

Clinical Safety & Effectiveness Cohort #13

Improving the INR/Coumadin Clinic at the MARC

CENTER FOR PATIENT SAFETY & HEALTH POLICY UT HEALTH SCIENCE CENTER[™] SAN ANTONIO

Educating for Quality Improvement & Patient Safety

TEAM

- Ildiko, Agoston, MD, Associate Professor, Medical Director of Cardiology Clinic at MARC, Division of Cardiology
- Myra Joseph, RN, Executive and Women's Comprehensive Health Program Manager



Extended Team:

- Mysti Schott, MD, EPIC UT Medicine
- Jeanette Hernandez, EPIC UT Medicine
- Wanda Patrick, EPIC UT Medicine
- Crystal Anderson, RN, Clinic Manager of Cardiology
- Sandra Garcia, LVN UT Medicine
- Juanita Vasquez, LVN UT Medicine
- Iba Aburizik, Facilitator
- Steven R. Bailey, MD UT Medicine

Aim Statement



Fish Bone Process



CAUSES OF Inability To Track Coumadin Patients



Current Workflow



New Workflow

NEW UT Medicine MARC Cardiology - Coumadin Workflow



DATA ANALYSIS

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Total INR Patients = 100 patients/month for Cardiology
Average Salary (MA vs. RN) $18.70/hour
Process in old workflow takes 20 min. (phone, in clinic, fax)
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$6.20 / 100 pts= $ 1,178 Monthly
$14,136 Yearly
$1020 room charge monthly ($32.23/hour) - $10.74/20 min room charge
Per patient/per visit cost = $16.94 ( $6.20+$10.74)
190 visits/mo x 20 min= 3800 min/mo divided by 60 min=60.3hour /mo
190 patient visits/month x $16.94 visit cost = $3218.6/ month
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Old workflow \$38,623.2 Total Expense per year (supplies, ink not included)

New workflow – Total time spent with patient 10 min Current projected yearly expense \$19,311.60 ROI - \$19,311.60 50% saving

PDSA Timeline

> <u>PLAN</u>: First Team Meeting 9/6/13

AIM statement 1 Cause/Effect (Fish) diagram Scope Decision: Current process vs. New process

Second Team meeting 9/13/13

Narrow workflow Discuss current INR process Discuss current process in EPIC Assign duties

DO: Third Team Meeting 10/11/13

Review of progress (fishbone/workflow) Epic Training – Overview and missing items Implementation of the new workflow (10/14/13)

STUDY: Fourth Team Meeting 11/1/13

- Data Analysis / Research
- Baseline Data Collection:11/13
- ACT: Intervention A institutionalize process changes, train staff and providers:10/9/13
- Finalize Control Charts for Presentation:1/6/14
- Deliverables & Project Presentation TODAY!



New EPIC INR Monitoring Workflow for Marc Cardiology

Anticoagulation Tracking System flow
New Patient Visit

Anticoagulation monitoring plays a crucial role in many cardiac patients' treatment. During an <u>office visit</u> with the patient, the cardiologist orders a referral to anticoagulation monitoring. When he places the order, he's prompted to answer an INR Goal question.

INVAL TO AN	UTM Referral, R	eferral By - RIVER	RA, OSCAR, Ca	-/ rdiology, M	ARC FAMILY MEDICINE	E, Family Med	icine , Referral/Vi	sit, Specialty Serv	ices l
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	1. INR Goal		1.5-2.5	2					
	Single response								
Additional Ord	ler Details								



The cardiologist documents the INR goal (1.5-2.0), along with the responsible group (Cardiology nurses), date of first INR, weekly max dose, and a target end date. After answering the questions, he signs the order. The system;

- 1. Enrolls patient in anticoagulation therapy and sends an enrollment message to the pool specified by the Cardiologist.
- 2. Prepares an INR reminder message to send to the pool on the day of the new INR.
- 3. Adds a Health Maintenance modifier to the chart for anticoagulation.
- 4. Creates an anticoagulation episode for the patient and links the diagnosis associated with the order to the episode.

When the nurse in the cardiology clinic checks her In Basket, she sees an anticoagulation enrollment message. She is a member of the anticoagulation In Basket pool specified by the cardiologist when he placed the referral order.

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Update your In Basket settings to	choose column	preference	s.				
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/ Status 🛛 😨 INR Due Date	Patient		Phone		Provider	🛆 INR	(Date)
字 🛛 INR Goal: 2.0-3.0	Se.	nt By: Brune, S	Sonja D		Date Se	ent: 06/12/2013	
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Read 09/26/2013 🎯 INR Goal: 2.0-3.0	Bautista, Encar Sei	nacion B nt By: Anderso	210-432-6 in, Crystal L	568	Brune, Sonja I Date Se	D 3.5 (9/) ent: 09/26/2013	26/2013)
Message	26/13	. 0.755.44.2				Mo	re Detail >>
Bautista, Encarnación B is due	for an INR test of	n 9/26/13.					
INR as of 9/26/2013 and Previous	Dosing Informa	tion					
INR Dt INR Goal	Wkly Tot	Sun	Mon	Tue	Wed	Thu Fri	Sat
2.0-3.0	17.5 mg	2.5 mg	2.5 mg	2.5 mg	2.5 mg 2	2.5 mg 2.5 mg	2.5 mg
Anticoagulation Dose Instruction	s as of 9/26/2013	3					
Total	Sun	Mon	Tue	Wed	Thu	Fri	Sat
New Dose 17.5 mg (5	2.5 mg 2. mg x 0.5) (5 m	.5 mg ng x 0.5) (5	2.5 mg mg x 0.5)	2.5 mg (5 mg x 0.5)	2.5 mg (5 mg x 0.5	2.5 mg) (5 mg x 0.5)	2.5 mg (5 mg x 0.5)
Anticoagulation Summany as of	1/26/2013						

The report defined for this message type includes a summary of the anticoagulation therapy referral order placed by the cardiologist. The enrollment notification remains in the nurse's In Basket until the nurse clicks Done for this message. On the date of the first INR (specified by the cardiologist in the referral), an INR Reminder message appears in the nurse's In Basket. Anticoagulation Visit-Nurse

Note: Anticoagulation nurses are able to place the referral order the same as providers.

INR Remino	der 6 unread, 12	2 total				S <u>o</u> rt -	🗕 🗹 AutoA	dvance	 ^
Fake 👒 Put I	Back 🔄 Chart 🦻	🕂 Enc 🛅 Dial 🛽	Flowsheet						
date your h	n Basket setting	gs t <mark>Enc</mark> loose co	lumn preferenc	es.					
Dismiss 🔑	Edit Columns 💋	Hide Wrapped (Columns 💊 Rese	et to Default					
Status	V INR Due Da	ate Patient		Phone		Provider			(Date)
INR Goal	2.0-3.0		Sent By: Brune,	Sonja D		Date	Sent: 06/12	/2013	· · ·
Read INR Goal:	07/01/2013 2.0-3.0	Quijano J	r, Jesus Sent By: Fowlks	956-722-00 s, Alesandra)84	Brune, Son Date	ija D Sent: 06/18	3.1 (6/1 /2013	7/2013)
Road	09/26/2013	Bautista. I	Encarnacion B	210-432-65	568	Brune, Son	ja D	3.5 (9/2	6/2013)
INR Goal:	2.0-3.0		Sent By: Anders	on, Crystal L		Date	Sent: 09/26	/2013	
INR Goal: autista, Enca	2.0-3.0	Due 9/26/13	Sent By: Anders	on, Crystal L		Date	Sent: 09/26	/2013 More	e Detail >>
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The INR Reminder message also includes a summary of the cardiologist's anticoagulation therapy order. This message remains in the nurse's In Basket until she creates an anticoagulation encounter and either a follow-up or cancellation date is applied to it. The nurse creates an anticoagulation encounter from this message by clicking **Enc button** while the message is selected.

//26/2013 visit with A	goston, Ildiko for Anti-Coag Tracking Only	? Resize
Images 🔝 Questio	nnaires 🔢 Admin 😫 Benefits Inquiry 🍈 References 🎉 SmartSets 📣 Open Orders 🎇 Care Teams <i>를</i> Print	A <u>V</u> S → More
👌 The patient's antic	oagulation episode is not linked to the encounter.	
📾 Link the anticoa	gulation episode A linked anticoagulation episode is required to document an anticoagulation encounter.	
Anti-Coag Tracking	BestPractice Advisories	click to open
estPractice 👘 🖌	Refresh Last refreshed on 9/26/2013 at 10:18 PM	
ontacts 🖌	Contacts	click to open
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outing Scharge	No Known Allergies Last Updated by Alvarado, Virginia on 4/25/2013 10:38 AM (History)	
	No Known Allergies	
	Mark as Reviewed Unable to Assess E Last Reviewed by Montes de Oca, Marisol on 6/11/2013 at (History)	:10:23 AM
	Medications & Orders	click to open
	💠 Create Medication List Comments	
	Search for new order	Options 🛞

After the Nurse clicks **Enc**, the **Encounter Selection window** opens and the nurse creates an <u>anticoagulation encounter</u> for this order. If the nurse does not complete these actions in In Basket, support staff can also schedule anticoagulation visits in the same way they schedule office visits. After the nurse creates the encounter, she is presented with the anticoagulation navigator template.

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No Known Allergies		
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The anticoagulation episode created automatically when the cardiologist placed the anticoagulation referral order appears in the Episodes section. To link the episode to the encounter, the nurse can either click **Link the anticoagulation episode** at the top of the navigator or open the Episodes section and select the Linked check box. By linking each anticoagulation visit to a single episode, the nurse provides a way to follow progress across encounters and to document the resolution of this course of treatment. Episodes also allow clinicians to review flowsheet data across multiple visits.

9/26/2013 visit with	Ago	ston, Ildiko for	Anti-Coag Tracki	ng Only					? Resize	\$
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Charting Pt Findings Anticoag Track Progress Notes Order Entry	2222	 KM Restore <i>Patient Findin</i> <i>Anticoagulati</i> <i>INR goal</i> 	on Tracking ation Summary as	9 • of 9/26/2013 2.0-3.0			🕆 Previ	ous F7 🕹	Next F8 click to open click to open	
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		Progress Not	t es ote in NoteWriter	ᠵ 🔶 Create Not	e 🐼 Refresh	J			click to open 少	
		No notes file	d.							
		Diagnoses a	nd Orders		1				ø	

When the nurse links the encounter to the episode, the nurse has the option of adding the problem linked to the episode to the list of encounter diagnoses, which she chooses. In the Results Console section, the nurse documents the INR levels. The nurse can also use this section to place an historic Coumadin order for documenting purposes.

9/26/2013 visit wi	th Ag	oston, Ildiko for A	nti-Coag Track	ing Or	ily	×			? Resize
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Allergies	5	G> Medica	tion Changes	P	\$	Diet Changes			
Meds & Orders	8	Bleed	ding Gums	0	4	Blood in Urine	- 4	Any Bruising	Ð
Results Console	č,	C Nos	e Bleeds	P	.	Blood in Stool	- 4	Other Complaints	Þ
Chardina		Commenter						Otherwise Negativ	e
Pt Findings	1	Comments.							
Anticoad Track	5	10 ang 12. 13	· 🖓 😵 🗣	Insert S	martText		× 🐝 🖪		
Progress Notes Order Entry	5	Patient comp green.	lained of vomi	ting an	d diarea	h. Patient also doe	es not eat v	regetables or anything	<u>_</u>
Discharge Routing	54								*
Close Encounter	54	(KK) Restore	🖌 Close	F9				🔶 Previous F7	Next F8
		Anticoagulation	n Tracking						click to open
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		Selected IN	IR V daaa		CE ma				
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		Target end	date			_			

Next, the nurse uses the Patient Findings section to document the answers to a standard set of anticoagulation questions posed to the customer. A series of positive and negative buttons is performed by clicking the mouse plus or minus. Should the patient present other findings not readily available to the screen, you may enter them in the comments section. This section is free form.

Epic - 🕅 🕄	Schedule 🖓 In Basket 😴] Chart 🦨 Telephone Call 😫 Refill Enc 🏠 Patient Station 🤎 Remind Me 🛛 🔹 🕐 🧿 ル 🎒 Print 🗸 🔒 Secure 🙇 Log Out
🔇 🖾 Card	tiology,Carl F	× EpicCare
Cardiology Male, 71 y.o., 08/3	,Carl F 1/1939	PCP: FAMILY Allergies BestPractice Advisory: Be Primary Ins.: None MRN: 201301
	1/13/2011 visit with Nu	rrse Cardiology, RN for Anti-coag visit ? Resize ♦
SnapShot	👫 Images 🍈 Referen	ces 🔢 Questionnaires 🕎 Admin 😫 Benefits Inguiry 🎇 SmartSets 🐇 Open Orders 🞇 Care Teams 🖉 Preview AVS 👘 More 👻
Chart Review	INR Goal 1.5-2.0 Indications Essential H	Start date 1/13/2011 Target end date 4/6/2011 Edit Episode Information ypertension, Atrial Fibrillation Providers Physician Cardiology, MD Physician Cardiology, MD
Flowsheets	Comments	O
Results Review	Anticoag Check	Patient Findings Click to open
Synopsis	Contacts Sepisodes Sector	Positives Missed Doses, Diet Changes Negatives Extra Doses, Medication Changes, Antibiotic Use, OTC/Herbal Medications, Dental/Other Procedures Hospitalization Bleeding Gums Nose Bleeds, Blood in Urine, Blood in Stool, Any
History	Vital Signs S Results Console	Bruising, Other Complaints
Allergies	Problem List 🖌 🖌	Anticoagulation Tracking click to open
Problem List	Pt Findings	Anticoagulation Summary as of 1/13/2011 INR goal 1.5-2.0
Medications	Implants S	Selected INR Next INR check
Immunizations	Progress Notes S Pt. Instructions	Weekly max dose 20 Target end date 4/6/2011 (mg)
Demographics	LOS & Follow-up	Indications Essential Hypertension, Atrial Fibriliation
Letters	Close Elicounter	Implants Click to open Annu Sector Sec
Enter/Edit Results		No active implants
Forms		Croste Notes Click to open
Patient Education		
		No notes filed.
Order Entry		Patient Instructions click to open
Visit Navigator		Intervice & Follow-up click to open
		No LOS code selected
		No follow-up instructions entered
More Activities	3 بر =	Close Encounter click to open

When the Patient Findings section is closed, the nurse's documentation appears in a compact report for easy review.

9/26/2013 visit with	Agos	ton, Ildiko f	or Anti-	Coag Track	ing Only										?	Res	size
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Meds & Orders Problem List Results Console	999	Quick sele	ct INR: 2013)	More INF 3.5 (9/26/20	Rs: 113) 🔽 🗖	Patient dev from dose	riated					(Pre	evious	dose	info ir	n mg)	
Charting Pt Findings	5	Proposed	Order-	- &		ow half pills	W	eekly	maximu	n dos	e: 65]
Anticoag Track		⊙ Single v	week	O Single w	eek additio	onal tablets	per day	0	Alternat	ing w	eek (1	4-day	rotatio	on)			
Progress Notes Order Entry	R R	Pill size:	Sun 5 mg	Mon • 5 mg	Tue • 5 mg	Wed • 5 mg	Thu • 5 mg	•	Fri 5 mg _	Sa 5 n	t ng _	•		We	ekly c	lose:	
Discharge Routing	5	# of Pills	0.5	0.5	0.5	0.5	0.5	(D.5	0.5		Re	eset	17.	5	mg	
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Next, the nurse proceeds to the Anticoag Track section. This patient's most recent INR result appears at the top of this section.

Elowsheet Report - Selected Encounters (INF 76 v.o., 05/09/1937, Add My Sticky Note)	२)							? Clos
Anticoag	Latest Ref Rng	3/5/2013	4/10/2013	4/29/2013	5/6/2013	6/11/2013	9/26/2013	9/26/2013
Last INR		1.9	1.6	3.1	2.8	1.9		3.5
INR Date		3/5/2013	4/10/2013	4/29/2013	5/6/2013	6/11/2013		9/26/2013
INR Goal		2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Pt. Dev		No	No	No	No	No	No	No
Current Wk Dose		17.5	17.5	22.5	17.5	17.5	17.5	17.5
Proposed WK Dose		65	65	65	65	65	65	65
PROTHROMBIN TIME								
INTERNATIONAL NORMALIZED RATIO (INR)	1.5 - 2.0	1.9 (A)	1.6 (A)	3.1 (A)	2.8	1.9 (A)		3.5 (A)
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Also, because the anticoagulation review Flow sheet is attached to the episode, the Anticoagulation Flow sheet button appears in the upper right corner of the section. The nurse can click this button to view all INR values from the episode. Also, From this activity, the nurse can later highlight all of the INR values documented in the episode and click Graph Region to graph them.

Last INR 1.9 1.6 3.1 2.8 1.9 3.5 INR Date 3/5/2013 4/10/2013 4/29/2013 5/6/2013 6/11/2013 9/26/2013 INR Goal 2.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 1.0-3.0 <th>Last INR 1.9 1.6 3.1 2.8 1.9 3.5 INR Date 3/5/2013 4/10/2013 4/29/2013 5/6/2013 6/11/2013 9/26/2013 INR Goal 2.0-3.0</th> <th>Latest Ref Rng</th> <th>3/5/2013</th> <th>4/10/2013</th> <th>4/29/2013</th> <th>5/6/2013</th> <th>6/11/2013</th> <th>9/26/2013</th> <th>9/26/2013</th>	Last INR 1.9 1.6 3.1 2.8 1.9 3.5 INR Date 3/5/2013 4/10/2013 4/29/2013 5/6/2013 6/11/2013 9/26/2013 INR Goal 2.0-3.0	Latest Ref Rng	3/5/2013	4/10/2013	4/29/2013	5/6/2013	6/11/2013	9/26/2013	9/26/2013
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From this activity, the nurse can later highlight all of the INR values documented in the episode and click Graph Region to graph them.

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After reviewing the INR results, the nurse returns to the Anticoag Track section in the navigator, where she can also review past Coumadin dosages and propose new ones. Prior to leaving this screen, the Return Date MUST be entered or you will NOT be able to close the encounter. You may enter t+ the number of days of the return or use the calendar to select the date. Note: T+30 will give you today's date plus thirty days from today.

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A Health Maintenance modifier for anticoagulation remains can also be attached to the chart until the cardiology nurse manually satisfies it. This ensures that the modifier is removed only after treatment is complete. The Model System also supports anticoagulation population studies. Using Clarity tables, users can report on encounter and episode information taken during anticoagulation visits, such as INR goals, INR results, and dose information for large numbers of patients.

Demonstra Male, 76 y.o., 05/09	tion, INR B 9/1937, 🙀		BMI: 2	1.80 kg/.	Allergies No Known	Allergies	Health I	Maintena	in Ci Mi	overag RN: 06	e: ADVANT 142532	AGE BY	SUPEF	RIOR H	EALTH	/AD	MyCh UHS
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Problem List	Allergies	5			2 3					17.5	2.5 2.5	2.5	2.5 2	2.5 2	.5 2.	5	
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To discontinue therapy, select the **discontinue therapy** button located on the bottom right hand corner of the screen. The next slide, will show you what the Edit Episode Information hyperlink is used for.

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NR goal:	2.0-3.	۷ ۵	Indications	* *	Add Inc	dications
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The edit Link information hyperlink allows clinicians the opportunity to modify the INR goal and other pertinent information related to managing where the INR reminders will route to, modify INR goals, weekly max dose and allows you to add any indications as needed.



UT Medicine Teams:

- EpicCare: "Revised Anticoagulation Charting"
- Cardiology Clinic: Implemented new INR reporting through EPIC that saves time and money

Leadership:

 Continue support of QI efforts in MARC Cardiology Clinic (like this CS&E project)

Future Cohort(s):

Establish Project Team to continue data collection and analysis of other cardiology medication processes for continuous improvement (future team for CS&E class Dr. Sandeep Sagar and Crystal Anderson, RN)

Thank you!





CENTER FOR PATIENT SAFETY & HEALTH POLICY

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