Safer Warfarin Management: Benefit of Algorithm Use

The Problem

Warfarin (Coumadin) is a medicine that is complex to prescribe and manage. Keeping the international normalized ratio (INR) result in the target range (such as INR of 2.0-3.0) improves patient safety by decreasing risk of stroke, bleeding, and death. The more time patients spend in their therapeutic range, the safer it is. Multiple factors influence the warfarin dose requirement, including age, weight, diet, other medications, and other illnesses, both acute and chronic. National benchmarks for high quality anticoagulation management are for a Time in Therapeutic Range (TTR) of at least 65%.

Goal

BIDMC Anticoagulation Management Service (ACMS) has a TTR of 70-72%, stable for many years. Our target is to improve this by at least 2% to improve patient safety.

The Team

- Diane Brockmeyer MD, Medical Director
- Jennifer Mackey, PharmD Team Lead
- Anticoagulation Management Service

The Interventions

In order to improve TTR, the team:
- Reviewed published literature on use of dosing algorithms and impact on TTR
- Identified published dosing algorithms
- Developed new dosing algorithm based on both published examples and our own expertise and best judgment
- Conducted extensive training of ACMS staff members (Pharmacists and RNs)
- Measured impact of the algorithm on ACMS Percent Therapeutic (ACMS Quality Measure that approximates TTR)

The Results

Implementing the Dosing Algorithm resulted in a significant improvement in our quality scores. The algorithm has been easy for staff members to use, standardizes care, and improves patient safety.

Lessons Learned

Designing the algorithm after reviewing literature was helpful. Staff found the algorithm easy to use. Discussions and training were important during implementation.

Next Steps

The team will:
- Continue to use the algorithm
- Continue to review opportunities to further improve the algorithm and the overall patient experience