

Impact of AHRQ Re-Engineered Discharge Toolkit on Adult Patient's 30-Day Readmission

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ABSTRACT

Purpose of Study: The aim of this quality improvement (QI) project was to determine whether implementing the Agency for Healthcare Research and Quality (AHRQ) Re-Engineered Discharge (RED) Toolkit would impact 30-day readmissions among adult medical-surgical patients in an urban Arizona hospital over 8 weeks. This quality improvement project aims to address the lack of evidence-based practice (EBP) discharge guidelines at the project site and to improve readmissions by translating research evidence into clinical practice.

Primary Practice Setting: The project site is a single medical center within a hospital system located in an urban area of Arizona.

Methodology and Sample: The medical-surgical nurses utilized the AHRQ RED components in the form of a discharge checklist. Education and staff teaching were conducted at the project site, with stakeholders provided with EBP resource materials, including the AHRQ's RED Toolkit and scientific evidence on how this process can impact hospital 30-day readmissions. This checklist incorporates the 11 RED components of the discharge process. The checklist served as a procedural guide for nurses during discharge.

Results: Patient data were collected to measure the impact of the AHRQ RED Toolkit on 30-day readmissions. Data were collected from the electronic health record and EBP tool, the AHRQ RED checklist. Thirty-day readmissions were measured as counts in a sample of 307 patients, with data collected before intervention ($n = 199$) and again after intervention ($n = 108$). The frequencies of 30-day readmissions were described using counts and percentage rates, then compared using Pearson's chi-square test. In the comparison patient group, there were 99 readmissions (50%) out of 199 patients. In the intervention patient group, 24 patients (22%) out of 108 were readmitted. Pearson's chi-square test showed a statistically significant difference in the number of patients readmitted within 30 days of discharge [$\chi^2(1, N = 307) = 22.0; p = .001$].

Implications for Case Management: The AHRQ RED components are evidence-based discharge interventions and strategies that have been proven to be crucial in reducing readmissions and improving patient outcomes. The project results highlight the importance of incorporating EBP guidelines into health care settings and validate the effectiveness of these interventions in bridging gaps in patient care, such as avoidable readmissions. The project outcomes demonstrate the role of the RED components in guiding case managers during a patient's hospital discharge. Applying the RED components was essential in preventing readmissions, thereby influencing health care and case management practices, including ensuring safe discharges, reducing costs, and improving care quality. The project outcomes showed significant improvements in the discharge process, providing opportunities to develop a new discharge protocol. This supports the decision to incorporate this checklist into the standard of care during discharges. Additionally, the positive results open the possibility of integrating the discharge checklist into the electronic health record system for a larger-scale impact. The project outcomes, which are both clinically and statistically significant, can help the case management community consider integrating AHRQ RED components into patient care coordination and discharge planning as patients transition to their homes.

Key Words: 30-day readmission, Agency for Healthcare Research and Quality Re-Engineered Discharge Toolkit, avoidable readmission, discharge checklist, home discharge

IMPACT OF AHRQ RE-ENGINEERED DISCHARGE TOOLKIT ON ADULT PATIENT'S 30-DAY READMISSION

Preparing patients for hospital discharge is a meticulous process that ideally starts at admission. Discharge planning is intricate and is a requirement for hospital accreditation (Patel & Bechmann, 2022). In 2022, the United States witnessed over 33 million

annual hospital admissions and discharges, with a staggering cost of 1.3 trillion dollars for hospital utilization (American Hospital Association, 2022).

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Conflicts of Interest: None identified.

DOI: 10.1097/NCM.0000000000000801

Elderly patients with poor health and multiple medications, as well as those receiving home care, are more likely to be readmitted to the hospital within 30 days of discharge (Alper et al., 2022).

Preventing avoidable readmissions can significantly improve both patient outcomes and utilization costs.

Elderly patients with poor health and multiple medications, as well as those receiving home care, are more likely to be readmitted to the hospital within 30 days of discharge (Alper et al., 2022). A discharge (DC) checklist is crucial in communicating discharge information to patients and their families. The checklist ensures that essential discharge elements are reliably incorporated, improving the quality of care and significantly enhancing patient understanding (Alper et al., 2022).

The Agency for Healthcare Research and Quality (AHRQ) Re-Engineered Discharge (RED) Toolkit was implemented at the project site, resulting in improved discharge processes and reduced readmissions. The project implementation used 11 out of the 12 RED components of AHRQ to provide a smooth transition from hospital to DC placement post-hospitalization, ensuring that patients and their caregivers understand the necessary discharge regimen for patient recovery (Nourse & Paauwe-Weust, 2021).

BACKGROUND OF THE PROJECT

Upon inquiry into the project site's practice problem, the Director of Professional Practice and Unit Director identified increased patient readmissions and discharge delays. The state and national statistical data obtained also reflected this problem. Statistics show that the project site has an increased readmission rate of 21% for chronic obstructive pulmonary disease patients, with a national average of 20% and an Arizona average of 18% (Hospital Compare, 2023). In addition, the project site has an average of 16% readmissions in patients diagnosed with pneumonia compared to an Arizona average for readmissions at 15% and a national rate of 17% (Hospital Compare, 2023). There is no identified evidence-based practice (EBP) guideline being used for the problem gap of increased readmissions.

Increased 30-day readmissions are linked to increased health care costs and poor patient outcomes. The AHRQ RED Toolkit is shifting focus on nurse case manager-driven follow-up, incorporating the concepts of patient education and continuous

patient assessment and care (Agency for Healthcare Research and Quality, 2023). The project site and its organization seek to concentrate on reducing readmission rates for patient safety and reduction in health care utilization. Avoidable readmission factors include social determinants of health, patient behaviors, community and outpatient services, insufficient or inappropriate medical treatment, and lack of proper care coordination (Bamforth et al., 2021). Annual nationwide costs reached \$41.3 billion for 30-day readmissions, making readmission visits one of the most expensive episodes to treat in the United States (Wang & Zhu, 2022). The undertaking of the Hospital Readmissions Reduction Program by the Centers for Medicare & Medicaid Services (Centers for Medicare & Medicaid Services, 2023) seeks to reduce avoidable hospital admissions by imposing financial penalties on institutions with relatively higher rates of readmissions on Medicare-insured members. With the hospital reimbursements tied up with this program, health care providers and their policymakers are determined to cut down on hospital readmissions (Centers for Medicare & Medicaid Services, 2023). Globally, improving the discharge process and reducing readmission rates contribute to better health (Centers for Medicare & Medicaid Services, 2023).

PROBLEM DESCRIPTION

Postdischarge readmission is a common and costly occurrence, particularly in older individuals with multiple chronic conditions (Facchinetti et al., 2020). Avoidable readmissions can be reduced using the hospital discharge guideline by the AHRQ's RED Toolkit (Agency for Healthcare Research and Quality, 2023). After identifying the rise in readmissions as a significant issue, the project lead proposed utilizing the AHRQ RED Toolkit at the project site. This initiative aims to reduce readmissions and aligns with the hospital system's overall goals and current initiatives. Ensuring that the topic to be spread aligns with the organization's goals and incentives is a key strategic initiative in the project site during project implementation (Institute for Health Improvement, 2022). The AHRQ RED Toolkit provided the essential evidence-based framework to develop a more comprehensive and fitting discharge planning and care transition process (Agency for Healthcare Research and Quality, 2015).

SCIENTIFIC UNDERPINNINGS

The AHRQ RED Toolkit is a standardized in-hospital discharge planning program backed up by evidence to

The AHRQ RED Toolkit is a standardized in-hospital discharge planning program backed up by evidence to decrease 30-day all-cause postdischarge hospital readmission and emergency room visits. Compared to patients receiving usual care, patients who received the AHRQ RED Toolkit experienced a 30% lower hospital utilization rate within 30 days of discharge.

decrease 30-day all-cause postdischarge hospital readmission and emergency room visits (Cancino et al., 2017). Compared to patients receiving usual care, patients who received the AHRQ RED Toolkit experienced a 30% lower hospital utilization rate within 30 days of discharge (Agency for Healthcare Research and Quality, 2023). One readmission or emergency department (ED) visit was prevented for every seven patients when the RED Toolkit was used (Agency for Healthcare Research and Quality, 2023). Regarding health care utilization, the patients who received the RED Toolkit cost an average of \$412 or 33.9% lower in the 30 days following hospital discharge. Literature supports how the AHRQ RED Toolkit can influence essential implications for the quality of care and health care utilization costs for the more than 38 million hospital discharges annually in the United States (Agency for Healthcare Research and Quality, 2023).

There is a significant reduction in hospital readmission rates with the use of discharge intervention when measured at 30 days (Weiss et al., 2019). Approximately 60% of hospital readmissions are preventable (Bamforth et al., 2021). A hospital that utilized the AHRQ RED Toolkit cut its 30-day Medicare readmission rate by over half within months of enforcing the components in the AHRQ RED Toolkit (Mitchell et al., 2017).

SYNTHESIS OF LITERATURE

The Agency for Healthcare Research & Quality (AHRQ) teamed up with Boston University Medical Center researchers to develop a discharge toolkit to assist hospitals with best practices to reduce readmissions (Agency for Healthcare Research and Quality, 2023). The evidence-based guideline, the AHRQ's RED Toolkit, provided patients and their families

with improved preparation for a hospital discharge transition and helped effectively reduce avoidable readmissions (Agency for Healthcare Research and Quality, 2023). The RED Toolkit consists of 12 hospital measures or components done during and after the hospital stay to ensure an effective discharge transition. The 12 components of RED were as follows:

1. Ascertain the necessity for language interpretation assistance;
2. Schedule appointments for follow-up care;
3. Plan on how to follow up on pending test/lab results;
4. Arrange postdischarge outpatient services and durable medical equipment;
5. Medication reconciliation;
6. Discharge plan reconciled with national guidelines;
7. Teach a written discharge plan that the patient can comprehend;
8. Patient education about diagnosis and medications;
9. Review after-hospital discharge plan if a problem arises;
10. Assess the extent of the patient's comprehension of the discharge plan;
11. Transmission of the discharge summary to outpatient clinicians; and
12. Provide telephone follow-up to reinforce the discharge plan (AHRQ, 2023).

The AHRQ RED Toolkit is a thoroughly researched guideline that is a product of 7 years of work and is considered a high level of EBP (Agency for Healthcare Research and Quality, 2023). Prior to implementing the program, the Pennsylvania Psychiatric Institute in Harrisburg had a higher 30-day readmission rate than three other acute care facilities in the region. After implementing RED, they reduced readmission rates from 20% to 10.4% in a 2-year implementation span (Agency for Healthcare Research and Quality, 2023). Other research evidence that supported the development of the AHRQ RED Toolkit was provided by:

1. a California acute inpatient facility whose 30-day readmissions for Medicare patients were reduced from 25% to 11.3%;
2. another acute inpatient hospital in Long Beach, California, implemented RED for heart failure patients, and the readmission rate dropped from 22% to 7.7%;
3. a San Francisco Medical Center also introduced RED to heart failure patients, reducing the overall readmission rate by >20%;

4. a County Hospital in Boston initially implemented RED in one unit and saw a substantial reduction in 30-day readmissions and thus implemented RED hospital-wide.

In addition to readmissions, this facility saw a significant positive impact on the patient experience as noted by patient satisfaction surveys related to discharge; (5) two Texas hospitals of the Valley Baptist system implemented RED and experienced a reduction of readmissions from 23.3% to 15% and 26% to 15% (Agency for Healthcare Research and Quality, 2023). These studies contributed to support the creation of the AHRQ RED Toolkit.

The literature highlighted factors that can affect and lower readmissions. One recurring theme was the use of continuity of care interventions in various literature articles, intending to link and organize care between patients and providers across different time periods and settings, such as primary care follow-up (Wiest et al., 2019), specialist care clinic (Marano et al., 2022), and transition-of-care clinic follow-up (Baldino et al., 2021). These interventions, crucially provided by health care professionals, encompass health care services during and after hospital discharge. Patients who had a primary care visit within 7 days of hospital discharge had lower readmission rates (Wiest et al., 2019). Specific to the clinical specialty clinic, Marano et al. (2022) conducted a cohort study that supported reduced readmissions for heart failure patients seen in a specialist care clinic. Baldino et al. (2021) found a statistically significant reduction in 30-day readmissions for patients seen in a hospitalist-led transition-of-care clinic postdischarge in a cross-sectional feasibility study. These services, delivered by health care professionals, are crucial in reducing readmissions. Notably, it was determined that discharge readiness, transitional care quality, health care services utilization, and patient satisfaction are improved by employing an innovative transitional care program (Hu et al., 2020).

A hospital predischarge transitional care is associated with a reduction of readmission rates among high-risk patients (Low et al., 2017). This randomized controlled trial is relevant to the quality improvement project as it used a hospital discharge transitional care consisting of discharge planning, medication reconciliation, coaching using standardized action plans, and an individualized care plan, such as written discharge instructions, appointments schedule, medication, and outpatient visiting nurse; care is handed over to the outpatient team on discharge, and also measured readmission rates (Low et al., 2017). Similarly, Balaban et al. (2017) determined the effect of a care transition program using patient navigators on health service

Hospital readmissions are a health-care quality problem associated with high healthcare utilization and cost, leading to poor health outcomes. Readmission after a hospital discharge is a common, arduous and costly occurrence, particularly frequent in older individuals with multiple chronic conditions.

utilization. A care transition program using patient navigators is beneficial among older patients, which can lead to low utilization costs among older patients (Balaban et al., 2017). A multifaceted transition-of-care program showed reductions in readmissions using a multifaceted approach with efforts at admission, predischarge, and postdischarge (Dizon & Reinking, 2017). Readmission rates as a reference is an effective way to carry out quantitative analysis in the bid to establish and measure improved patient outcomes.

Hospital readmission following discharge is a common circumstance in the clinical setting, which can be a significant financial burden on health care systems. After-hospital discharge interventions can produce positive patient outcomes, including reductions in mortality and readmission rates (Low et al., 2017). Hospital readmissions are a health care quality problem associated with high health care utilization and cost, leading to poor health outcomes. Readmission after a hospital discharge is a common, arduous, and costly occurrence, particularly frequent in older individuals with multiple chronic conditions (Facchinetti et al., 2020). Health care resources are overutilized when a patient readmits (Nuckols et al., 2017); policies and CMS rules are also in place for patients readmitted. For metrics and quality reviews, these readmission rates are trended and are compared to national standards.

Another subtheme noted is readmission specific to some high-risk patient populations or diagnosis categories. Marano et al. (2022) found reduced 30-day all-cause readmission rates in patients hospitalized for heart failure at a safety net hospital with the inclusion of the discharge checklist that targeted rapid discharge follow-up. Interestingly, Glans et al. (2020) found that 30-day readmissions increased if the length of stay was 5 days or longer if the patient was discharged on a Friday or from a surgical unit. There were also improved postdischarge outcomes for acute kidney injury (AKI) patients after implementing interventions that included patient education, case manager

assistance, and expedited nephrology outpatient appointments set postdischarge in the AKI clinic (Singh et al., 2021). Assessment and discharge readiness were highlighted in this research. The nurse case manager assesses for barriers to care, symptoms, self-monitoring, medication discrepancies, clinical communication deficiencies, socioeconomic issues, need for referrals, and other matters with care coordination (Singh et al., 2021). Tsuboi and Fujimori (2020) found that hospital discharge support by medical and nursing care workers effectively reduced readmission rates in long-term care patients. Knowing such risk factors, such as the associations of diagnosis category and high-risk population, can help focus on patient groups at high risk for readmission and ensure that continuity of care interventions are implemented to improve the postdischarge transition of care. These studies support the findings of maintaining continuity of care during the patient transition to the community setting and reduced 30-day readmissions in several different patient populations, including AKI patients, home discharges, and those discharged on certain days or from a certain unit.

An additional subtheme that emerged in the literature was improved patient satisfaction with the patient experience scores related to the quality of discharge services. Cancino et al. (2017) conducted a pilot study to examine the effect of the RED intervention on the post-hospitalization experience scores of adult patients. The study found that a larger percentage of adult patients who participated in the RED discharge program rated the quality of their discharge as "very good" compared to those who did not receive the RED intervention (Cancino et al., 2017). Notably, patient experience of discharge care was improved as measured by the quality of discharge teaching, readiness for discharge, and postdischarge coping difficulty, showing a significant reduction in readmissions (Opper et al., 2019).

A concept for reducing the readmission rate is communication redesign, implementing readiness evaluation and discharge intervention protocols (Weiss et al., 2019). This approach, backed by solid evidence, involves hospital discharge support by a medical or a nurse care manager in partnership with the health care team, which has been shown to effectively reduce readmission rates (Singh et al., 2021). A redesigned health care team discharge communication process further enhances this collaboration, improving communication and teamwork between nurses and physicians (Opper et al., 2019). Evidence from daily interprofessional team bedside rounding and

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bedside shift report studies was translated into redesigning health team communication for discharge. The Opper et al. (2019) study supports this quality improvement project; it utilized a redesigned team communication and discharge process, significantly reducing the 30-day readmission rate.

Several interventions to ensure continuity of care have been studied. One such intervention is the postdischarge telephone follow-up (TFU). For instance, Facchinetti et al. (2020) discovered that patients who received TFU after being discharged had a lower readmission rate compared to those who did not receive TFU. Similarly, Singh et al. (2021) found that patients who received a discharge follow-up call (step 12) had lower rehospitalization rates at 30 days. Additionally, Wiest et al. (2019) implemented a 7-Day Pledge program to decrease readmissions by improving access to timely primary care appointments after hospitalization. These efforts align with the quality improvement project, particularly focusing on discharge follow-up, which is one of the 12 AHRQ RED components.

Among the studies reviewed, all reported a significant reduction in hospital readmission rates with the use of a discharge guideline. All 15 articles reviewed supported this quality improvement project by employing all or parts of the RED Toolkit, with significant *p*-value results showing reduced readmission rates. The studies adopted all the relevant critical elements of an AHRQ RED Toolkit. AHRQ's RED Toolkit is a hospital strategy that provides EBP tools to help facilities, especially hospitals, to re-engineer and recreate their discharge processes (Agency for Healthcare Research and Quality, 2023). AHRQ's RED guideline is known to produce positive patient outcomes by reducing readmission rates. This guideline provides ways to help pinpoint and manage challenges and barriers in the implementation process. Translating the same approach and method to the medical-surgical patient population is suitable. In conclusion, when implemented

thoughtfully, the AHRQ's RED Toolkit can reduce 30-day hospital readmissions.

THEORETICAL FRAMEWORK

Nursing theory

Jean Watson presents nursing practice in a broad yet focused framework using the carative factors (Watson, 1979). Watson introduced this nursing theory in 1985 and highlighted the concepts of the caring occasion, transpersonal caring nature, the Caritas process, phenomenal fields, the impact of time, and individual development (Butts & Rich, 2018). This quality improvement project focused on three carative factors:

1. Developing a helping-trust relationship,
2. Using problem-solving for decision-making, and
3. Promoting a supportive environment (Watson, 1979).

The first carative factor identified, developing a helping-trust relationship, was used in building a patient-nurse relationship that is vital during the discharge process, especially in the patient education part. The nurse case manager helps with discharge planning from the first day of admission and ensures a safe discharge when the patient is deemed ready. The second carative factor, the use of problem-solving for decision-making, is used in the delivery of the discharge checklist where the nurse case manager creates pathways to ensure safe discharges, such as when problems related to medication compliance or literacy, and the nurse case manager can intervene and include thorough patient education or help secure referral for further care.

The third identified carative factor is promoting a supportive environment. This was utilized to create a safe discharge environment by using resources outlined in the AHRQ RED Toolkit, such as outpatient follow-up care and providing appropriate durable medical equipment and services. Jean Watson's human caring science (1979) and the AHRQ RED Toolkit reflected the need for environmental and operational improvements to achieve high-quality nursing care, improving care transitions to home and an outcome of reduced 30-day hospital readmissions.

Evidence-based change model

Change is inevitable, and in health care, change is constant. Kurt Lewin's change management model guided this project's implementation. Lewin (1947) examined organizational development and explored the relations between social groups during change. The concept of Lewin's theory used the idea of ice in

its different forms and stages, from frozen to liquid to refrozen (Lewin, 1947). Kurt Lewin introduced the theory of planned change, namely: (1) the unfreezing stage, where the understanding that change is needed occurs; (2) the moving stage, where the process of change initiation occurs; (3) and the refreezing stage, where the new status quo is established.

This three-stage theory was the change management theory that guided this quality improvement project. Since the project implementation introduced an EBP in a setting where they are accustomed to a particular workflow, the team initially was resistant to change as they are already habituated to standard discharge care. Kurt Lewin's change theory guided the process improvement and workflow changes in the project site. During the first stage, or the unfreezing, the educational part occurred; this was where the gap and the proposed solution using the EBP of AHRQ's RED Toolkit were realized and presented to the project site's leadership. The second stage, or the moving stage, was where the project implementation occurred in the project site. Readmission metrics were gathered before and after the intervention to establish the status quo for the refreezing stage. With the project's outcome, the implementation results of the EBP guideline were further analyzed to see if they could be embedded in their charting system, applied to other units, or applied as a large-scale hospital and system-wide intervention.

PROJECT DESIGN AND METHODOLOGY

This project used a quality improvement design and included a pre-post-intervention analysis of readmissions. This project is considered a quality improvement project because it operated systematically to improve patient care. Quality improvement projects work toward standardizing processes and structures to reduce variation, achieve predictable results, and improve outcomes for patients, health care systems, and organizations (Butts & Rich, 2018). Interventions were derived from existing research translated into practice, and outcomes were measured to highlight the improved patient outcomes.

Health care experts stress the importance of EBP in enhancing the quality of care and ensuring patient safety. EBP involves making decisions collaboratively with patients and providers, drawing on research evidence, provider expertise, and patient preferences (Tucker et al., 2021). Numerous studies support the view that EBP can lead to better patient outcomes, although these findings are not always put into practice (Mathieson et al., 2019). This quality improvement project aims to address the lack of EBP discharge guidelines at our facility and to improve the translation of research evidence into clinical practice.

SETTING AND SAMPLE POPULATION

The project site is a single medical center in a hospital system. As a health system, it takes innovations tested via pilot projects at one hospital and then replicates them at other facilities. The project site delivers care to approximately 331.4 million, with 77.5% aged 18 and above.

Setting

The project setting is the inpatient medical-surgical unit of an adult trauma medical center. Currently, there are 108 acute medical-surgical inpatient beds. The hospital is located in an urban area of Arizona. The project site is now a level 1 adult trauma center for patients aged 15 and older. With the new designation as a level 1 trauma center, the project site can provide more complex and total care for diverse injuries and trauma patients, delivering these additional patient care services.

Population and sample

The quality improvement project's sample population consists of admitted adult patients in the medical-surgical unit. The patient population needs to be fully admitted to the hospital as an inpatient and not placed in observation or outpatient under a medical-surgical bed. Inpatient status starts when a patient is formally admitted to the hospital with a physician's admit-to-inpatient order (Centers for Medicare & Medicaid Services, 2023).

The project's inclusion criteria encompass data from all patients in the medical-surgical unit who are over 18 years old. Data were collected on all patients discharged from the medical-surgical unit. The estimated sample size for this quality improvement project, using the G*Power calculator for Pearson chi-square, recommended a minimum sample of 52 patients, with a power of 0.95, an effect size of 0.5, and a significance level of .05. Informed consent was not required for this quality improvement project, as the discharge practice improvement does not pose a risk of harm to the patient and is a current and expected part of patient care.

POTENTIAL BIAS AND MITIGATION

Confounding bias may have transpired due to the project being a single-center, non-randomized project. Pre-implementation measuring 30-day readmissions were from a set of patients inherently different from the post-implementation measuring 30-day readmissions. Confounding bias occurs when a variable is correlated with the treatment and the outcome

(Varga et al., 2023). Restricting the sample to medical-surgical unit patients in the project site was done to mitigate confounding bias.

DATA ANALYSIS PROCEDURES

After obtaining institutional review approval from Grand Canyon University and the project site, a comprehensive data analysis was conducted on 30-day readmissions in a sample of patients. The readmission data from both the comparison and intervention groups were gathered from the Quality department director of the project site. A statistician then carefully analyzed these data using the IBM Statistical software packages (SPSS). The data, compiled in Microsoft Excel on N = 307 patients, were completed and exported into an SPSS database version 29 for statistical comparison. The AHRQ RED DC checklist (see Figure 3) was the cornerstone of our data collection process, providing the basis for the data collected from the population group. The descriptive variables of age, gender, primary diagnosis category, and 30-day readmissions were meticulously described. Age was reported in years using the mean and standard deviation, while the other characteristics were described using frequencies and percentage rates. Pearson's chi-square test was conducted to compare the frequencies of 30-day readmissions in the patients from the comparison data compared to the intervention data. Both statistical and clinical significance were thoroughly explored, with statistical significance supporting the reliability of the comparison and clinical significance demonstrating the impact resulting from the project. The results were presented in tables and figures, ensuring transparency and reliability.

Descriptive statistics were used to describe the demographic composition of the project population, including age, gender, race/ethnicity, and the primary diagnosis category. The inclusion of demographic data, such as age, gender, race/ethnicity, and primary diagnosis category, in the descriptive statistics was a crucial step in the project analysis. A notable reason for using the diagnosis category is because of the Hospital Readmissions Reduction Program, where Medicare tracks readmissions for specific diagnoses such as acute myocardial infarction, chronic obstructive pulmonary disease, heart failure, pneumonia, coronary artery bypass grafting, and elective primary total hip/ total knee arthroplasty (Centers for Medicare & Medicaid Services, 2023). This value-based purchasing program by Medicare motivates hospitals to reduce 30-day readmission. This approach was instrumental in identifying any gender, race/ethnicity, or diagnosis-related effects of AHRQ guidelines on 30-day readmissions, adding depth and relevance to the findings.

SUMMARY OF THE PROJECT

An inquiry was made to determine the project site’s practice problem or gaps, and after discussing with the Director of Professional Practice and Unit Director, increased patient readmissions, throughput issues, and discharge delays were the problems identified. Current practice in the project site does not use an evidence-based discharge guideline. This quality improvement project was chosen after reviewing evidence-based discharge guidelines that can help bridge the gap of increased readmission in the project site. The project translated the AHRQ’s RED components into a discharge checklist to ensure essential discharge communications, such as discharge summaries and outpatient follow-ups, are reliably communicated to patients and their families (Alper et al., 2022).

All the reviewed scholarly articles demonstrated a significant decrease in 30-day readmissions through the implementation of various discharge care models. These models included a discharge checklist, structured discharge readiness assessment, communication redesign, hospital discharge support, patient navigator, primary care physician (PCP) follow-up, postdischarge transition care clinic, and multi-quality improvement intervention. Some of these models also enhanced the patient experience in addition to reducing readmission rates. The AHRQ RED Toolkit was translated with the guidance of a foundational nursing theory, such as Jean Watson’s human caring science and the change theory of Kurt Lewin. After obtaining Institutional Review Board (IRB) approvals from both Grand Canyon University (GCU) and the project site, educational training was conducted to explain the scientific evidence supporting the AHRQ RED Toolkit’s effectiveness in reducing patient readmissions. Education and teaching on the discharge process, its rationale, and specified evidence on how the toolkit can improve 30-day readmissions were provided.

The EBP implementation of the AHRQ’s 11 RED components using a DC checklist (see Figure 3) was piloted over 8 weeks. The original AHRQ RED components consists of 12 steps, and this quality improvement project opted out step 12, which addresses discharge phone calls due to project site operational

issues. The DC checklist was kept in the patient’s file folder in the nurse’s station. The checklist was to be marked and dated once a step was completed. Upon patient discharge, the DC checklist was stored in a locked box in the RN Manager’s office. The project manager performed periodic checks to review questions, clarify, and ensure nurse compliance with the discharge checklist. Weekly retrieval of completed DC checklists was done, and data were transferred to the data collection spreadsheet. There was no need for protected health information (PHI) retrieval from the chart. Comparison and postintervention data were collected from the Quality director, and statistical data were extracted from the discharge checklist. Aggregate data were transcribed to a password-protected MS Excel spreadsheet. Data evaluation using statistical tests (descriptive and inferential statistics) and careful data analysis of results were done with the assistance of a statistician. Statistical and clinical significance were evaluated. The statistician conducted a chi-square test analysis and provided the results. The project manager noted bias/es. Results were reported, and further recommendations were provided to nurse leaders at the project site. Proper data disposal was observed at the time of study completion.

DESCRIPTIVE DATA OF SAMPLE POPULATION

Patient data were collected to measure the impact of the AHRQ RED Toolkit on 30-day readmissions. Data were collected on a sample of 307 patients, with the comparison data on 199 patients and implementation data on 108 patients. Data were collected from the electronic health record and EBP tool, the AHRQ RED checklist. Descriptive statistics were performed with the patient’s age, gender, race/ethnicity, and primary diagnosis category.

The age of the patient samples was collected in years (see Table 1). The age was collected in both the comparison and intervention patient groups. The mean (years) of the comparative group patients was 54.5 years (*SD* = 19.6), with a range of 18–98 years. The mean age of the intervention group was 53.3 years (*SD* = 19.8), with a range of 18–94 years.

TABLE 1
Descriptive Data for Age in Years (*N* = 307)

Baseline characteristic	Comparison (<i>n</i> = 199)			Intervention (<i>n</i> = 108)		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Age (year)	54.5	19.6	18–98	53.3	19.8	18–94

TABLE 2

Characteristics of Patient Sample for Gender, Race/Ethnicity, and Diagnosis Category (N = 307)

Baseline characteristic	Comparison (n = 199)		Intervention (n = 108)	
	N	%	N	%
Gender				
Female	95	48	54	50
Male	104	52	53	49
Not specified			1	1
Race/Ethnicity				
White/Caucasia	124	62	64	59
Black/African American	16	8	11	10
Hispanic/Latino	44	22	23	21
Asian	5	3	1	1
American Indian	7	4	5	5
Middle Eastern Indian	1	1	3	3
Two or more race/ethnicity	2	1	1	1
Diagnosis				
Cardio	9	5	6	6
Renal	11	6	6	6
Pulmonary	17	9	4	4
Infectious disease	32	16	12	11
Gastrointestinal	36	18	19	18
Endoscopy	8	4	5	5
Genitourinary	13	7	4	4
Hemato/onc	2	1	7	7
Neuro	9	5	3	3
Trauma	54	27	27	25
Integumentary	3	2	5	5
Others	5	3	10	9

Note. N = 307, % = percentage

Gender, race/ethnicity, and diagnosis categories were described using frequencies and percentages (see Table 2). The comparative group's gender was 52% male ($n = 104$) and 48% female ($n = 95$). The intervention group's gender was 49% male ($n = 53$) and 50% female ($n = 54$). One patient did not have their

gender specified. The comparative group's racial/ethnicity distribution was 62% Caucasian/White ($n = 124$), 8% African American/Black ($n = 16$), 22% Hispanic/Latino ($n = 44$), 3% Asian ($n = 5$), 4% American Indian ($n = 7$), 1% Middle Eastern Indian ($n = 1$), and 1% Multi-race ($n = 2$). The intervention group's racial/ethnicity distribution was 59% Caucasian/White ($n = 64$), 10% African American/Black ($n = 11$), 21% Hispanic/Latino ($n = 23$), 1% Asian ($n = 1$), 5% American Indian ($n = 5$), 3% Middle Eastern Indian ($n = 3$), and 1% Multi-race ($n = 1$). Diagnoses were categorized according to systems. The majority of patients in both groups were trauma/musculoskeletal (>25%), followed by gastrointestinal (18%) and infectious disease (>10%).

RESULTS

Quantitative analysis was performed to address the evidence-based question of whether there is a link between the AHRQ RED Toolkit and reduced 30-day readmissions. A chi-square test of independence was conducted to assess the comparison of readmissions in comparison to postintervention readmissions. This determined the impact of the discharge toolkit on reducing 30-day readmissions at the project site.

Thirty-day readmissions were measured as counts in a sample of 307 patients, with data collected before intervention ($n = 199$) and again after intervention ($n = 108$). The frequencies of 30-day readmissions were described using counts and percentage rates, then compared using Pearson's chi-square test. In the comparison patient group, there were 99 readmissions (50%) out of 199 patients. In the intervention patient group, 24 patients (22%) out of 108 were readmitted (see Figure 2).

Pearson's chi-square test showed a statistically significant difference in the number of patients readmitted within 30 days of discharge ($X^2(1, N = 307) = 22.0; p = .001$). Pearson's chi-square was considered statistically significant if the p is less than .05 (see Table 3). After implementation, a 28% reduction in 30-day readmissions was measured. Clinical significance was demonstrated, showing that 75 fewer people (28%) were readmitted after the implementation of the AHRQ RED checklist. Assessment of 30-day readmission by diagnosis category showed no difference in readmissions based on diagnosis (see Figure 1).

MAJOR FINDINGS

A total of 307 patients' discharges were sampled, with 199 in the comparison group and 108 in the intervention group. The mean age in years of the comparison group sample was 54.5, and the mean age of the intervention

TABLE 3

Chi-square Test Between Comparison Patient Groups

	Comparison (n = 199)		Intervention (n = 108)		χ^2	p
	#	%	#	%		
30-day Readmissions	99	50	24	22	22.0	.001
Patients not readmitted	100	50	84	78		

Note. χ^2 = Pearson chi-square, $p < .05$ —statistically significant.

Bar Graph of Readmissions by Diagnosis

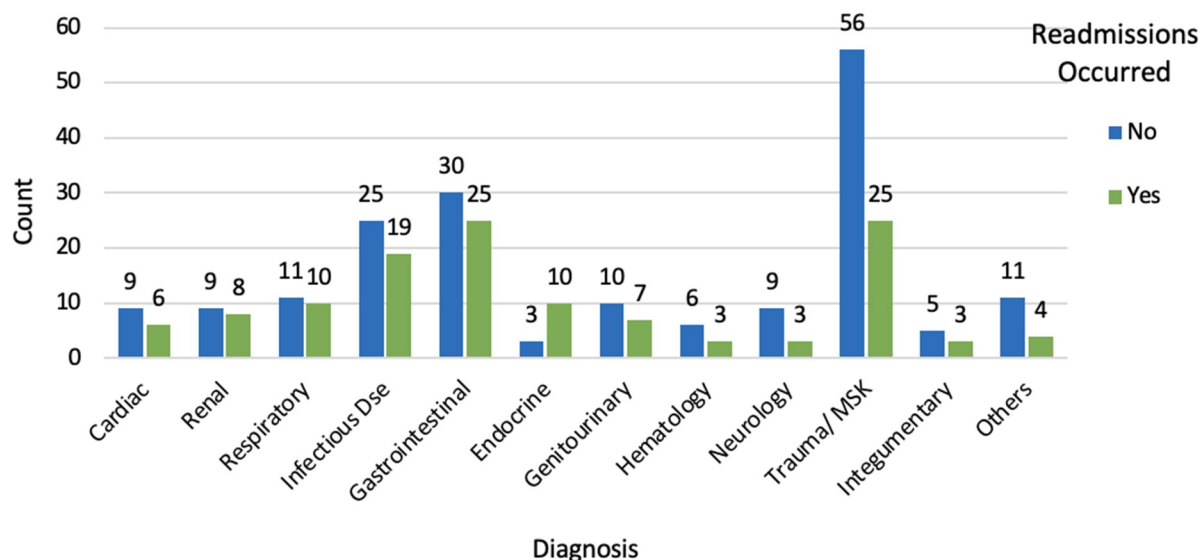


FIGURE 1

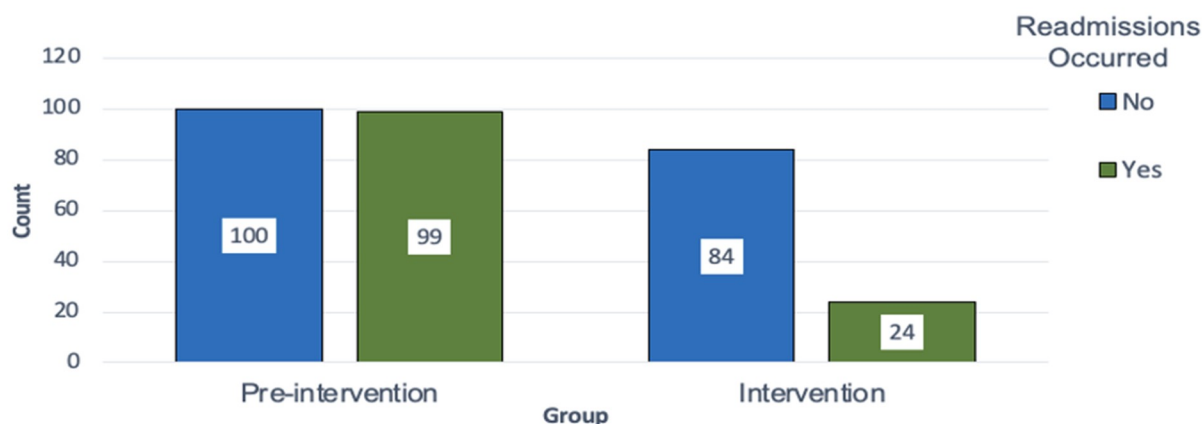
Bar graph of readmissions by diagnosis.

group was 53.3. In the comparison group, 104 were males and 95 were females, while in the intervention group, 53 were males and 54 were females. One patient did not have their gender specified. The racial/ethnicity profile in the comparison and intervention group were primarily Caucasian/White (62%, 59%), Hispanic/Latino (22%, 21%), and African American/Black (8%, 10%). Trauma/musculoskeletal (>25%),

gastrointestinal (18%), and infectious disease (>10%) were the majority of diagnosis categories for the sampled patients in the comparison and intervention group.

In measuring readmissions, the comparison group was 50%, and the postintervention readmission for the intervention group was 22%. IBM SPSS was used for Pearson's chi-square test, which revealed [$\chi^2 = 22.0, p = .001$], showing a statistically significant

Bar Graph of Readmissions by Pre-intervention and Intervention Group



$N = 307$, Blue bars represent patients not readmitted. Green bars represent 30-day readmissions.

FIGURE 2

Bar graph of readmissions by preintervention and intervention group. $N = 307$, Blue bars represent patients not readmitted. Green bars represent 30-day readmissions.

AHRQ Re-Engineered DC Checklist

Age: _____ Gender: M ____ F ____

Diagnosis Category (primary only):

____ Cardiac	____ Gastro-Intestinal	____ Neurology
____ Renal	____ Endocrinology	____ Trauma /MSK
____ Pulmonology	____ Genito-Urinary	____ Integumentary
____ Infectious Disease	____ Hema-Oncology	Others: _____

RED COMPONENTS	Date Completed / RN initials (N/A if not applicable)
1. Ascertain need for and obtain language assistance.	
2. Make appointments for follow-up care (e.g., medical appointments and post discharge tests/labs).	
3. Plan for the follow-up of results from tests or labs that are pending at discharge.	
4. Organize post discharge outpatient services and medical equipment.	
5. Identify the correct medicines and a plan for the patient to obtain them.	
6. Reconcile the discharge plan with national guidelines.	
7. Teach a written discharge plan the patient can understand.	
8. Educate the patient about his or her diagnosis and medicines.	
9. Review with the patient what to do if a problem arises.	
10. Assess the degree of the patient's understanding of the discharge plan.	
11. Expedite transmission of the discharge summary to clinicians accepting care of the patient.	

FIGURE 3
AHRQ Re-Engineered DC Checklist.

difference. In measuring the clinical significance, the results of the reduced readmissions in the project site support the effectiveness of the AHRQ RED checklist. After implementation, a 28% reduction in 30-day readmissions was measured, indicating 75 fewer people were readmitted after implementation.

INTERPRETATION OF FINDINGS

The quality improvement project, with its unique approach and findings, has added to the growing body of evidence supporting the effectiveness of the AHRQ RED DC Toolkit in reducing 30-day hospital readmissions. These results align with the conclusions drawn from the 15 studies reviewed the literature, all

of which demonstrated a significant decrease in hospital readmission rates with the use of a discharge guideline. Notably, all 15 articles endorsed this quality improvement project by incorporating all or parts of the RED Toolkit, with significant *p*-value results indicating reduced readmission rates.

AHRQ’s RED Toolkit is a hospital strategy that provides EBP tools to help facilities, especially hospitals, to re-engineer and recreate their discharge processes (Agency for Healthcare Research and Quality, 2023). The AHRQ’s RED guideline is known for producing positive patient outcomes by reducing readmission rates. This guideline offers ways to identify and manage challenges and barriers in the implementation process. The AHRQ RED Toolkit emphasizes the

importance of implementing and measuring outcomes to reduce readmissions, which is critical for continuous quality improvement. Applying the same approach and method to the medical-surgical patient population resulted in a 30-day reduction in hospital readmissions.

STRENGTHS AND LIMITATIONS

The discharge checklist guided nurse case managers in rendering patients who were discharged to home. The medical-surgical unit discharges 4–10 patients daily; thus, the sample size for the project was easily met. The project's systematic approach was instrumental in ensuring the successful implementation of the DC checklist intervention. The educational teaching on the use of the DC checklist was done in person, and the learning was recorded for those nurses who could not attend. The nurse case managers, who played a crucial role in this process, appreciated the flexibility of mandatory learning. The quality improvement project also aligned with the unit's initiative of improving nurses' knowledge about their roles during the discharge process. The project's implementation was successful because of the supportive unit leadership, a positive nursing work culture, an organized unit secretary, and an outstanding nurse manager who oversees nurse compliance with the DC checklist.

During the project's implementation phase, a few limitations were noted. The first limitation is the restricted sample population of patients in the medical-surgical unit; thus the findings in this QI project may not be similar to other hospital units. The second limitation was a decrease in the submission of DC checklists during weekends, especially in the initial weeks when nurse managers were off duty, and the staff was under a different resource nurse. The presence of float staff in the unit also led to limited compliance. To address this, nurse managers conducted regular morning huddles and reminded the nurses to use the DC checklist. The third limitation was related to patient compliance and their willingness to engage in thorough DC teaching by the nurse case manager. This issue was handled by providing continuous patient education throughout their hospital stay and initiating the DC checklist from the time of patient admission.

IMPLICATIONS FOR CASE MANAGEMENT

The improved readmissions have various impacts on health care and case management practice, including utilization cost, patient safety, and quality of care. One of the primary implications for nursing case management is a change in the discharge practice based on the project findings. The AHRQ RED Toolkit has made a significant impact. After the clinical guideline was translated and implemented, the

discharge toolkit not only improved the discharge processes but also reduced readmissions at the project site. The introduction of a DC checklist at the project site and its role in reducing readmissions can help support the decision to incorporate this checklist into the standard of care during discharges. The AHRQ RED components are evidence-based discharge interventions and strategies that have been proven to be crucial in reducing readmissions and improving patient outcomes. The project results highlight the importance of incorporating EBP guidelines into health care settings and validate the effectiveness of these interventions in bridging gaps in patient care, such as avoidable readmissions.

The project outcomes demonstrate the role of the RED components in guiding case managers during a patient's hospital discharge. Applying the RED components was essential in preventing readmissions, thereby influencing health care and case management practices, including ensuring safe discharges, reducing costs, and improving care quality. The project outcomes showed significant improvements in the discharge process, providing opportunities to develop a new discharge protocol. This supports the decision to incorporate this checklist into the standard of care during discharges. Additionally, the positive results open the possibility of integrating the discharge checklist into the EHR system for a larger-scale impact.

The project outcomes, which are both clinically and statistically significant, can help the case management community consider integrating AHRQ RED components into patient care coordination and discharge planning as patients transition to their homes. The scientific evidence presented during staff education helps reassure nurse case manager of the toolkit's effectiveness, making them better prepared to utilize this comprehensive discharge guideline. The specific elements of the toolkit are designed to ensure that patients can safely transition to their homes, providing them with a sense of reassurance about the quality of care they will receive. This quality improvement project provided an opportunity to benefit patient care, nursing science, and organizational outcomes after the readmission metrics were significantly reduced.

Recommendations for future projects and researchers

Several recommendations for future projects and research were identified. The first recommendation is to broaden inclusion criteria for patient populations, such as the pediatric population. Approximately 20% of adult patients and 20% of pediatric patients experience postdischarge issues, with one-third of the latter requiring further intervention (Desai et al., 2018). Caregivers cite inadequate preparation, unclear

instructions, lack of support, and barriers to accessing postdischarge services as common problems during hospital-to-home transitions (Desai et al., 2018).

The second recommendation is to pilot the use of other inpatient units with high readmission rates in the hospital, such as telemetry units. Several pioneer AHRQ RED Toolkit research studies were primarily done on congestive heart failure (CHF) patients; in telemetry units, there will be a shift in looking at patient readmissions associated with cardiac-related diseases. CHF is a common condition worldwide. It is a leading cause of hospitalization for people over 65 in the United States, constituting up to 80% of all hospitalized heart failure patients (Azadeh-Fard et al., 2024). Additionally, CHF patients aged 65 and older have a high hospital readmission rate (Azadeh-Fard et al., 2024).

The third recommendation is to continue trending readmissions and see if this sustains reduced readmissions of up to 60–90 days. The AHRQ RED Toolkit recommends reexamining the readmissions in the hospital through rates at different times. The toolkit recommends examining readmissions within specific time frames, such as 7, 30, 60, and 90 days. Analyzing longer timeframes can help identify issues with follow-up care, patients' understanding of self-care, and the hospital's ability to arrange post-hospital care (Agency for Healthcare Research and Quality, 2023).

The fourth recommendation is to include other discharge dispositions, such as discharges to skilled nursing facilities and not solely to home discharges. The AHRQ RED Toolkit explains the need to measure readmissions in terms of rates by readmission source. Future research should consider examining readmission rates based on the source of readmission, such as whether patients came from home, nursing home, skilled nursing facility, or assisted living. This will help determine the most common places from which patients are readmitted.

Recommendations for sustainability

Two recommendations for sustaining the AHRQ RED Toolkit have been identified. First, the DC checklist should be refined. The Agency for Healthcare Research and Quality (2014) emphasizes the importance of identifying program champions to support expansion and sustainability. Engaging stakeholders in quality improvement projects with the toolkit will help gather feedback and pinpoint obstacles. The project site, one of 29 hospitals, benchmarks its performance against national standards to enhance patient care. Known for adopting innovations, this site can test EBPs in pilot projects for future replication.

Another recommendation is the use of continuous education and training concerning the essentials of the DC checklist. Sharing the scientific evidence and rationale behind how this checklist reduces readmissions is crucial for the multidisciplinary team. Monitoring the implementation and impact of efforts to reduce readmissions is also essential. Tracking process and outcome data will provide information that can be shared with staff as part of continuous quality improvement efforts and will assure stakeholders that progress is being made (Agency for Healthcare Research and Quality, 2014). While nurse case managers can use the DC checklist on their own, involving additional staff like social workers for outpatient follow-ups and medically trained personnel for tasks such as medication reconciliation can further improve outcomes (Agency for Healthcare Research and Quality, 2014).

CONCLUSION AND CONTRIBUTIONS TO CASE MANAGEMENT PRACTICE

The quality improvement project has provided valuable insights into the gaps in readmission and the use of the AHRQ's RED Toolkit. It emphasized the importance of introducing an evidence-based discharge tool to guide nurse case managers during the patient's hospital discharge back to their home. The QI project translated the AHRQ RED Toolkit by utilizing 11 RED components into a discharge checklist, effectively mitigating 30-day readmissions. The EBP tool facilitated a seamless transition from the hospital to home, ensuring there is a clear discharge plan for the patient's recovery. The project's successful implementation and subsequent reduction in 30-day readmissions among adult medical-surgical patients not only demonstrated the effectiveness of the RED Toolkit but also reassured the health care professionals, hospital administrators, and quality improvement teams about the positive impact of such interventions on patient outcomes.

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The instructions and test for this CE activity are available online as of November 1, 2025 for **nurses** at www.nursingcenter.com/ce/PCM, for **case managers** at <https://alliedhealth.ceconnection.com/browse/professions/32> and for **healthcare quality professionals** at <https://alliedhealth.ceconnection.com/browse/professions/19>