



Improving Clinical Outcomes with Home INR Monitoring through



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Objective:

To show improved clinical outcomes and patient engagement by evaluating retrospective data of patients utilizing WebCareHealth's (WCH) Home INR Program (CoagMgr) versus standard anticoagulation management (standard management) from June 2014 through July 2016.

What is CoagMgr:

Home INR Management solution that improves all aspects of Coumadin Management. Through a partnership with the clinic/hospital, WebCareHealth facilitates an internal Home INR program, CoagMgr, that positively impacts clinical, operational and financial outcomes. This paper focuses on the clinical outcomes of the program.

Context:

The Iowa Heart Center Anticoagulation service provides warfarin management to approximately 2400 patients at multiple locations throughout the state of Iowa. All patients were managed through face to face visits along with a point of care lab or by outside lab draw (standard management) until June of 2014 when 1065 were transitioned over time to WCH's Home INR Program, CoagMgr. This subset of 1065 patients were trained face to face on the use of the Roche CoaguChek XS monitor and on how to report results and contact customer service.

All Home INR testers enrolled in CoagMgr were trained to test their INR from home weekly and report their result through CoagMgr for real-time review by their provider. All patients did sign a patient agreement prior to being trained on the monitor to improve compliance and accountability and to motivate the patients to be more engaged in their care.

Patient qualifications for Home INR testing:

Coumadin (warfarin) use for 3 months, payable diagnosis, mentally and physically capable to do home testing or have a caregiver to assist, demonstrate use of monitor, access to report results through at least one mode of transmission (landline or smart phone automated phone response system, mobile site, or customer service). Patients were required to keep any routine follow up deemed medically necessary with their health care provider.

Number of patients per diagnosis that were enrolled in CoagMgr.

Atrial Fibrillation:	929
Venous Embolism:	15
Pulmonary Embolism:	14
Hypercoagulable State:	5
Presence of Prosthetic Heart Valve:	89
Long Term use of Anticoagulant:	2
Thrombosis of Atrium, Ventricle, Auricular Appendage:	11

All CoagMgr patients were trained to test **once per week** preferably in the morning and on the same day each week and to report their results avoiding testing on after hours or weekends unless medically necessary. Safety nets were put in place to capture reported results during closed clinic hours and a provider notification strategy implemented.

For all patients enrolled in CoagMgr; patients did NOT receive a call from the provider's office with INR results unless a new recommendation or treatment change was necessary.

Patients managed through Iowa Heart's standard management had been asked to have a face to face visit with POC testing or outside lab draw on a 4-6 week basis. All patients were given results of their INR either face to face or by phone. Delinquent volume considered to be moderate to high with standard management.

All patients in CoagMgr and all patients in the standard management model were treated using the same anticoagulation Coumadin (warfarin) drug protocol.

All lab results from CoagMgr and from the standard management group were tracked in Iowa Heart's Electronic Health Record (EHR). CoagMgr is fully integrated into Iowa Heart's EHR and therefore all results for both patient groups (CoagMgr and standard management) are seen and managed by the clinical team in the same fashion.

Data Reviewed:

Clinical quality: Time In Therapeutic Range (TTR), Adverse events, testing frequency

Results:

Volume of patients in 8 clinic locations combined that were enrolled in CoagMgr: 1065
Total volume of Coumadin patients in the Iowa Heart Anticoagulation Clinic: 2400

Time in Therapeutic Range for patients utilizing CoagMgr for the Practice: 74%
Time in Therapeutic Range for same patients utilizing standard management prior to switching to CoagMgr : 51%
(TTR calculated using Rosendaal method with no variance)

Testing Frequency for patients utilizing CoagMgr for the practice: 7.2 days
Testing Frequency for patients utilizing standard management for the practice: ~4-6weeks

	<u>CoagMgr</u>	<u>Standard Management</u>
Time in Therapeutic Range	74%	51%
Testing Frequency	7.2 days	4-6 weeks

Adverse Events identified over a 2-year study period for patients utilizing CoagMgr based on survey results, hospital records and Iowa Heart EHR:

It was noted that the number of adverse events to include Stroke, Pulmonary Embolism, and GI Bleed were reduced once the patients were switched from standard management to CoagMgr. Hospital data from one local hospital was evaluated from January 2013 through study date of July 31, 2016.

Data below is only for patients that were switched from standard management over to CoagMgr and not for all patients managed through Iowa Heart’s Anticoagulation Clinic. Additionally, data below does not include all patients that were hospitalized at the one local hospital for adverse events and taking Coumadin, but rather an analysis of adverse events identified within the 1065 patients enrolled in CoagMgr prior to enrollment and following enrollment.

Patients that where treated by standard management prior to enrolling in CoagMgr and were evaluated by one local hospital (data collection site) for adverse events:

- Adverse events Prior to CoagMgr:
- 2 Strokes
 - 5 *Pulmonary Embolisms (PE)*
 - 4 *Major GI Bleeds (GI Bleed)*

Readmissions: Following enrollment in CoagMgr –subset of patients that were hospitalized above with adverse events:

No readmissions were noted.

Adverse events following enrolling in CoagMgr:

1 Stroke (INRs were therapeutic)

1 Pulmonary Embolism (PE)

2 Major GI Bleeds (GI Bleed) (both within 4-6 weeks of weeks of enrollment)

Conclusions:

1. Significant improvement in Time in Therapeutic Range(TTR) was noted with the use of CoagMgr.

TTR increased from 51% to 74%. By switching patients from standard management to CoagMgr an overall 45% increase in TTR was noted.

2. Weekly Home INR testing was widely accepted as noted by patient testing compliance.

Patient testing frequency of testing was noted to be every 7.2 days.

3. Adverse events/readmissions for adverse events were reduced utilizing CoagMgr vs standard management.

Adverse events Prior to CoagMgr: *2 Strokes, 5 PEs, 4 GI Bleeds*

Readmissions: Following enrollment in CoagMgr –subset of patients that were hospitalized above with adverse events: *No readmissions were noted following enrollment in CoagMgr.*

Adverse events following enrolling in CoagMgr: *1 Stroke (therapeutic INRs), 1 PE, 2 GI Bleeds*

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