



Streamline and Standardize Warfarin Management to Reduce Complications

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Objectives

To reduce warfarin related complications and maintain therapeutic range in National University Hospital.

Methodology

A Rapid Improvement Event was conducted to review and address the problems faced in achieving the objectives of warfarin management standardization. A team comprising hematologist, cardiologist, neurologist, rheumatologist, nurses, pharmacists and quality personnel reviewed the process. Value Stream Mapping of the warfarin management process was done, gaps and wastes were identified. Issues identified were :

- Lack of standardized care: Patients on warfarin were managed by different healthcare professionals from different specialties using different workflows and clinical protocols.
- Uncertainty regarding anticoagulant care continuum: Patients may get duplicate appointments or lost to follow-up during transfer of care

Interventions

Centralized Anticoagulation Clinic (ACC) services and an electronic **database** for tracing and keeping track of warfarin patients was created. A hotline was started for patients to call for enquires. **NUH Warfarin and Anticoagulation guidelines** were revised with inputs from relevant specialties to cater to the needs of different specialty patients.



Guides & Policies

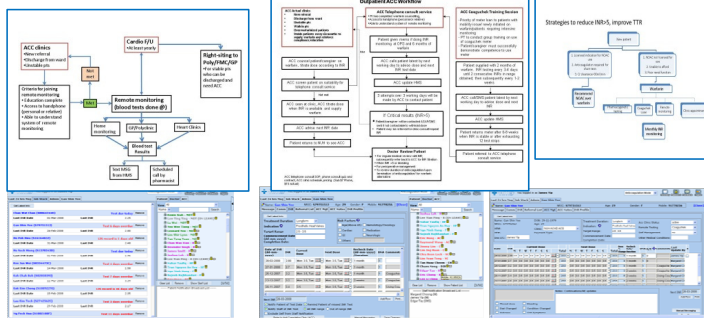
- Approved Abbreviations
- Clinical Policies & Procedures
- Drug Admin Guidelines
- Financial Counselling Guide
- Interpreter Service
- ISMS (Brendan) System User Guide
- User Guide for Medical Social Worker
- User Guide for Doctor
- User Guide for Ward Nurse
- User Guide for Therapist
- User Guide for Service Provider
- STD Helpdesk Case Logging System End User Guide
- Laboratory Medicine Service Guide
- List of Major Religious Organizations
- Massive Transfusion Protocol
- Music Therapy Guide
- Ministry Guidelines
- Next Case IP Codes
- NHG GP Partners Directory
- NHG Prescribing Guidelines
- NUH Warfarin and Anticoagulation

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Anticoagulation Management Sheet was revised.

It's a communication tool between doctors and pharmacists. Helps identify primary doctor to contact for anticoagulation related issues after discharge

Remote monitoring of International Normalized Ratio (INR) : Suitable patients may do INR at polyclinics or be loaned with portable meters to monitor their INR. Database jobstack can track phone consult patients for ACC to call and advise doses.



Daily Job Stack

Patient Anti coagulation Profile

Result

Therapeutic time in range was 75.1% in July 2013 and 68.6% in Aug 2013.

62 patients in 2013 had INR>5 of which only 9 were potentially preventable.

Compliance to Algorithm ranged between 50 % to 65% in 2013.

40 – 45% of ACC patients have been enrolled into the Remote monitoring group.

	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13
→ % Therapeutic time in-range (%)	54	63.2	64.5	71.3	58.9	55.5	72.6	70.9	67.9	69.8	75.1	66.6
→ INR>5	0	14	6	9	5	9	4	9	10	8	8	8
→ Potential Preventable INR>5	0	1	3	1	0	1	1	2	0	2	1	1
→ Compliance to Algorithm (%)	46	26.8	19.8	19.6	5	51	34	57.1	52	85	50	30

Conclusion

This project identified and improved anticoagulation related work processes to ensure safe and quality care. The remote monitoring has helped improve patients' compliance to the drug.