



Project RED: The ReEngineered Discharge

Reducing 30 Day All Cause Rehospitalization Rates

Second Annual National Medicare Readmissions Summit
June 7-8, 2010
The Ritz-Carlton, Washington DC



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Plan for Today

- I. The Problem
- II. NQF 'Safe Practice'
- III. Is 'Safe Practice' Safer?
- IV. Risk Factors for Rehospitalization
- V. Barriers to Implementation
- VI. Roll-out
- VII. Can Health IT Deliver?

“Perfect Storm” of Patient Safety



The hospital discharge is non-standardized and frequently marked with poor quality.

In 2006, there were 39.5 million hospital discharges with costs totaling \$329.2 billion!

“Perfect Storm” of Patient Safety



- The hospital discharge is non-standardized and frequently marked with poor quality.
 - **Loose Ends**
 - **Communication**
 - **Poor Quality Info**
 - **Poor Preparation**
 - **Fragmentation**
 - **Great Variability**
- 20% of Medicare patients readmitted within 30 days¹
- Only half had a visit in the 30 days after discharge¹

A Real Discharge Instruction Sheet



12

Memorial Hospital of South Bend

810381623

HF = Congestive heart failure

Discharge Date 7/14/09 Time 11:55

PATIENT IDENTIFICATION

642201 6/29/2009 F 48Y 918000202

N. MODDAN

GENERAL INFORMATION		DIET/NUTRITION
ACCOMPANIED BY <input type="checkbox"/> Employee <input type="checkbox"/> Volunteer <input type="checkbox"/> Self	METHOD <input checked="" type="checkbox"/> Wheelchair <input type="checkbox"/> Car <input type="checkbox"/> Walk <input type="checkbox"/> No restrictions	<input checked="" type="checkbox"/> General <input type="checkbox"/> Diabetic diet <input type="checkbox"/> 2,000 mg sodium/low fat/low cholesterol <input checked="" type="checkbox"/> Other <u>low fat/low cholesterol</u> <input type="checkbox"/> Food/Drug interaction
DESTINATION <input checked="" type="checkbox"/> Home <input type="checkbox"/> Home health care		

ACTIVITIES

Shower ☐ Restrictions None Push/pull ☒ Restrictions None

Tub bath ☒ Restrictions None Drive car ☒ Restrictions None

Climb stairs ☐ Restrictions None Other ☐ Other None

Lift objects ☒ Restrictions None When restrictions are lifted, exercise 30 minutes/day

IMPORTANT CONSULT YOUR PHYSICIAN IF:	SPECIAL INSTRUCTIONS OR TREATMENTS
<input checked="" type="checkbox"/> Pain begins or becomes more severe. <input checked="" type="checkbox"/> Temperature above 101° F. <input checked="" type="checkbox"/> Wound drainage begins, increases, or becomes foul smelling. <input checked="" type="checkbox"/> Nauseated or vomiting. <input checked="" type="checkbox"/> Redness around incision. <input checked="" type="checkbox"/> Sudden onset of chest pain or shortness of breath. HF - Weight gain 2-3 lbs. overnight/5 lbs. in one week. HF - Shortness of breath, swelling in legs/ankles/belly. Other <u>any change in condition</u>	HF - Weigh yourself first thing every morning. Stop smoking. Limit alcohol intake. <u>Start to take Hygroton 100mg daily</u> <u>every morning and</u> <u>Orsair 100mg in evening</u> <u>Depen 20mg daily</u> <u>Phiburide 3mg 2x daily</u>

MEDICATIONS	SCHEDULE	ACTION/USE	COMMENTS	ASSISTING SERVICES
<u>Orsair 100mg</u>	<u>100mg</u>	<input checked="" type="checkbox"/> PO <input type="checkbox"/> IM <input type="checkbox"/> IV	<u>every morning</u>	For home nursing care and equipment, you may contact: Memorial Home Care at (574) 273-2273. For your convenience, medications are available at Memorial Family Pharmacy; their phone number is (574) 647-7110.
<u>Depen 20mg</u>	<u>20mg</u>	<input checked="" type="checkbox"/> PO <input type="checkbox"/> IM <input type="checkbox"/> IV	<u>daily</u>	
<u>Phiburide 3mg</u>	<u>3mg</u>	<input checked="" type="checkbox"/> PO <input type="checkbox"/> IM <input type="checkbox"/> IV	<u>2x daily</u>	

See attached Medication Reconciliation sheet

PHYSICIAN FOLLOW-UP You are scheduled to see:

Physician N. Moddan Date 7/27/09 Phone 237-7400

Physician R. Evers Date 7/27/09 Phone 237-7340

SIGNATURES

I have received and understand the above instructions, and all of my medications and personal items have been returned to me.

Patient Signature [Signature] Date 7/14/09 Nurse Signature [Signature]

If other than patient, relationship to patient is: _____ Physician Signature (Optional) _____ Date _____

Page 1 of 1 Recorder from Materials
Form # 575530 A 11/94 901 108 MC (Rev 05/05)

DISCHARGE INSTRUCTIONS

ORIGINAL - Patient COPY - Medical Record

575530

But it is More than Patient Safety



- **"Hospitals with high rates of readmission will be paid less if patients are readmitted to the hospital within the same 30-day period saving \$26 billion over 10 years"**

Obama Administration Budget Document

- **MedPAC recommends reducing payments to hospitals with high readmission rates**

MEDPAC Testimony before Congress March '09

- <http://www.hospitalcompare.hhs.gov/>

Two Questions

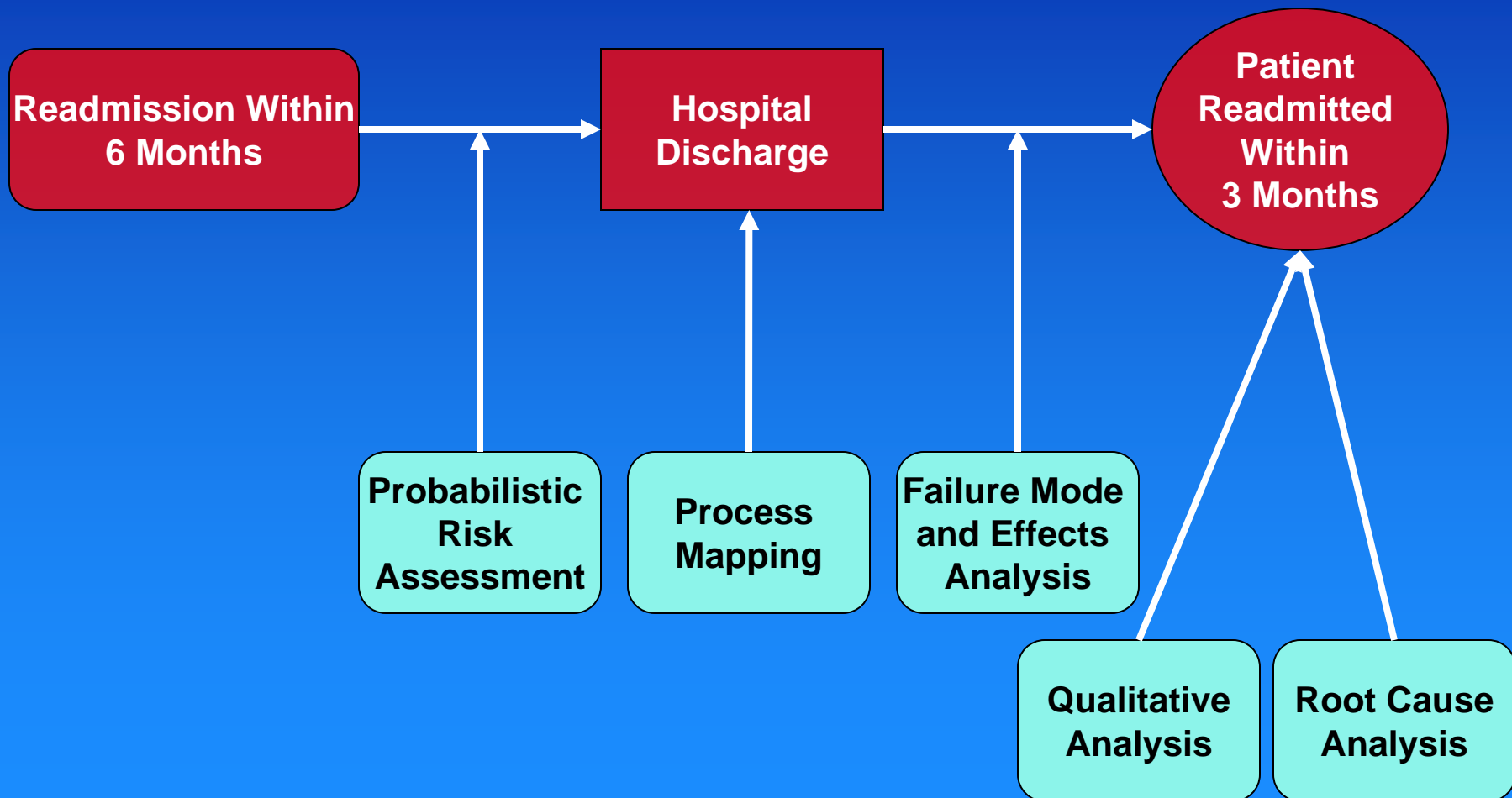
We asked:

- Can improving the discharge process reduce adverse events and unplanned hospital utilization?

Grant reviewer asked:

- What is the “discharge process”?

Principles of the RED: Creating the Toolkit





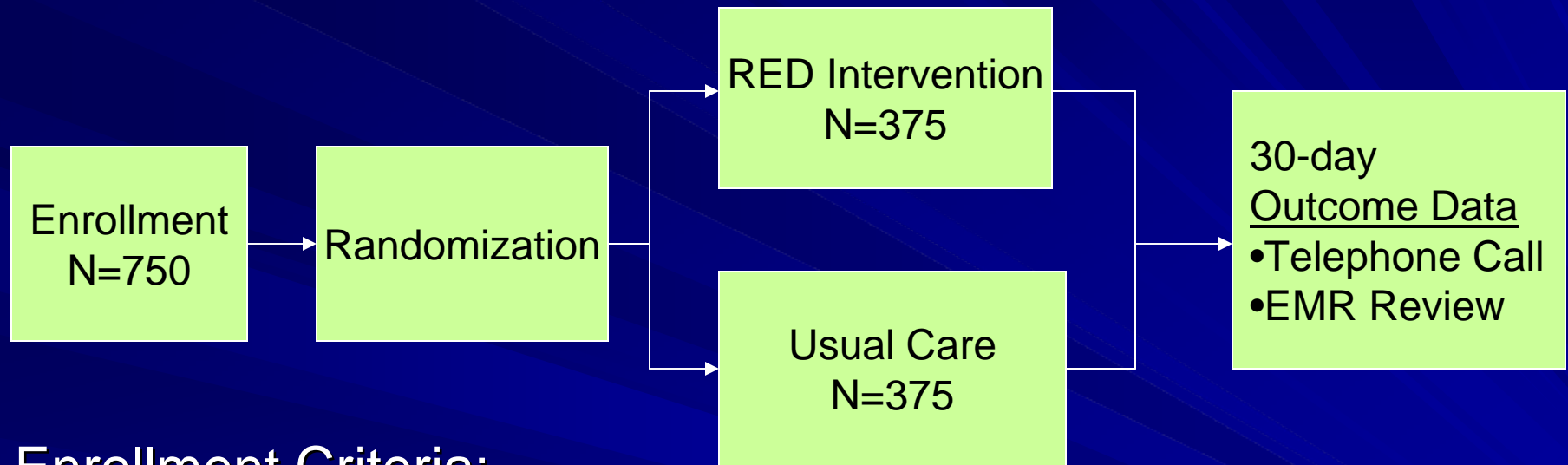
RED Checklist

Eleven mutually reinforcing components:

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

**Adopted by
National Quality Forum
as one of 30
"Safe Practices" (SP-11)**





Methods- Randomized Controlled Trial



Enrollment Criteria:






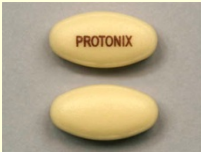
- English speaking
- Have telephone
- Able to independently consent
- Not admitted from institutionalized setting
- Adult medical patients admitted to Boston Medical Center (urban academic safety-net hospital)









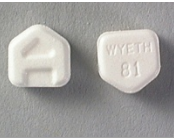
After Hospital Care Plan

	
<p>After Hospital Care Plan <i>for:</i> Maria Johnson</p>	
<p>Discharge Date: October 25, 2005</p>	
<p>Problem with anything in this packet? Call Mary Goodwin: (617) 414-6210</p>	
<p>Serious health problem? Call your Doctor, Chris Manasseh: (617) 825-3400</p>	

EACH DAY follow this schedule:

Medication Schedule for Maria Johnson

What time of day do I take this medicine?	Picture (the medication from the pharmacy may not look exactly like this)	Medication name Amount # of pills	How do I take this medicine?	Why am I taking this medication?
 Morning		Motrin® (Ibuprofen) 800mg 1 pill	by mouth with food	pain
		Zestril® (Lisinopril) 10mg 1 pill	by mouth	blood pressure
		Apresazide® (HCTZ) 25mg 1 pill	by mouth	blood pressure
		Nifedical XL® (Nifedipine) 30 mg 1 pill	by mouth	blood pressure
		Protonix® (Pantoprazole) 40 mg 1 pill	by mouth	indigestion

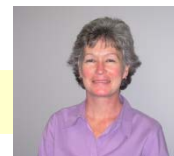
 Noon		Motrin® (Ibuprofen) 800mg 1 pill	by mouth with food	pain
		Flovent® (Fluticasone) 44mcg/puff 2 puffs	by inhalation through mouth	help breathing
 Evening		Motrin® (Ibuprofen) 800mg 1 pill	by mouth with food	pain
		Folic Acid 1mg 1 pill	by mouth	vitamin
 Bedtime		Flovent® (Fluticasone) 44mcg/puff 2 puffs	by inhalation through mouth	help breathing
If you need it for anxiety		Ativan® (Lorazepam) 0.5 mg 1 pill	by mouth 1x each day if needed	anxiety

Problem with anything in this packet?

Call Your Discharge Advocate, RN – Lynn, Michael, or Mary: (617) 414-6822

Serious health problem?

Call your Doctor, Chris Manasseh: (617) 825-3400



After Hospital Care Plan

Maria Johnson

10/11/05



*****Bring this Plan to each Appointment*****

MAIN PROBLEM:

Chest Pain

APPOINTMENTS:

Monday, October 31 st at 1:30pm	Friday, November 4 th at 10:00am	Wednesday, November 9 th at 9:30am	Tuesday, November 15 th at 11:00am
Dr. Chris Manasseh Primary Care Physician (Doctor)	Dr. Sheilah Bernard Consultant (Cardiologist)	Nutritionist	Cardiac Stress Test
at Harvard St. Community Health Center → John will drive	at Boston Medical Center; Doctor's Office Building - 642 → Take cab, use cab voucher	at Boston Medical Center → Take #1 bus	at Boston Medical Center 850 Harrison Ave 4 th floor – Cardiac Station → John will drive; take parking sticker
For a Follow-up appointment	For a heart appointment	To help with food plan	To check your heart
Office Phone #: 617-825- 3400	Office Phone #: 617-638- 7490	Office Phone #: 617-555-1234	Office Phone #: 617-555- 2345

Tests:

Lab test/Studies done in hospital. Waiting for results.

Lab test/ study name	Date done	Name of clinician to review/location	Day/Date subject will see clinician to discuss results?
Stomach biopsy from endoscopy (stomach test)	October 24, 2005	Dr. Manasseh at Harvard Street CHC	Dr. Manasseh will talk to you about results at your appointment with him on October 31, 2005.

November 2005

*****Bring this Plan to each Appointment*****

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4 Call cab at 9:15am Dr. Bernard at 10:00am at BMC	5
6	7	8 Cardiac Stress Test at 11:00 am at BMC John will drive	9 Nutritionist at 9:30am at BMC Take #1 bus	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24 BMC will call at 10am for study	25	26
27	28	29	30			

What did we find?

Primary Outcome:

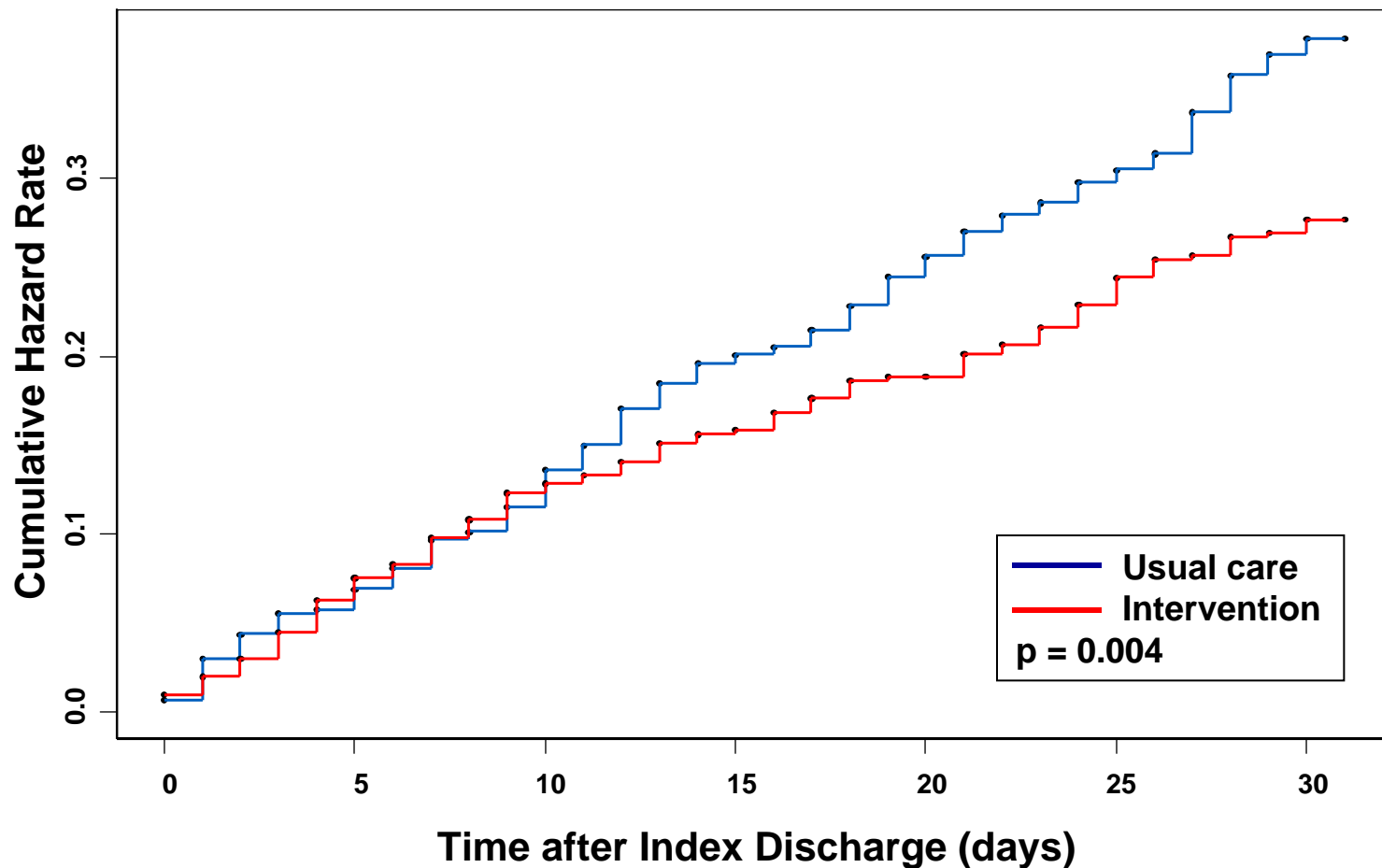
Hospital Utilization within 30d after dc



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

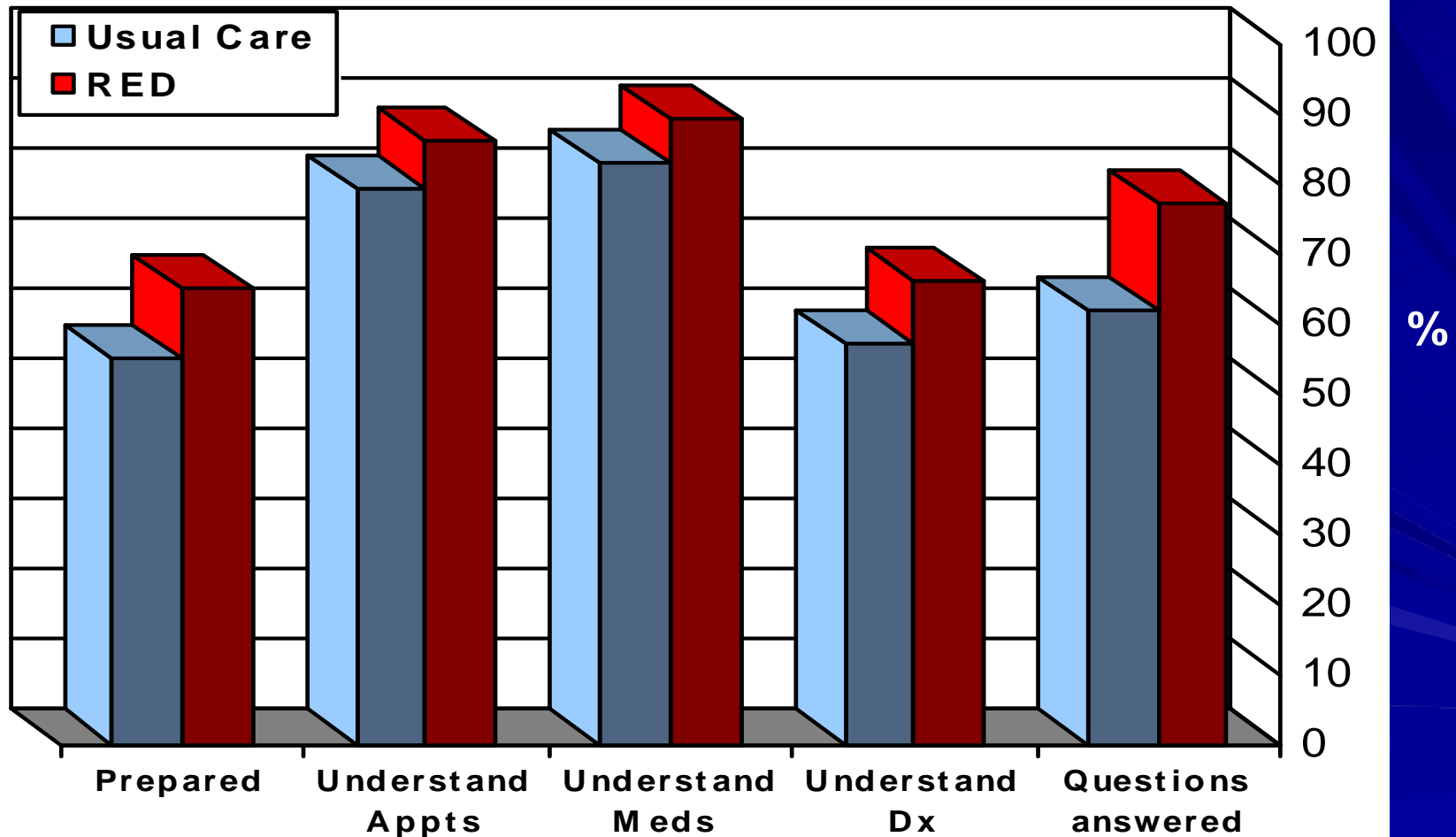
* Hospital utilization refers to ED + Readmissions

Cumulative Hazard Rate of Patients Experiencing Hospital Utilization 30 days After Index Discharge



Self-Perceived Readiness for Discharge

(30 days post-discharge)



Outcome Cost Analysis



Cost (dollars)	Usual Care (n=368)	Intervention (n=370)	Difference
Hospital visits	412,544	268,942	+143,602
ED visits	21,389	11,285	+10,104
PCP visits	8,906	12,617	-3,711
Total cost/group	442,839	292,844	+149,995
Total cost/subject	1,203	791	+412

We saved \$412 in outcome costs for each patient given RED

Implications



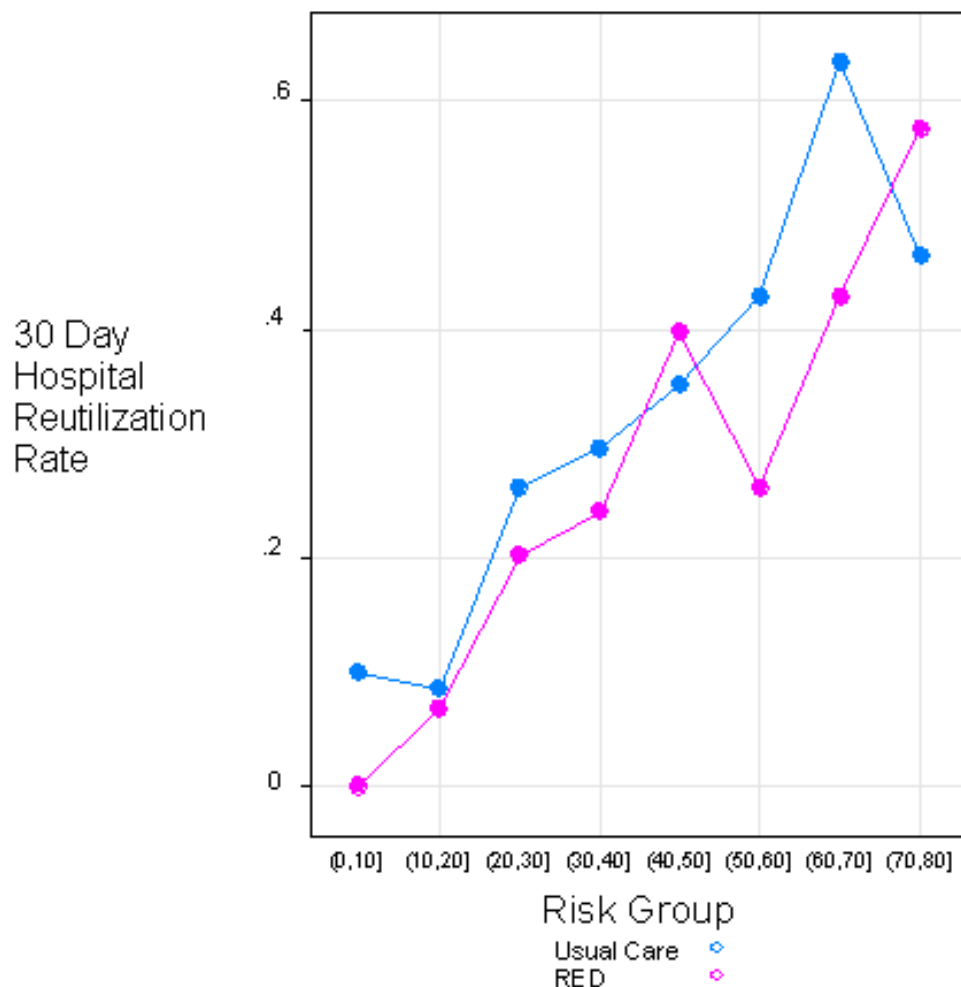
The components of the RED should be provided to all patients as recommended by the National Quality Forum, Safe Practice.



Who is at risk of Rehospitalizations?

- Frequent Fliers
- Health Literacy
- Depression
- Men
- Substance Abuse
- Elderly
- LOS
- Co-morbidity

RED Effectiveness for Risk Stratified Groups



Risk factors included in the analysis are: gender, marital status, depression status, hypertension/diabetes/asthma status, "frequent flier" status, and homelessness

Using Health IT to Overcome Challenge of RN Time



Embodied Conversational Agents

- Emulate face-to-face communication
- Develop therapeutic alliance using empathy, gaze, posture, gesture
- Teach RED
- Determine Competency
- Can drill down
- Maps of CHCs
- High Risk Meds

Lovenox

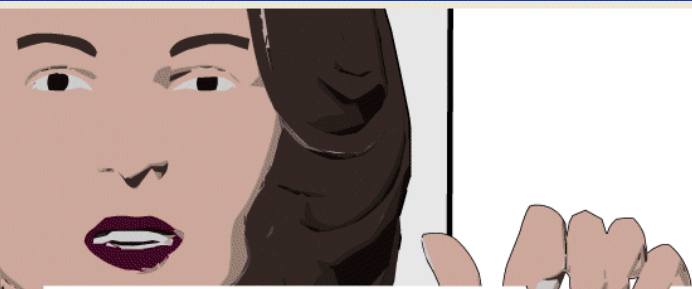
Insulin

Prednisone taper




Characters: Louise (L) and Elizabeth (R)

Studies of Nurse-Patient Interaction


Page 2

EACH DAY follow this schedule:

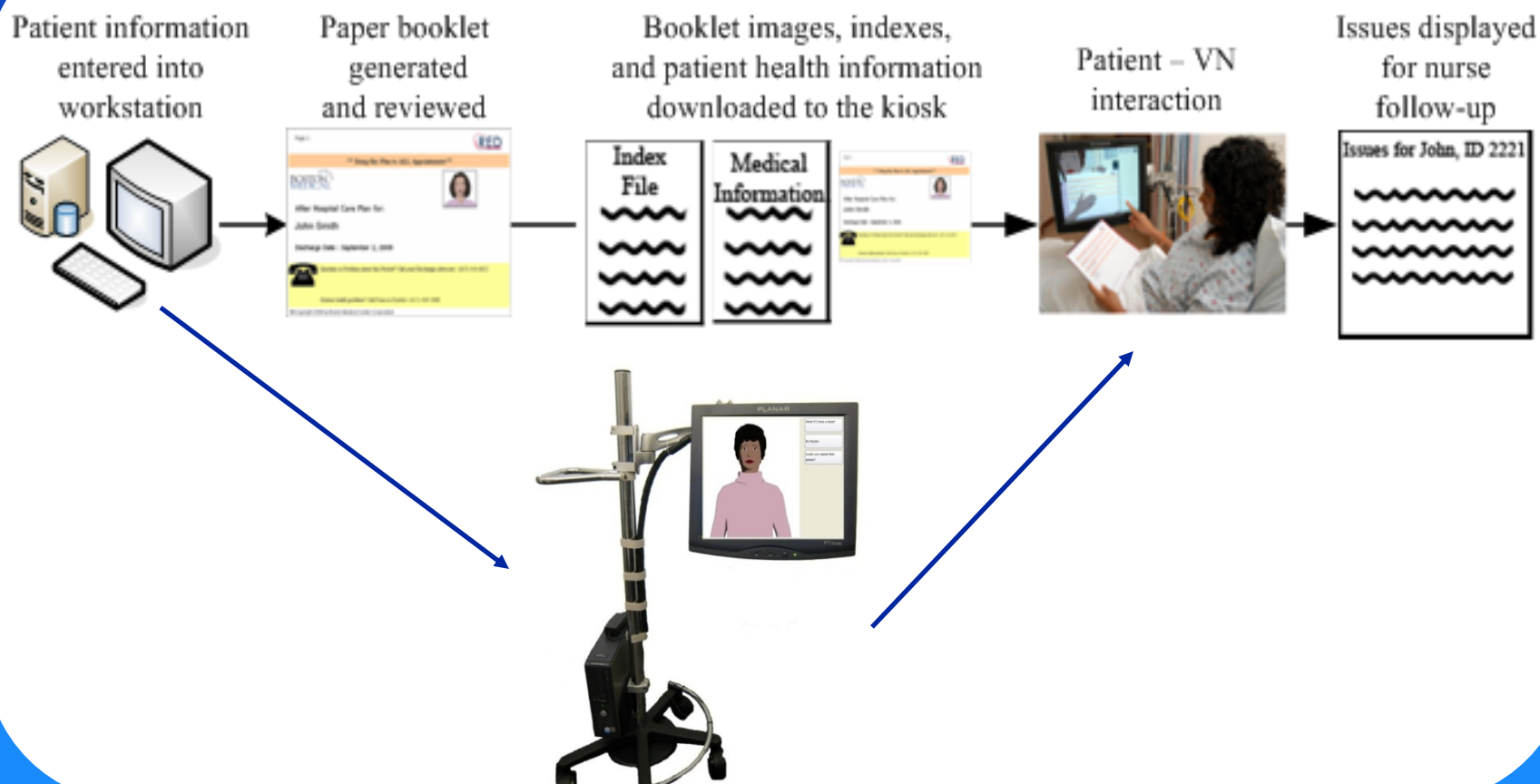


MEDICINES

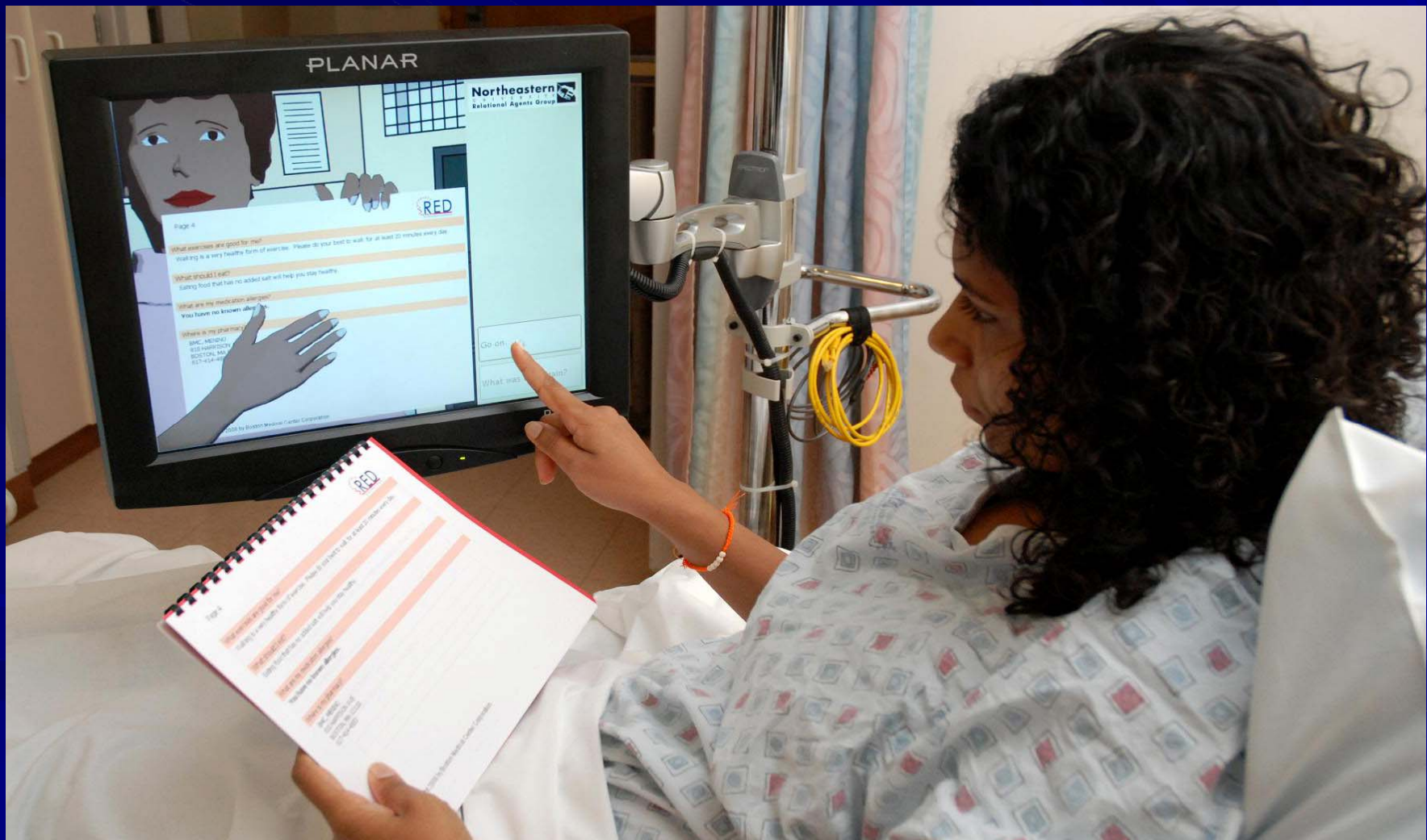
What time of day do I take this medicine?	Why am I taking this medicine?	Medication name Amount	How much do I take?	How do I take this medicine?
	Blood pressure	PROCARDIA XL NIFEDIPINE 90 mg	1 pill	By mouth
	Blood pressure	HYDROCHLOROTHIAZIDE 25 mg	1 pill	By mouth
	Blood pressure	CLONIDINE HCl 0.1 mg	3 pills	By mouth
	cholesterol	LIPITOR ATORVASTATIN CALCIUM 20 mg	1 pill	By mouth
	stomach	PROTONIX PANTOPRAZOLE SODIUM 40 mg	1 pill	By mouth



Automated Discharge Workflow



Patient Interacting with Louise



Embodied Conversational Agent

http://relationalagents.com/red_demo_4545.wmv



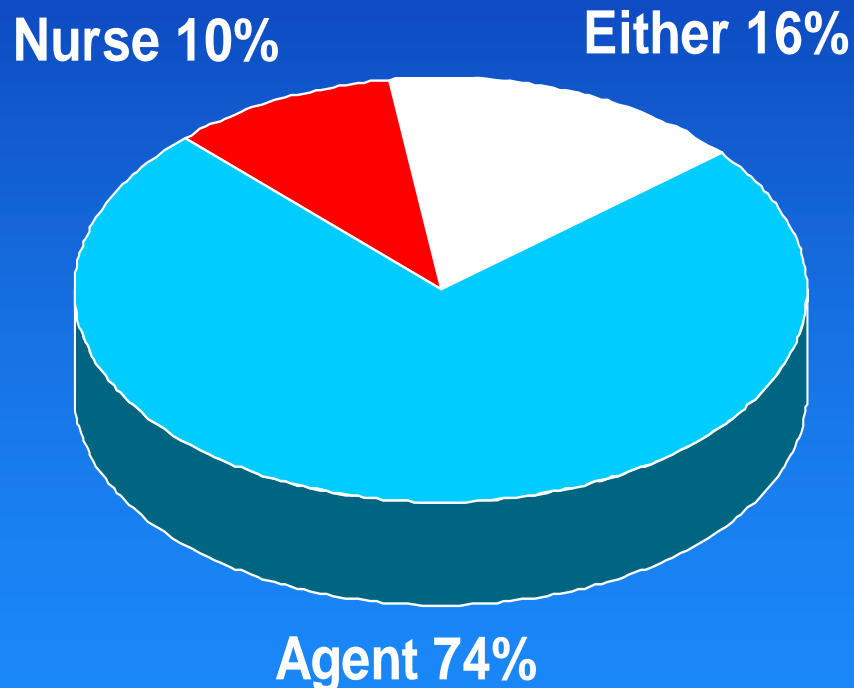
Northeastern
UNIVERSITY
Relational Agents Group

Yes, that's right.

No, that's not right.

Excuse me?

Who Would You Rather Receive Discharge Instructions From?



"I prefer Louise, she's better than a doctor, she explains more, and doctors are always in a hurry."

"It was just like a nurse, actually better, because sometimes a nurse just gives you the paper and says 'Here you go.' Elizabeth explains everything."

Current Work: Online Louise



- Post-discharge web-based system designed to emulate the post-hospital phone call
- Multiple interactions in the days between discharge and first PCP appointment
- Designed to
 - Enhance adherence
 - Monitor for adverse events
 - Prevent adverse events
 - Identifying post-dc “confusion” and rectify
 - Screening system for who needs 2 day phone call
- Beginning a trial of this system

Conclusions



- Hospital Discharge is low hanging fruit for improvement
- RED is NQF Safe Practice
- RED:
 - Can be delivered using AHCP tool
 - Can decreased hospital use
 - 30% overall reduction
 - NNT = 7.3
 - Saves \$412 per patient
- Health IT Could Help
 - could improve delivery
 - further improve cost savings and build the business case

Thank you!



- Brian Jack brian.jack@bmc.org

- Project RED Website

- <http://www.bu.edu/fammed/projectred/>

- Engineered Care Website

- info@engineeredcare.com