

Electronic warfarin home monitoring with Hospital in the Home: Using technology to improve critical communication

Elizabeth Su^{1,2}, Connor Palmer^{1,2}, Jade Eyles¹, Anne McGrath², Lisa Ho², Nicole Irwin³, Angela Sullivan³
 Contact: elizabeth.su@austin.org.au

1. Electronic Medical Record Service, Austin Health
2. Pharmacy Department, Austin Health
3. Hospital in the Home, Austin Health

Background

Warfarin is a high-risk medicine that requires careful monitoring and dosing.

Hospital in the Home (HITH) nurses visit patients at home to administer enoxaparin injections until warfarin becomes therapeutic. They use point-of-care devices to obtain international normalised ratio (INR) blood test results that are reviewed by HITH doctors to determine the warfarin dose to be taken by the patient.

Clear communication between HITH clinicians is critical for safe warfarin dosing.

Transferring warfarin monitoring information on discharge is also critical for continuity of care.

Objective

To develop a workflow for HITH warfarin home monitoring within the electronic medical record (EMR).

Action

A **warfarin home monitoring form** was developed that allows the HITH nurse at the patient's home and the HITH doctor at the hospital to document and view INR results and warfarin doses respectively.

Documented warfarin monitoring information is visible in the patient's EMR progress notes to all hospital clinicians.

On discharge from HITH, an electronic **warfarin discharge plan** and discharge summary are sent to the patient's pathology service and GP to communicate INR results and warfarin doses received with HITH.

Provision of an electronic warfarin discharge plan from HITH is a new practice to improve continuity of care.

Figure 1. Warfarin Home Monitoring Form

Figure 2. Warfarin Home Monitoring display

Date	INR (Transcribed) Result	Next Dose(s) Prescribed	Dose Comment(s)	Next INR Due	Patient/Carer Informed	Action
Thursday Jul 6th (7:44 pm)	1.8 from Point of care (POC) Su, Elizabeth - Pharmacist	4.5 mg on Thursday Jul 6th 5 mg on Friday Jul 7th Su, Elizabeth - Pharmacist	If next INR >2, contact cover HITH doctor over weekend to review. Su, Elizabeth - Pharmacist	Saturday Jul 8th Su, Elizabeth - Pharmacist	Yes* Su, Elizabeth - Pharmacist	✓
Wednesday Jul 5th (3:45 pm)	1.7 from Point of care (POC) Su, Elizabeth - Pharmacist	5 mg on Wednesday Jul 5th Su, Elizabeth - Pharmacist	-	Thursday Jul 6th Su, Elizabeth - Pharmacist	Yes Su, Elizabeth - Pharmacist	✓

Figure 3. HITH clinician feedback survey results

What's your usual role?	This workflow makes sense and is easy to use:	This workflow improves the visibility of warfarin monitoring info for hospital staff:	This workflow improves discharge communication of HITH warfarin monitoring info:
Pharmacist	Strongly agree	Agree	Strongly agree
Nurse unit manager	Strongly agree	Strongly agree	Strongly agree
Case manager nurse	Strongly agree	Strongly agree	Strongly agree
Case manager nurse	Agree	Strongly agree	Strongly agree
Visit nurse	Strongly agree	Strongly agree	Strongly agree
Visit nurse	Agree	Agree	Agree
Visit nurse	Agree	Neutral	Neutral
Doctor	Agree	Strongly agree	Strongly agree
Doctor	Strongly agree	Strongly agree	Strongly agree

Evaluation

Early user testing indicates this electronic workflow is intuitive and improves the visibility of warfarin monitoring information for clinicians at the patient's home and at the hospital, overcoming limitations of paper forms.

Feedback from pathology services and GPs is ongoing.

Discussion

An electronic warfarin home monitoring workflow allows HITH clinicians to clearly document and communicate critical information to support safe warfarin use.

Introduction of the electronic warfarin discharge plan to HITH practice broadens the hospital's existing initiative to bridge gaps in communicating warfarin-related information to community providers on discharge.