Characteristics Associated with Consistently Therapeutic International Normalized Ratios
Poster #49

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BACKGROUND

- Warfarin's narrow therapeutic index and overall complex pharmacokinetic profile along with a range of patient factors such as diet, genetic variations, concomitant medications, and underlying disease states, necessitates close international normalized ratio (INR) monitoring. These patient factors along with compliance influence the choice of frequency in INR monitoring.[1]
- Current CHEST guidelines recommend an INR monitoring interval of up to twelve weeks.[2] However, more recent guidelines are supported by a lower grade of evidence than previous guidelines recommending INR monitoring at least every 4 weeks.[1]
- Various studies have provided evidence to suggest extending INR monitoring beyond a four week interval. Pengo et al. compared the risk of hemorrhagic or thromboembolic complications of supratherapeutic or subtherapeutic INRs with monitoring intervals of 4 or 6 weeks. Results found no statistical significance between the two groups.[3]
- Witt et al. conducted a study to identify patients with stable INR control as well as finding patient characteristics correlated with long-term INR stability. A group including 2504 patients with stable INRs, all values in range, were compared to 3569 patients with at least one INR outside of range. Results found INR stability with patients greater than 70 years old and with the absence of diabetes mellitus, heart failure, or estrogen therapy. [4]
- Similar patient characteristics predicting long-term INR stability were reported that involved a 12 month observation period in comparison to a 6 month observation period used in the previous study mentioned.[5]

OBJECTIVES

Primary: To establish patient characteristics that identify a population with an increased likelihood of having a consistently stable INR in therapeutic range.

METHODS

Inclusion Criteria: Anticoagulation therapy monitored by the anticoagulation clinic located at Charles George VA Medical Center (CGVAMC) for at least six months. INR range of either 2 to 3 or 2.5 to 3.5.

Exclusion Criteria: Migratory patients that have INR monitoring also completed at other clinics.
Patients missing greater than two anticoagulation visits per year.
Patients that never reach a 4 week INR monitoring interval, defined as greater than 23 days.
Patients not taking warfarin for at least two months before the data collection period.

METHODS

Endpoints:

Primary: Characteristics associated with patients more likely to be in therapeutic INR range at four weeks.
Characteristics include: age greater than 70, gender, INR target range, primary indication for anticoagulation therapy: atrial fibrillation, venous thromboembolism, heart valve disorder, or other, patients with absence of diabetes mellitus, hypertension, or heart failure, or patients with prior venous thrombosis

Secondary: Number of INRs greater than 5, documented alcoholism, patients with mechanical mitral valve, warfarin dosing characteristics, number of anticoagulation visits and total number of visits per year at the CGVAMC

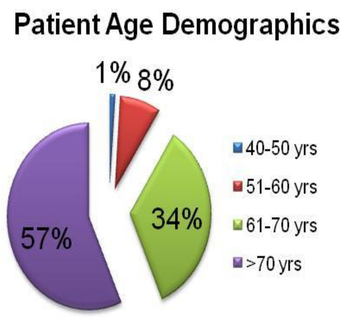
Data Collection

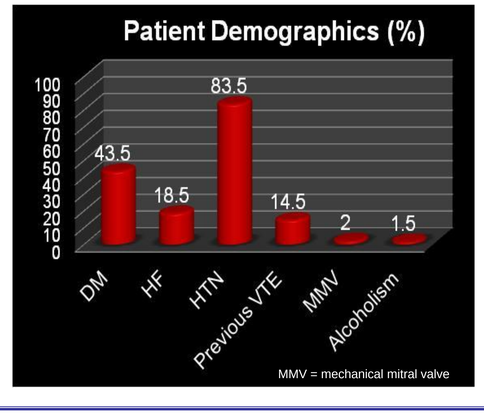
Retrospective chart review of 200 patients who have appointments at the anticoagulation clinic at the Charles George VA Medical Center.

Patient Demographic Data
- Age (years): <40, 40-50, 51-60, 61-70, >70
- Gender
- Presence of: diabetes mellitus, hypertension, heart failure, previous venous thromboembolism, mechanical mitral valve, alcoholism

Clinical and Laboratory Data
- INR target range
- Indication for anticoagulation
- Warfarin dosing characteristics: weekly dose total, regimen
- Number of concomitant medications
- Number of visits per year

RESULTS





RESULTS

Characteristics Associated with INR Stability

	CI	P value
Age >70 yrs	59 +/- 16	0.053
Age <70 yrs	54 +/- 17	
Absence of HF	58 +/- 17	0.109
Presence of HF	53 +/- 16	
Absence of DM	59 +/- 16	0.018
Presence of DM	54 +/- 17	

STUDY BENEFITS

- Identification of a stable INR patient population
- Potential to support extending INR monitoring
- Potential to support decreasing clinic visits
- Potential to ultimately decrease costs

LIMITATIONS

- Data collection was obtained by retrospective chart review
- Documentation within charts is not always consistent
- Study patient population includes primarily male, elderly population

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