Using Health IT and Patient Engagement to Improve Patient Outcomes

Center for Patient Safety, Research, and Practice
Brigham and Women’s Hospital
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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

129,476 STROKE
138,080 CHRONIC LOWER RESPIRATORY DISEASE
400,000 MEDICAL HARMS
574,743 CANCER
597,743 HEART DISEASE

Van Den Bos et al. (2011) The $17.1 Billion Problem: The Annual Cost Of Measurable Medical Errors Health Affairs. 30 (4) 596-603.
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

<table>
<thead>
<tr>
<th>Category</th>
<th>N=88</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. with 1 unique response</td>
<td>21</td>
<td>24%</td>
</tr>
<tr>
<td>No. with 2 unique response</td>
<td>44</td>
<td>50%</td>
</tr>
<tr>
<td>No. with 3 unique response</td>
<td>23</td>
<td>26%</td>
</tr>
</tbody>
</table>
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.”

Institute of Medicine, Crossing the Quality Chasm (2001)
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

Hibbard & Green (2013). What The Evidence Shows About Patient Activation: Better Health Outcomes And Care Experiences; Fewer Data On Costs Health Affairs: 32 (2) 207-214
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

Supported by the Moore Foundation, DW Bates PI
Patient-Centered Tool Kit (PCTK) Components

"Patient-facing"

"Provider-facing"
Provider FACING TOOLS

PROSPECT
<table>
<thead>
<tr>
<th>Item</th>
<th>Safety Screen (MD w/RN present at rounds)</th>
<th>RN Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient/Family Toolkit</td>
<td>We have given the RN an opportunity to present any new patient or family input (from the Patient SatisFActive model, Toolkit, or Microblog). Yes No</td>
<td></td>
</tr>
<tr>
<td>Vent Bundle</td>
<td>Is the patient on mechanical ventilation? Yes No</td>
<td></td>
</tr>
<tr>
<td>HOB elevation</td>
<td>Indicated</td>
<td>Last documented HOB angle:</td>
</tr>
<tr>
<td>Spontaneous Awakening Trial</td>
<td>Indicated</td>
<td>Performed this calendar day Passed</td>
</tr>
<tr>
<td>Spontaneous Breathing Trial</td>
<td>Contraindicated- Hemodynamic Instability (up titration of pressors)</td>
<td>Performed this calendar day Failed</td>
</tr>
</tbody>
</table>
Multidisciplinary Plan of Care Platform
## Nursing Plan of Care

<table>
<thead>
<tr>
<th>Onset Date</th>
<th>R</th>
<th>Problems</th>
<th>Goal(s)</th>
<th>Planned Assessments and Interventions</th>
<th>Outcome Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/12/2014</td>
<td></td>
<td>Comfort alteration</td>
<td>- Pain management goal</td>
<td>Assess pain every 2 hours</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Scale used Numerical (0-10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Other</td>
<td>T &amp; R q 2 hrs w/ PROM increase oob as tol</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RASS scale every 2</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Care Classification System Problems and Outcomes

Nursing Plan of Care Documentation

Patient Plan of Care Problems With Infobuttons

Patient Educational Content
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

Harry Potter's Plan of Care
Room #:1040A Phone#: (617)555-1212

My Care Team:
- Attending: Dr. Dalal
- Nurse: P. Dykes
- Intern: Jaeho Lee
- Primary Care Physician: David W. Bates
- Division: Kuniko Chashi
- Outpatient Oncologist: Lisa Lehmann
- Nurse: Patricia D'yless
My Overall Goal:
Be comfortable

My Daily Goal:
Get out of bed

My Care Team is helping me to meet my goals:

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
Be comfortable
Get out of bed
I would like my sister to be involved in my care

• Pain < 4
• Improve skin integrity
• Temp < 100.5
My Safety Concerns

<table>
<thead>
<tr>
<th>Safety Reminders</th>
<th>Fall T.I.P.S.</th>
<th>MySafeCare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition And Fluids</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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
Does the PROSPECT framework positively impact satisfaction, care plan concordance, and lead to reduction in adverse events and healthcare resource utilization and costs?

**Data collection (control and intervention units)**

- **Pre-implementation Period**
  - 7/1/13 – 6/8/14

- **Wash-in Period**
  - 6/9/14 – 6/30/14

- **Post-implementation Period**
  - 7/1/14 – 5/29/15
• 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

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

Supported by the Robert Wood Johnson Foundation, Dykes PI
The Fall TIPS Toolkit Requirements

- Leverage Existing Workflows
- Surveillance
- Tailoring
- Teamwork
- Communication
The Fall TIPS Toolkit: Fall Risk Assessment/Tailored Plan

<table>
<thead>
<tr>
<th>Patient Name: Jane Doe</th>
<th>MRN: 12345678 (BWH)</th>
<th>Location: 14-10A</th>
</tr>
</thead>
</table>

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

- **History of Falls: past 3 months:**
  - Yes (25)

- **Secondary Diagnosis:**
  - Yes (15)

- **Ambulatory Aid:**
  - None / Bed Rest / Nurse Assist (0)
  - Crutch / Cane / Walker (15)
  - Furniture (30)

- **IV or Hep Lock Present:**
  - Yes (20)

- **Gait:**
  - Normal / Bed Rest / Wheel Chair (0)
  - Weak (10)
  - Impaired (20)

- **Mental Status:**
  - Oriented to own ability (0)
  - Overestimates, forgets limitations (15)

**Morse Fall Score:** 65

**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:**

- Bad Poster
- Plan of Care
- English
- Spanish

**Patient Education:**

- Frequent checks, re-orientation

For more information about Fall prevention [visit our website](#)

For more information about Fall TIPS [Training Guide](#) Go To Status Dashboard

Fall risk assessment  Tailored plan
# Fall Prevention Plan of Care

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

**Patient Name:** Jane Doe  
**MRN:** 12345678  
**Printed:** March 04, 2009

<table>
<thead>
<tr>
<th>Patient has a history of falls</th>
<th>Safety Precautions</th>
<th>Document circumstances of previous falls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient uses ambulatory aid</td>
<td>Place WALKER at bedside</td>
<td></td>
</tr>
<tr>
<td>Patient’s gait is Weak</td>
<td>Patient needs AssistX1</td>
<td></td>
</tr>
</tbody>
</table>
| Patient overestimates ability, forgets limitations | Bed/Chair alarm turned on  
Move pt. close to nurse station  
Freq Checks; re-orientation; distractions |

**Total Morse Fall Score:** 65

**Sign/Credentials** Patricia E. Dykes RN  
**Date/Time** 3/04/09

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Fall T.I.P.S. Research Study Plan of Care Documentation Form October 1, 2008 - June 30, 2009  
Medical Record Copy
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

Fall Prevention is a 3-Step Process*

1. Fall Risk Screening/Assessment
2. Tailored/Personalized Care Planning
3. Consistent Preventative Interventions
   - Universal Precautions
   - Tailored Interventions to address patient-specific areas of risk

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*

Primary Aim:

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

![Diagram showing cycle of Problem Analysis, Design, Development, Implement, Evaluate]

Evaluate

Problem Analysis

Implement

Design

Development
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

<table>
<thead>
<tr>
<th>Fall Risk Factor</th>
<th>Present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have fallen within the last 6 months.</td>
<td></td>
</tr>
<tr>
<td>I have a medical condition and am taking medications that can make me dizzy,</td>
<td></td>
</tr>
<tr>
<td>unsteady, or cause me to urinate frequently.</td>
<td></td>
</tr>
<tr>
<td>I need a walking aid to walk safety.</td>
<td></td>
</tr>
<tr>
<td>I have an intravenous (&quot;IV&quot;) or other equipment attached to me.</td>
<td></td>
</tr>
<tr>
<td>My walking is unsteady, I need assistance.</td>
<td></td>
</tr>
<tr>
<td>Sometimes I forget to call for help getting out of bed.</td>
<td></td>
</tr>
<tr>
<td>When I toilet I need:</td>
<td></td>
</tr>
</tbody>
</table>

### My Safe Care

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

**Message Care Team**

- **Zing**
- **BWH**

**Room #: NO NAME Phone#:**

**Wednesday 11/12/2014**

**Temperature**: 49°F
## Fall TIPS Paper Tool Prototype

### Fall Risk Assessment

**Why you are at risk for falling while in the hospital**

1. You have fallen recently.
2. You have a medical condition and are taking medications that may make you dizzy, unsteady, or cause you to urinate frequently.
3. You need a walking aid to walk safely.
4. You have an intravenous (“IV”) or other equipment attached to you.
5. Your walk is unsteady.
6. You may forget or not want to call for help to get out of bed.

### Evidence-Based Fall Interventions

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

**History of Falls**
- **Tell your nurse about recent falls.**

**Bed/Chair Alarm**
- **The bed/chair alarm is on to remind you and your nurse that you need help to get out of bed.**

**IV Pole**
- **Ask for help to move the IV pole or other equipment.**

**Out of Bed with Assist**
- **Call for help to get out of bed. You may need assistance to get up safely.**

**Incontinence**
- **We will stay with you while you use the toilet or commode.**

**Other Plans?**
- **Call for help to use the commode.**
- **Our nurse may help you move by using special equipment.**
- **He or she will explain how the equipment works.**

**Patient Comfort Rounds, Because we care**

We are coordinating & formalizing the excellent care we give by anticipating your needs. We are rounding every ____ hour(s) 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

<table>
<thead>
<tr>
<th>Fall Risks Assessment Concepts</th>
<th>Initial Mean CIV Score (Patient)</th>
<th>Initial Icon</th>
<th>Dislikes</th>
<th>Suggested Improvements</th>
<th>Final Icon</th>
<th>Final Mean CIV Score (Patient)</th>
<th>Final Mean CIV Score (Nurse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Falls</td>
<td>2.8</td>
<td><img src="image" alt="History of Falls" /></td>
<td>-looks like a cage -days are too small</td>
<td>-use “January” instead of days as header</td>
<td><img src="image" alt="Final Icon" /></td>
<td>3.0</td>
<td>3.2</td>
</tr>
<tr>
<td>You have a medical condition and are taking medications that may make you dizzy, unsteady, or cause you to urinate frequently.</td>
<td>3.2</td>
<td><img src="image" alt="Rx" /></td>
<td>-black background -only a prescription -seemingly unrelated to falls</td>
<td>-eliminate background -perhaps draw patient as well as prescription</td>
<td><img src="image" alt="Final Icon" /></td>
<td>3.0</td>
<td>3.1</td>
</tr>
<tr>
<td>You need an ambulatory aid (walking aid) to walk safely.</td>
<td>3.7</td>
<td><img src="image" alt="Ambulatory Aid" /></td>
<td>-only includes one device</td>
<td>-possibly include more devices</td>
<td><img src="image" alt="Final Icon" /></td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td>You have an intravenous (“IV”) or other equipment attached to you.</td>
<td>3.1</td>
<td><img src="image" alt="Intravenous (IV)" /></td>
<td>-shows the act of tripping</td>
<td>-standing patient with IV</td>
<td><img src="image" alt="Final Icon" /></td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Your gait is unsteady.</td>
<td>2.6</td>
<td><img src="image" alt="Warning" /></td>
<td>-looks like someone slipping on wet floor, not unsteady gait</td>
<td>-draw person looking unsteady -lines around arms/legs to indicate unsteadiness -feet misaligned -put stars around head -some iterations too closely resemble dancing</td>
<td><img src="image" alt="Final Icon" /></td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>You may forget (or refuse) to call for help to get out of bed.</td>
<td>2.3</td>
<td><img src="image" alt="Thoughts" /></td>
<td>-suggests deep thoughts rather than desired concept</td>
<td>-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</td>
<td><img src="image" alt="Final Icon" /></td>
<td>3.1</td>
<td>2.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Fall Risks</strong> (Check all that apply)</th>
<th><strong>Fall Interventions</strong> (Circle selection based on color)</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Falls</td>
<td>Communicate Recent Falls</td>
</tr>
<tr>
<td>Walking Aid</td>
<td>Use Ambulatory Aid</td>
</tr>
<tr>
<td>IV Pole or Equipment</td>
<td>Crutches</td>
</tr>
<tr>
<td>Medication Side Effects</td>
<td>Cane</td>
</tr>
<tr>
<td>May Forget or Choose Not to Call</td>
<td>Walker</td>
</tr>
<tr>
<td>Unsteady Walk</td>
<td></td>
</tr>
</tbody>
</table>

**Medication Side Effects**

**Walking Aid**

**IV Pole or Equipment**

**History of Falls**

**May Forget or Choose Not to Call**

**Unsteady Walk**

**Toileting Schedule: Every __ hours**

**IV Assistance When Walking**

**Bed Alarm On**

**Assistance Out of Bed**

**Requirement:** Simplify, add decision support, add Spanish version
### Fall Risk Assessment

<table>
<thead>
<tr>
<th>Determinants of Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Falls</td>
</tr>
<tr>
<td>Adverse Effects of Medications</td>
</tr>
<tr>
<td>Aide for Walking</td>
</tr>
<tr>
<td>Intravenous Equipment</td>
</tr>
<tr>
<td>Unsteady Gait</td>
</tr>
<tr>
<td>forget to call or decide not to ask for help</td>
</tr>
</tbody>
</table>

### Tailored Plan Based on Patient’s Determinants of Risk

#### Interventions for Falls

- **Communication about Recent Falls**
- **Assistance for Walking**
  - Cane
  - Walking Frame
  - Walker

#### Bedside Nursing Interventions

- **Toilet Schedule**: Every ____ hours
- **Toilet Aid**: Comfortable Height, Youthful Height
- **Assistance for Toilet Use**: 1 Person, 2 Persons

#### Nursing Interventions

- **Alert from Bed**: 1 Person, 2 Persons
- **Nursing Chair**: Comfortable Height, Youthful Height
### Usability Results: Fall TIPS Paper Tool

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

**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

<table>
<thead>
<tr>
<th>Site/Number of Units</th>
<th>Service</th>
<th>Number of Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brigham and Women’s Hospital/3</td>
<td>Neuroscience Intermediate Care</td>
<td>43</td>
</tr>
<tr>
<td>Brigham and Women’s Hospital/2</td>
<td>Medical Intermediate Care</td>
<td>31</td>
</tr>
<tr>
<td>Brigham and Women’s Hospital/2</td>
<td>Oncology</td>
<td>20</td>
</tr>
<tr>
<td>Montefiore Medical Center/1</td>
<td>Medical Intermediate Care</td>
<td>36</td>
</tr>
</tbody>
</table>
Fall TIPS Pilot Test Results

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

- 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: 0.54

Fall TIPS Adherence: 82%

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

Use this mobile app with your nurse to complete your fall risk assessment and to develop a personalized fall prevention plan. This app is part of a research project called Patient-centered Fall Prevention. Thank you for agreeing to participate in this study to improve patient safety at our hospital.

Do your Assessment

View Your Plan

Status: Changes Pending Approval

Your Fall Prevention Interventions

Here’s what you can do with your nurses to prevent falling.

Communicate recent falls

Assist to Bathroom, Every 1 Hour

Use Cane

IV Assistance when walking

2 People assist

Bed Alarm On

Update Plan
Patient Portal: Fall TIPS

Patti’s Plan of Care

Room #: 4C-561

Below are your selected Fall Risk Factors.

- 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

Status: Approval Pending
**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

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- Jillian Hines
- Jessica Cleveland

Patient-centered Fall Prevention
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- Awatef Ergai
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- Jason Adelman
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