Clinical Safety & Effectiveness
Cohort # 13

Improve the multidisciplinary approach in the care of patients with thyroid cancer

CENTER FOR PATIENT SAFETY & HEALTH POLICY
UT Health Science Center
SAN ANTONIO

Educating for Quality Improvement & Patient Safety
Background

- **Context:** Scheduling patient with thyroid cancer for I131 involves the many physician located at different locations such as the MARC, TDI and UCCH north. It also involves UHS admissions, bed control, hospitalist, nuclear medicine physicians and technologist, radiation safety and nursing. In addition, the process begins during a follow up clinic visit and can take up to two hours to arrange.

- **Rationale:** At this time the endocrinology fellows are responsible for coordinating this care and as the number of physicians and patients have increased, the process has become more involved which can lead to errors.
Meet the Team . . .

- **Supporter:** Dr. Hillis, Chair Department of Medicine
- **Team Leader**
  - Jan Bruder, MD, Professor of Medicine, Chief of Endocrinology
- **Other Team Players**
  - Sonika Gupta, MD, Fellow in Endocrinology, Diabetes and Metabolism
  - Tim Arakawa, MD, Fellow in Endocrinology, Diabetes and Metabolism
  - Urban McCarthy-Scheherezada, MD, Fellow in Endocrinology, Diabetes and Metabolism
  - Alberto Chavez-Velaqueza, MD, Fellow in Endocrinology, Diabetes and Metabolism
  - Maureen Koops, MD, Associate Professor of Medicine, Div of Endocrinology
  - Sara Ahmadi, MD Assistant Professor of Medicine, Div of Endocrinology
  - Lisa Dodges, Bed Control
  - Theresa De La Haya, RN, Director of TDI
  - Camarino Salazar, Director of Quality Ambulatory Services, TDI
  - Tony Herron, RN, TDI
  - Joe Becker, MD, Assistant Professor of Medicine, Div of Endocrinology
- **Facilitator:** Edna Cruz
To decrease by 50% the amount of clinic time used to arrange admissions for I131 treatment for patients with thyroid cancer, by implementing an electronic order set and a web based scheduling tool accessible to ordering physicians, nuclear medicine, nursing, radiation safety and admissions by January 2013.
Project Milestones

– Team Created August 2013
– AIM statement created September 2013
– Team Meetings Began September 2013
– Data Analysis October 17, 2013
– Multiple emails with SharePoint and IT managers
– Met with TDI physicians November 6, 2013
– Interventions Implemented November 2013
– Collect data December/January
– CS&E Presentation January 2013
Department of Medicine – Improving the Multi-Disciplinary Approach to Thyroid Cancer Care -- FLOW

**OFFICE VISIT**

1. **START Time**
   - Attending Visit with Patient to discuss Plan of Care

2. Put Pt. Name, MR# on all pages 1-4 of packet & 2 Phone#s on Page 1 & 2 while Faculty is meeting with the patient.

3. Plan Patient Calendar
   - Treatment protocol
   - When to stop LT4
   - Start Low Iodine Diet
   - Schedule Lab
   - Admission Date

4. Complete Form 92 Admission Orders
   - (DOA, Fellows Signatures, IDs & Faculty Name & number)

5. Complete Radiology 131 treatment form

6. Place Bed Request in Sunrise

7. Place Radiology Orders in Sunrise
   - Treatment and WBS
   - WBS form will print out but Treatment form will not.
   - Give WBS form to patient with the lab slips

8. Place Lab Orders in Sunrise
   - Lab Pre-Tx — TSH, FT4, Tgs
   - Pre-Clinic TSH, FT4
   - Staple Labs & Indicate Pre-Rx Labs & Pre-Clinic Labs with date indicated on lab slips.

9. Order/refill LT4 if needed

10. **END Time**
    - Detail discussion w/Patient & give handouts to patient along with the calendar regarding:
      - Low Iodine Diet
      - S/E of Radioiodine Therapy

11. Compete Charge Sheet for F/U with RTC in 3 months from admission date.
    - Make 3 Copies
      1. Patient
      2. On-Call Fellow – CI
      3. Clerk who will fax to admissions
    - Walk with the Patient to Check Out

**CONTACT ON-CALL FELLOW FOR CENTRAL CALENDAR**

**FLOW REVIEW CHART**

1. **START Time**
   - Coordination with Patient & Central Calendar to choose a treatment date

2. Speak English?
   - Y: Perform H&P
   - N: Find Interpreter or Phone

3. Check Out with Attending
   - I131 Treatment?

4. Schedule Follow-up

5. Grab Packet Containing:
   - Pg.1) Steps
   - Pg.2) Admission Form
   - Pg.3) I131 Rx Form
   - Pg.4) Calendar
   - Pg.5) Diet
   - Pg.6) I131 Info.

6. Contact On-Call Fellow for Central Calendar

**Fellow Documents** A/P

| Review Chart | Starting Note | Greet Patient | Take to Exam Room | Speaks English? | Y: Perform H&P | Check Out with Attending | I131 Treatment? | Schedule Follow-up | Grab Packet Containing: Pg.1) Steps | Pg.2) Admission Form | Pg.3) I131 Rx Form | Pg.4) Calendar | Pg.5) Diet | Pg.6) I131 Info. | Contact On-Call Fellow for Central Calendar |
|--------------|---------------|---------------|------------------|----------------|---------------|------------------------|----------------|-------------------|-------------------------------------|-------------------|-------------------|----------------|-------------|----------------|----------------------------------|-----------------|
| **START Time** | 1. Coordination with Patient & Central Calendar to choose a treatment date | 2. OFFICE VISIT | 3. Plan Patient Calendar | 4. Complete Form 92 Admission Orders (DOA, Fellows Signatures, IDs & Faculty Name & number) | 5. Complete Radiology 131 treatment form | 6. Place Bed Request in Sunrise | 7. Place Radiology Orders in Sunrise | Treatment and WBS WBS form will print out but Treatment form will not. Give WBS form to patient with the lab slips | 8. Place Lab Orders in Sunrise Lab Pre-Tx — TSH, FT4, Tgs Pre-Clinic TSH, FT4 Staple Labs & Indicate Pre-Rx Labs & Pre-Clinic Labs with date indicated on lab slips. | 9. Order/refill LT4 if needed | 10. END Time | Detail discussion w/Patient & give handouts to patient along with the calendar regarding: Low Iodine Diet S/E of Radioiodine Therapy | 11. Compete Charge Sheet for F/U with RTC in 3 months from admission date Make 3 Copies 1) Patient 2) On-Call Fellow – CI 3) Clerk who will fax to admissions Walk with the Patient to Check Out |
UT Department of Medicine

Improving the Multi-Disciplinary Approach to Thyroid Cancer Care Delivery

CAUSE & EFFECT DIAGRAM

**People**
- Technology does not support clinical process
  - Confusing names on e-forms
  - Toggling within EMR for orders
  - Redundant Info. on e-Orders
  - Lab Dates
- Disorganized Personnel
- Redundant Forms, System, Phone #s?

**Supplies & Equipment**
- Calendar confusing to Patients
  - I131 requires complex Rx protocol

**Education/Training**
- No Work Flow Diagram
  - Staff new to Computer System
  - Patient Centered Coordination Required

**Problem Statement**
Prolonged transit time through Thyroid Cancer Clinic process.
How Will We Know That an Intervention is an Improvement?

• Types of measures – See flow diagram for start and end time.

• How you will measure – Manual data collection via use of observation and a stop watch.

• Specific targets for change -- To decrease by 50% the amount of clinic time used to arrange admissions for I131 treatment for patients with thyroid cancer by January 2013.
# Six Time Points

<table>
<thead>
<tr>
<th>DOS</th>
<th>Physician</th>
<th>Start time</th>
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<th>minutes</th>
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<td>Chavez</td>
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</table>
How Will We Know That an Intervention is an Improvement?

• We were unable to prospectively get more data using the start and end times.

• Types of measures – The team used a retrospective proxy measure of registration of patient to check out cycle time beginning in January 2013 and end in August 2013.

• How you will measure – The metric used was collected via e-time stamp within the EMR.

• Specific targets for change -- To decrease by 50% the amount of clinic time used to arrange admissions for I131 treatment for patients with thyroid cancer by January 2013.
Pre-Intervention Data

Comment: Data specific to the timeframe indicated in the flow is being collected. The data shown above represents the time from registration through the patient check out, as this was electronically documented and easily obtained.
Interventions We Will Make That Will Result in an Improvement?

Intervention #1 – e-Calendar for simultaneous notification of all involved in the admission for I131 therapy.

Intervention #2 – e-Order Set for I131 to simplify the process and standardize the orders.
Intervention #1 and # 2

Plan

What? Create an e-calendar on SharePoint and I131 Thyroid Cancer Care Order Set in Sunrise EMR

Who? developed by Drs. Becker and Bruder

Where? The e-calendar to be placed on UHS SharePoint with automatic email reminders to all involved parties and the order set to be placed electronically in Sunrise with pre-determined set of defaults.

When? by November 25
Intervention #1

e-Calendar for simultaneous notification of all involved in the admission for I131 therapy.
I131 Thyroid Cancer Care e-Calendar and Documents on SharePoint
I131 Thyroid Cancer Care e-Calendar on SharePoint
1131 Thyroid Cancer Care e-Calendar and Documents on SharePoint
I131 Thyroid Cancer Documents on SharePoint
<table>
<thead>
<tr>
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<th>Name</th>
<th>Modified</th>
<th>Modified By</th>
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<td>213</td>
<td>2013 Calendar with date boxes</td>
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<td>Jan Bruder</td>
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<td>Jan Bruder</td>
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<td>5e-Low iodine diet 2012</td>
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<td>I131 Patient Instructions and Low Iodine Diet</td>
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<td>226</td>
<td>Spanish I131 Instructions</td>
<td>10/31/2013 11:35 AM</td>
<td>Jan Bruder</td>
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Thyroid Cancer Initial I-131 Treatment Protocol
FRIDAY ADMISSION – 4.5 week protocol without cytomel

1. Stop thyroid medication (levothyroxine) on Day 1 (___________)
2. Begin low iodine diet on Day 19 (___________) 2 weeks prior to admission
3. On Day 26 (___________), go to the lab for blood work.
4. Doctor will check labs on Day 30 and call you to confirm admission.
5. Hospital Admission will be on Day 33 (___________). Go to the Radiology Registration Desk located on the second floor at UHS for admission at 8:00 A.M.
6. Bring lemon drops with you on the day of admission.
7. You will return to Radiology Registration Desk 7-10 days after the I-131 treatment for a Whole Body Scan to evaluate uptake of the radioactive iodine. You will be given the appointment date before you leave the hospital.
8. If you have any questions, call the TDI call center to contact your doctor at 358-7500 or call Radiology at 358-2936 and ask for Robert or Brandon.

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### Access and Email List for SharePoint

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<td>Technologists</td>
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<tr>
<td><strong>Total</strong></td>
<td>34</td>
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</table>
Intervention #2

e-Order Set for I131 to simplify the process and standardize the orders.
**Bed Status request**

- **Status** - inpatient admission
- **Condition on admission** - stable
- **Estimated length of stay** - 3 days
- **Admitting Service** - Medicine 5
- **Accepting Service** - Same as Admitting Service
- **Admitting Floor** - Clinical Decision Unit 6
- **Bed type** - regular (private)
- **Accepting Physician** - Hospitalist
- **Accepting faculty** - Hospitalist on call
- **Principal Admitting Dx** - thyroid cancer (193)
- **Anticipated Procedure** - Radioactive I131 treatment
- **Anticipated CPT code** - 79005
- **Med rec** - current home medication list reviewed and consider...
- **Current PH of CHF** - no
- **Special Instructions** - Elective admission to Medicine Service on call for thyroid cancer treatment. Page endocrine fellow at 235-0841 when patient is admitted. Pt to be on a low iodine diet.

**Thyroid cancer ablation or metastatic therapy order**

- **Exam time** 0800
- **Requested service location** - university hospital
- **Transportation** - ambulatory

**Thyroid scan (post I131)**

- **Exam time** 0800
- **Requested service location** - university hospital
- **Transportation** - ambulatory
- **Reason for Exam** - Whole Body Scan post I131 treatment for thyroid cancer 79005 with ICD 193
  1. Please do scan 7-10 days after receiving dose of I131 to look for metastatic disease (above exam date is 7 days post I131 treatment)

- **Attending physician** - leave blank
- **Isolation type** - no isolation needed
- **Service** - Endocrinology

---

**Labs**
Place the thyroid tests together at the top
- TSH and Thyroglobulin Ag and Ab panel - indicate in special instructions. Blood to be drawn a week prior to admission for I131 treatment
- TSH and FT4 to be T+120 and preclinic

**Radiology order**
- Thyroid scan (post I131 therapy)  Whole Body Scan post I131 treatment for thyroid cancer
- Attending physician - leave blank
- Isolation type - no isolation needed
- Service - Endocrinology
Implementing the Change

Action

The order set was piloted by Dr. Bruder on 11/05/13 with appropriate notifications sent to nuclear medicine and bed control. The e-calendar was piloted by Dr. Becker on 11/12/13 with appropriate notifications sent to physicians in nuclear medicine and to administrators in bed control.

Issues identified were redundant emails sent to many recipients. Moreover, a notification email was not sent to the head tech in nuclear medicine. Issues have been reviewed with IT.
Key Time Points

• The order set was moved out of the test mode into the order template “UCCH Endocrine Orders” in Sunrise EMR on 11/25/2013.

• The final email recipients list for the share point calendar was created and retested on 11/25/2013

• The calendar went live in December 2013

• Patients that had been scheduled in the old system were added to the electronic sharepoint calendar in December

• In December, patients were timed using the new system:
  – start and end time per flow diagram
  – Proxy time from check in to check out
  – DATA COLLECTION WAS LIMITED AS A RESULT OF THE HOLIDAYS
## Two Post-Intervention Time Points

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<th>DOS</th>
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Post-Intervention Data

UT Medicine - Improving the Multi-Disciplinary Approach to Thyroid Cancer Care

Clinic Cycle Time
Mean (X) Total Minutes

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<th>Cases</th>
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UCL: Upper Control Limit
CL: Center Line
LCL: Lower Control Limit
Return On Investment

• Hard Return
  – Net Return or cost savings will be the time saved multiplied by the Fellow salary
  – There are no Investment Cost or denominator
Return On Investment

- **Soft Return**
  - Improved capability in the form of process/efficiency improvement
  - Fewer errors due to simplification, standardization and automation
  - Ability to maintain existing revenues levels by avoiding denial of payment due to errors
  - Potential to increase capacity while avoiding new hires due to process/efficiency improvements
  - Improved patient and staff satisfaction
  - Reduce/eliminate overtime pay, vacancies and turnover rate
Thank you!
And special thanks to
Chris Portis – SharePoint
Allison Clarke – EMR Orders
Lisa Dodge – Bed Control