GUIDE TO
PREVENTING READMISSIONS

— AMONG —

RACIALLY AND ETHNICALLY DIVERSE

MEDICARE BENEFICIARIES

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Guide to Preventing Readmissions among Racially and Ethnically Diverse Medicare Beneficiaries

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Introduction

The passage of health care reform and current efforts in payment reform signal a significant transformation of the United States health care system. An entire set of structures is being developed to facilitate increased access to care that is cost-effective and of high-quality. Pursuing *high-value* health care is the ultimate goal, and health care leaders across the country are faced with the daunting challenge of succeeding—and perhaps just surviving—while delivering care to an increasingly diverse population. One major part of the move towards value-based care—paying for quality, not quantity of services—is a set of financial incentives and disincentives that target hospitals and are focused on driving quality improvement and controlling cost. Preventing avoidable hospital readmissions has become one such cost-controlling target, given the implications for quality improvement and the potential savings associated with addressing them. For example, research has demonstrated that unplanned readmissions cost Medicare $17.4 billion in 2004.[1] This study found that 20 percent of Medicare fee-for-service patients were readmitted within 30 days of discharge.[1] As a result, in 2012, the Centers for Medicare & Medicaid Services (CMS)—through Congressional direction and Administration initiatives—implemented the Hospital Readmission Reduction Program (HRRP), which penalizes hospitals with relatively higher rates of Medicare readmissions.[2]

While not all readmissions are entirely preventable, it is widely understood that a portion of unplanned readmissions could be prevented by addressing a series of barriers patients face prior to, during, and after admission and discharge. Some studies have shown that certain patient-level factors, such as race, ethnicity, language proficiency, age, socioeconomic status, place of residence, and disability, among others—when tied to particular costly and complicated medical conditions such as heart failure, pneumonia, and acute myocardial infarction, to name a few—may be predictors of readmission risk and readmissions.[1,3-7] In fact, research has demonstrated—and evaluations of the HRRP to date have found—that minority and other vulnerable populations are more likely to be readmitted within 30 days of discharge for chronic conditions,[8-10] such as congestive heart failure, than their white counterparts.[11] Given the cost and quality implications of these findings, addressing readmissions while caring for an increasingly diverse population has become a significant concern for hospitals and hospital leaders. In sum, there is a need for additional guidance on how hospitals can focus both system-wide redesign as well as targeted and specific efforts at preventing readmissions among minority and vulnerable populations.

With support from the Center for Medicare & Medicaid Services Office of Minority Health, the Disparities Solutions Center at Massachusetts General Hospital, in partnership with NORC at the University of Chicago, has created a *Guide to Preventing Readmissions among Racially and Ethnically Diverse Medicare Beneficiaries.*

The goals of this guide are to provide:

- An overview of key issues related to readmissions for racially and ethnically diverse Medicare beneficiaries
- A set of activities that can help hospital leaders take action to address readmissions in this population
- Concrete case examples of strategies and initiatives aimed at reducing readmissions in diverse populations

This guide is constructed to be clear, concise, practical, and actionable. It is developed for the CMS Office of Minority Health, Quality Improvement Organizations, Quality Innovation Networks, and all hospital leaders such as CEOs, VPs, and others, who focus on quality, safety, and care redesign. It is also applicable to all types of hospitals, including rural, urban, public, and private, among others. The strategies required to address avoidable readmissions for diverse populations outlined in this guide are closely aligned with the *CMS Quality Strategy Goals*. The recommendations and initiatives discussed herein contribute to supporting a culture of safety; strengthening patient and family engagement in care; promoting effective communication and care coordination;

promoting effective chronic disease prevention and treatment; working with communities to promote healthy living; and making care more affordable. This guide includes a thorough review of the peer-reviewed literature and case studies of innovative approaches that hospitals are undertaking to reduce readmissions in minority and vulnerable populations.

To maximize use of this guide, hospitals may:

1. Develop a "Transitions/Readmissions Care Redesign Team" (details below) or have the team that is currently responsible for this work review the information included here.

2. Conduct a gap analysis focused on whether the transition/readmission process incorporates the strategies and issues provided here.

3. Create a plan to incorporate strategies included here. Although presented in a step-wise fashion, the strategies presented here can be selected depending on what is most achievable and impactful in the short-term while also moving to incorporate all recommendations over a specified course of time. Data collection, however, is an important foundation of this work, but difficulties in this area should not preclude efforts in other areas.

Background on Readmissions

Guided by The Institute of Medicine (IOM) Report *Crossing the Quality Chasm*, our nation charts a path to deliver care that is safe, efficient, effective, timely, patient-centered, and equitable.[12] *Equity* is the principle that quality of care should not vary based on patient characteristics such as race and ethnicity, gender, socioeconomic status, or other characteristics. The key drivers that are shaping transformation and the pursuit of value – assuring patient safety; improving patient experience; developing innovations in population health; and preventing avoidable hospitalizations and readmissions-- all need to be built on these key principles of quality.

Preventing avoidable hospitalizations has garnered special attention as a strategy to improve quality and control cost. The Medicare Hospital Readmissions Reduction Program (HRRP) is one of the vehicles through which this strategy is being executed. The HRRP penalizes hospitals that have relatively higher rates of Medicare readmissions.[2] In FY 2016, as required by legislation, hospitals can now lose as much as three percent of their Medicare payments under the program.[13] To determine each hospital's penalty, CMS first looked at readmissions rates of patients who initially went into the hospital for heart failure, heart attack, and pneumonia but returned within 30 days of discharge. Two new conditions have been added since then, including chronic obstructive pulmonary disease (COPD), which can involve bronchitis and emphysema, and elective hip and knee replacements.[14] With respect to the FY 2015 program, according to Kaiser Health News, "For penalized hospitals, CMS will reduce each payment for a patient stay from October 2014 through September 2015, which is the federal fiscal year. These penalties apply to patients admitted for any condition, not just the five conditions that were used to determine if a hospital had too many readmissions. Thus, if Medicare would normally pay a hospital $15,000 for a kidney failure patient, with a 1.5 percent penalty, Medicare would deduct $225 and pay $14,775. Last year, nearly 18 percent of Medicare patients who had been hospitalized were readmitted within a month."[15] While that percentage is lower than in past years, roughly two million patients return a year, costing Medicare $26 billion. Officials estimate $17 billion of that comes from potentially avoidable readmissions.[15]

Among the conditions mentioned here, congestive heart failure (CHF) has been a key target for intervention. CHF is a highly prevalent and very costly chronic disease that is associated with significant morbidity and mortality worldwide. In the U.S., CHF impacts 5.1 million people a year at an annual cost to the healthcare system of over $32 billion.[16] It is widely accepted that increased CHF readmissions are associated with higher costs and are a marker of lower quality of care. In general, approximately one in four CHF patients are readmitted within 30 days of discharge and the average cost per CHF readmission is $13,000.[17] As might be expected, research demonstrates

that racial/ethnic minorities are disproportionately impacted by both cardiovascular risk factors and CHF. One major study reported that blacks had the highest incidence of CHF (4.6 per 1000 persons), followed by Hispanics (3.5), whites (2.4), and Chinese Americans (1.0).[18] Black and Hispanic patients also have higher readmission and hospitalization rates for CHF than non-Hispanic whites.[19-21]

Minority CHF patients often face a myriad of barriers to care that include those related to poor social support, living in low-resource or socioeconomically disadvantaged communities, lack of a usual source of care, limited English proficiency, health literacy, numeracy and general literacy, as well as issues of mistrust, and discomfort with self-engagement, to name a few. [18,19,22,23] These barriers can contribute to higher rates of readmission, including when patients misunderstand discharge instructions. The risk for readmission may be higher, particularly for chronic conditions in which diet, weight management, and adherence to a complex medication regimen are essential. Successful efforts to address this issue have proven to be elusive, especially for vulnerable populations with high rates of CHF. By penalizing hospitals for excessive CHF readmissions, the HRRP is attempting to drive greater focus on patient education, training in self-management strategies, care coordination, and the facilitation of successful transitions to the community—all with the goal of improving quality for this complex and costly population.

In this time of health care transformation and reform, strategies to prevent readmissions among vulnerable minority populations will be necessary if we are to realize the promise of value in healthcare going forward.

Overview of Key Issues & Strategies Related to Readmissions for Racially & Ethnically Diverse Patients

Data from the Agency for Healthcare Research and Quality indicate that black and Hispanic patients experience higher rates of potentially avoidable readmissions than white patients.[24] Among Medicare beneficiaries, readmission rates for all of the top conditions in the CMS Hospital Readmissions Reduction Program are higher for black patients and higher for Hispanic patients with congestive heart failure and acute myocardial infarction (see Appendix A).[4,20, 25-28] Several factors contribute to disparities in readmission rates for racially and ethnically diverse Medicare beneficiaries. While some of the issues and strategies outlined in the table below are relevant to preventing readmissions in any population, they are particularly important to consider when examining the drivers of readmission and opportunities to eliminate disparities in readmission rates for diverse populations. Along with these strategies, hospitals should systematically examine what they can do to improve care in accordance with the National Standards for Culturally and Linguistically Appropriate Services in Health and Heatlh Care, available at: https://www.thinkculturalhealth.hhs.gov/content/clas.asp. Research has shown that the effect of these strategies on readmission rates is enhanced when interventions include multiple strategies, whereas single-component interventions are unlikely to have a significant impact.[29]

Topic	Key Issues and Strategies Impacting Readmissions for Diverse Populations
Discharge and care transitions	Racial and ethnic minorities are less likely than white patients to follow up with a primary care provider or an appropriate specialist after discharge.[30] • Provide early discharge planning and follow-up for patients at high risk for readmission[31] • Communicate with patients about the importance of early follow-up. Support may be needed to schedule appointments and address potential barriers to follow-up among racial and ethnic minority patients (e.g., lack of usual source of care, transportation issues, language barriers).[32]
Usual Source of Care/Linkage to Primary Care	Racial and ethnic minorities are less likely to be linked to a primary care provider or have a usual source of care. Lack of this linkage leads to lower quality care.[33-35] • Determine whether the patient is linked to a primary care provider or has a usual source of care. • If no linkage exists, attempt to provide a referral and assure the patient can be navigated to a new primary care provider.[36,37]
Language barriers and access to interpreter services	Limited English proficiency is associated with several factors that contribute to avoidable readmissions, including lower rates of outpatient follow-up and use of preventive services, medication adherence, and understanding discharge diagnosis and instructions.[20,38] • Ensure that patients with limited English proficiency are aware of and have access to professional medical interpreter services during inpatient stays, discharge, and when accessing post-hospital care.[39] • Ensure that discharge instructions are communicated in the patient's preferred language. Written materials should take into account both literacy level and the preferred language of the patient and/or caregiver. Simply translating instructions may be insufficient to ensure patient understanding.[40] • Include family members and/or caregivers in care as appropriate, work with members of the extended care team (such as community health workers), and coordinate with traditional healers to help facilitate culturally competent care for patients with limited English proficiency.[41]

Topic	Key Issues and Strategies Impacting Readmissions for Diverse Populations
Health literacy	Many factors that contribute to readmissions for racial and ethnic minority populations are associated with health literacy (e.g., limited knowledge of medical condition, poor ability to manage medications and self-care, non-adherence to treatment plans) [42-44] • Conduct early screening and documentation of literacy and health literacy to ensure providers are aware of the patient's level of health literacy at all stages of care. [43] • Provide low literacy discharge instructions and educational materials that incorporate adult learning principles to facilitate patient understanding of diagnosis and treatment regimen.[44] • Reduce the complexity of self-care instructions provided to patients.[44] • Use terminology the patient understands, and avoid the use of medical jargon. Using relatable language is especially important when working with patients with limited English proficiency who may experience additional barriers to communication.[40]
Culturally competent patient education	Cultural beliefs and customs influence patients' health behaviors, perceptions of care, and interpretation of medical information or advice. [45-47] • Facilitate trust with patients by demonstrating respect for cultural practices and beliefs that may impact understanding of the disease, treatment, possible outcomes, and risks, as well as patient self-management, and tailor patient education accordingly. [48] • Engage families in care transitions, as appropriate, and leverage cultural beliefs or practices that promote self-care and family or social support. [47,49] • Link patients to community-based educational programs offered by institutions that engender trust (e.g., faith organizations, community-based cultural organizations) [48] • Address cultural factors predictive of medication non-adherence, such as patient perceptions regarding the benefits of Western vs. Eastern medicine and perceptions of susceptibility to disease/harm.[45]
Social Determinants	Factors linked to socioeconomic resources are associated with higher readmission rates for patients at minority-serving hospitals.[26,50] • Connect patients with community resources such as medication assistance programs, assistance with daily living, and services that address the social determinants of health (e.g., housing and food security, transportation, employment) in order to address financial barriers that disproportionately affect racial and ethnic minorities. [26,51] • Facilitate supplemental health insurance for underinsured patients.[52,53] • Improve social support through family-centered care, use of health information technology, and community-based interventions that reduce social isolation. [47,54]
Mental health	Anxiety and depression disproportionately impact certain minority groups (e.g., black patients with heart failure), and poor mental health has been shown to impact access to services and self-care after discharge. [55] • Assess patients for depression, assist them in accessing culturally competent mental health services, and support culturally-relevant coping mechanisms (e.g., spirituality). Stigma about diagnosis and variation in the cultural meaning of depression for minority populations may pose challenges to diagnosis and treatment. [55]
Co-morbidities	Racial and ethnic minorities commonly have multiple co-morbidities, resulting in higher readmission risk. • Focus on the full spectrum of the patient's health, not just the admitting diagnosis, especially for patients with multiple chronic conditions.[56] • Ensure appropriate referral to specialty care for co-morbidities.[57] • Implement policies that foster the use of multi-disciplinary disease management teams and provide payment for care coordination. [57]

High Level Recommendations for Moving the Needle on Readmissions for Diverse Populations

There has been extensive research and guidance on how to prevent avoidable readmissions, and the strategies span many areas and a myriad of initiatives. Less, however, has been done to effectively cross-walk the particular barriers minority and vulnerable populations face in this regard, and how they might be addressed in the context of broader plans to address readmission in the overall population. There are several key themes that emerge when it comes to developing a system that focuses on preventing readmissions for *all* patients, regardless of their race, ethnicity, culture, class, language proficiency, or level of health literacy. Here are some that we have identified:

1. Create a Strong Radar

There is clear consensus on the importance of data collection as the "radar" that identifies who is commonly being readmitted, for what condition, from what location, due to what factors, and at what cost. Developing a better understanding of these particulars is essential to having a strong grasp on what underlies the readmission rate. Ultimately, the stronger the radar, the better the foundation for interventions. As we consider addressing readmissions among diverse populations, there are several key data points that are critical to collect given what is known about this issue, and they include:

- *Race and Ethnicity*: Given research that highlights how minorities are more likely to be readmitted for chronic conditions than their white counterparts, standardized collection of race and ethnicity data is extremely important. Self-reported data is the gold standard and minimum standards for the collection of this data are provided by the federal Office of Management and Budget (https://www.whitehouse.gov/sites/default/files/omb/assets/information_and_regulatory_affairs/re_app-a-update.pdf) and Section 4302 of the Affordable Care Act (http://aspe.hhs.gov/pdf-report/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-and-disability-status).

- *Language*: Given research that highlights how patients with limited-English proficiency are more likely to be readmitted, this is another key piece of information. Data on language should be collected by asking the patient's preferred spoken language for care, as well as preferred written language.

- *Education:* Given the research that highlights how patients with low health literacy are at risk for readmissions, understanding this data point is critical.

- *Social Determinants:* Social factors, such as social support, access to healthy foods and safe, affordable places to exercise, availability of transportation, etc., are critical determinants of readmissions and as such key points of information to collect.

- *Disability:* Given the research that highlights how those with disabilities have more complex admissions, being able to know this early on and prepare for it is essential.

- *Linkage to Primary Care/Usual Source of Care:* Given the research that highlights the importance of having a usual source of care or linkage to primary care, as a precursor to higher quality of care, gathering this data is critical and can be actionable with efforts to refer to primary care, if necessary.

This information can be gathered routinely at registration, updated routinely, and used to do predictive modeling for readmissions, or readmission "hot spotting," in order to address factors that can preempt avoidable readmissions in diverse populations. In the absence of standardized data collection systems, this information can be gathered in the short-term from individuals who are routinely readmitted via chart review, focus groups, structured interviews, and through the use of multicultural advisory boards and/or patient/family councils.

2. Identify the Root Causes

Once the radar effectively picks up the root causes and characteristics that are linked to readmissions – then a process can be initiated that focuses on addressing barriers and developing the systems to prevent them. Performance measurement and monitoring makes the data meaningful and useful.

For example, if it is determined that certain racial and ethnic groups are more likely to be readmitted, factors such as mistrust, different cultural beliefs, language barriers, or health literacy can be targeted through a series of interventions, including provider training, organizational trust-building, interpreter services, navigators, health coaches, simpler discharge information, etc. Systems innovations and improvement becomes the natural outgrowth of a strong radar that picks up clear root causes.

3. Start from the Start

Deploying strategies to prevent readmissions mid-way through or at discharge is too late. Familiarity with the root causes should lead to a series of preemptive efforts that span the duration of pre-admission to post-discharge. These efforts are especially important for vulnerable minority populations where complexity may require more time for providers to effectively communicate and address patients' needs. Every hour counts, and creating systems that assess risk prior to admission, addressing these factors in a planned way at admission and throughout hospitalization, and assuring they are covered at discharge, is starting from the start. Given social factors, dietary patterns, cross-cultural issues, language, and health literacy all converge to create risk for readmission, working to address potential issues before they emerge as problems is essential to reduce the risk of readmission. Building trust, bridging cross-cultural divides, creating new lifestyle management and adherence patterns, and effectively educating, for example, all take time, and the sooner you start, the better.

4. Deploy a Team

All evidence points to myriad and multifactorial risks for readmissions. These risks cannot be solved solely by doctors, nurses, or social workers. True success will be predicated on a truly multidisciplinary team that is able to communicate quickly, effectively, and respectfully. Hospitals can either create a specific team that is charged with redesign of transitions or have teams that already charged with this work focus their efforts on assuring these approaches are incorporated into the transitions process. This team may include quality and safety leaders, doctors, nurses, social workers as well as allied health professionals (such as pharmacists, nutritionists, mental health providers, substance abuse services, etc.) and "non-traditional" team members (such as community health workers, navigators, and health coaches). Investing in these resources, derived from the communities-at-risk, will be essential. For example, hiring and training coaches and navigators who are multilingual, culturally competent, and familiar with the community, will provide a leg up in anticipating and addressing barriers that lead to readmissions. These team members need to be able to perform in both the inpatient and outpatient setting.

5. Consider Systems and Social Determinants

Developing interventions to prevent readmissions, especially in vulnerable and/or minority populations, requires focus in two areas— (1) creating systems responsive to the needs of diverse populations and (2) addressing the social determinants that put them at continued and repetitive risk for bouncing back. This is certainly easier said than done but is crucial, nevertheless, given the evidence that clearly outlines how these areas converge to create a perfect storm for readmissions. For example, systems should include provisions for easy-to-read information that is culturally and linguistically appropriate and deployed by a multidisciplinary inpatient team of educators and interpreters. Social determinants can be overcome with the support of navigators and links to community resources. Assuring that patients have the social supports they need to manage their condition is critical and can be assessed and addressed by social workers and community health workers. In the end, a patient's ability to engage in their care is influenced by their clinical, physical, and emotional status; the support system available to them; and their capacity to overcome the social obstacles present in their lives and environment.

6. Focus on Culturally Competent, Communication-Sensitive, High-Risk Scenarios

Communication is essential to the care process and, in turn, to preventing avoidable readmissions. Successfully reducing readmission rates may depend on patients' ability to understand three things: (1) their diagnosis, (2) the care they receive, and (3) their discharge instructions. Knowing what you have, what the warning signs are, what to take, who to call, and when to come in are all critical pieces of information that are compromised by low health literacy, mistrust, or language barriers, for example. Communication in "high-risk scenarios" includes elements that are foundational to preventing readmissions, such as medication reconciliation and discharge instructions, among others. These are considered communication-sensitive scenarios, meaning they rely on effective patient-provider communication to avoid harm caused by communication problems or barriers. [40] Deploying the necessary set of resources to address these factors in a culturally, linguistically, and educationally appropriate way is a key element of strategy to prevent readmissions in minority populations.

7. Foster Community Partnerships to Promote Continuity of Care

Addressing the issue of avoidable readmissions requires hospitals to build partnerships with other providers and the community. These partnerships will help facilitate the transition of patients back into the community by leveraging partners to ensure continuity of care for patients following hospitalization. Partners are able to ensure that the next care provider is aware of the patient's status and care information and to direct at-risk patients to needed care following hospitalization. Community partners are also sometimes equipped to address non-medical factors that could lead to readmissions such as behavioral, health literacy, and cultural issues. In places where these partnerships already exist, hospitals could focus on strengthening and maximizing their benefit. Coordinating all these efforts will separate success from failure.

Conclusion

The drive to high-value healthcare has begun and we are on a clear path towards transformation. While the goals seem clear—deliver high-quality, affordable healthcare for all—the new systems for delivery and the specific tactics to make those new systems successful are undoubtedly a work-in-progress. Preventing avoidable readmissions is no exception. In the current environment, healthcare systems are searching for quick "wins," or areas of focus that are promising, and provide high return-on-investment, "high-value" targets. Successful leaders will be those who are facile at identifying these high-value targets and quickly deploying systems and strategies to address them. For some areas, there will be proven models to deploy, for others there will be models that are transferrable and can be deployed or there may be a need for complete innovation. The evidence on preventing readmissions, cross-walked with the barriers that disproportionately impact vulnerable populations, allow for the development of innovative models that can be high-performing, high-quality, and high-value. The case studies that follow offer promising approaches to filling this void and link proven approaches with well-recognized strategies to address barriers commonly faced by vulnerable populations.

There are three realities that form the impetus for action to prevent unnecessary readmissions for diverse populations. First, racial and ethnic disparities in health care persist and are a clear sign of inequality in quality and low-value healthcare. Second, although the root causes for these disparities are complex, there exists a well-developed set of evidence-based approaches to address them. Third, some argue that efforts to address racial and ethnic disparities in health care are simply too costly in these challenging financial times. A large part of this viewpoint centers on the perception that addressing disparities requires significant cost outlays without clear cost savings. However, a more careful review of the evidence highlights how being inattentive to the root causes of disparities adversely impacts efficiency and the bottom line.[58-60] A key part of value is identifying areas where there are inefficiencies and waste, current investments we're making where we aren't getting a good return, and disparities are a great example of this. Preventing readmissions sits squarely at this intersection. In sum, as part of our care redesign, we must assure that we are prepared to deliver high-value healthcare to a diverse patient population. Our nation is becoming increasingly diverse and the newly insured will mirror this diversity. If we are

progressive, thoughtful, and truly gearing up for success, a new health care system that is high-value, equitable, culturally competent, and delivers quality care to all is well within reach.

Case Studies

The following case studies provide examples of interventions that have demonstrated success in preventing avoidable readmissions and highlight components that are particularly relevant to minority populations. Few examples exist of evidence-based programs that have been proven to reduce racial and ethnic disparities in readmissions. These case studies were selected because they include key elements of the recommendations in this guide that apply to preventing avoidable readmissions for minority populations.

The first case study describes an initiative designed to improve the discharge process and the second explains a post-discharge disease management model of care for patients with diabetes. The third case describes a home and community-based program targeting patients at high risk of readmission.

Case 1: Re-Engineered Discharge Process

Overview

Project Re-Engineered Discharge (RED) (https://www.bu.edu/fammed/projectred/) is an initiative designed to improve the hospital workflow process and reduce readmissions following the transition from hospital to home or other care setting, particularly at institutions serving a diverse patient population. It was developed by researchers at Boston University Medical Center, with support from the Agency for Healthcare Research and Quality and the National Heart, Lung, and Blood Institute. Discharge is a critical transition point that relies on effective communication between patients, inpatient providers, the patient's caregivers, and ambulatory care providers to avoid rehospitalization. Opportunities for improving the discharge process, particularly for racial and ethnic minorities and patients with limited English proficiency, have the potential to reduce disparities in quality of care, avoid preventable readmissions, and reduce costs.[61]

How it Works

Research has shown that multi-component interventions offer greater promise for reducing readmissions than singular interventions and successful readmission reduction initiatives have included dedicated transition care personnel, patient-centered discharge instructions, and telephone follow-up.[29] RED includes these, and several other, mutually reinforcing components (see Figure 1). Nurse discharge advocates (DA) are trained to carry out the in-hospital components of the RED, including coordination of the discharge plan with the hospital care team, patient education, and preparation for discharge. The DA compiles information from the care team and the patient to create an after-hospital care plan (AHCP), an individualized booklet that includes provider contact information, medication schedule, list of tests with pending results at discharge, an illustrated description of the diagnosis, and information about steps to take if a problem arises after the patient leaves the hospital. The discharge advocate reviews the AHCP with the patient and sends copies of the AHCP and discharge summary to the patient's primary care physician (PCP) on the day of discharge. Patients receive a follow-up call from a clinical pharmacist, two to four days after discharge, to reinforce the plan and to review all medications and address any problems. The pharmacist communicates any issues to the patient's PCP or DA.[62]

In addition to using in-person discharge advocates, a health information technology system was developed as an option for reducing the time required of hospital nurses. A virtual discharge advocate is an animated character that is accessible via a touch screen at the patient's bedside. The virtual nurse explains the discharge process, and patients can interact with the system and ask questions using the touch screen. A copy of the AHCP is displayed on screen and patients follow along with a paper copy. The system includes a mechanism to test patients' understanding of key information and produces a report, containing patient issues or questions that the virtual

discharge advocate could not address, for nurse follow-up. Pilot results revealed positive patient reactions to the virtual discharge process.[63]

Figure 1. Components of the Re-Engineered Discharge Process

The figure below provides an overview of the twelve mutually reinforcing components of the RED. In clinical studies of the RED, these components were implemented by nurse discharge advocates, although it is possible for hospitals to have more than one staff person from different disciplines performing these tasks.

1. Ascertain need for an obtain language assistance.
2. Make appointment for follow-up care (e.g., medical appointments, post-discharge tests or 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.
12. Provide telephone reinforcement of the discharge plan.

*As listed in the AHRQ *Re-Engineered Discharge (RED) Toolkit*. http://www.ahrq.gov/professionals/systems/hospital/red/toolkit/

Results

In a randomized controlled trial, patients who received the RED had 30 percent lower readmission rate within 30 days of discharge, compared to patients who received standard care. Average cost savings of $412 per person in the 30 days following discharge have been realized for RED patients.[62] This has important quality and cost implications, as hospitals are subject to financial penalties for excess readmissions under the CMS Hospital Readmissions Reduction Program. In addition, patients receiving the RED were more likely than those receiving usual care to be able to identify their index discharge diagnosis and PCP name and were more likely to follow up with their PCP. They also reported feeling more prepared for discharge.[62]

Key Components that Touch on Issues Relevant to Diverse Populations

Deploy a Team

RED responds to the need for a coordinated multidisciplinary team that fosters integrated communication between patients, the hospital care team, caregivers, and providers in the community or at other care facilities. Using a nurse discharge advocate ensures that there is a dedicated member of the team who is available to work with the patient and their caregivers to ensure a smooth transition and to connect the patient with a PCP for early follow-up, as well as a pharmacist who is available to discuss medications and answer questions in the critical days following discharge. Coordination among health professionals can help ensure early follow-up, as well as support for patients to address barriers that may increase readmission risk.

Consider Systems, Social Support, and Social Determinants

RED was developed with an eye toward creating a discharge system that is sensitive to the needs of diverse patient populations. For example, the content, format (e.g., use of images, color, and large font), and techniques used to communicate the AHCP to patients were informed by the literature on health literacy and resulted in improved patient understanding of key elements of self-care such as understanding diagnosis, medications, and follow-up appointments.[62]

Additionally, a virtual discharge advocate, Louise, was developed to assist in engaging patients' caregivers in understanding diagnosis, discharge, and follow-up care, in order to provide the necessary social support to the patient. Whereas an in-person nurse discharge advocate may not have time to explain the AHCP to both the patient and caregiver, the virtual advocate (a computer-based program available at the patient's bedside) can be accessed at any time to inform caregivers of the patient's care plan and provide the opportunity to ask questions.[61,63]

Finally, the RED Toolkit provides basic education on the important role of family and broader community supports in many cultures and outlines some of the ways that cultural differences can influence patient care.

Focus on Culturally Competent, Communication-Sensitive, High-Risk Scenarios

A key component of the RED involves assessment of patients' language needs and assistance obtaining the necessary language assistance. The RED Toolkit (https://www.bu.edu/fammed/projectred/toolkit.html) includes a series of tools that provide implementation guidance with a focus on language barriers, cross-cultural care, and communication and trust with diverse patient populations. Addressing these factors is critical to ensuring patients' understanding of their diagnosis, care, and discharge instructions. Tool four specifically addresses the role of culture, language, and health literacy in readmissions and walks the user through the preparation required to provide RED to diverse populations. The tool also provides detailed examples of culturally appropriate approaches to implementing the RED. Key issues when working with diverse populations are highlighted, including: assessing communication needs; working with professional interpreters; communicating across differences; understanding how culture informs health beliefs, attitudes, and behaviors; and understanding the role of family and community. This tool also touches on additional considerations, such as religious observances, sexual orientation and gender identity, and mental health.[61]

Devote Attention to Community, Coordination, and Continuity

Ensuring coordination and continuity of care are cornerstones of the RED. In addition to the hospital care team, having a dedicated discharge advocate to assist in coordinating post-discharge follow-up care, including follow-up with a PCP and proactive phone calls from a pharmacist, addresses key factors known to increase readmission risk for diverse populations. Several RED components are in place to maximize coordination and ensure that other care providers are aware of the patient's needs, including making follow-up appointments for post-discharge care; planning for follow-up on test results that are pending at discharge; organizing outpatient services; and ensuring transmission of the discharge summary to health professionals engaging with the patient after discharge.

Case 2: Home Health Disease Management and Telehealth

Overview

The Centers for Disease Control and Prevention estimate that 29.1 million people in the U.S. are living with diabetes. While data is limited, studies have shown that patients with the top conditions in the HRRP have diabetes as a comorbidity at the following rates: Acute Myocardial Infarction (5%), Congestive Heart Failure (30-40%), Chronic Obstructive Pulmonary Disease (12.7% - 16.3), Pneumonia (9.8%) and Total Knee Replacement/Total Hip Replacement (8.6%).[64-68] Racial and ethnic minorities are more likely to have comorbid chronic conditions, which often lead to poorer outcomes and increase the risk of hospitalization and other high cost services.[69,70] Racial and ethnic disparities in the prevalence of diabetes also exist, with higher rates among blacks, Hispanics, American Indians and Alaska Natives, and Asian Americans than non-Hispanic whites.[71] Additionally, mortality rates among Hispanics and blacks are roughly twice that of non-Hispanic whites.[72,73] One study found that among patients with diabetes, racial and ethnic disparities are more common in 180-day readmission rates, as compared to 30-day readmission rates, with the highest readmission rates among Medicare beneficiaries.[9]

Alterna-Care Home Health is a free-standing home health corporation serving 400,000 patients in Springfield, Illinois and 17 surrounding counties. In an effort to reduce readmissions and emergency room use among patients with a home health plan of care, the organization implemented a disease management model targeting patients with diabetes, cardiovascular disease, or both. Patients with these diagnoses were the greatest contributors to the high rates of readmission (36%) and emergency room use (32.5%) among Alterna-Care's patients.[74]

How it Works

In January 2005, Alterna-Care Home Health launched a 12-month initiative to test a disease management model of home care. Patients with a diagnosis of diabetes, cardiovascular disease, or both were assigned to a nurse (referred to as a specialty home health clinician), who received additional training in managing the specific diagnosis. These clinical specialists were paired with physician collaborators who met monthly with the specialists to participate in case reviews, adjust treatments, and individualize patient care plans. The specialists and physician collaborators involved the patients' primary care physicians to approve the team's recommendations. Clinical specialists were also paired with licensed practical nurses (LPNs), who provided clinical oversight of care and assisted with home visits, when necessary. A diabetes care map was developed, based on evidence-based treatment protocols, and consisted of three home visits to provide patient education on emergency and non-emergency contact procedures, prevention of hyper- and hypoglycemia, proper medication use, blood sugar testing and goal setting, maintaining a healthy weight, and foot care. Diabetes patients enrolled in the program were provided with telehealth monitors that provided daily information on blood glucose levels, which allowed for timely follow-up by clinical specialists, as needed. Patients who did not transmit the information as scheduled received a follow-up call from a telehealth nurse, who walked them through the process of submitting the information on the phone. [74]

Results

The disease management model of care and telehealth intervention was successful at reducing hospitalizations for diabetes patients by 51 percent and emergency room visits by 17.5 percent. Hospitalizations for cardiac patients were also significantly decreased. Clinical specialists reported a preference for the disease management and specialty nursing model over traditional models of care.[74]

Key Components that Touch on Issues Relevant to Diverse Populations

Deploy a Team

Care coordination and post-discharge support have been identified as key to reducing readmission risk for patients with diabetes.[75] This often requires interaction among a multidisciplinary team of care providers. The success of the disease management model and telehealth intervention, tested by Alterna-Care Home Health, relied on communication and teamwork among nurses with training in diabetes, specialists (e.g., an endocrinologist), the patient's PCP, and LPNs assisting with home visits. Tailoring this program to meet the needs of diverse populations, who may have additional barriers to successfully managing their diabetes at home, could involve expanding the care team to include community health workers, health coaches, or interpreters, to name a few.

Consider Systems, Social Support, and Social Determinants

The use of home telemonitoring with diabetes patients has demonstrated success in improving glycemic control.[76] By facilitating frequent follow-up with patients, telemonitoring can support earlier detection of health problems and timely intervention. Alterna-Care Home Health's use of telemonitoring is a step toward addressing the need for systems-level innovations to prevent readmissions. In order to tailor this intervention for minority populations, additional support may be required to ensure that patients have the necessary tools to successfully use this technology, as well as ongoing social support to manage their diabetes at home. Additionally, linking patients to community resources to address the social determinants of health is likely to further reduce the risk of repeat hospitalization.

Focus on Culturally Competent, Communication-Sensitive, High-Risk Scenarios

A key component of this intervention involves at-home diabetes education provided by a clinical nurse specialist. Ensuring that patients understand the assessments and instructions provided during these visits is essential to avoiding unnecessary readmissions. Patients with limited health literacy and/or language barriers may require additional culturally competent resources to realize the full potential of the disease management and telehealth model.

Devote Attention to Community, Coordination, and Continuity

Alterna-Care's involvement of the patient's PCP in approving care plans for patients in the disease management program is key to ensuring proper coordination and continuity of care. Beyond coordinating the patient's clinical care, this program could be tailored to diverse populations by developing partnerships with community organizations to address non-medical issues that influence readmissions.

Case 3: Health Connections Initiative

Overview

KentuckyOne Health in Louisville, Kentucky is a nonprofit system with over 200 locations, including hospitals, physician groups, clinics, primary care centers, specialty institutes, and home health agencies across the state of Kentucky and southern Indiana. It is the largest health system in Kentucky and was formed when Jewish Hospital & St. Mary's HealthCare and Saint Joseph Health System came together in 2012. The Agency for Healthcare Research and Quality has shown that the sickest five percent of U.S. patients account for over half of health care costs. In Louisville, KentuckyOne used a "hot spotting" method to map the home addresses of "super-users" of care (defined for their study as having four or more inpatient, outpatient, or ED visits resulting in an admission between July 2011-June 2012). The data indicated significant opportunity for improvement among a relatively small population.

In just one year, 976 Jewish Hospital patients met the super-user criteria but 126 accounted for charges of $19 million, which was more than 50 percent of the total costs. At Sts. Mary & Elizabeth Hospital, 133 patients generated charges of $15.8 million, representing 45 percent of the total costs. To address these high costs and reduce readmissions, KentuckyOne Health, in partnership with VNA Nazareth Home Care, implemented Health Connections Initiative. The program is based on strong evidence that a large number of ED visits and hospital admissions of "super-utilizing" patients can be prevented by relatively inexpensive and coordinated early interventions. In 2014, KentuckyOne Health received from Catholic Health Initiative's (CHI) Mission and Ministry Fund a $1.5 million, three-year grant to implement Health Connections Initiative, which employs a multidisciplinary team to work in the homes of recently discharged, high-risk patients from low-income neighborhoods to help them better manage their medical conditions and prevent readmission, while addressing barriers to good health. KentuckyOne Health is part of CHI, a non-profit, faith based health system founded in 1996 through the consolidation of four Catholic Health Systems. CHI's Mission and Ministry Fund provides funding (for up to three years) for the planning, development, and implementation of new initiatives to promote healthy communities and since 1996 has awarded 409 grants totaling more than $55.5 million.

How it Works

Health Connections Initiative is based on the model developed by Camden Coalition of Healthcare Providers, aimed at increasing coordination of services for super-utilizers identified through the use of "hot-spotting" or mapping neighborhoods where patients with the highest medical costs live (https://www.camdenhealth.org/). Potential participants are identified while they are hospitalized at Sts. Mary & Elizabeth or Jewish Hospital using the LACE Index Scoring Tool, which calculates the risk of readmission based on length of stay, acuity of admission, co-morbidities, and number of ED visits in the six months prior to admission (http://www.besler.com/lace-risk-score/). Patients who have a primary payer of Medicaid, self-pay, or are dual eligibles, who score in the high risk

category (LACE Index score of 11 or higher), and who live in one of the neighborhoods of concern are invited to enroll in the free program, which entails frequent home visits over a period of up to 90 days. The team works with the patient to set goals for health improvement, to identify any barriers to good health, and to work together to overcome them. Home visits focus on medical and social-support service delivery, such as addressing basic needs like housing, transportation, food insecurity, and low literacy, with the ultimate goal of promoting self-management and transitioning the participant to a medical home. In November 2014, University of Louisville Hospital, a safety net hospital in Louisville, was added to the program.

Figure 2. Health Connections Initiative Population

The figure below illustrates the method for identifying potential participants in the Health Connections Initiative. Among the general population of inpatient, outpatient, and ED cases (Group A), patients with four or more visits (Group B) who have a primary payer of Medicaid, self-pay, or are dual eligibles (Group C) are identified. Group D includes the top patients in Group C based on total charges. Charges for these patients represent five percent of the charges in Group A.
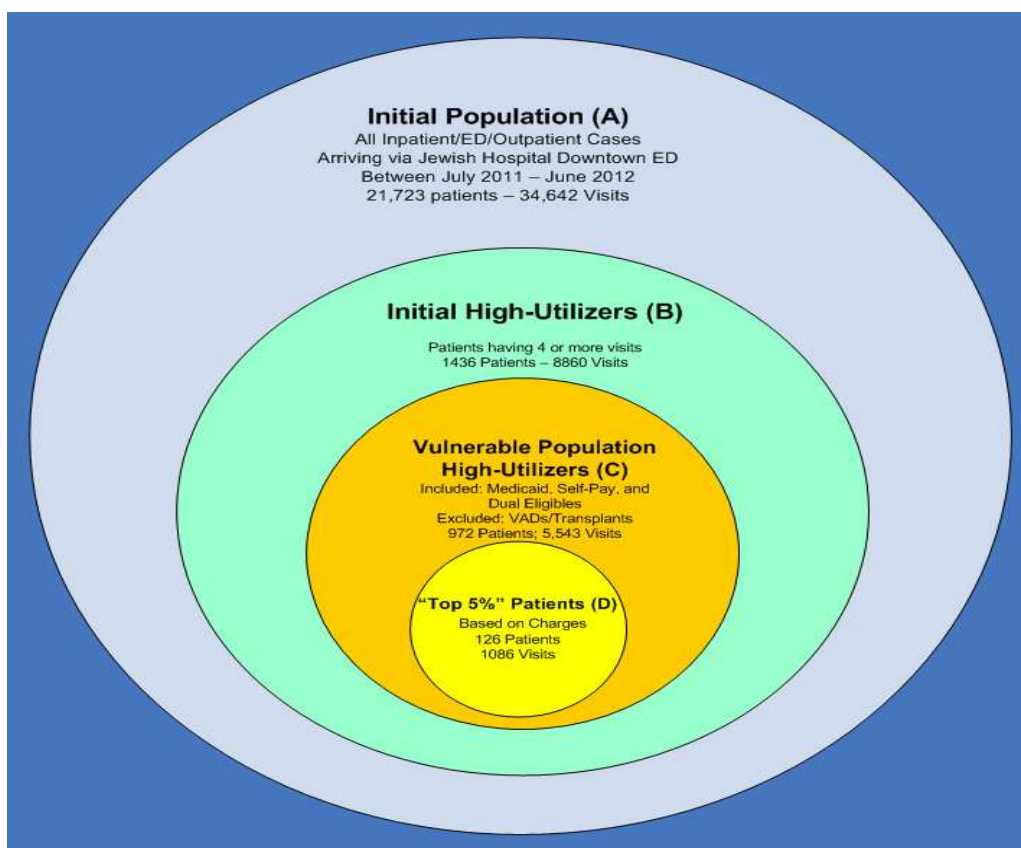
Results

Participants saw dramatic improvements in rates of depression, confidence in their ability to manage their health, and connection to the medical home. From November 2013 through February 2015, readmission rates decreased significantly by 17 percent, from 29.7 percent to 12.8 percent. Additional results included a decline in depression rates from 6.73 to 3.65, an increase in self-efficacy and ability to manage health from 4.7 to 7.86, an increase of medical home connection from 4.13 to 4.44, an increase in perception of care coordination from 4.1 to 4.64, and an increase in patient satisfaction from 4.12 to 4.70. KentuckyOne Health engaged Accenture, a national consulting company, to perform an independent review of the program, including a Return on Investment (ROI) analysis which indicated that for the first pilot year, the program decreased patient admissions by 50 percent, decreased length of stay by 66 percent and decreased 30 day readmissions by 25 percent. Emergency Department

(ED) visits increased by 24 percent, and a chart review revealed that most of these visits were by complex patients with co-morbidities who had a need for a visit to the ED. A deeper analysis into the data will help clarify root causes. Overall, Health Connections Initiative yielded in nine months a positive ROI of 100 percent particularly impressive given that the majority of their patients have multiple co-morbidities, with a high incidence of COPD, CHF, diabetes, hypertension, and end stage renal disease (ESRD).

Key Components that Touch on Issues Relevant to Diverse Populations

Identify the Root Causes

KentuckyOne Health enrolled patients for the program through risk modeling. Because neighborhoods are a predictor of health outcomes, this program uses an evidence-based mapping process that identifies patients who may qualify for enrollment if they live in low-income neighborhoods and have payer sources that may indicate they are low-income. Payers include Medicare of any type, Medicaid of any type, as well as the uninsured. Patients are also identified through an evidence-based readmission risk analysis tool that assigns a numerical score for the following elements: Length of stay, Acuity, Co-morbidities, and Emergency visits (LACE). Patients with a LACE score equal to or greater than 11 are candidates for the program.

Start from the Start

Although patients are identified through the risk analysis tool, which indicates they are high-utilizers of the health care system, a team works with the patient to asses and address risks for admissions such as social factors, dietary patterns, cross-cultural issues, language, and health literacy. The team continues to work with the patient through an entire continuum of care that extends over the course of 90 days.

Deploy a Team

Each care team includes a lead RN, a licensed practical nurse, a social worker, and two community health workers. They collaborate with each participant's primary care provider to ensure optimal outcomes and the smooth transition to a medical home. Some participants in the non-skilled Health Connections Initiative program simultaneously receive traditional VNA skilled care. Additional team members such as an interpreter or dietician will be brought in as needed. There is one team for people living in west Louisville and one for those living in the south.

Consider Systems, Social Support, and Social Determinants

The Health Connections Initiative teams address participant needs holistically, recognizing that to impact intractable medical problems you must address basic needs like housing, transportation, food insecurity, and low literacy. They can also access nutrition counseling through a registered dietitian from VNA or mental health/substance abuse services through a certified peer support specialist. Including a social worker on the team allows them to address any social support issues. In addition, an interpreter is available and incorporated into the team visits for patients with limited English proficiency.

Focus Attention on Community, Coordination, and Continuity

VNA Nazareth Home Care operates the program for KentuckyOne. Key to the program is connecting patients with basic community-based services that address needs such as food, housing, transportation, and access to medications and other basic community services.

Appendix A: Disparities in Top Conditions in CMS Hospital Readmissions Reduction Program

The table below provides an overview of the epidemiology of the top conditions in the CMS Hospital Readmission Reduction Program, as well as racial and ethnic disparities for each condition, the 30-day readmission rate, disparities in readmission rates, and the estimated cost associated with excess readmissions among Medicare beneficiaries overall. The annual cost of readmissions is $26 billion, and potentially avoidable readmissions account for an estimated $17 billion of that cost.[15]

Condition	Overall U.S. Prevalence	Racial and Ethnic Disparities by Condition*	Overall 30 Day Readmission Rate	Racial and Ethnic Disparities in 30 Day Readmission Rates*	Total cost of all-cause, 30-day readmissions
Congestive Heart Failure (CHF)	> 5.7 million (~2% of U.S. adults > 20 years) [77]	Highest incidence rate among African Americans and Hispanics (4.6 and 3.5 per 1,000 person years, respectively, compared with 2.4 among whites).[18] The higher incidence of CHF among African Americans is related to differences in the prevalence of hypertension and diabetes, as well as socioeconomic status. Lack of insurance was not found to be a significant contributor.[18]	22.7%[78]	A 2011 study found higher readmission rates among black patients, with highest rates among black patients treated at minority-serving institutions.[4] A study of Medicare Provider Analysis Review data from 2006-2008 found higher readmission rates among Hispanics. Higher readmission rates were also found at Hispanic-serving hospitals.[20] A recent study found that foreign-born patients with LEP had higher risk of readmission, independent of clinical factors and race and ethnicity. [41] Hospitals serving the highest proportion of African American Medicare fee-for-service patients had a higher heart failure readmission rate than hospitals serving the lowest proportion of African American patients. [25]	$1.7 billion[79]

Condition	Overall U.S. Prevalence	Racial and Ethnic Disparities by Condition*	Overall 30 Day Readmission Rate	Racial and Ethnic Disparities in 30 Day Readmission Rates*	Total cost of all-cause, 30-day readmissions
Acute Myocardial Infarction (AMI)	7.6 million (2.8% of U.S. adults > 20 years)[77]	In 2014, prevalence for AMI was 5.9 percent in whites, 5.6 percent in African Americans, and 5.2 percent in Mexican Americans.[77] A 2009 study found that blacks had a higher mortality rate and worse quality of life after MI. These differences did not persist after adjusting for patient factors and site of care.[80] A 2014 study found that older blacks with AMI initially exhibited lower mortality rates, but higher mortality rates long term. This increase in mortality rate may be due to differences in post-discharge care or co-morbidities.[81]	17.8%[78]	A 2011 study found higher readmission rates among black patients, with highest rates among black patients treated at minority-serving institutions.[4] A study of Medicare Provider Analysis Review data from 2006-2008 found higher readmission rates among Hispanics. Higher readmission rates were also found at Hispanic-serving hospitals.[20] Hospitals serving the highest proportion of African American Medicare fee-for-service patients had a higher AMI readmission rate than hospitals serving the lowest proportion of African American patients.[25]	$693 million[79]

Condition	Overall U.S. Prevalence	Racial and Ethnic Disparities by Condition*	Overall 30 Day Readmission Rate	Racial and Ethnic Disparities in 30 Day Readmission Rates*	Total cost of all-cause, 30-day readmissions
Pneumonia	1.1 million hospital discharges in 2010 [24] (In the absence of ongoing surveillance of pneumonia cases, hospital discharges are used as an indicator for estimating prevalence)	From 2003 to 2004, the average annual incidence of bacteremic pneumonia was 24.2 episodes per 100,000 black adults versus 10.1 per 100,000 white adults. [82] Among Medicare beneficiaries in 2010, 49 percent of African American and 39 percent of Hispanic Medicare beneficiaries reported receiving a pneumonia vaccine compared with 65 percent of whites. Low immunization rates may be attributed to cultural and linguistic barriers, lack of awareness, and distrust of immunizations. [83] On average blacks are 37 percent less likely and Hispanics are 46 percent less likely to be vaccinated against pneumonia than whites. [84] In a 2009 study, African American and Hispanic patients were less likely to receive pneumonia and influenza vaccinations, smoking cessation counseling, and antibiotics within four hours than white patients. [85]	17.3% [78]	A 2011 study found higher readmission rates among black patients, with highest rates among black patients treated at minority-serving institutions. [4] Hospitals serving the highest proportion of African American Medicare fee-for-service patients had a higher median pneumonia readmission rate than hospitals serving the lowest proportion of African American patients. [25]	$1.1 billion [79]

Condition	Overall U.S. Prevalence	Racial and Ethnic Disparities by Condition*	Overall 30 Day Readmission Rate	Racial and Ethnic Disparities in 30 Day Readmission Rates*	Total cost of all-cause, 30-day readmissions
Chronic Obstructive Pulmonary Disease (COPD)	13.7 million (6.5% of adults > 25 years)[86]	Highest incidence rate among American Indian/Alaska Natives (11%), followed by whites (6.9%), blacks (6.5%), Hispanics (4.1%), and Asian/Pacific Islanders (2.5%) [86] In a 2009 study, African American patients used 17 percent fewer medical services, 18 percent less outpatient services, and 15 percent less inpatient services for COPD than white patients. Other races were 26 percent less likely to use outpatient services than white patients. [87]	20.7% [78]	African Americans hospitalized with COPD have a higher 30-day readmission rate compared with white patients (23.1% vs. 20.5%).[26] Among Medicare beneficiaries, readmission rates are highest for African Americans at minority-serving institutions (26%) and lowest for whites at non-minority-serving institutions (21%).[26] In 2008, black patients were readmitted at higher rates (8%) than whites (7.2%), Hispanics (6.1%), and Asian/Pacific Islanders (6.1%).[27] Hospitals serving the highest proportion of African American Medicare fee-for-service patients had a higher median COPD readmission rate than hospitals serving the lowest proportion of African American patients.[25]	$924 million[79]
Total Hip Arthroplasty (THA) Total Knee Arthroplasty (TKA)	22.7 million (9.8% of adults ≥ 18 years) have arthritis and arthritis-related limitations, for which THA/TKA is a treatment option.[88] TKA: 6.7 million (6.7% of adults > 50 years) THA: 4.5 million (4.4% of adults > 50 years) [89]	Higher prevalence of osteoarthritis (OA) among African Americans and Hispanics than whites, but African Americans and Hispanics report OA-related total joint arthroplasty 2/3 less frequently than whites.[48,90] Disparities between black and white patients in primary and revision TKA and THA persisted or worsened from 1991-2008. In 2008, utilization of primary TKA was 40 percent lower for blacks than whites (41.5 per 10,000 vs. 68.8 per 10,000, respectively). [28] Black patients experience longer length of stay (LOS) and are less likely to be discharged home.[28]	5.2%[78] TKA: 2.4% rTKA: 11.9% THA: 2.4% rTHA: 9.5%[91]	2006-2008 Medicare data show higher readmission rates for African Americans than whites: • TKA (8.8% vs. 6.7%) • rTKA (13.6% vs. 11.2%) • THA (9.0% vs. 7.6%) • rTHA (17.1% vs. 14.5%)[28] Hospitals serving the highest proportion of African American Medicare fee-for-service patients had a higher THA/TKA readmission rate than hospitals serving the lowest proportion of African American patients.[25]	Data not available

*Compared to non-Hispanic whites unless otherwise indicated

Appendix B: Disparities in Top Chronic Conditions

The table below provides an overview of the epidemiology of the three top chronic conditions prioritized by CMS OMH, as well as racial and ethnic disparities for each condition, the 30-day readmission rate, disparities in readmission rates, and (where available) the estimated cost associated with excess readmissions among Medicare beneficiaries overall.

Condition	Overall U.S. Prevalence	Racial and Ethnic Disparities by Condition*	Overall 30 Day Readmission Rate	Racial and Ethnic Disparities in 30 Day Readmission Rates*	Total cost of all-cause, 30-day readmissions
Diabetes	29.1 million (9.3% of U.S. population)[70]	Highest incidence rate among American Indian/Alaska Natives (15.9%), followed by Non-Hispanic blacks (13.2%), Hispanic Americans (12.8%), Asian Americans (9.0%), and whites (7.6%) [70] Hispanics, African Americans, and American Indian/Alaska Natives are all more than twice as likely as non-Hispanic white adults to die from diabetes.[72,73,92] African Americans are also more likely to have lower extremity amputations.[72]	20.3%[93]	A 2013 study found that African Americans were as likely as white patients to be readmitted within 30-days, but more likely to be readmitted within 180-days of discharge. [94] A 2010 study showed that patients with unscheduled readmissions within 90 days of discharge were more likely to be ethnic minorities. [95]	251 million[79]
End Stage Renal Disease (ESRD)	636,905 (0.19% of U.S. population)[96]	African Americans are nearly 3.5 times more likely to develop ESRD than whites.[97] Hispanics are nearly 1.5 times more likely to develop ESRD than whites.[97] Native Americans are 1.3 times more likely to develop ESRD than whites.[93]	35.2%[96]	The US Renal Data System 2014 Annual Data Report indicates that blacks/African Americans have a higher rate of rehospitalization within 30 days (38%) when compared with whites (36%).[96]	Data not available

Condition	Overall U.S. Prevalence	Racial and Ethnic Disparities by Condition*	Overall 30 Day Readmission Rate	Racial and Ethnic Disparities in 30 Day Readmission Rates*	Total cost of all-cause, 30-day readmissions
Chronic Kidney Disease (CKD)**	31 million (10% of U.S. population)[98]	CKD prevalence is greatest in non-Hispanic blacks (17.0%), followed by non-Hispanic whites (14%).[99] (This only includes prevalence data for stage 1 – 4 of CKD. Does not include stage 5 (ESRD) data.) Blacks/African Americans are three times more likely than white Americans to develop kidney failure due to high rates of diabetes and high blood pressure.[100] (May include prevalence data for all five stages of CKD.)	24%[96]	The US Renal Data System 2014 Annual Data Report indicates that black/African American CKD patients have higher overall rates of 30-day readmission for CKD (26.2%) when compared with white patients (23.8%).[96] A 2012 study found that African Americans were more likely to be readmitted within 30-days of kidney transplantation.[101]	Data not available

*Compared to non-Hispanic whites unless otherwise indicated

** As End Stage Renal Disease is stage 5 of Chronic Kidney Disease, CKD statistics may include ESRD data.

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