Improving INR control amongst patients in a specialized warfarin clinic

David Maj, B.Sc., M.Sc., MD
Centre for Quality, Innovation, and Safety, Schulich School of Medicine & Dentistry, Western University, London, ON, Canada

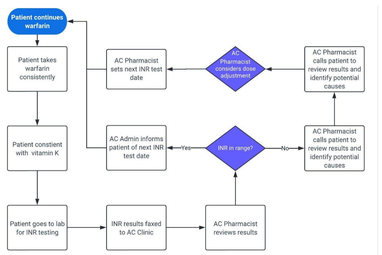
AIM Statement: By May 2022, decrease the proportion of high-risk warfarin patients with low time in range from 55% to 25%.

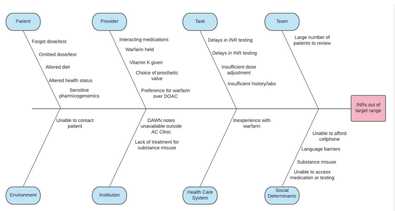
PROBLEM DEFINITION

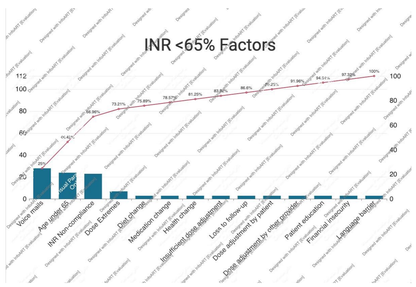
Warfarin remains drug of choice for some anticoagulation needs, but is only considered therapeutic if INR Time in Range (TIR) is ≥ 65%. Amongst patients with an INR target 2.5-3.5 managed by the Anticoagulation Clinic, only half of patients had a TIR ≥ 65%.

ROOT CAUSE ANALYSIS

Pharmacists were primary process owners. They attributed low TIR to variable pharmacist practice and patients skipping INRs.







Insufficiently frequent INR monitoring and lower patient contact was most responsible for insufficient Time in Range amongst warfarin patients.

IMPLEMENTATION

PDSA Strategy 1: For patients recently out of range, after review the AC pharmacist will email patients their next scheduled INR test date plus new dosing plan and vitamin K information. Implementation delayed by concerns re: email consent and confidentiality.

PDSA Strategy 2: For patients with ≥ 4 of 10 most recent INRs out of range, AC pharmacist will have AC admin book for virtual physician review.

MEASUREMENT & RESULTS

In progress. Integrating data into process control chart is challenging for several reasons:

1. TIR is not a point statistic
2. Reduced frequency of testing with improved individual patient performance
3. Lag between intervention and effect
4. Expected reversion to the mean

Will address with use of I-chart and plotting all INRs measured within 8 week time interval for subgroup of patients who received intervention.

SUSTAINABILITY

The AC Clinic pharmacist is the process owner and will take over maintenance. New process can be amended into existing warfarin algorithms, and INR tracking software can be audited at a population level q3 months to identify backsliding and trigger reassessment of process.