Interoffice Collaboration to Close Referral Loops

Gordon Schiff MD
Associate Director, Center for Patient Safety Research and Practice
Division of General Internal Medicine, Brigham and Women’s Hospital
Associate Professor of Medicine, Harvard Medical School
Quality and Safety Director, Harvard Medical School Center for Primary Care

Scot B. Sternberg, MS
Director, Quality Improvement
Co-Director, Stoneman Center for Quality & Patient Safety
Department of Medicine, Beth Israel Deaconess Medical Center

IHI Summit
April 20 – 22, 2017

#IHIsummit

MARCH FOR SCIENCE
EARTH DAY
APRIL 22, 2017
#MarchForScience

The March for Science is the first step of a global movement to defend the vital role science plays in our health, safety, economies, and governments.
Session Objectives

- Understand key change ideas for creating closed-loop systems to prevent missed or delayed diagnosis of colorectal cancer and breast cancer
- Identify the ways in which collaboration between primary care and specialty practices is a key tool for improvement at their organization

Presenter Disclosures (if any)

- We have no conflict of interests to disclose.
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Closed Loop Systems

- Fundamental engineering principle
Open Loop System

Water goes on the same time each day, regardless of whether it is raining or lawn is flooded

Most of medicine, especially diagnosis is an open loop system

Schiff A J Med 2008

Closed Loop Systems

- Fundamental engineering principle
- Much of diagnosis is Open Loop
- Unclosed loops should fail in Visible/safe rather than Invisible/unsafe mode
Preventing Train Crashes with air brakes

Direct Air Brakes
Initial design:
Compressed air to apply pressure to brake pads to stop the train

What if air leak?

WESTINGHOUSE AUTOMATIC (NEGATIVE PRESSURE) AIR BRAKE
Lifts shoe off of wheel until pressure released

NEED TO DEFAULT in SAFE MODE
Air Brake Failure – Safer, Visible Mode

• Applying brake drained the air pressure to let the brake rest on the wheel.
• “Air leak failure” resulted in the train coming to an unplanned stop, doubtless annoying but obviously safer in avoiding crashes inherent in previous design.

Ryan’s Story
Video
ONLY ~50-50 chance this order results in colonoscopy actually being performed!
Patient Related Barriers

- Understanding of risks, benefits, and options for colorectal cancer (CRC) screening
- Fear of colonoscopy and complications of procedure
- Denial of risk for CRC and fear of cancer
- Suboptimal practices, resources, and time to engage patients in shared decision making
- Follow-up and respect for patients who decline
- Inability to take off work/schedule into busy lives
- Difficulties with or lack of patient transportation
- Need for another person to accompany patient to colonoscopy
Communication with GI/Endoscopy

• Issues coordinating patient scheduling/inability to schedule before patient leaves office
• Lack of clarity with roles and responsibilities (for example, follow-up of no-shows and abnormal findings, bowel prep support)
• Notification of missed appointments, patients who fail to schedule, or inability to contact patient
• Coordination of medication management related to the procedure (especially for diabetes and anticoagulation regimens)
Insurance/Financial Concerns

• Full coverage for screening but not diagnostic colonoscopy
• Bowel prep affordability and insurance coverage
• Co-pays
Bowel Preparation

• Logistics of selection—most affordable, safe, and efficacious regimen acceptable to endoscopy center; must also be available at patient’s pharmacy
• Patient education and support before, during, and after prep
• Stress of intense prep regimens—diarrhea, adverse reactions, including severe dehydration, especially for frail patients or those with comorbid conditions (for example, chronic kidney disease, diabetes)
• Poor bowel prep: quality metrics, follow-up interval, rescheduling, patient support/education
Identification, Outreach, Tracking

- Dynamic identification of patients due for screening for both outreach and at the time of office encounters.
- Identification, tracking, and maintenance of continuous relationship with high-risk individuals.
- Documentation of high-risk symptoms (for example, rectal bleeding) and follow-up to conclusion/diagnosis.
- Staffing, workflow, and roles and responsibilities.
- Health IT challenges in identifying and tracking patients, running reports, documenting important structured data fields, etc.
- Consistent documentation and regular updating of family history.
- Reliable follow-up for adenomatous polyps; Coded due date fields.
- Consistent follow-up rectal bleeding; avoids pitfalls of assuming hemorrhoids or cessation of follow-up for bleeding that “resolves.”

Your poll will show here

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Fecal Blood Testing

- *When* to use (pt choice, declines colonoscopy, cost); *which* to use (FIT, FOBT, DNA)
- Pt education, materials how to perform correctly
- Pt education on sensitivity/specificity of the test; need for annual screening; implications + test
- Documentation FOBTs dispensed and follow-up on return of cards (how long to wait for return, efforts to contact pts, how to document efforts to contact)
- Documentation EHR as unstructured data
- Staffing, work flow, and roles and responsibilities
- Burden, logistics of *annual* rescreening

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To Reduce Missed and Delayed Diagnoses of Colorectal Cancer

Leverage Health Information Technology and Population-based Management and Outreach

Primary Drivers

- Ensure Organizational Alignment
- Patient and Family Engagement
- Optimized Teamwork
- At-Risk Patient Identification and Tracking
- Closed Loops for Referrals and Tests
- Leverage Health Information Technology and Population-based Management and Outreach

Secondary Drivers

- Engage diverse group of institutional leaders and stakeholders across the organization
- Communicate how this work builds on and aligns with other initiatives across the organization
- Create clear organization-wide consensus for CRC screening and guidelines
- Seek to understand and reduce barriers to scheduling, bowel prep, and day-of-test navigation
- Reduce barriers for patients to communicate with care team around new/concerning symptoms or for help with navigating care system
- Engage patient partners in improvement processes
- Seek regular formal and informal patient feedback on process
- Develop clear protocols and algorithms, integrated into care workflow and HIT
- Clearly define roles, responsibilities and handoffs/interactions within care team
- Engage and partner with specialists
- Promote culture of collaboration and teamwork
- Engage partners
- Address risk at office visits
- Identify and manage patient risk factors
- Identify and track patients who are symptomatic, high-risk and/or overdue for screening
- Develop clear care pathways for screening and diagnosis
- Ensure needed referral access and capacity
- Ensure coordinated system for scheduling, tracking referrals and tests through to referral partner
- Develop reliable processes to support patient education around bowel prep
- Track and develop systems to reduce and follow-up on no-shows/failure to schedule
- Ensure reliable and timely communication of test results to patients
- Develop system for timely, reliable follow-up of abnormal test results
- Ensure structured data capture and reliable update of family history, diagnoses and symptoms
- Create population-based outreach and tracking systems
- Develop reports to identify and notify patients due for screening and patients that are hard to reach
- Identify and provide needed resources for population management

Harvard Center for Primary Care Academic Improvement Collaborative

Colorectal Cancer Driver Diagram

10/2014
Overview

- Closed loop referral management: development, implementation and impact
  - Design
    - Engage stakeholders and identify drivers
    - Define framework
    - Identify key process steps and flow
    - Design and program system
  - Test and pilot
    - Identify any gaps and/or improvements
  - Monitor and measure. Ongoing evaluation and improvement
  - Expansion to other areas
- Follow-up of abnormal cancer screening tests system

Referral Management Lifecycle

Referral Management Lifecycle. Risk Management Foundation of the Harvard Medical Institutions, all rights reserved. 2012*
Designing closed-loop systems to prevent missed or delayed diagnosis: engaging stakeholders and identifying drivers

- Identify key stakeholders and engage in defining drivers, key elements, and workflow
  - For this initiative, we formed a workgroup including physicians and administrative staff from primary care, several specialty services, and IS.
  - IS programmed tool integrated within our electronic medical record designed to facilitate tracking and workflow.

**Closed Loop Referral Management Process Map**

- **Patient**
  - Visit Summary
  - System adds order to closed-loop referral management queue for administration team of specialty practice to outreach, track and monitor for completion

- **Referring Provider**
  - Electronic Referral Order
  - Referral Management Queue

- **Scheduled procedure, test or visit**
  - Follow-up Outreach to reschedule: a call and a letter

- **Not Scheduled**
  - Referrals not scheduled after outreach (patient declined, outreach unsuccessful, patient reports condition improved, patient scheduled with outside provider) are returned to the referring practice to reschedule for future action or to close

- **Kept**
  - System continues to track

- **Rescheduled**
  - Results communicated to patient

- **Cancelled or No show**

- **Not Kept**

- **Referral completed & closed**
Closed Loop Referral Management: Pilot

- System and pilot design presented and discussed with 2 of 10 primary care teams.
- During pilot, discuss at regular meetings with specialty as well as primary care group to review and address system issues and/or improvements; and performance and opportunities for improvements
  - System issues and/or improvements [e.g., additional status options (e.g., Patient unsure or unaware; patient requesting alternative FOBT; pending) and automate functions with scheduling system data]

Closed Loop Referral Management: Pilot Impact

<table>
<thead>
<tr>
<th>Pre-Implementation</th>
<th>Electronic orders for Colonoscopy by primary care between 4/1/2012-3/31/2013</th>
<th>Completion at 6-months and 12-months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonoscopy orders</td>
<td># orders</td>
<td>% completed within 6-months of order</td>
</tr>
<tr>
<td></td>
<td>1978</td>
<td>24.2%</td>
</tr>
</tbody>
</table>

Pilot: Closed Loop Referral Management Colonoscopy orders by 2 of 10 Primary Care Teams between 4/1/2014 - 3/31/2015 plus 2 additional teams 9/30/2014 - 3/31/2015: Status at 6 months; and at 12 months Completion at 6 months; 12 months and 18 Months

<table>
<thead>
<tr>
<th>Status at 6 months from order date</th>
<th>Status at 12 months from order date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed</td>
<td>62.9%</td>
</tr>
<tr>
<td>Active Outreach or Scheduled</td>
<td>10.1%</td>
</tr>
<tr>
<td>Inactive-Incomplete</td>
<td>27.0%</td>
</tr>
</tbody>
</table>
Identifying Opportunities for Improvement

Identifying opportunities for improvements (e.g., in the case of GI referrals for Colorectal Cancer Screening, Coordination with GI to develop documents to address barriers and key clinical and patient issues, and educational materials; GI referral coordinator offer FOBT/FIT if patient declines screening colonoscopy referral; Improved processes for use of fecal occult blood tests (FOBT), patient education and outreach)

Pre-Procedural Checklist for a Colonoscopy

1. You have not received a test for a colonoscopy.
2. You have been referred for a colonoscopy.
3. You have an upcoming colonoscopy.

What do you need to know and what do you need to do to prepare?

* For a colonoscopy, you may need to follow specific instructions or guidelines to ensure that the test is performed correctly.
* Follow all pre-procedure instructions as directed.
* Take any recommended medications at the recommended times.

How to schedule the procedure:

- Contact your doctor's office to schedule your appointment.
- Be prepared to provide all necessary information, including your medical history and any existing conditions.

Closed Loop Referral Management: System Implementation

<table>
<thead>
<tr>
<th>Status at 6 months from order date</th>
<th>Status at 12 months from order date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed</td>
<td>63.8%</td>
</tr>
<tr>
<td>Active Outreach or Scheduled</td>
<td>16.9%</td>
</tr>
<tr>
<td>Inactive/Incomplete</td>
<td>26.6%</td>
</tr>
</tbody>
</table>

¹ While status at 6-months includes all orders during the full implementation period, data for status at 12 months only includes orders submitted during first 6 months.
Lessons Learned & Next Steps

- Before this undertaking, we did not fully appreciate the complexities and the high failure rate.
- Collaborations between primary care and specialties, physicians and administration, and IS are critical.
- Leveraging an electronic referral tracking system with non-physician referral coordinators in a standard work flow, we followed patients, identified reasons for missed follow up and facilitated completion of important procedures, tests and visits.
  - GI referral completion, particularly colonoscopy, increased by more than 25%
  - Non-physician staff can facilitate completion of referrals, thus reducing overall administrative burdens on primary care physicians and employing a top of license strategy.

Subsequent & Next Steps

Steps to Extend Impact on Colorectal Cancer Screening and Follow-up

- Expanded use of system to orders from community based primary care practices, including a community health center
- Expanded use of system for GI Recall Program for colonoscopy and other GI procedures

Expansion to Other Specialties:

- Midway during pilot, we extended use of this closed loop system to orders from Dermatology and Cardiology
- Expanded implementation to Breast Health Clinic
- Expansion to OB/GYN referrals, including colposcopy, in process
Barriers and Challenges for Growth and Sustainability

- Shift, and potential additional resource needs.
- Redefine roles: referral coordinator
- Reporting and oversight of performance
- IS support for expanded automation of functions

System for follow-up of abnormal cancer screening tests

- Breast Cancer Screening Follow-up
  - Using algorithm for appropriate follow-up based on BIRADS score, designed and implemented electronic reminder system into EHR
  - If patient does not complete appropriate follow-up within allocated time frame, system alert/task to PCP is generated
  - PCP can either indicate appropriate action was taken which will turn off alert or take follow-up action and have alert/task return at designated time.
  - If PCP does not respond within 30 days, a second alert goes to PCP as well as QA administrator, who reaches out to PCP

- Colorectal Cancer Screening
  - Fecal Occult Blood Test
    - Electronic reminder system
  - Follow-up to Colonoscopy/Sigmoidoscopy are incorporated into a GI recall program which utilizes the closed loop referral system
Closed Loop Systems

- Fundamental engineering principle
- Much of diagnosis is Open Loop

- Unclosed loops should fail in Visible/safe rather than Invisible/unsafe mode

- Creates safety net to practice more conservatively
## Preliminary Findings

### 1. Family History Issues

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Family History Issues</td>
<td>4</td>
<td>- Failure to obtain family history of breast cancer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Under-weighing family history of breast cancer</td>
</tr>
<tr>
<td>2. Atypical Presentation/Cognitive Challenges</td>
<td>6</td>
<td>- Underestimating risk of BC in young symptomatic patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Fast-growing cancers arising during MMG interval</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Under-weighing complaints of patients with psychiatric diagnoses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Prioritizing chronic medical or social issues over screenings in complex patients</td>
</tr>
</tbody>
</table>

### 2. False Negative Physical Exam

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. False Negative Physical Exam</td>
<td>2</td>
<td>- Lump felt to be benign on physical exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Bias in wanting to reassure patient, due to low likelihood of BC</td>
</tr>
</tbody>
</table>

### 4. Fibrocystic/Dense Breast Dilemmas

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Fibrocystic/Dense Breast Dilemmas</td>
<td>9</td>
<td>- Fibrocystic breast tissue can obscure underlying BC in MMG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not recognizing changes in breast density over time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Failure to investigate unilateral fibrocystic changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Failure to investigate breast lump with FNA in patient with dense breasts and negative U/S</td>
</tr>
</tbody>
</table>

### 5. Screening vs. Diagnostic Mammogram Order

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Screening vs. Diagnostic Mammogram Order</td>
<td>2</td>
<td>- Ordering/performing a screening MMG, rather than a diagnostic MMG</td>
</tr>
</tbody>
</table>

### 6. False Negative Mammogram

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. False Negative Mammogram</td>
<td>9</td>
<td>- False negative MMG in pt with fibrocystic breasts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Failure to reevaluate breast complaints in light of previously negative MMG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Misreading of MMG by radiologists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Failure to follow-up on nipple retraction observed on MMG, attributing it to imaging technique</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Falsely reassuring negative “additional views”</td>
</tr>
</tbody>
</table>

### 7. False Negative Ultrasound

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. False Negative Ultrasound</td>
<td>2</td>
<td>- Falsely reassuring negative U/S in pts with breast lump</td>
</tr>
</tbody>
</table>

### 8. Surgical Referral

<table>
<thead>
<tr>
<th>Pitfall</th>
<th>N</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Surgical Referral</td>
<td>4</td>
<td>- Failure to refer to breast surgeon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Breast lump appearing benign to surgeon palpation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Patient failure to follow-up on referral</td>
</tr>
</tbody>
</table>
Malpractice Cases Pitfalls’
Take Home Lessons

• **Reliable family history systems (documenting, updating, tracking) --absolute must**

• **Negative mammogram** – not stopping point
  – Some confusion about exact next steps, f/up
  – Nor is prior negative exam a starting point to not pursue a breast lump, esp with continuing complaints

• **Understanding implications fibrocystic, dense**
  breast tissue issues
  – Dense tissue can obscure malignancy on mammogram
  – Fibrocystic complicates exams; causes sx

BREAST CANCER PITFALLS: MALPRACTICE CASES REVIEW
Preliminary Findings

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<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Biopsy Performance/Interpretation</td>
<td>1</td>
<td>Inability to recognize missed sampling due to bleeding/complications and failure to repeat biopsy</td>
</tr>
<tr>
<td>10. Failure to Order Further Studies</td>
<td>2</td>
<td>Failure to order diagnostic imaging studies (MMG and U/S)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Failure to recommend excisional biopsy</td>
</tr>
<tr>
<td>11. Diffusion of Responsibility/Coordination Issues</td>
<td>4</td>
<td>Failure to document/ensure pt was receiving screening MMGS and breast exams</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Failed coordination/communication between PCP and GYN</td>
</tr>
<tr>
<td>12. Other Symptoms</td>
<td>8</td>
<td>Failure to follow-up on resolution of mastitis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Failure to pursue etiology of persistent galactorrhea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pursuing lymphoma as cause of lymphadenopathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axillary lymphadenopathy lost due to fact that not incorporated into BIRADS coding (revised now)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Failure to work up persistent painful cyst</td>
</tr>
</tbody>
</table>
• Challenges in regular screening & f/up in patients with irregular f/up or distracted by other medical/psychosocial issues
  – Special awareness, targeting
• Young women patients
  – What to say... other than low risk but can’t dismiss
• Does psychological stress and logistical challenges mandate “just-in-time” systems?