

The background is a collage of four images: top-left shows a sign for Brigham and Women's Hospital; top-right shows a person in a 'BOSTON STRONG' t-shirt; bottom-left shows a nurse in colorful scrubs attending to a patient in a hospital bed; bottom-right shows a male doctor in a white coat and glasses smiling.

# Using Health IT and Patient Engagement to Improve Patient Outcomes

Center for Patient Safety, Research, and Practice  
Brigham and Women's Hospital  
Patricia C. Dykes PhD, RN, FAAN, FACMI

October 2, 2017

# Disclosure Statement

- This project was supported by grant #P30HS023535 from the Agency for Healthcare Research and Quality (AHRQ). The content is solely the responsibility of the authors and does not necessarily represent the official views of AHRQ.

# Overview

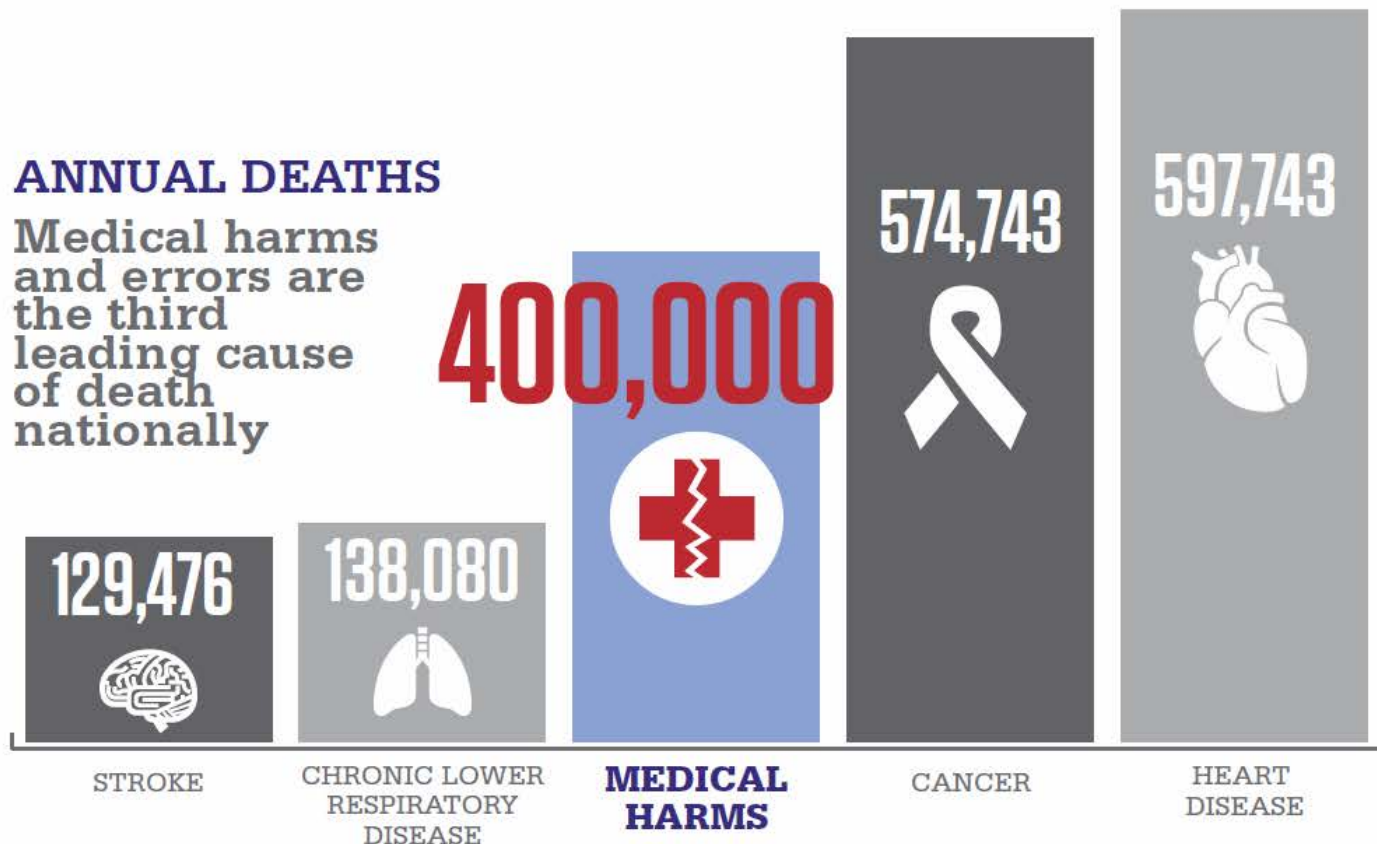
- Background
  - Review current state of healthcare team communication
  - Define patient engagement
- Describe a series of projects that leverage health IT to improve team communication, patient engagement, and patient safety
- Review lessons learned
- Discussion

# First, Do No Harm...

- Ineffective communication is a leading root cause of medical errors

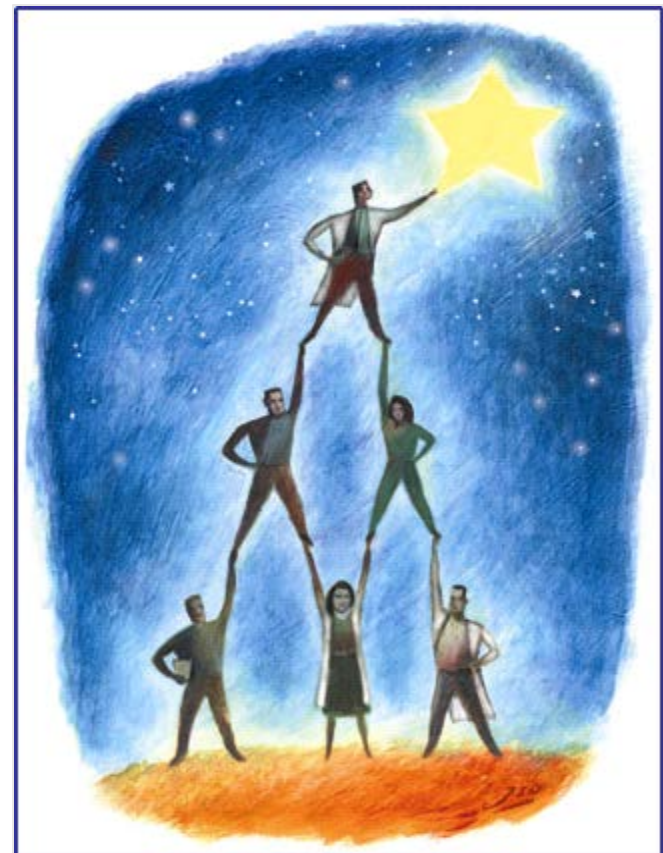
## ANNUAL DEATHS

Medical harms and errors are the third leading cause of death nationally



# Team Communication Challenges

- Multiple handoffs
- Involvement of numerous professional and paraprofessional providers
- Varied communication methods
- Simultaneous parallel conversations
- Information silos
- Inconsistent beliefs re: patient/family role on care team





# Team Communication is Suboptimal: BWH Baseline Data

- Asked ICU and Oncology patients (or caregiver), bedside RN, and physician from primary team about the patient's overall goal for hospitalization

## Goals of Care among Hospitalized Patients (Haberle 2011)

1. Be Cured
2. Live Longer
3. Improve & Maintain Health
4. Be Comfortable
5. Accomplish a personal life goal
6. Provide support for family
7. Other

No. (%) of patients with X unique responses

Category	N=88	%
No. with 1 unique response	21	24%
No. with 2 unique response	44	50%
No. with 3 unique response	23	26%

# Patient-centered Care

- “Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.”



# Patient Engagement



Patient Activation

+



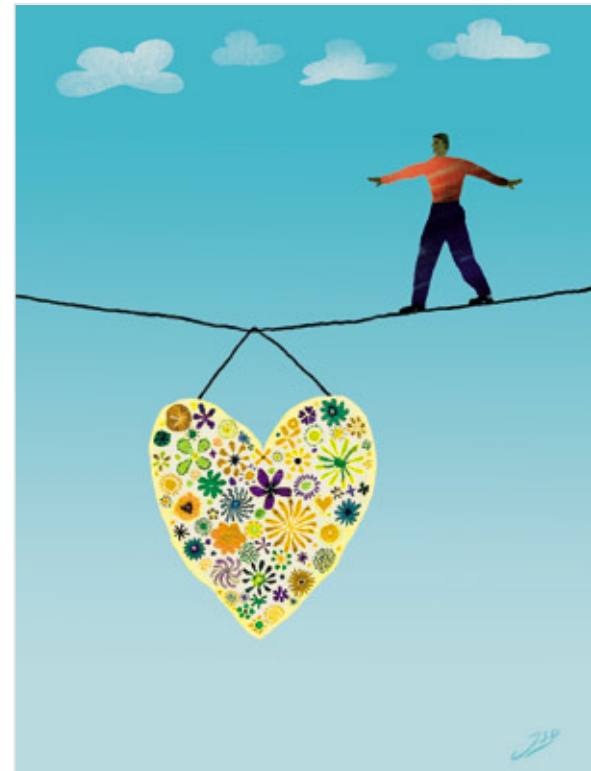
Interventions/tools  
designed to promote  
activation and positive  
health behaviors

Precondition for patient-centered care



# Activated, Engaged Patients are More likely to...

- ✓ Engage in preventive behavior (check-ups, screenings, and immunizations)
- ✓ Engage in healthy behavior such (healthy diet, regular exercise)
- ✓ Avoid health-damaging behavior (smoking and illegal drug use)
- ✓ Incur less costs



# BWH PROSPECT Project

## Promoting Respect and Ongoing Safety through Patient Engagement Communication and Technology

- Goal: To transform the intensive care environment through implementation of a patient-centered intervention to engage patients and care partners in the plan of care

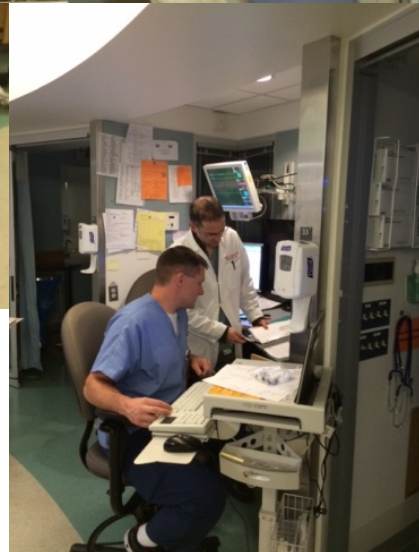
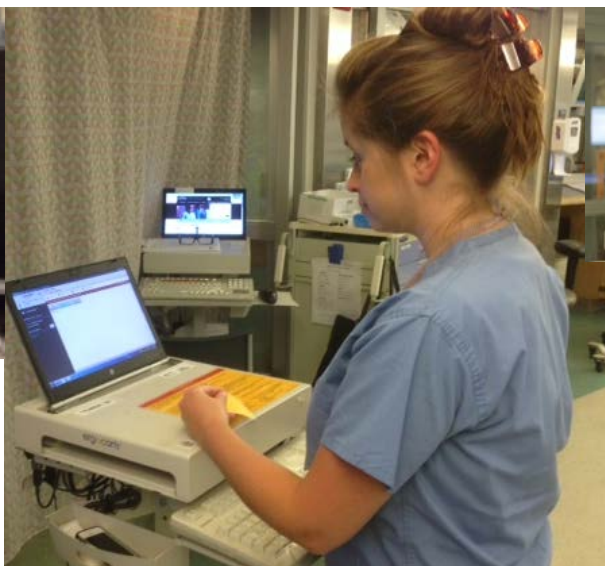


# Patient-Centered Tool Kit (PCTK) Components



**“Patient-facing”**

**“Provider-facing”**



# Provider FACING TOOLS

PROSPECT



# Safety Checklist

Plan of Care
Patient Thread
Care Team
Provider Thread

Only the content on the 'Patient Plan of Care' is visible to the patient
BWH PROSPECT modu

Patient Plan of Care

Nursing Plan of Care Worksheet

Safety Checklist Worksheet

## Safety Checklist

Patient :

Item	Safety Screen (MD w/RN present at rounds)	RN Performance
<b>Patient/Family Toolkit</b>	We have given the RN an opportunity to present any new patient or family input (from the Patient SatisfActive model, Toolkit, or Microblog). <input type="radio"/> Yes <input type="radio"/> No	
<b>Vent Bundle</b>	Is the patient on mechanical ventilation? <input checked="" type="radio"/> Yes <input type="radio"/> No	
<b>HOB elevation</b>	<input type="text" value="Indicated"/>	Last documented HOB angle:
<b>Spontaneous Awakening Trial</b>	<input type="text" value="Indicated"/>	Performed this calendar day Passed
<b>Spontaneous Breathing Trial</b>	<input type="text" value="Contraindicated- Hemodynamic instability (up titration of pressors)"/>	Performed this calendar day Failed



# Multidisciplinary Plan of Care Platform

The screenshot displays a user interface for a patient named **Prospect, Patti** (41y F - 31 bed 1 - #51247682). The interface is organized into several sections:

- Navigation:** Includes tabs for "Plan of Care", "Team", "Patient Thread", and "Provider Thread".
- Visibility:** A red banner states "This content is visible to the patient" and identifies the "BWH PROSPECT module".
- Plan Components:** A row of buttons for "Patient Plan of Care", "Nursing Plan of Care Worksheet", and "Safety Checklist Worksheet".
- Patient Information:** A search bar containing "PROSPECT,PATTI".
- Health Concerns:** "I am concerned about a DVT".
- Patient's Goals:** "Overall Goal: **Live Longer**" and "Goal for today: **To get out of bed**".
- Care Preferences:** "I would like my sister involved in my care".
- Goal Progress:** "My care team is helping me to meet my goals: **Somewhat**".
- Clinical Problems:** A list including "Confusion", "Infection", "Comfort Alteration", and "Skin Integrity Impairment".
- Care Team Goals:** "Temp <100.5", "Pain level <4", and "Improved skin integrity".
- Patient Schedule:** A table showing scheduled activities:

Activity	Morning	Evening	Afternoon
LAB: BLOOD DRAW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PHYSICAL THERAPY CONSULT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
X-ray Chest Portable	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Orders:** A button for "PHYSICAL THERAPY CONSULT" with a green plus icon.
- Footer:** "New Event" and "Add" buttons.

# Nursing Plan of Care

Plan of Care    Patient Thread    Care Team    Provider Thread

Only the content on the 'Patient Plan of Care' is visible to the patient BWH PROSPECT modu

R= Resolved    =Not available for Patient View    =Available for Patient View    Active Goals/Planned Assessments/Interventions

Onset Date	R	Problems	Goal(s)	Planned Assessments and Interventions	Outcome Status
<b>SENSORY</b>					No change ▼
10/12/2014	<input type="checkbox"/>	Comfort alteration <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Pain management goal 1 ▼ <input checked="" type="checkbox"/> Scale used Numerical (0-10) ▼ <input checked="" type="checkbox"/> Other <input checked="" type="checkbox"/> Patient will appear comfortable	<input checked="" type="checkbox"/> Assess pain every 2 hours T & R q 2 hrs w/ PROM increase oob as tol	
<b>NEURO</b>					No change ▼

RASS scale every 2

# Clinical Care Classification System Problems and Outcomes

## Patient Plan of Care Problems With Infobuttons

### Nursing Plan of Care Documentation

Onset Date	R	Problems	Goal(s)	Interventions
05/24/2015		<input type="button" value="Add Problem"/> Skin integrity impairment	<input type="checkbox"/> Skin will remain intact <input type="checkbox"/> Other	Braden scale 9 <input checked="" type="checkbox"/> Turn and Reposition every 2 hours <input checked="" type="checkbox"/> Offload tubes, linens <input checked="" type="checkbox"/> Float heels/Prevent heel pressure dsd to bilateral upper extremities skin tears, change dressings xeroform b/l LE blisters
05/24/2015		<input type="button" value="Add Problem"/> Infection	<input type="checkbox"/> Temp will be < 100.5 <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Antibiotics <input type="checkbox"/> MRSA precautions <input type="checkbox"/> VRE precautions <input checked="" type="checkbox"/> CDIFF precautions
05/27/2015		<input type="button" value="Add Problem"/> Comfort alteration	<input checked="" type="checkbox"/> Pain management goal 0 <input checked="" type="checkbox"/> Scale used CPOT(0-8) <input type="checkbox"/> Other	Deteriorated No change Improved fentanyl drip and ivb prn

- HOME
- MY CARE TEAM
- MESSAGES
- SAFETY
- TEST RESULTS
- MEDICATIONS
- FOOD AND DIET
- DISCHARGE
- INFO
- FEEDBACK
- LOG OUT

**Bart Emartest's Plan of**  
Room #:17A-112 Phone#

**Goals**

**My Concerns:**  
Type your concerns here, your concerns will automatically save when you leave this page.

**My Other Clinical Problems:**

- Skin integrity impairment
- Infection risk

### Patient Educational Content

U.S. National Library of Medicine

**MedlinePlus**  
Trusted Health Information for You

Search MedlinePlus

About MedlinePlus Site Map FAQs Contact Us

Health Topics Drugs & Supplements Videos Tools Español

Home → Medical Encyclopedia → Preventing pressure ulcers

**Preventing pressure ulcers**

Pressure ulcers are also called bedsores, or pressure sores. They can form when your skin and soft tissue press against a harder surface, such as a chair or bed, for a prolonged time. This pressure reduces blood supply to that area. Lack of blood supply can cause the skin tissue in this area to become damaged or die. When this happens, a pressure ulcer may form.

You have a risk of developing a pressure ulcer if you:

- Spend most of your day in a bed or a chair
- Are overweight or underweight
- Are not able to control your bowels or bladder
- Have decreased feeling in an area of your body
- Spend a lot of time in one position

You will need to take steps to prevent these problems.

**Self-care**

You, or your caregiver, need to check your body every day from head to toe. Pay special attention to the areas where pressure ulcers often form. These areas are your:

**Related MedlinePlus Health Topics**

- Pressure Sores

**Images**

- Areas where bedsores occur

**Read More**

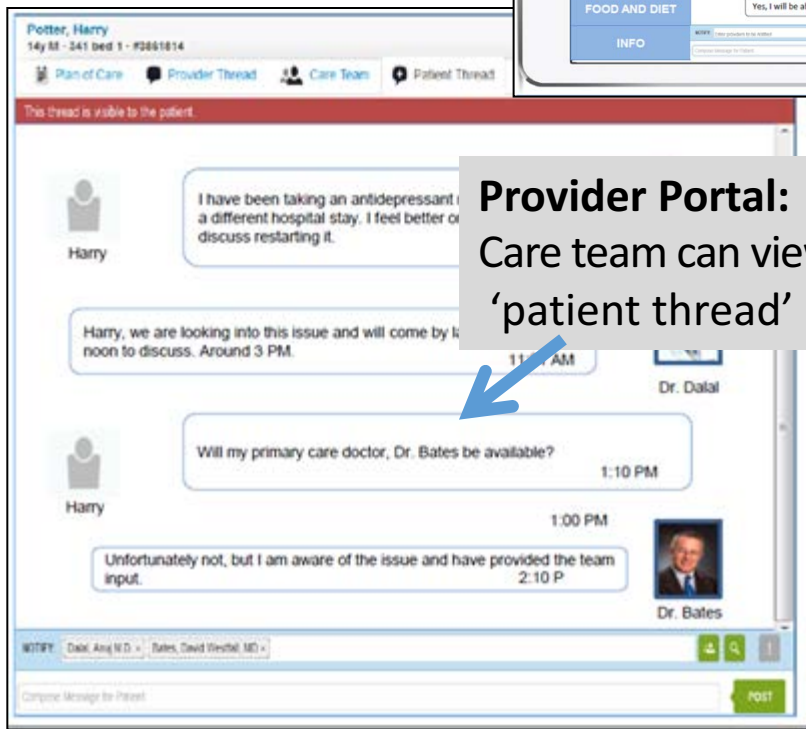
- Bowel incontinence
- Multiple sclerosis
- Neurogenic bladder
- Recovering after stroke

# Patient-Centered 'Microblog' Functionality

**Patient Portal:**  
Patient sends a message to the care team.



**Provider Portal:**  
Care team can view and respond using 'patient thread' and 'provider thread'

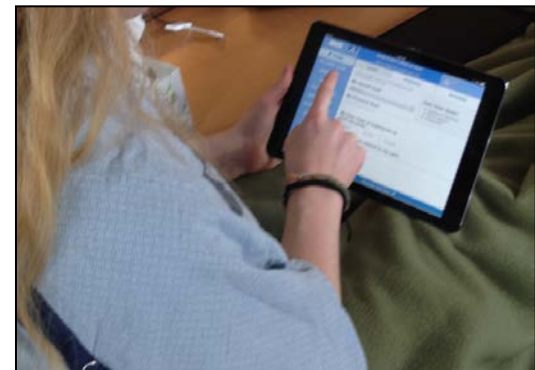






# Patient FACING TOOLS

PROSPECT





# My Care Team

The screenshot displays a mobile application interface for a patient's care team. The top status bar includes a Zoom control, the BWH logo, the patient's name 'Harry Potter's Plan of Care', room and phone information, and the date 'Tuesday 3/18/2014' with a weather forecast of '31° Partly Cloudy'. A left-hand navigation menu lists options: HOME, MYCARE Team (highlighted), MESSAGES, SAFETY, TEST RESULTS, MEDICATIONS, DISCHARGE, FOOD AND DIET, and INFO. The main content area, titled 'My Care Team:', features a central 'you' icon connected to five team members: Intern: JaeHo Lee, Attending: Anuj Dalal, Nurse: Patricia Dykes, Primary Care Physician: David W. Bates, and Dietician: Kumiko Ohashi. An Outpatient Oncologist, Lisa Lehmann, is also shown but not connected to the central 'you' icon. A 'Message Care Team' button is located at the bottom right.

Zoom



# Patti Prospect's Plan of Care

Monday 9/15/2014



Room #:3B-311 Phone#:

[HOME](#)

**Goals**

**Problems**

**Schedule**

MY CARE TEAM

MESSAGES

SAFETY

TEST RESULTS

MEDICATIONS

FOOD AND DIET

DISCHARGE

INFO

FEEDBACK

LOG OUT

Choose your goals, preferences, and provide feedback on your care.

### My Overall Goal:

Be comfortable

### My Daily Goal:

Get out of bed

### My Care Team is helping me to meet my goals:

Not at All

Somewhat

Completely

### My Preferences related to my care:

I would like my sister to be involved in my care

### Care Team Goals:

- Improve respiratory status
- Prevent skin breakdown
- Free of pain
- Adequate nutrition

[Message Care Team](#) ^

Zoom



# Patti Prospect's Plan of Care

Monday 9/15/2014



58°

Mostly Cloudy

Room #:3B-311 Phone#:

HOME

MY CARE TEAM

MESSAGES

SAFETY

TEST RESULTS

MEDICATIONS

Schedule

## Message Care Team

Your care team wants to hear from you. This is meant for non-urgent communications.

Write your message here

Send

## Team Goals:

<4

ove skin integrity

<100.5

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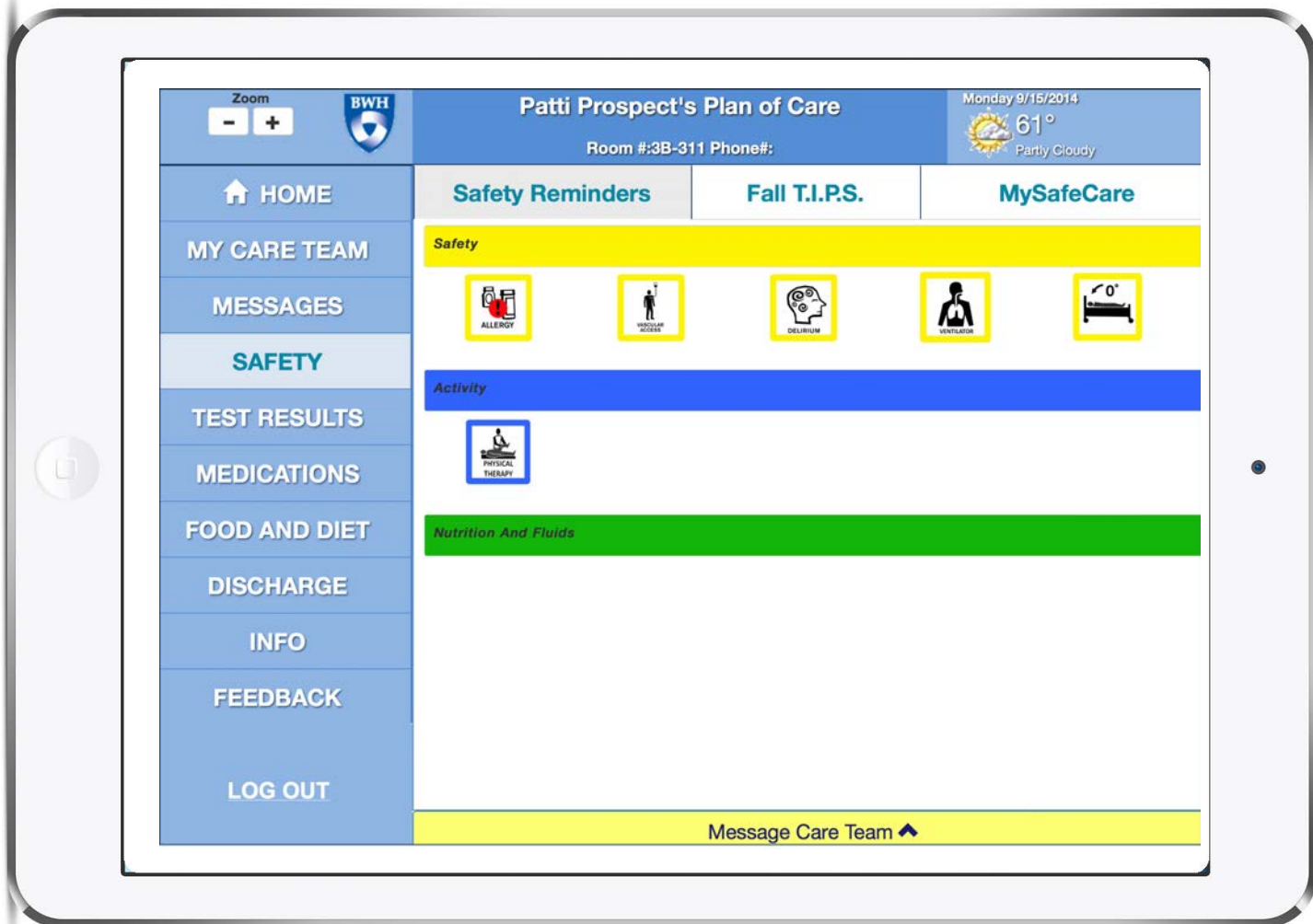


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# My Safety Concerns



# My Medications

**Zoom** - + **BWH** **Patti Prospect's Plan of Care** Monday 9/15/2014  
Room #:3B-311 Phone#: 61° Partly Cloudy

**HOME**  
**MY CARE TEAM**  
**MESSAGES**  
**SAFETY**  
**TEST RESULTS**  
**MEDICATIONS**  
**FOOD AND DIET**  
**DISCHARGE**  
**INFO**  
**FEEDBACK**  
**LOG OUT**

**My Medications:**

- HEPATITIS A VACCINE 1,440 UNITS IM x1**  
Last administration given: 2013-12-04 14:15:00Z  
Next administration due:
- ACETAZOLAMIDE PO 25 MG ( 5 MG/KG ) Q6H**  
Last administration given:  
Next administration due:
- TRANSFUSE 1 bags PLATELETS Over 0.5 hrs for platelet count < 10 thousand each bag ROUTINE 06/12**  
Last administration given:  
Next administration due:
- HYDROMORPHONE HCL 1MG/ML PCA IV Q24H**  
Last administration given:  
Next administration due:
- HYDROMORPHONE HCL 1MG/ML... 0.8 mg IV Q10MIN X 2 doses PRN Pain**  
Last administration given:  
Next administration due:
- ONDANSETRON HCL 1 MG IVPUSH Q6H PRN Nausea**  
Last administration given:  
Next administration due:
- NALBUPHINE HCL 5 MG IVPUSH Q4H PRN Itching**  
Last administration given:  
Next administration due:
- NALOXONE HCL 0.04-0.08 MG IV Q2MINUTES PRN Other:Respiratory Depression**  
Last administration given:

Message Care Team ^



Zoom



# Patti Prospect's Plan of Care

Monday 9/15/2014



58°

Mostly Cloudy

Room #:3B-311 Phone#:

HOME

MY CARE TEAM

MESSAGES

SAFETY

TEST RESULTS

MEDICATIONS

FOOD AND DIET

DISCHARGE

INFO

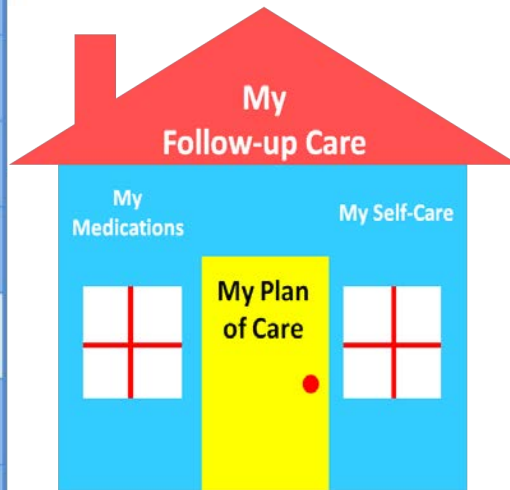
FEEDBACK

LOG OUT

## My Discharge Checklist:

Please only check the items that you know are complete, it will help you get home safely.

If you have questions, ask your care team or send them a message by clicking the MESSAGES tab.



### My Follow Up Care

- I understand where I am going after I leave the hospital.
- My family or someone close to me knows that I am coming home (leaving the hospital) and is prepared to provide the support I need.
- I have a follow-up appointment scheduled with my doctor.
- I will be willing and able to get to and keep that appointment.
- I have the name and phone number of a person I should contact if a problem arises after I leave the hospital.

My Medications

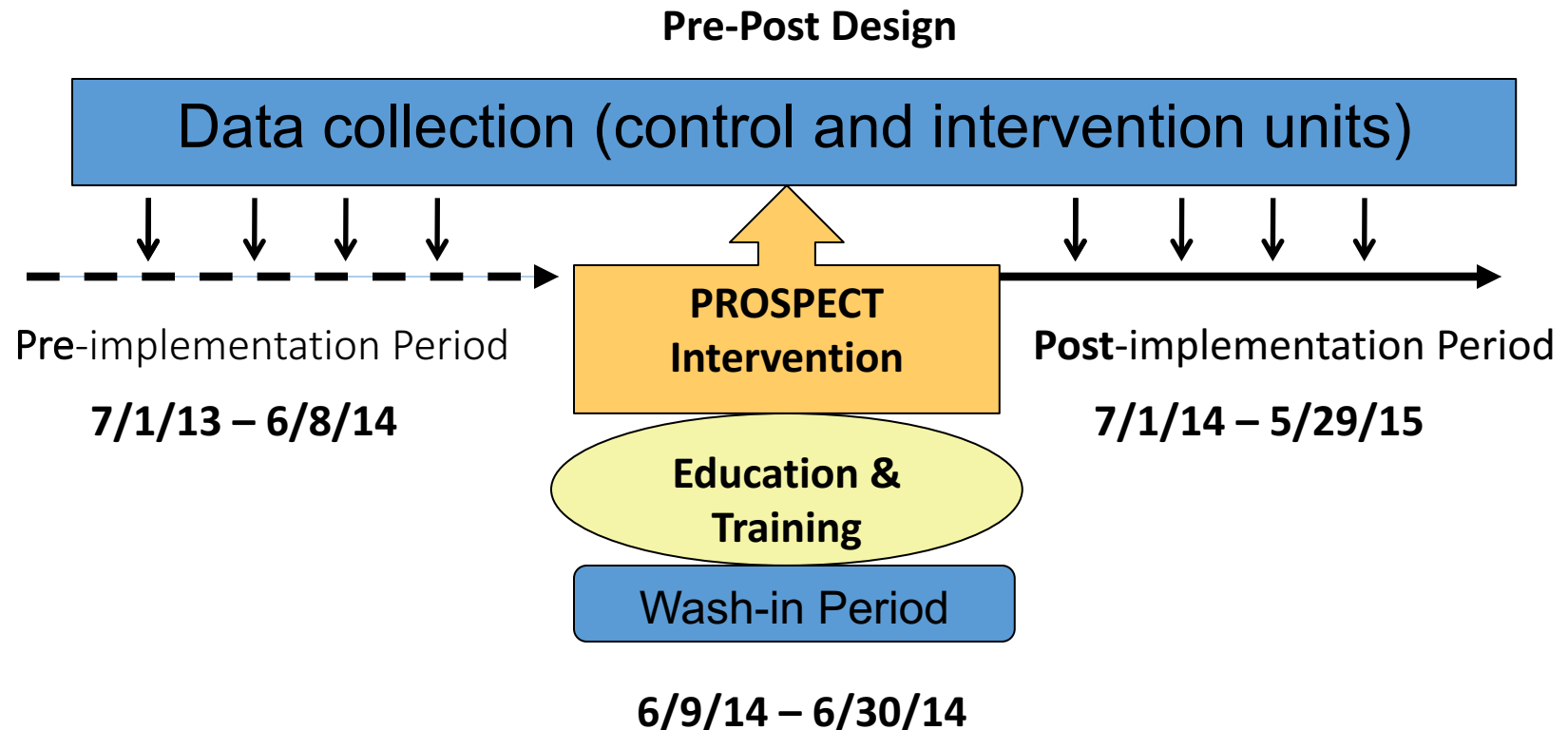
My Self-Care Management

My Plan of Care

Message Care Team

# PROSPECT Research Question and Study Design

Does the PROSPECT framework positively impact satisfaction, care plan concordance, and lead to reduction in adverse events and healthcare resource utilization and costs?



# PROSPECT Patient Demographics

- Pre: 1030
- Post: 1075
- Demographics similar pre-post; Post patient less likely to be Caucasian ( $p=.02$ )
- Toolkit users: 194 (18%)
  - Mean age: 60
  - More likely to be Caucasian and private pay

# Findings

	Pre-intervention	Intervention	P-value
Preventable harms/ 1000 patient days	65.2	46.6	<.001
Overall hospital rating (patient)	71.8%	93.3%	<.001
Overall satisfaction (care partners)	84.3%	90.0%	<.001
Mean global concordance overall goal of hospitalization	26.9%	34.0%	<.001
Resource utilization			
• Mean (Median) Length of Stay (days)	4.9 (2)	5.0 (2)	0.61
• 30-day hospital readmission	19%	18.4%	0.82

# Findings\*

- Improved patient/care partner satisfaction
  - Reduction in adverse events
  - No change in care plan concordance
  - No change in resource utilization
- Patient Feedback:
    - “It’s a really great idea. We’re always asking questions so this way we won’t have to chase anyone down”
    - *(In response to “My Care Team page)* “These are my friends! I’ve known them for 7 years. It’s nice to see their pictures here”
    - “With something like this, you know what’s going on”
    - “This is great! Patients need more info about risks, safety, medications, ‘who is my doctor’ ...”

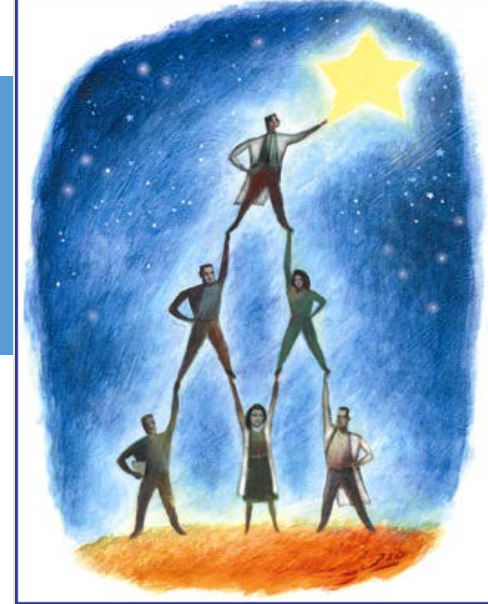




# PROSPECT Team

## BWH Research Investigators

- David Bates – *Principal Investigator*
- Sarah Collins – *Co-Investigator/Nursing Informatics Specialist*
- Anuj Dalal – *Co-Investigator*
- Patricia Dykes – *Co-Investigator/Director*
- Priscilla Gazarian – *Co-Investigator*
- John Hanna – *Research Assistant*
- Jaeho Lee – *Graphical Design*
- Lisa Lehmann – *Co-Investigator*
- Stuart Lipsitz – *Biostatistician*
- Kelly McNally – *Research Assistant*
- Eli Mlaver – *Research Assistant*
- Conny Morrison – *Research Assistant*
- Kumiko Ohashi – *Project Manager*
- Sucheta Ravindran – *Research Assistant*
- Ronen Rozenblum – *Co-Investigator*
- Lipika Samal – *Co-Investigator*
- Diana Stade – *Research Assistant*
- Cathy Yoon – *Data Analyst*



## Clinical Leadership

- Oncology
  - Ted Alyea – *Medical Director*
  - Eddy Chen – *Medical Oncologist*
  - Katie Fillipon – *Nursing Director*
  - Marsha Malone – *Nursing Director*
- MICU
  - Kathleen Leone – *Nursing Director*
  - Anthony Massaro – *Medical Director*

## Other Collaborators

- Frank Chang – *Developer*
- George Getty – *Developer*
- Deborah Williams – *Database Programmer*
- Maureen Fagan – *Executive Director for Patients and Families*
- Care Thread Inc.



# Fall TIPS (Tailoring Interventions for Patient Safety)



# Fall TIPS (Tailoring Interventions for Patient Safety)

- 2 year mixed methods study funded by Robert Wood Johnson Foundation:
  - Qualitative phase:
    - why do hospitalized patients fall?
    - what interventions are effective and feasible in hospital settings?
  - Randomized control trial: to test a fall prevention toolkit designed to address issues identified during qualitative phase.

# The Fall TIPS Toolkit Requirements



# The Fall TIPS Toolkit: Fall Risk Assessment/Tailored Plan

## FALL T.I.P.S.

TAILORING INTERVENTIONS FOR PATIENT SAFETY



Patient Name:

MRN:

Location:

**Morse Fall Scale:** For more info, scroll over each response below

History of Falls- past 3 months:	<input checked="" type="checkbox"/> Yes (25)
Secondary Diagnosis:	<input type="checkbox"/> Yes (15)
Ambulatory Aid:	<input type="radio"/> None / Bed Rest / Nurse Assist (0) <input checked="" type="radio"/> Crutch / Cane / Walker (15) <input type="radio"/> Furniture (30)
IV or Hep Lock Present:	<input type="checkbox"/> Yes (20)
Gait:	<input type="radio"/> Normal / Bed Rest / Wheel Chair (0) <input checked="" type="radio"/> Weak (10) <input type="radio"/> Impaired (20)
Mental Status:	<input type="radio"/> Oriented to own ability (0) <input checked="" type="radio"/> Overestimates, forgets limitations (15)

**Morse Fall Score:**

For more information about Fall prevention [visit our website](#) For Fall TIPS [Training Guide](#) Go To [Status Dashboard](#)  
 For more information about Fall TIPS project contact [our team](#).

**Interventions**

**Safety documentation**

\*Safety Precautions  
 Document previous fall  
 Review Medication List

**Consultations**

Consult with MD/Pharmacist  
 PT consult

**Assistance with toileting**

Toileting schedule using:  
 Bed Pan  
 Commode  
 Assist to bathroom

**Assistance with ambulating**

Provide Ambulatory aid:  
 Crutches  
 Cane  
 Walker  Other Device  
 IV assistance when walking  
 Out of bed with assistance:  
 1 Person  
 2 Persons

**Bedside assistance**

Bed/Chair alarm turned on  
 Bed close to nurse station  
 Frequent checks; re-orientation

**Print Documents**  Bed Poster  Plan of Care

**Patient Education:**  English  Spanish

Fall risk assessment

Tailored plan



# FALL T.I.P.S.

TAILORING INTERVENTIONS FOR PATIENT SAFETY





## Fall Prevention Plan of Care

**Problem: \*\*\*Patient is at risk for falls\*\*\***

 Patient Name: **Jane Doe**

MRN: 12345678

Printed: March 04, 2009

Patient has a history of falls	<input type="checkbox"/> Safety Precautions <input type="checkbox"/> Document circumstances of previous falls	 <b>History of Falls</b>
Patient uses ambulatory aid	<input type="checkbox"/> Place WALKER at bedside	 <b>Ambulatory Aid: Walker</b>
Patient's gait is Weak	<input type="checkbox"/> Patient needs AssistX1	 <b>Out of Bed with Assist</b>
Patient overestimates ability; forgets limitations	<input type="checkbox"/> Bed/Chair alarm turned on <input type="checkbox"/> Move pt. close to nurse station <input type="checkbox"/> Freq Checks; re-orientation; distractions	 <b>Bed/Chair Alarm On</b>

Total Morse Fall Score: 65

 Sign/Credentials Patricia C. Dykes R.N Date/Time 3/04/09

## Fall Prevention in Acute Care Hospitals A Randomized Trial

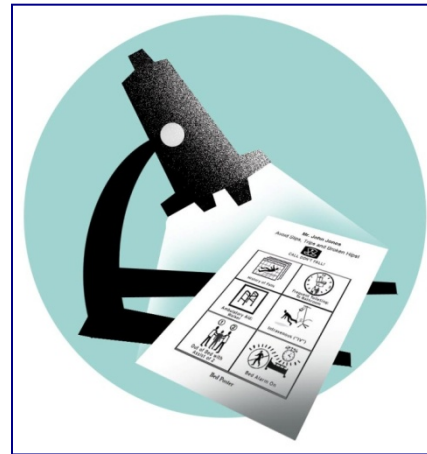
Patricia C. Dykes, RN, DNSc; Diane L. Carroll, RN, PhD, BC; Ann Hurley, RN, DNSc; Stuart Lipsitz, ScD; Angela Benoit, BComm; Frank Chang, MSE; Seth Meltzer; Ruslana Tsurikova, MSc, MA; Lyubov Zuyov, MA; Blackford Middleton, MD, MPH, MSc

- Findings:

- Patient falls were significantly reduced on intervention units.

**There were fewer falls in  
intervention units than in  
control units**

**Patients aged 65 or older  
benefited most from the Fall  
TIPS toolkit**



**No significant effect was noted in  
fall related injuries**

# Fall Prevention Lessons Learned

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Strategies and tools to facilitate the 3-step fall prevention process will prevent patients from falling!

# Fall Prevention Lessons Learned

- Fall TIPS reduced falls by 25% but >90% of falls are preventable...what happened?
  - Why did some patients with access to the Fall TIPS Toolkit fall?
    - What factors are associated with falls in younger patients?
    - What factors are associated with falls in older patients?
  - Secondary analysis of fallers (cases) n=48 and 144 matched controls exposed to the Fall TIPS toolkit\*
  - Found that in all cases, planned interventions were not followed consistently by the patient (most frequently) or the nurse
    - i.e., Out of bed with assistance

How do we get patients to CONSISTENTLY follow their fall prevention plan?

# Rationale for Patient Engagement in 3-Step Fall Prevention Process

- Facilitates patient understanding of personal fall risk status and the plan to prevent a fall.
- Promotes patient understanding of their role in fall prevention.
- Facilitates patient (and family) partnership in ensuring that the plan is carried out consistently.

A common reason why patients fall is that planned interventions are not followed consistently by the patient (most frequently) or the team\*



# BWH Patient Safety Learning Lab Patient-Centered Fall Prevention Toolkit



## Primary Aim:

- To engage patients and their family caregivers as well as providers in the design and development of a fall prevention toolkit.



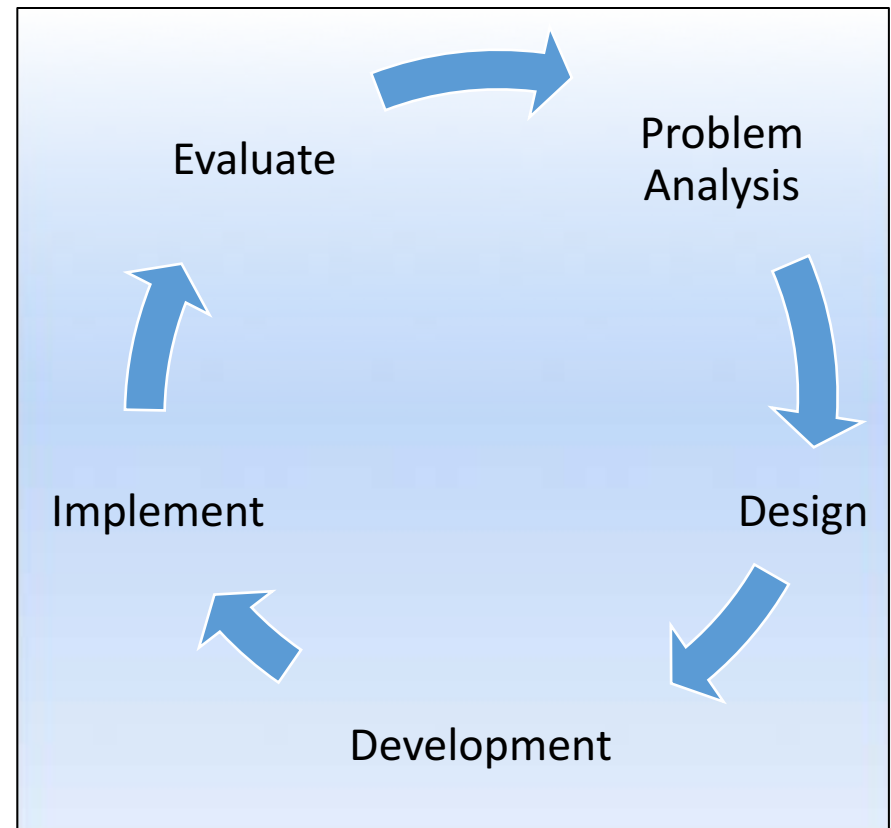
Agency for Healthcare Research and Quality  
Advancing Excellence in Health Care



Northeastern University  
Healthcare Systems Engineering Institute

# Mixed Methods/Participatory Design Approach

- Surveys, observations, semi-structured interviews
  - Nurses, patients, families
- Interviews recorded, analyzed for themes
- Focus end-user requirements for patient participation in 3-step fall prevention process
- Feedback on prototype tools
  - Electronic
  - Paper



# Iterative Design and Development

- **Design phase**
  - Powerpoint mockups by Systems Engineering interns at Northeastern University
  - Qualitative feedback from Patient and Family Advisory Council (PFAC) and patients at bedside
- **Development phase**
  - System and integration software testing
  - Usability testing with patients and providers to refine tools
  - Iterative fall prevention icon development with ongoing patient and clinician validation (patient n=90; clinicians n=59)

# Fall TIPS Electronic Tool Prototype

Zoom  		Patti Prospect's Plan of Care		Wednesday 11/12/2014	
		Room #:NO NAME Phone#:		 49° Fog	
<a href="#">HOME</a>		<a href="#">Safety Reminders</a>		<a href="#">Fall T.I.P.S.</a>	
<a href="#">MY CARE TEAM</a>		<a href="#">MySafeCare</a>			
<a href="#">MESSAGES</a>		<b>Fall Risk Factor</b>		<b>Present?</b>	
<a href="#">SAFETY</a>		I have fallen within the last 6 months.		<input type="checkbox"/>  HISTORY OF FALLS	
<a href="#">TEST RESULTS</a>		I have a medical condition and am taking medications that can make me dizzy, unsteady, or cause me to urinate frequently.		<input type="checkbox"/>  MEDICATION	
<a href="#">MEDICATIONS</a>		I need a walking aid to walk safety.		<input type="checkbox"/>  CANE <input type="checkbox"/>  CRUTCHES <input type="checkbox"/>  WALKER <input type="checkbox"/>  WHEELCHAIR	
<a href="#">FOOD AND DIET</a>		I have an intravenous ("IV") or other equipment attached to me.		<input type="checkbox"/>  EQUIPMENT ASSIST	
<a href="#">DISCHARGE</a>		My walking is unsteady, I need assistance.		<input type="checkbox"/>  ASSIST X1 <input type="checkbox"/>  ASSIST X2 <input type="checkbox"/>  TOTAL ASSIST	
<a href="#">INFO</a>		Sometimes I forget to call for help getting out of bed.		<input type="checkbox"/>  CALL FOR HELP	
<a href="#">FEEDBACK</a>		When I toilet I need:		<input type="checkbox"/>  BED PAN <input type="checkbox"/>  COMMODE <input type="checkbox"/>  TOILET	
<a href="#">LOG OUT</a>		Message Care Team 			

# Fall TIPS Paper Tool Prototype

## FALL RISK ASSESSMENT







## EVIDENCE-BASED FALL INTERVENTIONS

Date: \_\_\_\_\_ Patient Name: \_\_\_\_\_

**PARTNERS HEALTHCARE** | FOUNDED BY BRIGHAM AND WOMEN'S HOSPITAL AND MASSACHUSETTS GENERAL HOSPITAL

### FALL RISK ASSESSMENT

Why you are at risk for falling while in the hospital










1. You have fallen recently.	 HISTORY OF FALLS	_____
2. You have a medical condition and are taking medications that may make you dizzy, unsteady, or cause you to urinate frequently.	 Rx	_____
3. You need a walking aid to walk safely.	 AMBULATORY AID Walker	_____
4. You have an intravenous ("IV") or other equipment attached to you.	 INTRAVENOUS ("IV")	_____
5. Your walk is unsteady.	 Unsteady Walk	_____
6. You may forget or not want to call for help to get out of bed.	 Forget/Not Want to Call	_____

**INJURY RISK ASSESSMENT**

- Age (85 years old or older, frailty)
- Bones (osteoporosis, risk or history of fracture, etc)
- Coagulation (risk for bleeding, low platelet counts or taking anticoagulation)
- Surgery (recent), lower limb amputation or major abdominal or thoracic surgery

**PARTNERS HEALTHCARE** | FOUNDED BY BRIGHAM AND WOMEN'S HOSPITAL AND MASSACHUSETTS GENERAL HOSPITAL

### How can we work together to prevent you from falling while you are in the hospital?

 HISTORY OF FALLS	 BED ALARM ON	 INTRAVENOUS ("IV")	 Out of Bed with Assist	
Tell your nurse about recent falls.	The bed/chair alarm is on to remind you and your nurse that you need help to get out of bed.	Ask for help to move the IV pole or other equipment.	Call for help to get out of bed. You may need assistance to get up safely	We will stay with you while you use the toilet or commode
 Frequent Toileting: Commode	 Frequent Toileting: To Bathroom		 AMBULATORY AID: Quinbar	Other plans?
Call for help to use the commode.	Call for help to use the bathroom.	Your nurse may help you move by using special equipment.	AMBULATORY AID: Cane AMBULATORY AID: Walker	
We would be happy to help you up to the commode.	We would be happy to help you to the bathroom.	He or she will explain how the equipment works.	Be sure to use your crutches, cane or walker.	

**Patient Comfort Rounds, Because we care**

We are coordinating & formalizing the excellent care we give by anticipating your needs. We are rounding every \_\_\_\_\_ to make sure:

- ✓ Your pain is controlled
- ✓ Assist you with toileting
- ✓ Make sure you are comfortable
- ✓ Your Personal Items are within reach
- ✓ Environment is safe













**We are coordinating the care we give you by anticipating your needs.**



# Requirements for Patient Engagement

- Icons: Must be patient friendly
  - Validate with patients
- Electronic tool: Improve visual appeal of user interface, improve ease of use, eliminate double work/documentation
  - Simplify
  - Link with Morse Fall Scale/fall prevention interventions in EHR
- Paper tool: Simplify visual display, optimize for use by patient/family,
  - Add decision support to link areas of risk to interventions
  - Develop Spanish version

# Requirement: Validate Icons with Patients

Fall Risks Assessment Concepts	Initial Mean CIV Score (Patient)	Initial Icon	Dislikes	Suggested Improvements	Final Icon	Final Mean CVI Score (Patient)	Final Mean CVI Score (Nurse)
History of Falls	2.8	 HISTORY OF FALLS	-looks like a cage -days are too small	-use "January" instead of days as header		3.0	3.2
You have a medical condition and are taking medications that may make you dizzy, unsteady, or cause you to urinate frequently.	3.2		-black background -only a prescription -seemingly unrelated to falls	-eliminate background -perhaps draw patient as well as prescription		3.0	3.1
You need an ambulatory aid (walking aid) to walk safely.	3.7	 AMBULATORY AID: Walker	-only includes one device	-possibly include more devices		3.4	3.6
You have an intravenous ("IV") or other equipment attached to you.	3.1	 INTRAVENOUS ("IV")	-shows the act of tripping	-standing patient with IV		3.7	3.7
Your gait is unsteady.	2.6		-looks like someone slipping on wet floor, not unsteady gait	-draw person looking unsteady -lines around arms/legs to indicate unsteadiness -feet misaligned -put stars around head -some iterations too closely resemble dancing		3.0	3.0
You may forget (or refuse) to call for help to get out of bed.	2.3		-suggests deep thoughts rather than desired concept	-draw a patient sitting on bed looking confused -use question marks -include phone or call bell -have person with string tied around finger to indicate remembering -include stop sign		3.1	2.7

# Fall Risks

(Check all that apply)



History of Falls



Walking Aid



IV Pole or Equipment



Medication Side Effects



May Forget or Choose Not to Call



Unsteady Walk

# Fall Interventions

(Circle selection based on color)

Communicate Recent Falls



Use Ambulatory Aid



Crutches



Cane



Walker

IV Assistance When Walking



Toileting Schedule: Every \_\_ hours



Bed Pan



Commode



Bathroom

Bed Alarm On




















Assistance Out of Bed



None



# Laminated Paper Fall T.I.P.S.

<p><b>Nombre:</b></p>	<p><b>Fecha:</b></p>
<p><b><u>Riesgos de Caídas</u></b> (Marque todo lo que corresponda )</p>	<p><b><u>Intervenciones Para Caídas</u></b> (Circule la sección basada en el color )</p>
<p> <b>Historia de Caídas previas</b> <input type="checkbox"/></p> <p> <b>Efectos adversos a medicamentos</b> <input type="checkbox"/></p> <p> <b><u>Ayudante</u> para caminar</b> <input type="checkbox"/></p> <p> <b>Equipos para intravenosas (IV)</b> <input type="checkbox"/></p> <p> <b>Marcha inestable</b> <input type="checkbox"/></p> <p> <b>Olvida llamar o decide no pedir ayuda</b> <input type="checkbox"/></p>	<p><b>Comuniqué caídas recientes</b> </p> <p><b>Ayudas para caminar</b>   <b>Muletas</b>             <b>Bastón</b>             <b>Caminador</b></p> <p><b><u>Ayudante</u> con IV/Equipos para caminar</b> </p> <p><b>Horario para ir al baño : Cada ___ horas</b>   <b>Sanitario</b>             <b>Asistencia con la silla sanitaria</b>             <b>Asistencia para llegar al baño</b></p> <p><b>La alerta de la cama está funcionando</b> </p> <p><b>Asistencia para salir de la Cama</b>   <b>Una persona</b>             <b>Dos personas</b></p>
<p>Fall risk assessment</p>	<p>Tailored plan based on patient's determinants of risk</p>

# Usability Results: Fall TIPS Paper Tool

Survey Question	Old (N=27)		New (N=27)		p-value
	Mean	Variance	Mean	Variance	
1. I think that I would like to use these tools frequently.	2.333	0.846	3.704	1.217	<.001
2. I find the tools unnecessarily complex.	3.148	1.746	1.667	1.077	<.001
3. I think the tools are easy to use.	2.692	1.502	4.222	0.949	<.001
4. I think that I would need the support of a fall prevention expert to be able to use these tools.	1.852	0.593	1.500	0.660	.112
5. I find the various functions in the tools are well-integrated.	2.593	0.866	3.852	1.131	<.001
6. I think there was too much inconsistency in available tools.	2.704	1.293	2.111	1.179	.06
7. I would imagine that most people would learn to use these tools very quickly.	2.889	1.333	4.296	1.063	<.001
8. I find the tools very cumbersome to use.	3.296	1.755	2.222	1.872	.005
9. I felt very confident using these tools.	3.222	1.103	4.259	1.046	<.001
10. I needed to learn a lot of things before I could get going with these tools.	2.423	1.134	1.852	0.823	.04
11. I am satisfied with the tools to support the fall prevention process at this hospital.	2.481	1.028	3.704	1.293	<.001

Katsulis Z, Ergai A, Leung WY, Schenkel L, Rai A, Adelman J, Benneyan J, Bates DW, **Dykes PC**. Iterative user centered design for development of a patient-centered fall prevention toolkit. **Appl Ergon**. 2016 Sep; 56:117-26. PMID: 27184319.

*System Usability Scale*, responses ranged from 1 (strongly disagree) to 5 (strongly agree).



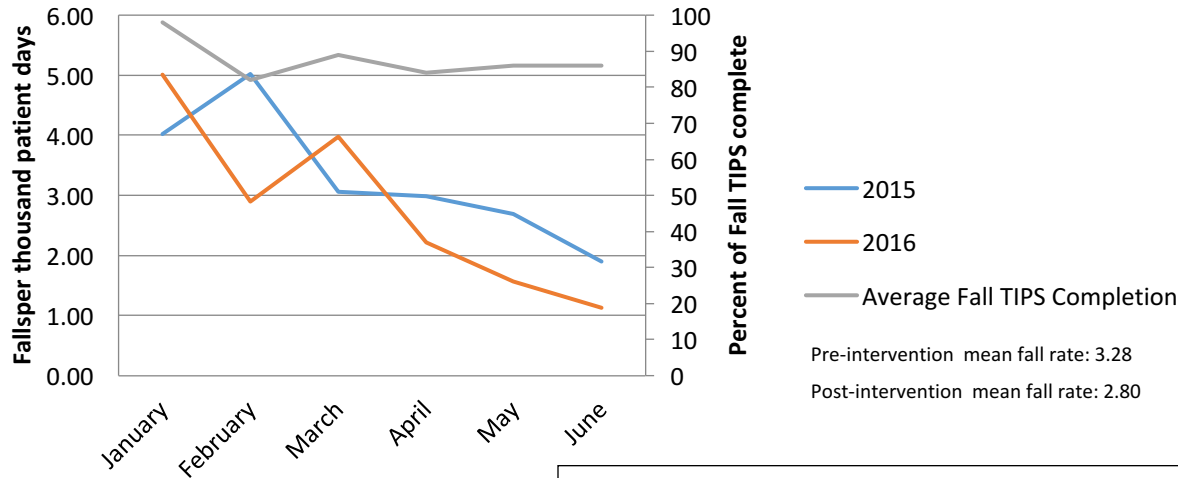
# Fall TIPS Poster Pilot Test

- January – June 2016
- Targeted units with fall/injury rates above hospital and state mean

<b>Site/ Number of Units</b>	<b>Service</b>	<b>Number of Beds</b>
<b>Brigham and Women's Hospital/3</b>	Neuroscience Intermediate Care	43
<b>Brigham and Women's Hospital/2</b>	Medical Intermediate Care	31
<b>Brigham and Women's Hospital/2</b>	Oncology	20
<b>Montefiore Medical Center/1</b>	Medical Intermediate Care	36

# Fall TIPS Pilot Test Results

## Average Fall Rate 2015 vs. 2016 with Average Fall TIPS Completion



Fall TIPS Adherence: 82%

Pre-Fall TIPS Fall Rate: 3.28

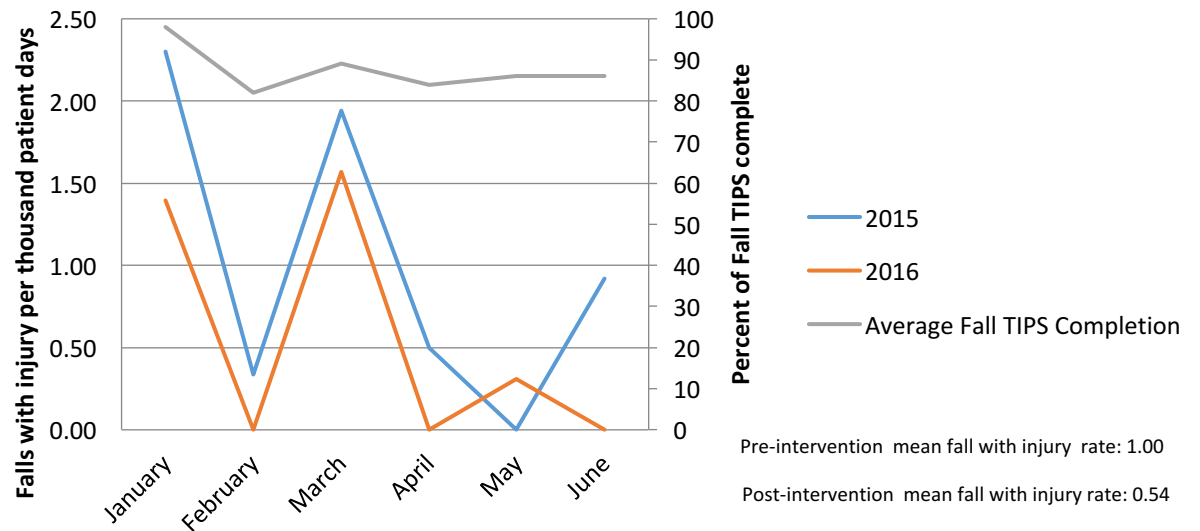
Post Fall TIPS Fall Rate: 2.80

Pre-Fall TIPS Injury Rate: 1.00

Post Fall TIPS Injury Rate: .54

Dykes PC, Duckworth M, Cunningham S, Dubois S, Driscoll M, Feliciano Z, Ferrazzi M, Fevrin F, Lyons S, Lindros M, Monahan A, Paley M, Jean-Pierre S, Scanlan M. Pilot Testing Fall TIPS (Tailoring Interventions for Patient Safety): a Patient-Centered Fall Prevention Toolkit. **The Joint Commission Journal on Quality and Patient Safety.** Aug 2017

## Average Fall Rate with Injury 2015 vs. 2016 with Average Fall TIPS Completion

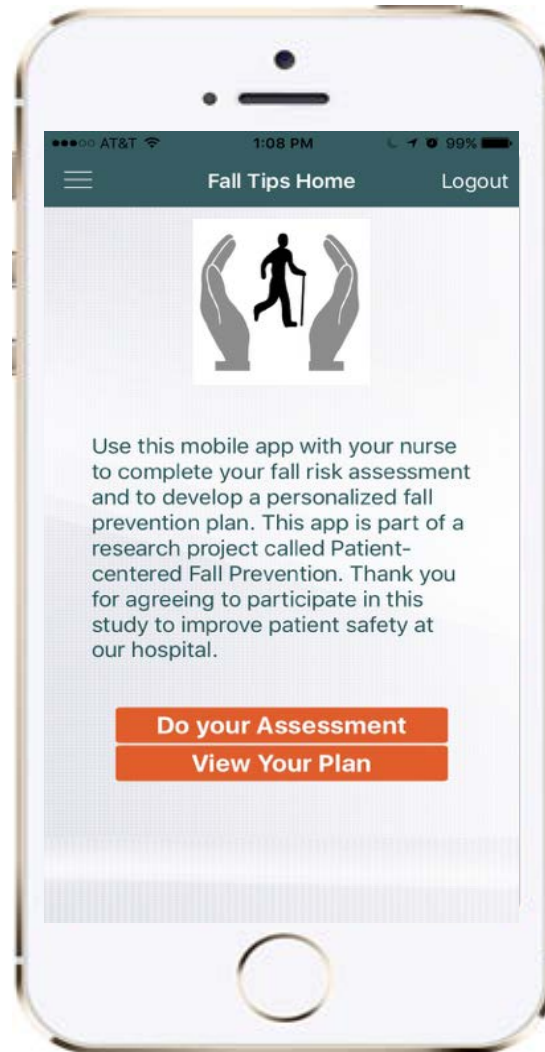
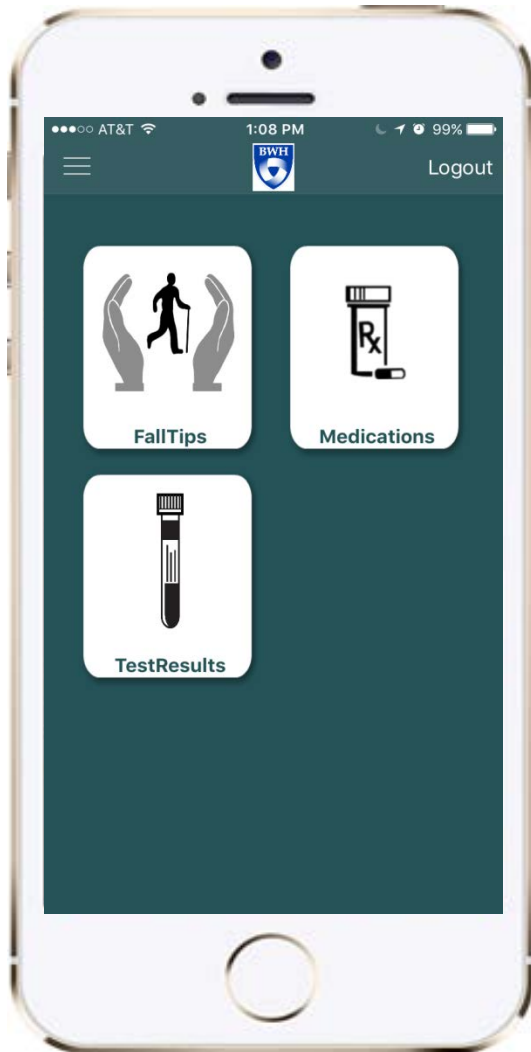


# Patient-centered Fall Prevention Tools

- Laminated paper Fall T.I.P.S.
- Web-based and mobile patient portals to access Fall T.I.P.S.
- Patient Safety Plan Screensaver for all members of the care team, including patients and family



# Patient Portal (Mobile Application view)–Fall T.I.P.S. displayed



# Patient Portal: Fall TIPS

Zoom **Patti's Plan of Care** Monday 4/25/2016

Room #: 4C-561

Below are your selected Fall Risk Factors. Status: Approval Pending

- Medication Side Effects
- Walking Aid
- IV and/or Equipment
- Unsteady Walk
- Forget or Choose not to Call

Your suggested plan of care is

- Assistance with Bathroom needed every 2 hour(s)
- Use Cane
- IV Assistance when walking
- 1 Person assist
- Bed Alarm On

[Update Plan](#)

**SAFETY**

- Reminders
- Fall TIPS**
- MySafeCare

**MY CARE TEAM**

**PREFERENCES**

**TEST RESULTS**

**MEDICATIONS**

**FEEDBACK**

**INFO**

**LOG OUT**

# Patient Room Desktop Screensaver

## Patient Needs:

Hearing aid, translator, glasses/contacts, latex allergy, arm restriction

## Safety Reminders:

Braden score, diet order, catheter infection, ulcer, restraints, PT exercises etc

## Fall Prevention:

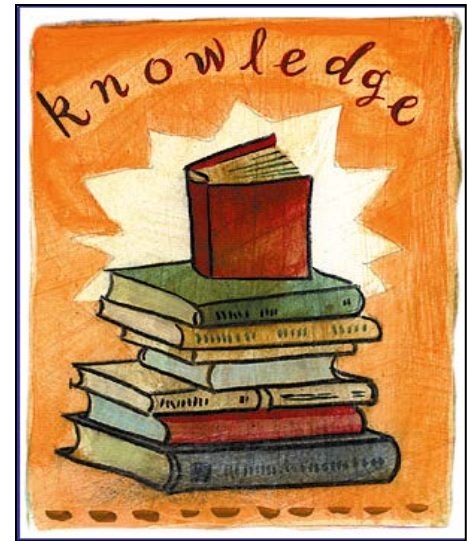
Toileting schedule, help to walk with IV Pole, use ambulatory aid etc





# Lessons Learned

- Multidisciplinary involvement needed to improve clinical outcomes
  - Clinical champions to reinforce best practices
  - Documenting reasons why safety checklist items are not indicated
- Patient care units are busy; many barriers to adoption and use of new innovations
  - Patients lack capacity, no care partner
  - Lack of access outside of hospital
- A device strategy is needed
  - Accessories
  - Storage
  - Cleaning
  - Security
  - Enrollment



- Patients want to be engaged but still challenges
  - Incapacitated, less “tech-savvy”, variably “activated” patients
  - Access to content for non-English speaking patients
  - Understanding of goals of care concept
  - Identifying and providing access to care partners can address some challenges
- More work needed re:
  - Workflow integration and clinician buy-in
  - Communicating value of using technology

# Conclusions

- Making care better:
  - Will involve partnering with patients.
  - Will require high-tech and low-tech solutions
    - Clinician attitudes still have a ways to go
  - Will be highly multidisciplinary
    - Roles of nurses and other clinicians will change
- Health IT is opening new doors and we need to take advantage!



# Thank You: BWH/NEU Patient Safety Learning Lab Team



## Brigham and Women's Hospital

David Bates  
Alex Businger  
Sarah Collins  
Brittany Couture  
Anuj Dalal  
Patricia Dykes  
Sarah Khorasani  
Lisa Lehmann  
Emily Leung  
Stuart Lipsitz  
Eli Mlaver  
Ronen Rozenblum  
Jeffrey Schnipper  
Kumiko Schnock

## Partners HealthCare

Frank Chang  
Ramesh Bapanapalli  
Mohan Babu Ganasekaran  
Gennady Gorbovitsky

## Patient-centered Fall Prevention

Patricia Dykes  
Emily Leung  
Awatef Ergai  
Jillian Hines  
Zachary Katsulis  
Ramesh Bapanapalli  
Mohan Babu Ganasekaran  
Jason Adelman  
Maureen Scanlan

## Northeastern Institute of Healthcare Systems Engineering

James Benneyan  
Corey Balint  
Jennifer Coppola  
Nicholas Fasano  
Zachary Katsulis  
Meredith Clemmens  
Lindsey Baldo  
Awatef Ergai  
Dominic Breuer  
Jillian Hines  
Jessica Cleveland