

SUPPORTING STATEMENT

Part B

**Avoiding Readmissions in Hospitals Serving Diverse
Patients**

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Agency of Healthcare Research and Quality (AHRQ)

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B. Collections of Information Employing Statistical Methods

Overview

This project has the following goals:

- 1) To pre-test the revised RED Toolkit in ten varied hospital settings, evaluating how the RED Toolkit is implemented in varied hospital settings by: a) documenting the implementation process; b) assessing the fidelity of implementation; and c) identifying the factors that affect redesign fidelity, including intensity of technical assistance (TA).
- 2) To modify the revised RED Toolkit based on pre-testing and to disseminate it.

The following table lists the data collection activities that we plan to conduct in order to meet the project objectives. Each data source will allow us to assess the project goals adequately.

Data sources	To pre-test the revised RED Toolkit in ten varied hospital settings	To modify the revised RED Toolkit
Baseline key contact semi-structured interview	√	
Monthly semi-structured interview	√	√
Base-line semi-structured interview	√	√
Post implementation semi-structured interview	√	√
Patient survey	√	√
Hospital system data	√	
Master trainer training	√	
Intensive training	√	

1. Respondent universe and sampling methods

Ten participating hospitals will be purposively selected from a pool of hospitals that have indicated their willingness to participate. An announcement will be posted on the study website to invite interested hospitals to participate. We will also reach out to those hospitals where investigators have existing relationships (listed as examples in table below). Study hospitals will be chosen based on hospital characteristics, community characteristics, implementation timeline and patient population socio-demographics. The goal is to have a diverse set of hospitals representing different geographic areas, hospital sizes and patient populations. Hospitals will also be chosen based on a high baseline readmission rates. Hospitals will be randomly assigned to receive either intensive or train the trainer TA using block randomization in one block of 10, containing 6 intensive TA assignments and 4 train the trainer assignments.

The following table outlines potential study hospitals and their corresponding characteristics, highlighting the varied locations, sizes, and patient populations. Final hospital determination will take place at the start of the project.

Potential study hospital name	Location	Size (number of inpatient hospital beds)	Patient population served
1. San Francisco General Hospital	San Francisco, CA	302	-Underserved population -Large homeless population -Large Hispanic and Asian population -Young population
2. University of Pittsburgh, Passavant Hospital	Pittsburgh, PA	399	-Diverse urban population
3. Hebrew Rehabilitation Center	Roslindale, MA	2 acute rehab units, total of 64 beds	-Geriatric patients
4. UMass Memorial Hospital	Worcester, MA	385	-Suburban and rural population
5. Magnolia Hospital	Corinth, MS	164	-Serves rural communities -Very low education level
6. Valley Regional Hospital	Brownsville, TX	215	-Large Hispanic, Spanish-speaking population -Low rate of health insurance

A key contact will be chosen at each hospital based on that person’s expertise, knowledge of the discharge process at their hospital, investment in the project, and their available time to devote to the project. The key contact will serve as the key implementation counterpart. This individual will be the chief point of contact and understands the importance of the project to their hospital.

Baseline needs assessment: The key contact at each hospital will purposively select who to include in the baseline needs assessment. Participants in the needs assessment will be selected from each hospital’s leadership in patient safety and clinical departments such as nursing, physicians, and pharmacy. In each hospital, this will be a purposive sample of those people that the key contact believes are necessary for the intervention to be successfully implemented.

Baseline key contact semi-structured interviews: A key contact will be purposively selected at each hospital based on that person’s expertise, knowledge of the discharge process at their hospital, investment in the project, and their available time to devote to the project. This will most likely be a member of the hospital leadership and management team. The key contact will serve as the key implementation counterpart. This individual will be the chief point of contact and understands the importance of the project to their hospital.

Monthly semi-structured interviews with hospital: All six intensive TA hospitals will receive monthly phone calls from the leadership team at Boston University. At a minimum, the key contact from each hospital will participate in this call with the leadership team at BUMC.

Baseline semi-structured interview: With the assistance of the BUMC organizational change champions/evaluators, relevant hospital staff will be identified by the key contact at the hospital using purposive sampling. These people may include: nursing leadership, case manager leadership, quality improvement leadership, physician leadership, IT leadership and hospital administrators. In addition, front line clinical providers and staff including nurses, case managers, physicians and pharmacists who work in the hospital areas where RED will be delivered will be interviewed. Approximately 15 individuals at each hospital will be identified by

the key contact at each hospital. We will attempt to interview the same hospital staff at baseline and 12 months (post-implementation semi-structured interview), however these staff may be slightly different considering normal turnover in the course of the year. In sum, the respondent universe includes any front line clinical providers and staff at each implementation hospital, both train-the-trainer and intensive hospitals.

Post implementation semi-structured interview: With the assistance of the BUMC organizational change champions/evaluators, relevant hospital staff will be identified by the key contact at the hospital using purposive sampling. These people may include: nursing leadership, case manager leadership, quality improvement leadership, physician leadership, IT leadership and hospital administrators. In addition, front line clinical providers and staff including nurses, case managers, physicians and pharmacists who work in the hospital areas where RED was delivered will be interviewed. Approximately 15 individuals at each hospital will be identified by the key contact at each hospital. In sum, the respondent universe includes any front line clinical providers and staff at each implementation hospital, both train-the-trainer and intensive hospitals.

Patient survey: This survey will be administered to a sample of patients that have and have not received the RED intervention at the 6 implementation hospitals receiving intensive technical assistance. Pre-implementation will include the 3 months prior to implementation and post-implementation will include the 12 months after implementation is initiated. The main outcome variable to be assessed in the patient survey is patient satisfaction. This will be measured using selected questions from validated patient satisfaction surveys. In order to calculate sample size, national data from a related question on the HCAHPS survey was utilized. The main outcome, patient satisfaction with hospital staff communication and education at discharge, was used to calculate sample size. Assuming a baseline satisfaction rate at each study hospital of 74%, an increase to 80.5% is expected among patients receiving the RED intervention. Therefore, with $\alpha=0.05$ and $\text{Power}=0.8$, using a binomial distribution, each of the 6 implementation hospitals needs to sample 691 patients in the RED group, both pre- and post-implementation. Assuming a 25% non-response rate, we expect each hospital to collect data from 518 patients. This will be adequate to show a statistically significant increase of 6.5% from the baseline of 74 percent using the assumptions above.

Because participating hospitals will be chosen after OMB approval, we have approximated sample size calculations using average hospital statistics. These will have to be slightly modified to accommodate each different hospital. On average, a participating hospital will have 150 beds on their medical floors and an average length of stay of 4 days. Therefore, from an average hospital, 38 patients will be discharged per day and 1,140 patients will be discharged per month.

Therefore to sample 691 patients who have received the RED discharge in the 12 months after implementation, assuming 1,140 discharges per month, each hospital will select about every 20th patient who receives the RED discharge, each month for the 12 months following the intervention. For the pre-intervention each hospital will sample about every 5th patient discharged during the 3 months prior to the intervention.

Hospital system data: Hospital reutilization rates, using all cause readmissions and all cause ED visits within 30 days of discharge, will be calculated by all ten study hospitals over the course of pre- and post-implementation. Pre-implementation will include the 3 months prior to implementation and post-implementation will include the 12 months after implementation is

initiated. The hospitals receiving intensive TA will also collect the numbers of readmissions and ED visits for patients who have received RED during the 12 months of implementation.

The main outcome, hospital readmission rate, was used to calculate sample size. Assuming a high 30-day readmission rate at each study hospital of 22.0%, a decrease to 17.5% (a 4.5 percent reduction) is expected using the RED intervention. Therefore, with $\alpha=0.05$ and Power=0.8, each hospital would need to review 967 patients in each group.

Hospitals receiving intensive TA will transmit to BUMC data on patients who receive RED, including which components of RED were completed, from the RED workstation that is used to generate the AHCP. Data extracted from the RED workstation will be used to analyze whether reutilization rates were associated with demographic characteristics or with failure to receive certain RED components.

2. Information Collection Procedures

Below is an explanation of the procedures for each of the data collections:

Baseline key contact semi-structured interview: Hospitals will have been sent attachment C and the RED tool, “How to begin RED implementation at your hospital”, and be expected to complete several activities prior to the baseline key contact semi-structured phone call. Each hospital receiving TA will be scheduled to have this call at a time that is convenient to both teams.

Monthly semi-structured interview phone calls: Monthly phone calls will be scheduled by the BUMC leadership team and the key contact person at each intensive TA hospital. The BUMC team will use a semi-structured interview protocol to plan the agenda of the call and will record the minutes of each.

Baseline semi-structured interview and Post implementation semi-structured interview: For intensive TA hospitals, these interviews will be in-person while at train the trainer TA hospitals, interviews will be conducted by phone. The BUMC team will work together with the key contact at each hospital to schedule these interviews at baseline and 12 months after implementation. Interviews will not be recorded but detailed notes will be maintained by the BUMC organizational change facilitators/evaluators, who will be conducting the interviews.

Patient survey: The 30-day follow-up survey will be administered over the phone by a trained research assistant at each hospital. Those patients chosen to participate will be asked to confirm their contact phone numbers and a mailing address, if possible, prior to discharge. A research assistant hired by each hospital, trained by BUMC research staff, will conduct the patient survey using an established survey tool. We will ask each participating hospital to administer selected items from the HCAHPS discharge survey and the “readiness for discharge questions” used in the Project RED studies. For the pre-implementation survey, the hospital will contact by phone a selected sample of patients discharged with usual care at that hospital. This will occur over the three months prior to implementation. For the post-implementation survey, the hospital will contact by phone a selected sample of those patients who have received the RED discharge at that hospital. This will occur over the 12 months after implementation. We believe that we can collect information to meet our objectives by not contacting every person who receives the RED discharge because this will be burdensome to the hospitals and their patients. Therefore we have

determined a set of criteria with which we will decide who will receive a call that balances the burden and desire to collect enough information to meet our objectives.

Hospital system data: We will instruct all participating hospitals to use their IT system to extract hospital reutilization data within 30 days after discharge. The purpose is to assess the impact of the implementation on 30-day all cause hospital readmissions and ED visits. An administrative staff member will extract reutilization numbers on patients who did not receive the RED and from those patients who did receive the RED . If possible, the pre-implementation data will be drawn during the three months prior to implementation. Post-implementation data will be drawn throughout the 12-month implementation period.

Post-implementation data collection will also include information on which components of the RED discharge advocates were able to complete for each subject. We will use this information to determine the success of RED implementation using this process data. Fidelity of RED implementation will be measured by assessing the completeness of RED discharge components reported in the RED workstation. We will measure fidelity indicators such as the number of patients discharged with a follow-up appointment, with an AHCP, medication reconciliation, among others. We will collect information on which components of the RED discharge advocates were able to complete for each subject. This information will help us to gauge the success of RED implementation based on their ability to deliver all of the components of the RED intervention.

3. Methods to Maximize Response Rates

Baseline key contact semi-structured interview: In order to participate in this study and receive TA from BUMC at no charge to the hospital, hospitals must agree to complete the baseline key contact semi-structured interview. The BUMC team will emphasize the extreme importance of this interview prior to RED implementation. It is the planning step that is critical to implementation success. The BUMC team will schedule and coordinate the phone call. The BUMC team will also collect and prepare the data, taking the burden off of the hospitals.

Monthly hospital semi-structured interviews: Each study hospital is dedicated to the success of the implementation at their hospital. In order to participate, hospitals must agree to a minimum amount of support and communication. During this regular communication, implementation logs will be recorded by the BUMC study team.

Baseline semi-structured interview and Post implementation semi-structured interview; The key hospital contact, together with hospital leadership at participating hospitals, will encourage their chosen hospital staff to participate. The in-person interviews will be brief and initiated by the BUMC organizational change champion/evaluator. Interview data that is collected will be reported in aggregate so that no individual's responses can be identified. We expect 90% of staff who ask to participate will do so. For this data collection, responses will be maximized because the interviewees will be identified by the implementation hospital key contact. The BUMC organizational change team will conduct these interviews in person (intensive TA) or by telephone (train the trainer TA), thereby initiating the conversation and planning it to be at a time that is convenient to the staff member during their paid working time.

Patient survey: Three proven methods to maximize survey response rates will be used to achieve an expected response rate of 75%. First, the instrument is designed to be respondent friendly. It is designed to be filled out quickly and easily, designed to be easily-understood, and framed to ask about patient's own experiences in a neutral manner. The instructions and format are straightforward. Second, we will use trained and experienced interviewers (research assistants) at each hospital who can deliver the survey instrument. Third, we will follow up on non-respondents with alternate contact phone numbers, encouraging response.

Hospital system data: Hospitals can generate reutilization data from their records systems that include the universe of patients admitted to the hospital. Similarly, hospitals receiving intensive technical assistance can download data on RED implementation for the entire universe of patients that receive RED from the RED workstation.

4. Tests of Procedures

The baseline needs assessment procedure and the baseline key contact semi-structured interview has been used previously by BUMC in their own hospital and is based on the literature of organizational process change.

The monthly semi-structured interview protocol was designed with input from the organizational change experts/evaluators.

Baseline and post-implementation semi-structured interview procedures and instruments have been used extensively in previous studies by the BUMC organizational change champions/evaluation staff.

The patient data collection procedures and instruments, such as the patient survey and electronic hospital system data, are similar to ones used previously in the published randomized controlled trial with satisfactory results. We have added questions from the AHRQ HCAHPS Item Set for Addressing Health Literacy, which will be validated and tested prior to our use.

Training sessions for the RED discharge process, similar to those that will be conducted at intensive TA hospitals, have been conducted at other hospitals and refined to be most useful to hospital staff.

5. Statistical Consultants

The following is the list of persons consulted:

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