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
Increase Coumadin Anticoagulation tracking system flow in clinic by 100% utilization at the MARC by 1/1/14 for Cardiology patients with arrhythmias and valve disease.
Fish Bone Process
CAUSES OF Inability To Track Coumadin Patients

Epic/MR
- Lack of Patient reminders
- Difficulty getting response from provider
- Multiple visit types

Management/Money
- Cost per patient to process INR
- Number of calls to adjust INR

Provider
- Confusion on how long to track patients
- Confusion on how to use EPIC
- Order type stat vs Regular
- Inconsistent Charting
- No Standardization
- Difference on how we receive INR reporting

Nurse
- Coumadin vs regular clinic workflow

Patient
- Patient does not call
- Delayed results
- Multiple calls to adjust INR

Environment/Support
- Multiple visit types
- Difficulty getting response from provider
- Lack of Patient reminders
Current Workflow

Current UT Medicine MARC Cardiology - Coumadin Workflow

<table>
<thead>
<tr>
<th>MARC Provider INR visit</th>
<th>Current Workflow</th>
<th>MARC Provider INR visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front desk arrives patient.</td>
<td>Nurse escorts pt. to take room for w/ and vitals</td>
<td>Nurse checks INR per order</td>
</tr>
<tr>
<td></td>
<td>Nurse reviews current medications, Coumadin dose and adverse events</td>
<td>Pt. taken to exam room</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provider reviews INR form results filled out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provider Encounter in EPIC created</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provider documents results/new orders under level 11 visit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upon discharge patient is scheduled for a lab result and FU visit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinic INR nurse visit</th>
<th>Current Workflow</th>
<th>Clinic INR nurse visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front desk arrives pt.</td>
<td>Nurse escorts pt. to take room and obtains pts. w/ and vitals</td>
<td>Nurse Encounter in EPIC created</td>
</tr>
<tr>
<td></td>
<td>Nurse checks INR</td>
<td>Pt. goes back to lobby</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provider reviews INR form nurse filled out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nurse documents charges for Coumadin dose on INR form into EPIC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nurse gives copy of INR form to pt.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upon discharge patient is scheduled for a lab result and FU visit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pr calls office to report INR results to clinic</th>
<th>Current Workflow</th>
<th>Pr calls office to report INR results to clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call center creates telephone encounter</td>
<td>Nurse calls pt. back to verify dosage of coumadin and adverse events reviewed</td>
<td>Nurse calls pt. to call following week with INR results to clinic</td>
</tr>
<tr>
<td></td>
<td>Nurse calls provider for new Coumadin order if indicated by lab</td>
<td>Nurse reminds pt. to call following week with INR results to clinic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do nursing telephone encounters vary?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No process in place</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INR faxed from lab</th>
<th>Current Workflow</th>
<th>INR faxed from lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did a final lab result file under the EC chart review lab?</td>
<td>If Provider in clinic they review</td>
<td>Nurse calls pt. to discuss any adverse events and discuss any Coumadin dose changes</td>
</tr>
<tr>
<td></td>
<td>If provider not in clinic nurse calls in results to provider</td>
<td>Clinical staff secures paper lab result for transport to HIM Imaging Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nurse reminds pt. of next INR lab draw</td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td>Non interfaced Reference Lab Clinical Staff contacts reference lab to obtain result</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>Lab results faxed to clinic</td>
</tr>
</tbody>
</table>

Reference Lab

- UHS & Quast Reference Labs are interfaced with EC
  - Lab result automatically links to lab order
  - Status changes to final
  - An in basket message routes to Provider/pool

- Non interfaced Reference Lab Clinical Staff contacts reference lab to obtain result
  - Lab results faxed to clinic
DATA ANALYSIS

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)

$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 = 60.3 hour /mo
190 patient visits/month x $16.94 visit cost = $3218.6/ month

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

- **PLAN**: 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 **office visit** 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.
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.
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.
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.
After the Nurse clicks Enc, the Encounter Selection window opens and the nurse creates an anticoagulation encounter 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.
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.
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.
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.
When the Patient Findings section is closed, the nurse's documentation appears in a compact report for easy review.
Next, the nurse proceeds to the Anticoag Track section. This patient’s most recent INR result appears at the top of this section.
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.
From this activity, the nurse can later highlight all of the INR values documented in the episode and click Graph Region to graph them.
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.
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.
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.
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!

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