Project RED: Reengineering the Discharge Process

Roundtable on Health Literacy
Institute of Medicine
17 March 2014

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Associate Professor of Medicine
Boston University School of Medicine
Funding History

- AHRQ
- NHLBI

Declaration of COI

Consultant for Engineered Care, Inc.

http://www.engineeredcare.com
Principles of the RED: Creating the Toolkit
Process Mapping-1

Ready for Discharge?

HOSPITALIZATION

NO

READY FOR DISCHARGE?

YES

Medical:
- Physician Team*
- Other Consultants

Social/Behavioral:
- Case Manager/Social Worker

Physical:
- Physical Therapy
- Occupational Therapy

Nutrition:
- Nutritionist

Preparedness:
- B1, B2, B3 (Home/ward)
  - 7:30-8:30 - Morning Report
  - 8:30-10:15 - Rounds
  - 10:15-11:15 - (Sit down) Rounds, 15 minutes per Team

B4 Team
- 7:30-8:30 - Morning Report
- 8:30-11:15 - Rounds
- 9:15-9:30 - Case Manager Joins Rounds

Nursing/Case Management
- 11:15-15am - Morning Meeting to Discuss Patients’ Discharge Status

*Physician Team includes: Sub-I Medical Student, Intern, Junior Resident, Senior Resident and Attending Physician
RED Checklist

Eleven mutually reinforcing components:

1. Patient education
2. Follow-up appointments
3. Outstanding tests
4. Post-discharge services
5. Medication reconciliation
6. Reconcile dc plan with National Guidelines
7. What to do if problem arises
8. Dc summary to PCP
9. Assess patient understanding
10. Written discharge plan
> Telephone Reinforcement

Adopted by National Quality Forum as one of 30 "Safe Practices" (SP-15)
RED Checklist

11 → 12 components:
1. Ascertain need for and obtain language assistance
2. Make appointments for follow up care
3. Plan for the follow up of results from pending tests
4. Organize post discharge services and equipment
5. Identify the correct medicines and plan for pt to obtain
6. Reconcile the discharge plan with national guidelines
7. Teach a written discharge plan the pt can understand
8. Reconcile discharge plan with National Guidelines
9. Educate pt about diagnoses and medicines
10. Assess the degree of the pt's understanding of plan
11. Expedite transmission of discharge summary to PCP
12. Telephone Reinforcement
Care Plan – Not a Form but a PROCESS

- Substantive Cultural Shift
- Bad data in → Bad data out
- Data sources
  - Comprehensive
  - Tailored
  - Med Rec
  - What training is needed?
  - What supervision / monitoring is needed?
Care Plan – Not a Form but a PROCESS

- No form can be understood by all
- Every document that goes to patient
  - What is your educational agenda?
  - How will this be empowering / activating?
  - What educational process to support the form?
  - What training is needed?
  - What supervision / monitoring is needed?

Design the form for these purposes
Operationalizing RED

- After Hospital Care Plan
- Discharge Advocate
- Follow-up phone call
After Hospital Care Plan for:

John Doe

Discharge Date: October 20, 2006

Question or Problem about this Packet? Call your Discharge Advocate: (617) 414-6822

Serious health problem? Call Dr. Brian Jack: (617) 414-2080
EACH DAY follow this schedule:

### MEDICINES

<table>
<thead>
<tr>
<th>What time of day do I take this medicine?</th>
<th>Why am I taking this medicine?</th>
<th>Medication name Amount</th>
<th>How much do I take?</th>
<th>How do I take this medicine?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>blood pressure</td>
<td>PROCARDIA XL NIFEDIPINE 90 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>blood pressure</td>
<td>HYDROCHLOROTHIAZIDE 25 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>blood pressure</td>
<td>CLONIDINE HCl 0.1 mg</td>
<td>3 pills</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>cholesterol</td>
<td>LIPITOR ATORVASTATIN CALCIUM 20 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>stomach</td>
<td>PROTONIX PANTOPRAZOLE SODIUM 40 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td>Time</td>
<td>Condition</td>
<td>Medication</td>
<td>Quantity</td>
<td>Administration</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------</td>
<td>-----------------------------------</td>
<td>----------</td>
<td>----------------</td>
</tr>
<tr>
<td>Morning</td>
<td>heart</td>
<td>ASPIRIN EC 325 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>to stop smoking</td>
<td>NICOTINE 14 mg/24 hr</td>
<td>1 patch</td>
<td>On skin</td>
</tr>
<tr>
<td></td>
<td>Then, after 4 weeks use →</td>
<td>NICOTINE 7 mg/24 hr</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blood pressure</td>
<td>COZAAR LOSARTAN POTASSIUM 50 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>Infection in eye</td>
<td>VIGAMOX MOXIFLOXACIN HCl 0.5 % soin</td>
<td>1 drop</td>
<td>In your left eye</td>
</tr>
<tr>
<td>Noon</td>
<td>Blood pressure</td>
<td>ATENOLOL 75 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>Blood pressure</td>
<td>LISINOPRIL 40 mg</td>
<td>1 pill</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td>Infection in eye</td>
<td>VIGAMOX MOXIFLOXACIN HCl 0.5 % soin</td>
<td>1 drop</td>
<td>In your left eye</td>
</tr>
<tr>
<td>Time</td>
<td>Condition</td>
<td>Medication</td>
<td>Dosage</td>
<td>Route</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>-----------------------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Evening</td>
<td>Infection in eye</td>
<td>VIGAMOX MOXIFLOXACIN HCl 0.5% soln</td>
<td>1 drop</td>
<td>In your left eye</td>
</tr>
<tr>
<td>Bedtime</td>
<td>Blood pressure</td>
<td>CLONIDINE HCl 0.1 mg</td>
<td>3 pills</td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TRAMADOL HCl 50 mg</td>
<td></td>
<td>By mouth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NITROGLYCERIN 0.4 mg</td>
<td></td>
<td>Under your tongue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NICORELIEF NICOTINE POI ACR II FX 4 mg gum</td>
<td>1 pill every 5 minutes (if need more than 3 pills, call 911)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To stop smoking</td>
<td>PEROCET OXYCODONE-ACETAMINOPHEN 5-325 mg</td>
<td>1 pill 3 times each day If you need it</td>
<td>By mouth</td>
</tr>
</tbody>
</table>
**Bring this Plan to ALL Appointments**

John Doe

**What is my main medical problem?**
Chest Pain

**When are my appointments?**

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Doctor</th>
<th>Location</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, October 24th at 11:30 am</td>
<td>Dr. Brian Jack</td>
<td>ACC – 2nd floor</td>
<td>For a Follow-up appointment</td>
</tr>
<tr>
<td></td>
<td>Primary Care Physician</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Doctor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr. Jones</td>
<td>Boston Medical Center</td>
<td>For your arthritis</td>
</tr>
<tr>
<td></td>
<td>Rheumatologist</td>
<td>Doctor’s Office Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4th floor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr. Smith</td>
<td>Boston Medical Center</td>
<td>to check your heart</td>
</tr>
<tr>
<td></td>
<td>Cardiologist</td>
<td>Doctor’s Office Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4th floor</td>
<td></td>
</tr>
<tr>
<td>Thursday, October 26th at 3:20 pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday, November 1st at 9:00 am</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Office Phone #: (617) 414-2080

<table>
<thead>
<tr>
<th>Office Phone #: (617) 638-7460</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Phone #: (617) 555-1234</td>
</tr>
<tr>
<td>Sunday</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>Phar</td>
</tr>
<tr>
<td>29</td>
</tr>
</tbody>
</table>
Questions for
Dr. Jack
For my appointment on
Tuesday, October 24th at 11:30 am

Check the box and write notes to remember what to talk about with Dr. Jack

I have questions about:
☐ my medicines

☐ my pain

☐ feeling stressed

What other questions do you have?

Dr. Jack: These tests were outstanding at discharge:
Stress Test done on October 24th and Blood Cultures done on October 20th.
My Medical Problem:

Noncardiac Chest Pain

Noncardiac chest pain is pain that is not caused by a heart problem.

- If your chest pain gets different or worse, call your doctor.
- Take your medications as prescribed.
- See your doctor and ask questions.
Components of RED Intervention

- In Hospital – Nurse Discharge Advocate (DA)
  - Interacts with care team: medication reconciliation, appointments, and national guidelines
  - Prepares and teaches After Hospital Care Plan (AHCP)

- Post Discharge – Clinical Pharmacist
  - Calls for follow-up @ 72 hours post-dc
  - Reinforces dc plan and review medications
Randomized Controlled Trial

Enrollment Criteria:
- English speaking
- Have telephone
- Able to independently consent
- Not admitted from institutionalized setting
- Adult medical patients admitted to Boston Medical Center (urban academic safety-net hospital) → 48% Medicaid + 22% Free Care

Enrollment N=749
Randomization
RED Intervention N=374
Usual Care N=375
30-day Outcome Data
- Telephone Call
- EMR Review

48% Medicaid + 22% Free Care
Analysis

Primary outcome:
- All hospital utilization (readmissions plus ED visits)
  - Intention-to-treat
  - Poisson tests for significance
  - Cumulative hazard curves for time to multiple events

Secondary outcomes:
- PCP follow-up rate, identified dc diagnosis, identified PCP name, self-reported preparedness for discharge, cost
  - Proportions tests for significance
### Primary Outcome:
**Hospital Utilization within 30d after dc**

<table>
<thead>
<tr>
<th></th>
<th>Usual Care (n=368)</th>
<th>Intervention (n=370)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital Utilizations</strong> *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # of visits</td>
<td>166</td>
<td>116</td>
<td>0.009</td>
</tr>
<tr>
<td>Rate (visits/patient/month)</td>
<td>0.451</td>
<td>0.314</td>
<td></td>
</tr>
<tr>
<td><strong>ED Visits</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # of visits</td>
<td>90</td>
<td>61</td>
<td>0.014</td>
</tr>
<tr>
<td>Rate (visits/patient/month)</td>
<td>0.245</td>
<td>0.165</td>
<td></td>
</tr>
<tr>
<td><strong>Readmissions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # of visits</td>
<td>76</td>
<td>55</td>
<td>0.090</td>
</tr>
<tr>
<td>Rate (visits/patient/month)</td>
<td>0.207</td>
<td>0.149</td>
<td></td>
</tr>
</tbody>
</table>

* Hospital utilization refers to ED + Readmissions
Patient Care Plan

JAMES SMITH

LEFT HOSPITAL:
12/9/2013

SERIOUS HEALTH CONCERN?
CALL YOUR DOCTOR:
KRISTEN MULLINS
(206) 973-7916

Engineered Care
Email: info@engineeredcare.com

BRING THIS PLAN TO ALL MEDICAL APPOINTMENTS
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My Doctor
Getting ready for my appointments

Primary Care Physician

Serious health concern?
Call your doctor:

**KRISTEN MULLINS**

TEL: (206) 973-7916
Emergency: Dial 911

Doctor's Office Address:
348 Quality Improvement Dr.
Seattle, WA

Healthcare Proxy

**MARYANNE SMITH**
Spouse
TEL: (866) 692-4271

Questions for My Doctor

**MY APPOINTMENT: WEDNESDAY, DECEMBER 11, 2013**
I have questions about:

**MY MEDICINES:**

**MY PAIN:**

**MY STRESS:**

**OTHER QUESTIONS:**

Pending Tests

**MULLINS:** When I left the hospital, results from some tests were not available. Please check on the status of these tests: ACE LEVEL, ALPHA GALACTOSIDASE
MY GOALS

WHAT ACTIVITY IS GOOD FOR ME?
- Get out of bed and sit in a chair everyday.
- Do not lift heavy objects

WHAT SHOULD I EAT?
- Do not drink fruit juice; this will help control your blood sugar.
- Low sodium diet
- Eat healthy foods. Foods that are good for you: fresh fruits, fresh/frozen vegetables. Baked fish/chicken.

ALLERGIES
- Penicillin

TRY TO QUIT SMOKING
Try to quit smoking. Call the quit line at: 1 (800) STOP NOW.
HOME CARE SERVICES

Tidy Cleaners
300 4th St.
Seattle, WA
TEL: (800) 454-3453

MY PHARMACY

CVS PHARMACY
8 Main St, Suite 112
Seattle, WA 98102
TEL: (206) 777-5555
FAX: (206) 777-5666

HOME MEDICAL EQUIPMENT

Medical Supply Co
900 2nd Ave
Seattle, WA 98121
TEL: (206) 555-6678

• Blood Pressure Cuff
• Nebulizer
**My Medicine**

Bring all of your medicines (in their bottles) to your doctors' appointments

<table>
<thead>
<tr>
<th>What do I need to take?</th>
<th>Why am I taking this?</th>
<th>How do I take this?</th>
<th>How much do I take?</th>
<th>When do I take this?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atenolol 50mg Oral tablet</td>
<td>Blood Pressure</td>
<td>by mouth</td>
<td>1 tablet</td>
<td>Morning, Evening</td>
</tr>
<tr>
<td><strong>NEW</strong> Hydrochlorothiazide 25 MG Oral Tablet</td>
<td>Blood Pressure</td>
<td>by mouth</td>
<td>1 tablet</td>
<td>Morning</td>
</tr>
<tr>
<td><strong>NEW</strong> Levofoxacin 500mg Oral tablet</td>
<td>Bronchitis</td>
<td>by mouth Before meals</td>
<td>1 tablet</td>
<td>Morning Stop on 12/19/2013</td>
</tr>
<tr>
<td>CHANGE Ranitidine 150 MG Oral Tablet</td>
<td>Reflux</td>
<td>by mouth</td>
<td>1 tablet</td>
<td>Morning, Bedtime</td>
</tr>
<tr>
<td>What do I need to take?</td>
<td>Why am I taking this?</td>
<td>How do I take this?</td>
<td>How much do I take?</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td><strong>NEW</strong> Albuterol 0.09 MG/ACT Inhalant Solution</td>
<td>Asthma</td>
<td>inhalation</td>
<td>1-2 puffs Morning, Afternoon, Evening, Bedtime</td>
<td></td>
</tr>
<tr>
<td>Tylenol 500 MG Oral Tablet</td>
<td>Pain</td>
<td>by mouth Do not drink alcohol when taking this medication</td>
<td>1-2 tablets Morning, Afternoon, Evening</td>
<td></td>
</tr>
</tbody>
</table>
### My Appointments

<table>
<thead>
<tr>
<th>PHYSICAL THERAPY</th>
<th>PAIN CLINIC</th>
<th>PRIMARY CARE PHYSICIAN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tue, Thu, at 10:45 AM</strong></td>
<td><strong>Every day at 3:30 PM</strong></td>
<td><strong>Wednesday, December 11, 2013</strong></td>
</tr>
<tr>
<td><strong>BRIAN L. ABBOTT MD</strong></td>
<td><strong>Dr. Christian Jones, M.D.</strong></td>
<td><strong>9:00 AM</strong></td>
</tr>
<tr>
<td>Seattle General Hospital</td>
<td>Harborview Medical Center</td>
<td><strong>KRISTEN MULLINS</strong></td>
</tr>
<tr>
<td>123 Main St.</td>
<td>85 Bellevue Ave</td>
<td>348 Quality Improvement Dr.</td>
</tr>
<tr>
<td>Seattle, WA</td>
<td>Seattle, WA</td>
<td>Seattle, WA</td>
</tr>
<tr>
<td><strong>To make sure your health is getting better</strong></td>
<td><strong>To make sure your health is getting better</strong></td>
<td><strong>To follow-up with your doctor</strong></td>
</tr>
<tr>
<td>(206) 555-1234</td>
<td>(206) 555-6666</td>
<td>(206) 973-7916</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECHOCARDIOGRAM</th>
<th>STRESS TEST</th>
<th>CARDIOLOGIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thursday, December 26, 2013</strong></td>
<td><strong>Monday, December 30, 2013</strong></td>
<td><strong>Wednesday, January 29, 2014</strong></td>
</tr>
<tr>
<td>11:15 AM</td>
<td>9:00 AM</td>
<td>8:45 AM</td>
</tr>
<tr>
<td><strong>QI Medical Center</strong></td>
<td><strong>Harborview Medical Center</strong></td>
<td><strong>Dr. Christian Jones, M.D.</strong></td>
</tr>
<tr>
<td>1500 Belvoic Ave</td>
<td>85 Belvoic Ave</td>
<td>900 2nd Ave</td>
</tr>
<tr>
<td>Seattle, WA</td>
<td>Seattle, WA</td>
<td>Seattle, WA</td>
</tr>
<tr>
<td><strong>For your next test</strong></td>
<td><strong>For your next test</strong></td>
<td><strong>To make sure your health is getting better</strong></td>
</tr>
<tr>
<td>(206) 340-5477</td>
<td>(206) 555-6666</td>
<td>(206) 555-6678</td>
</tr>
</tbody>
</table>
Barry, Lester

EC 1300v1 Discharged Congestive Heart ... 47 years old High Risk Discharged 2 Days Ago |(206) 555-9567

After Hospital Care Plan

Care Plan Status

Care Plan is not completed.

Care Plan Components

- **Diet Recommendation**
  Do not drink fruit juice; this will help control your blood sugar. Eat your regular diet.
- **Exercise Recommendation**
  Get out of bed and sit in a chair everyday. Exercise as recommended by your healthcare provider.
- **Pharmacy**
  CVS Pharmacy, 8 Main St Suite 112, Seattle, WA
- **Equipment**
  Bipap Machine, Can
- **Pending Lab Results**
  ACE level, Alpha galactosidase
- **Nursing Facility**
  None
- **Advance Directive**
  I do not want resuscitation or to be sent to the hospital unless needed for comfort (DNR/DNH)
For more information:

Project RED Website
http://www.bu.edu/fammed/projectred/

Engineered Care Website
info@engineeredcare.com