Rising Readmission Rates: A national issue

Elaine Anderson

Indiana State University

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Abstract

Recently there has been a rise in hospital readmission rates. As a result of this increase in readmissions, the Affordable Healthcare Act (ACA) was implemented to assist in reducing hospital readmissions. This was done by penalizing hospitals for readmissions associated with the Medicare population. Prior to this research, the effect of this legislation on the readmission rate was unknown. Additionally, the different aspects or factors that contributed to an individual's risk for being readmitted were unclear. Also it was uncertain how a high verses low nurse-to-patient ratio would affect patient outcomes and the readmission rate. Finally, the effects of being hospitalized on the patient were unknown. Both subjective and objective data were evaluated for this research. After extensive research it was found that the readmission rate was declining slightly, but it was still unclear whether the ACA was the cause for this decline. Additionally, it was uncovered that the main factors that contributed to being readmitted included: age, disease, literacy barriers, community support, medication and quality of care. Furthermore, high nurse-to-patient ratios contributed to an increase in a hospital's readmission rate as a result of a decrease in the quality of care given by the nurse. Finally it was concluded that patients that experience high stress levels are at a greater risk for being readmitted and post invasive care syndrome often occurs post-discharge. In order to prevent readmission it is necessary to collaborate with other health professions to meet the unique needs of each patient.

Rising Readmission Rates: A national issue

**Introduction**

**Background**

The function of acute healthcare facilities is to provide intensive care to patients with improvement and eventual discharge as the optimal outcome. While many patients are discharged without incident, patients are often readmitted into the facility.  A readmission is defined as a previously discharged patient being readmitted less than thirty days later. When examining current healthcare trends, a concerning development is the surge of readmissions in acute care institutions, specifically hospitals.  This trend can be evaluated by examining fines from The Hospital Readmission Reduction Program (HRRP). HRRP fines hospitals based upon the number of readmission of Medicare patients to try to promote the reduction of readmissions (Boccuti & Casillas, 2015).  Medicare fines against hospitals have risen from 2014 to 2015; this trend is a national issue affecting both rural and urban hospitals (Boccuti & Casillas, 2015).

This national trend relates to all aspects of healthcare. Specifically, it relates to the quality of health care that professionals provide patients. Nurses are a major factor in preventing readmission rates by giving the patient the tools to care for themselves through education. Before leaving the hospital and throughout the patient's stay the nurse provides education concerning the disease and how to live with and care for their condition post-discharge. Education also includes providing vital information concerning the patient's medications and proper at home administration of those medications. The nurse also collaborates with a social worker to help the patient locate resources that will help provide a support system post-discharge. Through education and helping build a support system post-discharge, the end objective is to prevent patient readmission.

Under the Affordable Care Act (ACA), HRRP states that, if a hospital has a higher readmission rate of Medicare patients compared to the national average, Medicare has to reduce their payments to hospitals (Boccuti & Casillas, 2015). HRRP was established in 2013 in response to the increasing readmission rate (Boccuti & Casillas, 2015). Along with HRRP and the ACA, Medicare and Medicaid are programs that are indirectly associated with readmission rates. According to the Center for Medicare and Medicaid Services, Medicare provides assistance for citizens 65 years and older, for people with specific disabilities and for people requiring dialysis (2014). Under Medicare, expenses that are covered include inpatient hospital care, doctor services, some outpatient care and medications ("Centers for Medicare", 2014). Medicaid eligibility is determined by one's poverty level and, as a result of the ACA, Medicaid has become more accessible to larger percentage of the population by decreasing the poverty level requirement ("Centers for Medicare", 2014). Benefits under Medicaid include inpatient hospital services, home health care, outpatient services and sometimes prescription drugs ("Centers for Medicare", 2014). Both Medicare and Medicaid affect both the access patients have to services but also the hospitals ability to get reimbursed for specific services.

**Undetermined Origins**

There are so many aspects of the healthcare system that make it unclear what is causing readmissions. There is a level of uncertainty regarding whether or not acute care facilities are doing enough in terms of preventing readmissions. Specific interventions being put in place by each individual hospital administration are not well known and it is unclear if such interventions are reducing readmissions. On the staff level it is unknown how well nurses and other healthcare professionals provide pre-discharge education and how effective that education is. Additionally, it is unclear whether that nurse to patient ratio affects the readmission rate and patient outcomes.

From the perspective of the government, it is difficult to determine if Medicare, Medicaid, ACA and HRRP are effective in preventing readmissions and the effects on the hospital. Both Medicare and Medicaid have been put in place to help the patient financially based upon specific circumstances. Most patients admitted and readmitted into the hospital setting are on Medicare and as a result Medicare has a large impact on the hospital financially. The puzzling aspect of HRRP is the thought process behind the policy. It is unclear why the government sector is penalizing hospitals that don't have full control over preventing an individual being readmitted into the hospital. As a result, it is not clear if HRRP is creating a general positive or negative impact on the hospital.

**Purpose of Research**

It is well known that there has been a rise in readmission rates in the hospital; however, its underlying cause and impact on the hospital are unknown. It is also unknown how being readmitted affects each individual patient. Within this research project, I want to synthesize research and data to determine the factors causing readmissions, examine if programs put in place by the government have been effective, determine the effects of nurse-to-patient ratios and evaluate the effect readmissions has on the patient.

One specific aspect of this research project is looking at government policy to determine if these policies have been effective in reducing the readmission rates. Specifically in this research, the Affordable Health Care Act will be analyzed. When evaluating if the outcomes of the legislation have been effective, a comparison will be made between the number of readmissions before and after the establishment of the legislation.  Additionally, the purpose of this research will be to evaluate if these governmental policies are more effective in a rural or urban hospitals.

Another important aspect of this research is to determine the main factors that cause or contribute to an individual's risk for being readmitted into the hospital. Knowing the cause, or looking upstream, will assist in reversing the trend in the future. When looking at the research to determine the different factors associated with readmissions, these factors will be determined through different correlations seen in practice and in the literature. If multiple pieces of literature determine that certain age ranges are consistently readmitted into the hospital then age would be viewed as a risk for being readmitted. Another way factors will be determined is by evaluating what other studies have done towards preventing readmissions.

In connection with evaluating the different factors for readmission, it is appropriate to evaluate nurse-to-patient ratios. It is important to understand staff ratios to determine if adequate staffing in hospitals is met. When evaluating the data, to determine the connections between patient outcomes and nurse staffing levels, both qualitative and quantitative data will be evaluated. Quality of care, as it relates to decreased staffing, will also be evaluated. Research on the subject will continue until data saturation is reached.

Finally, when evaluating the rise in readmissions, it is important to look at the effect it has on the patient. When looking at the data and evaluating the psychological and physiological effects, qualitative data will be collected. To ultimately determine the overall effects of being readmitted, the correlation between being readmitted and psychological and physiological effects on the patient will be evaluated. This qualitative data will be pulled from a pre-existing pool of research. This aspect of the research gives a humanistic view to emphasize the importance of preventing readmissions.

**Approach to Research**

The data for this research project will be a synthesis of both qualitative and quantitative data. Quantitative data will be evaluated to examine the effects of government policy, determine the factors the increase an individual's risk for being readmitted and to understand the effects of nurse-to-patient ratios. Qualitative data will be evaluated for factors, effects of nurse-to-patient ratios and effects on the patient. In terms of relevance, no data will be examined that is older than five years. Overall, this research project will be the accumulation of previously collected data and, through comparison, a conclusion will be formed.

**Summary**

Readmission rates have been a reoccurring issue in the healthcare system. This issue has prompted the creation of the ACA and jointly the HRRP. The causes of readmissions are unclear and need to be determined to decrease the occurrence of readmissions. There are multiple aspects of the healthcare system that maybe contributing to this increase. The effects of this trend may be seen in both the financial status of the hospital and evaluating the psychological status of the patient post-readmission. This research project will be a synthesis of qualitative and quantitative data.

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**Literature Review**

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In this literature review, the effects of the ACA will be examined to evaluate if the policy is causing a decrease in readmissions. Additionally, different factors including: demographics, community, communication and medication administration will be evaluated to determine how each of these factors individually affects readmission rates but also looking at the connections between the factors. This review of the research will additionally examine the relationship between nurse-to-patient ratios and readmissions. Finally this body of research will determine

the psychological and physiological effects on the patient from being hospitalized and how these changes affect their wellbeing.

**Government Policy**

A major aspect of the ACA is focused on reducing readmissions and improving the quality of care given in health care institutions. According to Blumenthal, Abrams and Nuzum, "Under the ACA program, hospitals that perform in the lowest quartile with respect to rate of hospital-acquired conditions [never events] may lose 1% of their Medicare payments" which pushes hospitals to improve their quality of care (2015, p. 2453). Green Boesen, Leal, Sheehan and Sobolik discussed how the Center of Medicare has indicated that improving the quality of care will ultimately reduce readmissions (2015). So theoretically, if the ACA legislation negatively reinforces the need for quality improvement resulting in an increase in quality care, the rate of readmissions should decrease. In conjunction to improving the quality of care, Blumenthal et al. stated that the ACA encourages the formation of assistive care organizations to improve the transition of care from different facilities (2015). This transitional care, theoretically, will help reduce the risk for being readmitted. To formulate a conclusion concerning the effectiveness of the ACA, data will be assessed to determine if, after the implementation of the ACA, readmission rates decreased.

In two of the studies evaluated, both found that readmission rates had decreased. According to Blumenthal et al., "Since the initiation of the program, 30-day readmission rates nationally have declined from more than 19% to less than 18%, equivalent to approximately 150,000 fewer readmissions annually among Medicare beneficiaries" (2015, p. 2453). Similarly Gerhardt, Yemane, Hickman, Oelschlaeger, Rollins and Brennan stated , "As shown in Exhibit 1, from 2007 through 2011, the 30-day, all-cause, hospital readmission rate among FFS Medicare

beneficiaries remained remarkably stable at 19 percent. But during 2012, the monthly

readmission rate dropped to a low of 18 percent in October and averaged 18.4 percent for the

year, or more than half a percentage point lower than the average rate for the previous five years"

(2013, p. 4). From the data, Gerhardt et al. formulated that these lowered readmission trend are

widespread across the country (2013).  In addition to evaluating ACA's effectiveness, trends in

quality of care should also be evaluated. This trend correlates with the ACA because the

legislation encourages hospitals to improve their quality of care.

According to Blumenthal et al., "Recent data from the department of Health and Human

Services (DHHS) shows the first-ever documented decline in composite rates of hospital-

acquired conditions nationally: 17% from 2010 to 2013" (2015, p.  2453).  Additionally, they

discussed  how "quality measures have greatly improved for the 33 indicators tracked by MSSP

[Medicare Share Savings Program], and patients report better care experiences in some respects

then Medicare beneficiaries who are not part of ACOs" (Blumenthal et al., 2015, p.  2454). Even

though the trends in the data suggest that the ACA is having a positive effect on readmissions

and the quality of care, it is uncertain how closely the data correlates with the legislation or if

other factors may be involved.

Even though the data shows a decrease in readmissions and increase in quality of care,

there is much discussion concerning "whether ACA programs accounted for all or part of these

gains" (Blumenthal et al., 2015, p. 2453). Blumenthal et al. discusses how the main debate

concerning the ACA is the inability to find "definitive evaluations" to evaluate the policy's

effectiveness at the five year mark (2015, p. 2455). Gerhardt et al. further discusses that "one

possible explanation for the observed reduction in rates in 2012 is that payment reforms and

other initiatives aimed at reducing avoidable readmissions are starting to have a measurable

impact on provider behavior and are resulting in improved care" (2013, p. 9). Finally, they suggested that another possibility of decreasing admission rates is a result of an increase in postop and post-discharge care (Gerhardt et al., 2013). It is not plausible to determine the effectiveness of the ACA on readmissions because there is no direct method to measure the effectiveness of the legislation. As stated by Blementhal et al., the main controversy is the inability to directly measure ACA's effectiveness on healthcare.

The inability to evaluate the effect of the ACA is concerning. Controversy around the ACA legislation focuses on the penalization of hospital institutions. Within the ACA legislation there is lack of discussion concerning how institutions have limited control over how mental illness, poor social support, and poverty contribute to readmission rates (Green Boesen et al., 2015). Additionally, the size and type of hospital may be at a greater risk for readmissions: "The appropriateness of current readmissions measure s has been questioned because of evidence that safety-net hospitals and large teaching hospitals may be unfairly penalized under the program owing to the social and medical complexity of their patient populations" (Blumenthal et al., 2015, p. 2453). It is concerning that the ACA hampers hospitals with penalizations as a result of factors that the hospital cannot control. It is vital to re-evaluate this legislation to verify that these factors have been recognized within the legislation. Additionally, a method that directly measures the ACA legislation is of vital importance. This will assist in determining if the legislation is resulting in a positive or negative impact on the healthcare system.

**Factors Associated with Readmission**

**Demographics.** Only certain demographic factors were shown to influence the readmission rate. In the literature, it was discussed how, at a specific age, the rate of readmissions increased. Additionally, certain chronic and acute diseases increased a person's risk

of being readmitted. Finally, it was concluded that literacy levels contributed to a patient's

readmission. To recognize these factors allows the healthcare provider to recognize patients risk

for being readmitted.

*Age.* According to Prior, Bahret, Allen and Pasupuleti, "Levels of repeated unplanned

hospitalizations and emergency department visits are significantly higher for seniors than for the

general population and are responsible for a significant portion of the total health care costs for

this group" (2012, p. 346). Specifically Scott, Shohag and Ahmed found that patients older than

seventy were at an increased risk for being readmitted (2013). Another study evaluated the

"National Electronic Injury Surveillance System–Cooperative Adverse Drug Event Surveillance

database" to see how many admissions were the result of adverse drug events and indirectly

found that most readmissions occurs in patient above the age of seventy (Green Boesen et al.,

2015, p. 240). In summation, a patient is at risk for being readmitted increases as age increases

and if that age is higher than seventy.

*Disease.* In addition to the patient's age, certain diseases increase the patient's risk for

readmissions. According to Scott et al., the risk for being readmitted increased with multiple

comorbidities (2013). Specifically, diseases associated with hospital readmissions included:

depression, coronary artery disease, chronic obstructive pulmonary disease and myocardial

infarction (Mitchell, Sadikova & Jack, 2012).Within the study conducted by Green Boesing et

al., they discussed how "hospitals now receive less reimbursement for Medicare patients who are

readmitted within 30 days for diagnoses of acute myocardial infarction (AMI), heart failure

(HF), or pneumonia" (2015, p. 237). Additionally, they discussed how patients with those

conditions would receive extensive follow up care (Green Boesen et al., 2015).  Prior et al. also

discussed a program put in place to assist patients, with multiple admissions, manage their

disease (2012).  Diseases that were cared for in their program included: "congestive heart failure, coronary artery disease, chronic obstructive pulmonary disease, diabetes and hypertension" (Prior et al., 2012, p. 349). It can be concluded that the main diseases associated with readmissions include: coronary artery disease, chronic obstructive pulmonary disease and myocardial infarction (see Appendix A for a complete reference list).

*Literacy barriers.* Mitchell et al. describe health literacy "as the degree to which individuals have the capacity to obtain, process, and understand health information, skills, and services needed to make informed health decisions and take informed actions" (2012, p. 326). One demographic factor associated with readmissions is a lower educational status, which suggests a decreased literacy level (Harrin, Andre, Joshi, Audit & Hines, 2015).  It is known that "low health literacy has been linked to poor health outcomes, particularly for patients with chronic conditions such as diabetes, asthma, cancer, depression, HIV/AIDS, and heart failure" (Mitchell et al., 2012, p. 326). It is suggested that lower health literacy levels place the patient at higher risk for hospitalization and a decrease in their health status (Mitchell et al., 2012). Similarly, in a video by the American Medical Association, Mark V. Williams commented that individuals with low health literacy are more likely to be hospitalized regardless of other factors (AMA Foundation, 2010). Additionally, "health literacy barriers are often associated with decreased knowledge of one's medical condition, poor medication recall, nonadherence to treatment plans, poor self-care behaviors, and increased all-cause mortality" (Mitchell et al., 2012, p. 326). They described how inadequate health literacy may impair comprehension of discharge teaching and as a result these patients are seen in the emergency room as a result of noncompliance, of their treatment regimen (Mitchell et al., 2012). Likewise, the video from the AMA Foundation also discussed how inadequate health literacy can lead to lack of knowledge

concerning follow up appointments (AMA Foundation, 2010). It is evident that inadequate health literacy is a serious healthcare issue. To have a full understanding of the issue, it will be important to evaluate a humanistic view of this issue.

In the video by AMA Foundation, multiple patients were interviewed concerning their health literacy issues. The first patient that was interviewed read at a 7th grade level and discussed how she was admitted into the hospital numerous times. Additionally, the first person discussed how they did not understand the medication administration and post-discharge instructions but was too embarrassed to ask for help. One gentleman commented how, when he arrived at the doctor's office, he had to fill out forms but he could not read them and as a result he left the office. That night the gentleman had to go to the hospital because of a condition that was not treated as a result of him leaving the doctor's office. One patient discussed their frustration with doctors not speaking in lay-men's terms resulting in a lack of understanding. An example later in the video was the meaning of the word hypertension and how that meant something different for both the patient and the health care provider. They also discussed worrying they are going to make a mistake in their self-care. In the video, there were multiple demonstrations on how difficult it was for someone with low literacy levels to understand how to properly take a medication. In multiple interviews, patients explained that the only way they could differentiate between medications was by what the pill looked like. Finally, many patients in the video discussed their fear of revealing their low literacy level which decreased their desired to ask for help. (AMA Foundation, 2010)

Health literacy can affect the health outcomes of the patient and their risk for readmission. The video by the AMA foundation stressed that much of the problem surrounding health literacy is patient based. In order to improve health literacy the focus of the interventions

should be patient centered, meaning the focus of the interventions is the patient. In conjunction

to these interventions, medical staff needs to have a heightened sense of awareness concerning

their audience and tailor their language to that audience.

  **Community factors.** The influence of the community is an essential aspect of patient

outcomes. According to Morrissey, "Even the best hospital care, combined with thorough

discharge instructions and a follow-up appointment, can still be undone by community-level

factors like living alone, unemployment or limited access to care" (2015, p. 8). Harrin et al.

added that "individuals who live alone, who are unemployed, or who have challenges affording

health care are more likely to be readmitted" (2015, p. 33). They also suggested that rural areas

have a tendency to have higher readmission rates (Harrin et al., 2015). Prior et al. additionally

discussed how seniors with financial issues, transportation and lack of social support are factors

related to a readmission (2012). Within the article by Prior et al. it was stressed how social

isolation greatly impacts the health outcome of the senior (Prior et al., 2012). It will be important

to determine if different strategies that increase the amount of support for the elderly post-

discharge decrease the rate of readmissions.

  Prior et al., discussed a program to increase social support for seniors. They suggested

that home health care was effective to reduce the risk for readmissions and maintain an adequate

health status (2012).  The program focused on low-income patients who had been readmitted and

had a chronic illness (Prior et al, 2012). Additionally, the program evaluated the social and

psychological issues for each client (Prior et al., 2012). The program's staff included a

"registered nurse who serves clients directly and manages the program, a licensed social worker,

a certified financial counselor, university students (interns) in social work, pharmacy, and

nursing, and program volunteers" (Prior et al., 2012, p. 348). The overall goal of the program

was to provide a compressive plan of care that addressed the social and financial problems

associated with the individual (Prior et al., 2012). At the conclusion of the program, it was found

that the frequency of hospital admissions was reduced (Prior et al., 2012). Additionally, the

participants reported a general feeling of decreased isolation and increased support after

participating in the program (Prior et al., 2012). While this program showed success with

increasing social support, Morrissay explained how outpatient programs require multiple

resources and often these resources are not easily accessible to the healthcare team (2015).  It is

difficult to make a conclusion whether an outpatient program is effective due to the lack of

literary evidence. Before implementing a similar outpatient program, it will be important to

preform additional research on other similar programs to see if they were just as effective.

  As discussed by Morrissay, an outpatient program can only be effective if the resources

for that program are accessible. Accessibility to care refers to transportation and the amount and

type of healthcare providers in that area. Harrin et al. specifically evaluated and concluded that a

readmission rate within a specific area was affected by the location of the hospital in the

community (2015).  Additionally, Harrin et al. concluded that hospital readmissions were

affected by the number of general medicine practitioners within an area; "patients who are

discharged into areas with smaller numbers of general practitioners may have fewer options

other than returning to the hospital following post discharge events (Harrin et.al, 2015, 34).

Additional community factors include "type of illnesses, seniors' ability to manage their illnesses

and daily tasks of living, financial problems, marital status, and lack of available community

resources" (Prior et al., 2012, p.  346). To have a positive impact on reducing readmission rates,

it will be important to determine the type of care providers that are needed within an area.

Additionally, a program should be developed to create a support system for individuals in the

community, specifically seniors.

**Quality of care.** Care patients received within the hospital effect patient outcomes and

the likelihood of being readmitted. Scott et al. discussed that the absence of a care plan for

chronically ill patients led to an increased risk for a readmission because the chronic disease was

not adequately managed (2013). Additionally, they discussed how, even if a plan of care was

constructed, often aspects of that plan of care were not completed or were discontinued prior to

the suggested discontinuation date (Scott et al., 2013). Along with a nonexistent plan of care, if a

patient assessment did not assess the physical and psychological care needs for the patient, the

providers did not provide anticipatory guidance to the patient concerning self-care post-discharge

which resulted in inadequate self-care post discharge (Scott et al., 2013).   In junction with a

lacking assessment, evidence also suggests that deficient discharge communication with

community health providers resulted in an increase in readmissions ( Scott et al., 2013).

Kirkham, Clark, Paynter, Lewis and Duncan suggested that by having a "transitional coach" that

coordinates post-discharge care would be effective in lowering readmissions (2015, p. 740).

Additionally, White, Camey, Flynn and Feilds suggested that if a transitional program, from

hospital to community, involved "medication reconciliation, discharge planning, follow-up

appointments, follow-up phone calls" that the overall risk for being readmitted was greatly

reduced (2014, p. 72). It is important to verify that all aspects of care for a client have been

considered and that transitional programs from the hospital to the community are effective in

providing care in order to decrease readmissions.

**Medication.** Medications are an influential factor related to readmissions. Specifically,

Kirkham et al. discussed that over half of post-discharge patients were readmitted as a result of a

self-medication error (2015).  Green Boesen et al. further discussed how if the number of medications taken by the patient increased, the patient's risk for being readmitted increased (2015).  It was additionally determined that "anticoagulants, hypoglycemic agents, cardiovascular drugs, central nervous system agents, and anti-infective drugs" were the most common medication classifications to cause a readmission (Green Boesen et al., 2015, p. 240). Additionally, readmissions were related to the patient's access to a pharmacy to obtain the prescribed medication (Green Boesen et al., 2015). The literature has suggested multiple methodologies to help decrease these adverse drug occurrences.

One study described a program in which medication counseling was a main focus with the end goal being "to promote medication adherence and reduce unplanned readmissions" (Kirkham et al., 2015, p. 740). The program also implemented "bedside delivery of post-discharge medications and follow-up telephone calls two to three days after discharge" (Kirkham et al., 2015, p.  740). Green Boesen et al. discussed that a common issue was inadequate monitoring of drugs post-discharge and a lack of instruction pre-discharge (2015, p.  240) .Specifically the program focused on heart failure patients and preformed follow up telephone calls (Green Boesen et al., 2015). Both of these programs resulted in a decrease in readmissions. The effectiveness of these programs shows the importance of maintaining a focus on medication counseling and developing effective teaching plans in order to reduce readmissions rates.

**Connections between factors.** There are multiple connections between the different factors previously discussed. These connections further emphasize that, to prevent readmissions, strategies need to have a patient centered focus. This patient centered focus is important because the reasons for a patient to be readmitted vary. One connection that can be made is between age and disease.

As an individual's age increased, their risk for being readmitted increased. Additionally, cardiovascular disease, which includes heart failure and coronary artery disease, and chronic obstructive pulmonary disease increase a patient's readmission risk. When looking at the correlation between disease and age it is common knowledge that these disease processes increase in prevalence in the aging community. It is plausible to state that there is a correlation between age and disease. Additionally, this correlation further increases the elderly patient's risk for being readmitted. A connection additionally exists between support and the aging population.

As described by Prior et al., if support post-discharge increases and more comprehensive care are provided post-discharge, then the person's risk of being readmitted decreases (2012). In addition, their focus for support was around the elderly population. As stated previously, the risk for being readmitted increases with age. Because the focus of Prior's program was the elderly population, it is possible that, as a person ages, their support system deteriorates. The link between age, disease and support is concerning because, with a combination of all three, it heightens an individual's to be readmitted.

Another connection that can be made through the literature is with health literacy, support and medication administration. Health literacy is a contributing factor to readmissions because patients with low health literacy have a lack of understanding concerning medications and other discharge instructions. When examining readmissions related to adverse drugs occurrences, it was found that these adverse events were the result of self-error by the patient. This could be related to a decreased health literacy level. In the video by the AMA multiple examples were given concerning patients not understanding medication administration instructions (AMA Foundation, 2010). However, as more support was given in the form of telephone follow-ups and increased education, the rate of readmissions related to adverse drug reactions decreased.

Therefore, it can be determined that lack of educational support, in combination with a decrease in health literacy, will lead to adverse drug occurrences, post-discharge, which will result in being readmitted.

**Staffing and Readmissions**

   **The Problem.** Registered nurse staffing ratios affect a hospital's readmission rate. According to McHugh, Berez and Small, "Staffing was measured as the ratio of registered nurse hours per adjusted patient day" (2013, p. 1741). This ratio exemplifies the amount of time a nurse can spend with each patient during that shift. An example of the calculation for one twelve hour shift is a follows:

   <u>384 patient hours (32 patients x12 hour shift)</u>
   96 nursing hours (8 nurses x 12 hour shift)
   = 4 hours (the amount of time the nurse spends with each patient)

Another way to evaluate staffing is through a simple nurse to patient ratio. From the example above, if there were eight nurses and thirty-two patients then the ratio would be four patients for each nurse. McHugh et al. discussed that higher levels of nurse staffing (increased nursing hours per patient), compared to lower levels of nurse staffing, decreased the risk for readmissions and jointly ACA penalizations (2013) (see Appendix B for further discussion concerning levels of nursing staff). In addition to a decrease in readmissions a higher staffing level has been shown to improve the nurses' work environment. By having low staffing levels, there was a decrease in patient outcomes, patient satisfaction and negativity in the overall working environment.

   **Quality of care.** During a patient's stay in the hospital, nurses are responsible for identifying and appropriately responding to a change in the patient's condition, providing education to the patient and their family on the care being received, providing pre-discharge instructions and helping to determine if the patient is able to be discharged (Tubbes-Cooley,

Cimiotti, Silber, Sloane & Aiken, 2013). Each of these roles can be affected by the amount of

nursing hours per patient during a shift.

When specifically looking at education to prevention readmissions, McHugh and Ma

describe it as a continuous process that begins at the initial admission in which the nurse

consistently provides education to both the family and patient to prepare them for discharge

(2013). Furthermore, many of these patient's reported that thorough discharge education helped

them manage self-care post-discharge; "better quality of discharge teaching by nurses was

predictive of increased readiness for discharge among parents of hospitalized children, decreased

coping difficulty in the weeks following discharge, and ultimately, fewer post discharge

readmissions and emergency department visits" (Tubbes-Cooley et al., 2013, p. 2). McHugh et

al. discussed how, if there was not enough staff, nurses had an inability to provide thorough

discharge instruction, continuous education and assess the patient's knowledge of the

instructions (2013). This decrease in the ability of the nursing staff to provide thorough

education and adequate discharge instruction, as a result of low levels of staffing, exemplifies

how the amount of staff can affect the completeness of the care given. In addition to education,

nurses are also responsible for recognizing patient status changes.

One of the main jobs performed by the nurse is recognizing patient status changes in

order to prevent further complications (McHugh et al., 2013). Higher levels of nursing staff has

been shown to correlate with a decreased mortality rate, an increased ability to rescue a coding

patient and increased patient safety measures (McHugh et. al., 2013). McHugh et al. stated that

"nurses who work in well-staffed hospitals have the time and the resources to more effectively

execute the care processes that influence readmissions. They are also better equipped than other

nurses to monitor for complications and adverse events that increase readmission risk." (2013, p.

1740-1741). Additionally, "Reduced nurse availability, as a consequence of workload, is also thought to result in decreased awareness of patient conditions and needs. Multiple studies have identified unresolved problems during an index hospitalization as likely contributors to readmission" (Tubbes – Cooley et al., 2013, p. 6). As a result of low staffing levels and decreased quality care, an individual's risk for complications during their hospital stay and post-discharge increased.

Specific numeric examples were given to describe the relationship between nursing staff and readmissions. In an example given by McHugh et al., "Estimates suggest that each additional nurse hour per adjusted patient day was associated with 10 percent lower odds of being penalized" (2013, p. 1743). Tubbes-Cooley et al. also stated that "higher average nurse staffing ratios in hospitals [lower registered nursing levels] were strongly and significantly associated with increased odds of readmission for both medical and surgical patients within 15–30 days after discharge" (2013, p. 4) Additionally, patients with complex diseases processes including: heart failure, myocardial infarction and pneumonia were at an increased risk for being readmitted as that patient's nurse's work load increased (McHugh & Ma, 2013). So, as the level of registered nurses increases, the risk of being penalized and the risk for being readmit decreased.

**Environment.** In addition to the amount of nursing staff, the nurse's working environment can affect readmission rates and patient outcomes. McHugh and Ma (2013) discussed the following:

This framework suggests that hospitals organized as better places for nurses to work --- those that value nurses autonomy, excel in frontline manager supervisory ability, incest in staff development, support good nurse-physician relations, have high proportions of

educated staff, and staff for manageable workloads empower nurses to provide high-

quality care resulting in better patient outcomes. (p. 52)

McHugh and Ma further discussed how the desired work environment included the suggested

nurse-to-patient ratio and nurses that have a bachelor of science and nursing (BSN) (2013).  By

having an environment that supports nursing staff in the delivery process of patient care, the staff

has a better ability to provide quality care to patients.

**Final thoughts.** Nurse staffing levels, in relation to readmissions, are a multi-faceted

issue. From the view point of the nursing staff, an adequate environment, which includes inter-

professional communication, high levels of nursing staff and staff with a BSN, is necessary to

provide thorough quality nursing care. To fix this issue it will be important to address increasing

the amount of nursing staff along with creating a positive working environment. By addressing

both, it will be a more comprehensive approach to decrease readmission rates as it relates to

nursing staff.

**Psychological and Physiological Effects on the Patient**

There are multiple causes of stress and other psychological effects on the patient during

hospitalization. Edmondson, Green, Halazun and Davidson discussed that a stressful hospital

experience was "due to the unfamiliarity of the surroundings, loss of control, fear, and lack of

information that patients often endure" (2014, p.1).  Additionally, Edmondson et al. further

discussed how "subjective stress during hospitalization could occur as the result of disturbed

sleep, physical deconditioning, and/or weight loss both during hospitalization and in the days

after discharge" (2014, p. 2). Rukundo, Nakasujja and Musis additionally discussed that

psychological changes in the hospitalized patient could also be the result of a difficulty in coping

with a decrease in independence as a result of their illness, lack of a significant partner and

previous hospitalizations (2013)   Edmondson et al. further explained that, due to the stressful experience within the hospital, after discharge the patients are at risk for infection because of a weakened immune system and that higher levels of stress can lead to an increased risk for readmission into the hospital  (2014). Stollings and Caylor stated that "this constellation of impairments and complications was termed *post intensive care syndrome* by the Society of Critical Care Medicine (SCCM)" (2015, p. 1315). This post intensive care syndrome is the combination of both psychological and physiological effects on the patient post-discharge.

The primary psychological disorder, which develops post-discharge, discussed in the literature was PTSD;  "Patients with PTSD may be left with vivid flashbacks of memories of painful procedures or delirious hallucinations as well as symptoms of anxiety and depression lasting months to years after recovery from the illness that led to their ICU stay" (Stollings & Caylor, 2015, p. 1316). Strollings and Caylor discussed how "posttraumatic stress disorder (PTSD) occurs in 5–64% of patients after ICU discharge" (2015, p. 1316). Rukundo et al. additionally explained how medications that are administered in the hospital may cause an exacerbation of underlying psychological disorders or may cause a new psychological disorder to develop (2013). In general, Rukundo et al. found that most patients with psychological disorders met the criteria for a specific diagnosis and half of those patients had two psychological diagnoses (2013). Overall, the main psychological effect experienced by the patient was PTSD after hospitalization.

In order to prevent this ongoing post intensive care syndrome, nurses need to be aware of possible psychological effects that may occur post-discharge. Additionally, nurses need to set up interventions to prevent post invasive care syndrome. These interventions may include: cluster care, constantly orienting the client to their surroundings, maintaining the patient's sense of

autonomy, proper nutrition and fluid intake and continuous education. First, by providing cluster care, which is when the nurse preforms multiple nursing tasks at once, it will allow for longer rest periods for the patient throughout the shift. Second, by constantly orienting the patient and providing continuous education, it will increase the patient's awareness of their surroundings. Third, by maintaining the patient's autonomy it allows the patient to have a sense of control over their care.  Finally, by ensuring that the patient's nutritional needs are meet it will decrease the risk weight loss during their stay. In connections with the needed interventions implemented by the nurse, it will also be important prevent readmissions because as stated previously, if the patient is readmitted it places them at a higher risk for psychological and physiological distress.

## Conclusion

**Introduction**

The purpose of this body of research was to examine the multifaceted issue of patients being readmitted into acute healthcare settings. This issue was examined through four research questions. The first question evaluated the effectiveness of the ACA and HRRP to determine if this legislation reduced national readmission rates. Secondly, the different factors associated with an individual being readmitted were assessed. These factors included: age, disease, health literacy levels, community factors, quality of care and medication administration. In addition, all of the different factors were evaluated to determine if a connection existed between them. Thirdly, the relationship between staffing levels and patient levels were examined to determine if a relationship existed between these two levels and how this relationship affected readmission rates. Finally, the psychological and physiological effects on the patient were researched to determine how being admitted to the hospital affected the patient.

**Summary of the Findings**

After a thorough examination of the research, concerning the ACA legislation, the findings were inconclusive. Multiple researchers that have evaluated the ACA stated that there was a decrease in readmission rates. However, it was additionally found that a direct way to evaluate the ACA is currently non-existent because there are multiple factors associated with readmissions. In order to evaluate how the ACA legislation exclusively affects the readmission rate, extrinsic factors need to be acknowledged and accounted for in the research process and data evaluation. Within this body of research, it was determined that, even though there has been a slight decrease in the readmission rate, it is unclear whether this trend was affected by the ACA legislation. Additionally, it was concerning that a direct method of evaluating the legislation did not exist because the ACA penalizes hospitals. If legislation is not effective, it does not justify penalizing hospitals for their readmissions.

When evaluating the different risk factors for an individual to be readmitted, there was continuity within the findings. After examining age, it was found that as a person ages, their risk for being readmitted increased. Specifically it was found that, when the patient reaches seventy and above, their risk for being readmitted rises exponentially. The next factor that was examined was disease. From the the literature, different disease processes were found to be common amongst readmitted patients. These disease processes included: coronary artery disease, chronic obstructive pulmonary disease, pneumonia and myocardial infarction. In one of the connections that was made, it was determined that, as an individual aged, the prevalence for these disease processes increased.

Additionally, there was a connection between health literacy, community support and medications. As an individual's literacy level decreased their risk for being readmitted increased.

This increase was the result of a lack of understanding concerning overall management of their

disease, specifically medication administration.  When examining different issues related to

medication administration, the main reason for adverse drug reactions originated from poor

understanding of the education, by the patient, concerning self-administration of the drugs.

Additionally, as more drugs were added to the medication regimen, there was an increased risk

for an adverse drug occurrence. It was jointly discussed how drugs, including: anticoagulants,

medications for cholesterol, cardiovascular drugs, neurological drugs, and antibiotics, were the

leading cause of readmissions due to inaccurate self-administration. The availability, or access to

the medication, also contributes to increasing an individual's risk for being readmitted.  In

connection with medication administration and health literacy, community factors were shown to

affect someone's risk for being readmitted. One aspect of the community that was assessed was

access to care. When there was an increase in availability of primary healthcare providers within

an area, ER and hospital admissions decreased. From the findings it was determined that, as an

individual receives more community support through a home based health care team, their risk

for being readmitted decreased. If the individual was receiving the necessary community support

post-discharge, it heightened their ability receive further education and guidance on self-

administration of medications. Additionally, if there was a gap in knowledge as a result of health

literacy, the healthcare team was able to provide continuous education and care within the

community setting. Finally, the last factor evaluated was the quality of care. If a patient's care

was not fully completed and there was inadequate management of the patient's chronic disease

process within the hospital setting, the risk for being readmitted increased. Additionally, if pre-

discharge activities including providing a transition program and thorough education were not

fully provided or were omitted, the patient's risk for being readmitted increased.

After thoroughly examining the relationship between staffing levels and a patient's risk for being readmitted, two conclusions were made. First, as the levels of staffing decreased, the quality of care received decreased. Quality of care included: detecting changes in the patient's condition and responding to these changes quickly to prevent complications, thorough education concerning the disease process and the care received and adequate education for pre-discharged patient. So, as the nurse staffing levels decreased, their ability to perform all of these tasks decreased which led to poor patient outcomes and readmissions. Secondly, it was found that, as nurse staffing levels decreased, the overall working environment became a negative verses positive environment. When the working environment was a negative environment, it was found that patient outcomes additionally decreased.

Finally, the last topic that was examined was the psychological and physiological effects on the patient during and after a hospital admission. It was found that the stress for being admitted compromised the patient's immune system during their hospital stay and post-discharge. This left them susceptible to infection during and after their hospital stay. When evaluating the psychological effects of hospitalization, both PTSD and post invasive stress syndrome were found to affect patients. In addition, it was found that medications may cause an exacerbation of an underlying psychological disorder. Finally, it was concluded that nursing staff can formulate specific interventions to decrease stress during hospitalization and therefore decrease the patient's risk for a compromised immune system and psychological disorders. These interventions included: cluster care, constantly orienting the patient to their surroundings, maintaining the patient's sense of autonomy, proper nutrition and fluid intake and continuous education.

**Relevance and Application**

To prevent readmissions it will involve multiple health disciplines in addition to nursing. One of the disciples that this research is relevant towards is social work. One of their main functions is to verify that an adequate support system exists post-discharge. Additionally, if this support is inadequate or nonexistent, the social worker provides the patient with support through community resources. Another disciple that is relevant to this research is pharmacists. Medications are a main cause for readmissions. This is due in part to lack of understanding concerning the self-administration of these medications. Pharmacists should continue to place emphasize on the necessary education for each medication filled for a patient.

Overall this body of research is relevant to the community as a whole. It further emphasizes that to fix this issue it is not straightforward. Rather than simply penalizing hospitals, in order to reverse the readmission rate it will involve multiple resources to address each patient's unique risk factors for being readmitted.

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Appendix A

Patient characteristics by condition seen in readmission from McHugh & Ma's (2013) research

analysis

**TABLE 1.** Patient Characteristics by Condition

| Patient Characteristics | Heart Failure (N = 171,883) No. (%) | Myocardial Infarction (N = 62,394) No. (%) | Pneumonia (N = 141,404) No. (%) |
|---|---|---|---|
| Readmissions within 30 d | 39,954 (23.2) | 12,131 (19.1) | 25,169 (17.8) |
| Length of stay (d), median (IQR) | 4 (3–7) | 5 (3–8) | 5 (3–7) |
| Age (y), median (IQR) | 80 (74–84) | 78 (72–84) | 79 (74–84) |
| Female | 92,884 (54) | 31,350 (49) | 75,440 (53) |
| Top reasons for readmission | | | |
| Most frequent | Heart failure 12,961 (32.4) | Heart failure 1850 (15.3) | Pneumonia 5318 (21.1) |
| Second most frequent | Renal failure 1718 (4.3) | Coronary atherosclerosis 1696 (14) | COPD 1966 (7.8) |
| Third most frequent | Cardiac dysrhythmias 1398 (3.5) | Acute myocardial infarction 1000 (8.2) | Heart failure 1764 (7.0) |
| Fourth most frequent | Pneumonia 1330 (3.3) | Cardiac dysrhythmias 497 (4.1) | Respiratory failure 1009 (4.0) |
| Fifth most frequent | COPD 1223 (3.1) | Nonspecific chest pain 469 (3.9) | Septicemia 720 (2.9) |
| Sixth most frequent | Coronary atherosclerosis/heart disease 5139 (3.0) | Complications of device or procedure 421 (3.5) | Urinary tract infection 622 (2.5) |
| Seventh most frequent | Respiratory failure 5070 (2.9) | Pneumonia 353 (2.9) | Cardiac dysrhythmias 564 (2.2) |
| Eighth most frequent | Hypertension with complications 4366 (2.5) | Renal failure 308 (2.5) | Renal failure 521 (2.1) |
| Ninth most frequent | Complications of device or procedure 4314 (2.5) | Respiratory failure 285 (2.4) | Intestinal infection 518 (2.1) |
| 10th most frequent | Urinary tract infection 3111 (1.8) | Gastrointestinal hemorrhage 282 (2.3) | Fluid/electrolyte disorders 445 (1.8) |

Top reasons for readmission are based on the Agency for Healthcare Research and Quality's Clinical Classification's software.
COPD indicates chronic obstructive pulmonary disease; IQR, interquartile range.

Appendix B

Description of suggested nurse per patient hours

In the study by McHugh et al., they evaluated over 2,000 hospitals in terms of staffing. The chart

below describes the difference between the hospitals concerning high and low staffing. The

boxes accounts for the variation between the 25% and 75% percentiles. The red line accounts for

the 1% to 99% percentiles. The line in the middle is representative of the median. From the chart

the median for low staffing was approximately five and the median for high staffing was

approximately eight. McHugh et al. used these approximate values as guidelines within their

research. Figure 1A for a visual description.

Figure 1A



**EXHIBIT 4**

**Distribution Of Registered Nurse Hours Per Patient Day By High And Low Staffing Hospital Groups After Matching**