Why Improving Hospital Discharges Can Reduce Medical Errors: An Interview with Dr. Brian Jack, Associate Professor of Family Medicine, Boston Medical Center

AHRQ Grants: "Re-engineering the Hospital Discharge for Patient Safety," and “Testing the Re-Engineered Hospital Discharge “

Introduction

An estimated 20 percent of the 38 million discharges in hospitals each year result in adverse medical events and re-hospitalizations that could have been prevented. When patients are discharged from a stay in most U.S. hospitals today, there is no check list of dos and don’ts in place for providers or patients to follow. As a result, patients who are discharged often get shortchanged and they often return to the hospital. Why is this a problem? Although re-hospitalized patients account for 13 percent of the total hospital population, they consume 60 percent of resources, which translates into billions of dollars. Dr. Brian Jack and his colleagues at Boston Medical Center are trying to set a course for standardizing the way patients are discharged from hospitals. Through the “ReEngineered Discharge Process” or RED, Jack and his team are hoping to decrease medical errors and adverse events after a hospital discharge and ensure that patients are well-prepared when they leave the hospital. The National Quality Forum (NQF) already has endorsed the thrust of Dr. Jack’s research and last March listed having a RED system in place as one of 30 practices that a hospital needs to be considered a “safe” institution. Dr. Jack also has just received an extension on his AHRQ Partners in Implementing Patient Safety (PIPS) grant for the next three years to continue developing ways to implement the RED tool and assess its feasibility for hospitals nationwide. Dr. Jack talked to the PSRCC about his AHRQ-funded research and why transforming the hospital discharge process is a critical step towards advancing patient safety.

PSRCC: What got you interested in this area of research?

BJ: I’ve long been interested in the phenomenon of patients being discharged from the hospital, particularly here at Boston Medical Center (BMC), where there are a lot of patients coming in through the emergency room and where there is a high admission rate and high length-of-stay rate. There also is a very high rate of rehospitalization. These so-called ‘frequent fliers’ are patients in which there is not enough attention paid at the time of discharge. As a result, rehospitalizations are dramatically high with this group of patients. I am very interested in what we can do to support people when they are discharged. The quality of care they get receive the hospital is very important but so is the quality of support they receive once they are discharged.
PSRCC: Is the quality of support they get once they are discharged seriously lagging?

BJ: No one is truly responsible for a hospital patient from discharge to the first doctor visit. Instead, we’ve labeled this “time of patient self care.” I began to focus on where the opportunities for intervention in this revolving door process (when patients are readmitted for preventable conditions) existed.

PSRCC: So, you believe discharge should be considered part of the care continuum?

BJ: There is a lot of opportunity for patient safety improvement here but no one really had ever looked at hospital discharge as a process of care. That really surprised me. We spent a whole year with folks at our hospital looking at this and we made a process map of the hospital discharge, and analyzed those who had been re-hospitalized frequently. We came up with the principles of the re-engineered hospital discharge.

PSRCC: How big a problem is it nationally?

BJ: The first 90 days after hospitalization is a high-risk period. In the literature it’s been coined “The Black Hole.” When we studied what happens to our patients, we found that 22 percent of admissions were followed by a rehospitalization within 90 days. These rehospitalizations were slightly concentrated toward the days immediately following discharge; one third occurred within the first two weeks following discharge.

PSRCC: Why is this such a problem; seems pretty intuitive to keep patients healthy so they don’t return to the hospital?

BJ: The systems within hospitals are geared toward admitting patients. We know that the hospital discharge process is flawed, haphazard and lacks standardization. There also is often a lack of clarity as to who is responsible for the discharge education and preparation. In teaching hospitals, the discharge is often left to the intern, the least experienced member of the team – and it is now well documented that supervision by senior residents and attending physicians is lacking and the quality of the discharge information is poor.

Also, the priority of doctors and nurses is the sick patient coming up from the emergency room – which is appropriate; but because of staffing limits, people on the other end - those leaving the hospital - are getting short-changed. We have also found that the discharge plans are not finalized until shortly before discharge; and because there is great emphasis within hospitals to fill the beds as quickly as possible, there often is inadequate opportunity to prepare patients to leave the hospital. It obviously comes down to a matter of priorities.

The hospital discharge is really the poster child of patient safety. We now know that discharge summaries often do not contain key information and often do not get to the primary care physician, work-ups started in the hospital are often not completed, lab tests ordered in the hospital that are not back at the time of discharge often fall through the
cracks and many people leave the hospital without an adequate plan for follow up. All this leads to a high rate of adverse events, which is now well documented.

We believe there is a great need to standardize the discharge process and to study these new systems to determine if the added time and effort needed by hospital staff will result in positive health outcomes. Without this evidence, it will be very difficult to change the time-honored systems existing in hospitals

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**PSRCC:** You say that the hospital discharge process is a “handoff ripe with embedded structural risks and hazards” that can lead to failures and medical errors. Can you explain?

**BJ:** When people are discharged, there is no check list to follow, like when pilots prepare a plane for flight. That would change if the principles of re-engineered discharged (RED) are adapted. We came up with the 11 components of the RED - things we think ought to happen prior to discharge. We think this list makes great sense – and most everyone we’ve talked with has agreed - but yet we’re not doing it. Now under our AHRQ PIPS grant, we are testing it to see if it is feasible to do in a hospital and to determine the barriers and clinical outcomes.

**PSRCC:** Why is this study important?

**BJ:** Before we make a recommendation that every hospital begin the RED process, we need to make the case that clinical outcomes will improve and it needs to be organized so as not to overly burden the hospital staff—or it will never become a sustainable process. If we can show that a nurse-delivered re-engineered discharge intervention can decrease adverse events, that is very important. If we can show it can reduce rehospitalizations and save unnecessary health care or hospital costs, that also is very important. The results of our randomized control trial with 750 subjects will be available in late ’07. So, right now, we can’t show that.

**PSRCC:** So what have you found?

**BJ:** Our preliminary results are promising. We have found that after 30 days, when patients are asked “how prepared are you for discharge and do you understand medicines, diagnosis and follow-up?,” the disparity between pre- and post-intervention is highly significant. After the RED is instituted, patients say they are better prepared, understand appointments better, and understand their medicines and diagnosis better. We have studied the effect of the RED tools here at BMC and found that those who received this intervention are more likely to go to BMC-affiliated primary care physicians within 30 days (57 percent vs. 44 percent).
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We also have discovered that by analyzing data for some subjects and stratifying it by health literacy, people with low literacy (8th grade and below) were more likely to benefit from the RED intervention. Although only 47 percent of those with limited literacy said they were well prepared for discharge before the intervention; 64 percent said they were well prepared after the intervention. Those who said they understand appointments increased from 67 percent to 84 percent. Those who understood medications increased from 73 percent to 86 percent; and the number of people who understood their diagnosis grew from 36 percent to 61 percent.

PSRCC: What does this mean or show in terms of improving care, reducing errors?

BJ: It shows that there is a big difference between high literacy and limited literacy in terms of preparedness and understanding. It shows that when we administer the intervention, the effects of literacy disappear.

PSRCC: Have you identified through your research the factors that lead to rehospitalization and how that plays into improving discharge policies?

BJ: One thing we’ve identified is the role of depression. Our research shows that depression is a powerful predictor of rehospitalization. We evaluated the merits of adding psychosocial information to improve its predictive power among high-risk patients with prior admissions. We found that hospitalized patients with a history of prior hospitalizations within six months who screen positive for depression are three times more likely to be rehospitalized within 90 days.

Another thing we found was that rehospitalizations are also affected by the discharge day. For example, we found that patients discharged on Friday, Saturday, and Sunday were 30 percent more likely to be rehospitalized or seen in the ED within 90 days than those discharged other days. One theory we have is that because hospital staffing is lighter on the weekends and Friday is the busiest discharge day, problems at post-discharge may be due to the time of discharge. Other things we’ve looked at are life circumstances outside the hospital and how that affects recovery.

PSRCC: What goes into the reengineered hospital discharge?

BJ: This is transforming because there has been very little characterization of what the discharge processes ought to be before. Through our close attention to the detail of what actually happens and what should happen, we now can provide a list of things that we think ought to happen every single time. And if they are delivered, we know for sure, patients 30 days later will say they were prepared and know their appointments better.
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**PSRCC**: So what needs to be on the checklist?

**BJ**: First, there must be explicit delineation of roles and responsibility. All patients need to be discharged with a written plan that they understand that includes follow-up with an informed clinician, pending tests and studies, reconciled medication list and a discharge process that is benchmarked to quality indicators. There are 11 discrete and mutually reinforcing components that we believe should be consistently part of every hospital discharge. These include:

- Educating the patient about their diagnoses throughout their hospital stay
- Making appointments for clinician follow-up and post-discharge testing
- Discussing with the patient any tests or studies that have been completed in the hospital and discussing who will be responsible for following up the results
- Organizing post-discharge services
- Confirming the medical plans
- Reconciling the discharge plan with national guidelines and critical pathways
- Reviewing the appropriate steps for what to do if a problem arises

**PSRCC**: These steps are now included in the NQF “safe practices” list?

**BJ**: Yes, if a hospital wants to be considered a “safe” institution by NQF standards, it has to follow these guidelines.

**PSRCC**: You have had to produce a lot of written materials to facilitate your efforts. What kind of printed materials are needed to supplement the intervention?

**BJ**: We’ve produced an “After Hospital Care Plan” (AHCP), a color booklet designed to be clearly understood by all patients that if used will deliver the RED and the items identified by the NQF as important at discharge. The other thing we’ve prepared is a training manual—a 25-page book that can teach hospital professionals how to do this re-engineered discharge and how to prepare the AHCP. Finally we have created a workstation so that when we enter in key elements of discharge, we push a button and it is programmed to lay out the After Hospital Care Plan. This is set up so it’s easy to use. The nurse can push a button create an individualized AHCP for that patient.

**PSRCC**: As I understand then, creation of the after hospital care plan is now automated by this discharge planning work station?

**BJ**: Essentially this is the nexus of all information regarding patient discharge and discharge follow-up. Now this is a stand alone tool, where the nurses responsible for the discharge enter key information into a database. Once this is entered, an AHCP is created automatically by the workstation. The discharge nurse then reviews and refines
this plan, if necessary. The nurse then prints out the draft discharge plan and takes it to the house officer for review and sign off. Once that has been modified and finalized in the workstation, the AHCP is published and a spiral binding added at the workstation. The discharge nurse then reviews the material with the patient at the bedside. One of our next objectives is to integrate the workstation into the hospital’s electronic health record system so that key information like reconciled medication lists go automatically the AHCP and electronically exporting the AHCP to the patient’s ambulatory electronic record.

PSRCC: You have created a computerized virtual patient advocate. Tell me about her. You call her Louise?

BJ: Yes, with funds from the National Institutes of Health and help from Tim Bickmore, a computer science professor at Northeastern University (formerly at the media lab at MIT), we have created an “embodied conversational agent” named Louise, an empathetic animated character designed to teach the AHCP. These are not videotapes or prepared ahead of time. The computer program can produce speech and we have worked to teach Louise how to provide the RED intervention. She is programmed to teach the AHCP to patients at the time of discharge. She is in development and testing now – we hope she will be up and running in a new RCT in January 2008. The goal is to have her meet with the patient on a touch screen and computer kiosk before discharge to educate the patient on his/her discharge information using the AHCP. Louise is now able to explain over 300 medications and to explain the rest of the RED, including information on appointments and pending tests. This is an interactive conversation that allows the patient to ask questions and receive answers. Louise also is able to determine if the patient understands the elements of the AHCP before discharge. If not, she prints a report allowing the nurse to clarify the medications, or other parts of the discharge plan.

PSRCC: What happens when Louise gets a complicated question, which she can’t answer?

BJ: Questions that Louise cannot answer are printed out as “flags” for the staff nurse to address prior to discharge.

PSRCC: So how will you continue to develop this?

BJ: With our AHRQ grant, we will continue to develop Louise’s ability to provide discharge education and also link her to a PDA for continued interaction during the “black box” period, between discharge and the patient’s first primary care physician visit. In this grant, the patient will meet Louise in the hospital and will be given a PDA for the time between discharge and the first PCP visit. Before seeing the PCP, the patient will meet with Louise on a kiosk in the waiting room to gather his/her information from the PDA. The information also will be given to the PCP to better understand what has occurred since discharge. Prior to the visit, Louise will focus on patient activation to help establish the patient’s agenda for the appointment. Following the appointment the patient
will again meet with Louise in the waiting room for more education and a question-and-answer session. The patient will leave the appointment with an updated book.

**PSRCC:** Why is creating Louise so important?

**BJ:** When a hospital CEO says “A comprehensive discharge is important but it’s too expensive for our nurses to spend time doing this,” we will be able to respond with “Here is a computer program that will meet the NQF safe practice standards for all discharges – and it will require only minimal nursing time.”