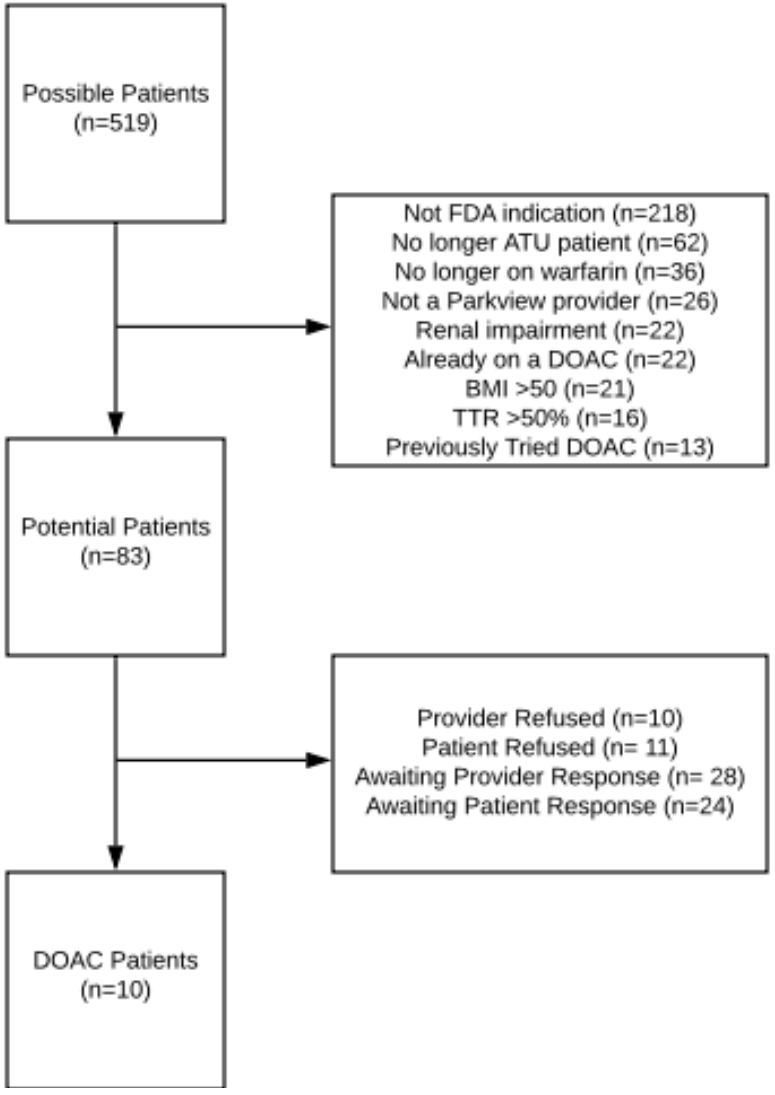
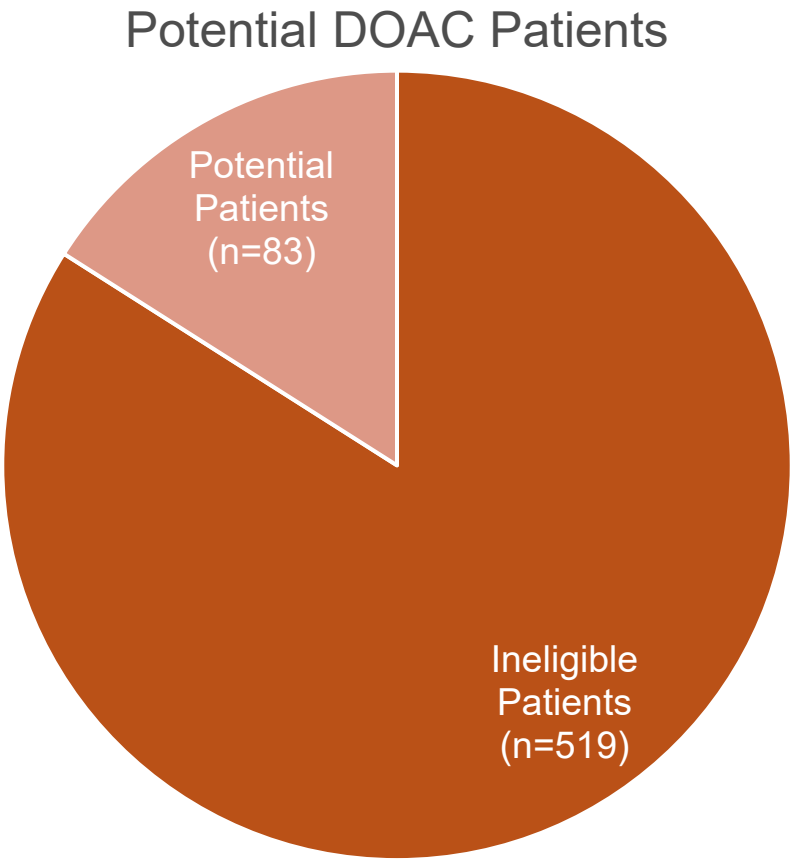
Results





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Results

Primary:

- Total patients (n=16)
  - Clinic initiated (n=15)
  - Provider initiated (n=1)

Secondary:

- Dose adjustments required (n=1)
- Transitioned back to warfarin (n=1)
- Safety events (n=1)

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Discussion- Strengths

- Develop and implement a new service
- Provided education to pharmacy team and providers
- Utilize care management team

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Discussion- Limitations

- Small sample size
- Patient specific barriers
- Therapy specific barriers
- Health system specific barriers

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Next Steps

Continue to identify and monitor DOAC patients

Increase awareness of new service

Updating workflow based on feedback

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Conclusions

- Monitor CBC, SCr, and LFTs while on DOACs
- DOAC clinics are starting to emerge and various clinic designs have been published
- The Parkview DOAC clinics have been able to identify potential patients and continue to monitor labs to ensure appropriate dose and adherence

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