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Not Coming Home: The Flaws in Skilled Nursing Facilities and their Contribution to Cyclical Hospitalizations of Post-Acute Patients

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A Thesis Presented by

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INTRODUCTION

The following timeline describes the basic experience of an emergency medical technician (EMT) who works primarily in interfacility transfers. Rather than responding to 911 calls, these EMTs usually move stable patients from one bed to the next. This timeline is informed by the experiences of myself, my coworkers, and shared accounts of EMTs across the nation.

June 3rd

0900 My partner and I leave the station towards Post 11. As our ambulance rolls down the road, we receive a page from dispatch to pick up a patient from one of the nearby hospitals. We reroute.

0930 We arrive on scene at the hospital and make patient contact. The patient is awake, alert, and oriented and can walk on their own. The hospital nursing staff say the patient was in the hospital for a stroke but had recovered enough to be discharged. We are taking the patient to a post-acute center down the road for further care.

1015 We arrive at the facility and settle the patient into their temporary bed. The nursing staff at the facility pays little attention to the arriving patient. They seem preoccupied with other documents. Patient call-lights chime from behind the nurse's station, and I wonder how long they have been ringing. My partner and I leave for another call.

June 12th

1630 My partner and I are dispatched to the same post-acute center we visited on June 3rd. The name of the patient looks familiar.

1645 We arrive on scene at the facility and make patient contact. The patient is awake, but not alert or oriented. The patient has a bandage wrapped around their head, so it is hard to identify what they look like. According to the nursing staff, the patient had fallen last night but the staff decided to not call the ambulance until now. Supposedly the patient's status has declined since that morning. We transfer the patient to the nearby hospital.

1730 The patient arrives at the emergency room where the flurry of paperwork, gloves, and scrubs zips past one another from one room to the next. We wait with the patient in the lobby until they can give us a bed. Once we have a room, we relay the limited information given to us to the ER nurses. The ER nurses are upset with the lack of information and send us on our way.

June 20th

1045 My partner and I are dispatched to a nearby hospital for a patient who needs transport to a post-acute center. I know this patient.

1100 We arrive on scene at the hospital and make patient contact. The patient is awake, alert, and oriented, but cannot move without assistance. Their fall 8 days prior has left them unable to walk.

1130 We arrive at the facility and settle the patient down into a temporary bed. This bed is two doors down from where we left them on June 3rd, however, that one is now occupied. We hand the paperwork over to the same nursing staff. The same chimes ring and the same documents are being reviewed from behind the counter. My partner and I don't know when we will return for the same patient, but we know that we will be returning soon for someone else.

The timeline above describes what I refer to as "cyclical hospitalizations." While patients return home every now and then, patients may not go home for multiple reasons. In fact, one in five patients (22%) may not be discharged home after staying at a hospital for an acute illness (Tien, 2016). Instead, patients may be sent to post-acute centers for further care, depending on factors like their previous health issue, current health status, and even their insurance. Of the 22 percent of discharges to post-acute care, nearly half of those patients are sent to a skilled nursing facility (SNF [pronounced "sniff"]), which is where I personally saw how patients entered the cycle of rehospitalization.

Many patients stay at SNFs around 20 days, often to receive the care they need to finish the discharge plan created by the hospital staff (Wogen, 2018). However, while SNFs are intended to rehabilitate patients back to health, some patients experience harm during their stay that can prolong their discharge time. Patients may even be sent back to the hospital. This issue is particularly worrying because the main institution responsible for patient rehab is failing its intended role. If SNFs cannot fulfill their duty in aiding patients back to full health, who can patients rely on to receive that care?

During my brief time as an EMT, I saw this phenomenon occur frequently. As described in the opener, I would transfer patients back to the hospital after discharging them a month prior. However, I never understood why patients would get trapped in this cycle. Is this problem rooted in medicine itself, such that medications and other care are causing undue harm? Is it rooted in a flawed patient care system, where nurses and staff are unable to provide adequate care? Is this a result of a capitalist system that benefits from patients cycling through hospitals and nursing facilities? Or what if all of these factors are occurring simultaneously? As I interviewed coworkers and dug deeper into existing research, the answer started to reveal itself. In this thesis, I argue that issues with state and federal staffing regulations and insurance reimbursements lead to medical professionals being overworked, resulting in poor care and increased adverse events for patients. Additionally, complicating factors, like physiological and socio-structural factors, can exacerbate issues and cause more patients to experience cyclical hospitalizations.

At the end of this thesis, I also provide potential solutions to create sustainable reform for SNFs. Policies around staffing and management regulations have not seen updates in over 30 years and are no longer adequate in ensuring patients receive proper healthcare. It is important that these issues receive attention soon because patients may be abused, neglected, and even face life-altering medical issues as a result of existing flaws. On top of current conditions, it is likely that this problem will only magnify in the coming years as the baby boomer generation begins to reach older ages. SNFs and hospitals alike may find themselves overloaded with patients, and an already flawed system may allow more patients to fall through the cracks. Sustainable reform is long overdue for this sector of the healthcare system, especially if we as a society hope to provide the best care to all patients as they reach older ages.

METHODS AND MATERIALS

Data and information were collected through analysis of scientific literature and statistics related to skilled nursing facilities. This information addresses flaws in the healthcare system that directly and indirectly impact the health outcomes of post-acute patients. The majority of this discussion is informed and supported by a government study by the Office of Inspector General. This study detailed the rates of patients who faced harm at the hands of a mismanaged healthcare system and paralleled the experiences I encountered as an EMT this past year.

It is important to define some terms mentioned throughout the current paper. *Cyclical hospitalizations* is a term I use to refer to the phenomena where patients become re-hospitalized after being discharged, usually while staying at a post-acute center (Figure 1). In this thesis, *nursing facilities* will be used as an umbrella term to describe care given by nursing staff in an institution outside of hospitals, which can be experienced at both skilled nursing facilities and nursing homes (Medicaid, 2021). *Skilled nursing facilities* (SNFs) are facilities that treat post-acute patients over a short period of time with the aim of rehabilitation (Medicare, 2021). Additionally, this thesis uses the term *nursing homes* to describe facilities that provide long-term care for elderly patients, usually to aid with daily living. *Acute illnesses* are medical conditions that have severe and sudden onset and are often the initial reason why patients visit a hospital. *Adverse events* are defined as harm to a patient or resident as a result of medical care, including the failure to provide needed care (FDA, 2016). *Medication-induced delirium* is defined as a serious disturbance in mental abilities that results in confused thinking and reduced awareness of surroundings as a result of an issue with medication (Alagiakrishnan & Wiens, 2004). *Falls or other trauma with injury* relates to the action through which a patient may injure themselves from physical impact, resulting in a fractured bone or other injury. Lastly, different levels of

nursing staff are often mentioned. *Registered nurses* (RNs), *licensed vocational nurses* (LVNs), and *certified nursing assistants* (CNAs) are the most frequent staff members who work in skilled nursing facilities.

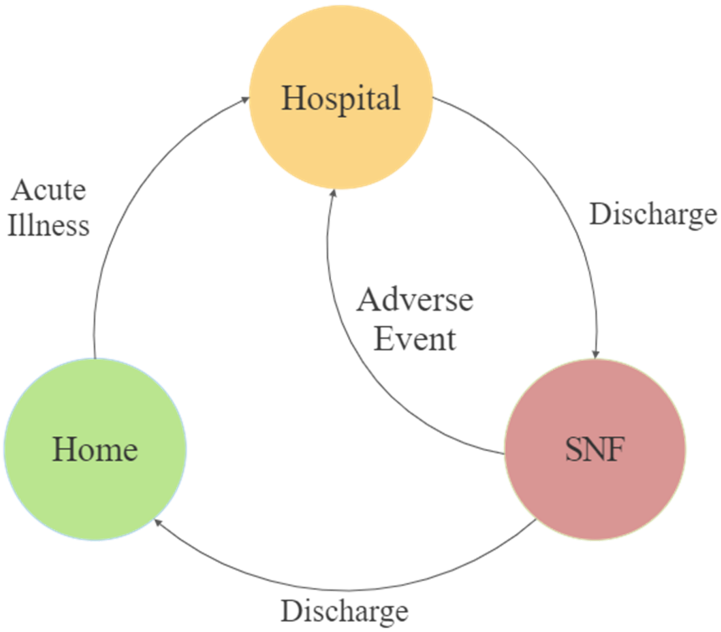

Figure 1. Visualization of cyclical hospitalizations.

BACKGROUND

To preface the discussion on cyclical hospitalizations of patients, it is important to discuss the role and operation of post-acute centers and SNFs. Post-acute centers can either be inpatient rehabilitation facilities, long-term care hospitals, skilled nursing facilities, or home health agencies. Each of these post-acute centers differ in the care they specialize in, how long they provide care, and what type of medical professional is administering care. The present thesis will mainly focus on SNFs, since more than 1.6 million patients rely on these facilities annually for specialty rehabilitation care (SNFData, 2021).

The role of skilled nursing facilities is to provide continued care following an acute hospitalization, where nursing staff aid in recovery, improving health status, or managing chronic illnesses (Sollitto, 2021). Compared to long-term care facilities like nursing homes and long-term care hospitals, SNFs are intended to provide short-term care, much like a stepping stone before a patient is able to return home. The average length of stay at a SNF is around 20 days, compared to a hospital with 5 days and a long-term facility with 840 days (Wogen, 2018; OECD, 2021; NCAL, 2009). Additionally, in California, people aged 45-74 years old make up 43 percent of patients, and people aged 75 and older make up 57 percent of patients (CAHF, 2021). Since the average SNF patient is elderly, the type and frequency of care provided to patients may be different than other healthcare environments. This age is important to consider when also comparing insurance statuses, medication needs, and other effects of aging that may influence care.

Since SNFs play an important role in the rehabilitation of patients, these facilities require certain medical professionals to provide the appropriate care. Detailed in the Nursing Home Reform Act of 1987, SNFs are required to employ "a registered nurse (RN) eight consecutive hours, seven days a week; licensed nurses (RNs and licensed practical nurses or licensed vocational nurses) 24 hours a day; and otherwise 'sufficient' nursing staff to meet residents' needs" (Edelman, 2014). Other nursing staff may include licensed vocational nurses (LVNs) and certified nursing assistants (CNAs). With the provided staff, skilled nursing care is expected to provide care like "wound care, intravenous (IV) therapy, injections, catheter care, physical therapy, and monitoring of vital signs and medical equipment" (Sollitto, 2021). This care is relevant for SNF patients, as many of them require post-acute, rehabilitation care for health issues like traumatic falls and strokes.

However, not all staff in SNFs are trained to administer the different types of necessary care. Wound care, IV therapy, injections, and catheter care can only be administered by a registered nurse, rather than an LVN or CNA. LVNs usually provide basic nursing care and are responsible for the comfort of the patient, such as monitoring vital signs and helping patients bathe and dress. CNAs often have similar duties as LVNs; however, the training of a CNA is only about two to six months, compared to an LVN program that takes up to a year (LVN Program Staff, 2021). Relatedly, RN training usually takes about 3 years (BRN, 2021). Less training often correlates with fewer medical-related duties. Across the nation, CNAs make up 61 percent of the nursing staff at SNFs, while LVNs make up 23 percent and RNs make up 16 percent (BLS, 2021). Thus, while the expectation is that SNFs should provide various forms of patient care, the reality is that more than half of SNF staff is unable to do so.

Overall, SNFs provide different care to patients than the care that hospitals and nursing homes provide. This care is imperative to the rehabilitation of patients, yet there are few trained professionals in these facilities to make sure patients are receiving the attention they need. This lack of professionals is a constant problem throughout the fundamental issues present at SNFs.

FUNDAMENTAL ISSUES IN SNFS

In response to inadequate care provided in nursing homes, the Nursing Home Reform Act of 1987 (NHRA) issued recommendations for nurse-to-patient staffing ratios in the hopes of raising the quality of patient care. To clarify, the term “nursing home” in this case refers to all nursing facilities that receive Medicare or Medicaid funding, regardless of if they are a SNF or long-term care facility (Klauber and Wright, 2001). Following the NHRA’s guidance, the Federal

government recommends a ratio of 1 nurse to every 5 patients for skilled nursing facilities (Gale Healthcare, 2021). However, in practice, each state is responsible for setting and enforcing their own ratios. In the case of skilled nursing facilities, there is no strict staff ratio required in California. Instead, California requires nursing facilities to provide "at least 3.5 hours of direct care per resident per day" (NANHA, 2019), with the goal of raising the number of hours of direct care to each patient and improving the quality of care patients receive during their stay.

Without strict requirements for staffing at nursing facilities, the Federal government left a rather ambiguous statement for facility management to interpret. The conflicting requirements created by the state and Federal government allow SNF management to capitalize on every hour each nurse can provide. For example, in California, the state requirement is that nursing facilities provide 3.5 hours of care daily to every patient, however, there is no Federal requirement for the SNF to employ enough nurses to fulfill the recommended 1:5 nurse-to-patient ratio. This means a SNF could employ the minimum number of nurses to provide 3.5 hours to every patient, but each nurse may be working 12-hour shifts to fulfill every patient hour they are required to provide. In actuality, some nurse-to-patient ratios can range between 1:30 and 1:60, according to a national poll of over a thousand nurses (Wofford, 2019). As an aside, these poll results were obtained informally because it is difficult to find sources of high nurse-to-patient ratios since facilities tend to keep these issues private. It is imperative for government groups to survey nursing facilities more frequently to understand the extent of these staffing ratios.

These ratios may also seem extreme because they only account for RNs. LVNs and CNAs are also available to help and often fulfill remaining duties to create the "sufficient" workspace suggested by the Federal government. Yet even with supplementary nursing staff, CNA-to-patient ratios can still range between 1:16 and 1:30 (Wofford, 2019).

Despite the fact that CNAs have far less training than RNs, they still have a comparable number of patients to attend to. Since CNAs typically attend to the more menial jobs of patient care, they often have the most contact with patients. According to an update in March 2021, California now clarifies that of the 3.5 required patient care hours, a minimum of 2.4 of those hours must be performed by CNAs (CANHR, 2021). This means that CNAs, rather than a more highly trained healthcare provider, impart around 70 percent of patient contact daily to each of their 20-some patients. While this does not mean that CNAs are unable to recognize patient changes in health, the patients at SNFs require post-acute care that CNAs may not always be trained to provide, such as administering injections or providing wound care. Since RNs already have 60 other patients to give advanced care to, a patient that worsens throughout the day may go unnoticed.

In terms of staffing requirements, the NHRA has not seen an update in 30 years. It is obvious that the old requirements are not sustainable in today's healthcare system. As stated in a Nurse.org article, Drumeka Rollerson, RN remarks, "I think we confuse these staffing guidelines way too often. Just because you are able to do [a 1:60 ratio] doesn't make it safe for the patients" (Wofford, 2019). Many nursing facilities face understaffing issues, which create further problems for both nursing staff and patients.

Understaffing in any job can create stress for employees, especially if those employees are handling the health outcomes of multiple patients. As some healthcare workers have experienced, nurses can face "burnout" from the constant rush of the job. A survey of 3,300 nurses showed that 64 percent rarely got seven to eight hours of sleep every night, 77 percent said they do not regularly eat well, and 89 percent said they feel they "cannot work effectively due to apathetic superiors and a lack of support staff" (LegalNurse, 2014). As a result, a study by

Rogers et al. found that “the risks of making an error were significantly increased when work shifts were longer than twelve hours, when nurses worked overtime, or when they worked more than forty hours per week” (2004). As nursing staff continue to work tirelessly, it is obvious that more and more errors will arise when staff are not fully rested.

The effects of being understaffed can overwhelm nursing staff, as more duties are given to overworked nurses. Constantly being overwhelmed at work can lead to burnout, and employees may leave their work environment when it becomes too stressful. This experience is seen in the turnover rates at SNFs, which are significantly higher than other healthcare environments. In a study by Gandhi et al. (2021), the turnover rate of nursing staff at nursing facilities was compared to metrics like “star ratings,” which rank facilities on a scale of one to five based on their quality of care. One-star facilities had a median total nursing staff turnover rate over a period of two years of 135.3 percent, while five-star facilities had a 76.7 percent median turnover rate. The high percentage of 135.3 can be interpreted as the entire staff at a SNF being replaced in just two years, with some of the new staff leaving in that period as well. In addition to overall turnover rates, the turnover rates specifically for RNs at SNFs are concerning compared to rates at hospitals. RNs had a mean turnover rate of 140.7 percent in SNFs, compared to 18.7 percent in hospitals (Gandhi et al., 2021; NSI, 2021).

With high turnover rates at most SNFs, facilities need to train their new workers quickly and easily. Usually, this manifests in the form of limited training and “learning on the job.” An RN who posted in a forum on AllNurses.com stated that they “got only 5 days orientation,” while another RN similarly stated that “the lack of orientation time is prevalent. Some fortunate nurses have posted that they received several weeks of orientation. Personally, I have never received more than a couple of days” (amyca, 2012). With a lack of training for all nursing staff,

problems can easily arise within the SNF. For example, nursing staff may complete paperwork or fulfill duties incorrectly because they were not properly trained to do so, resulting in more mistakes, miscommunications, and lower quality of care. Relatedly, a study by Thomas et al. (2013) found a significant association between the retention rate of nursing staff and the rehospitalization rate of patients at nursing facilities. Nursing homes with a 10 percent increase in nursing staff retention, meaning a lower turnover rate, equated to "two fewer hospitalizations per facility annually" (Thomas et al., 2013). Keeping the same staff allows employees to learn and improve over time. Experienced staff members can fulfill duties more efficiently and with fewer mistakes, since they have become more accustomed to the job. Yet if staff members have reasons to leave, nursing staff are likely to remain inexperienced, inefficient, and make more mistakes.

In summary, one of the main issues contributing to cyclical hospitalizations is understaffing. With understaffing, nursing staff can feel burnout, which in turn leads to high turnover rates, untrained staff, and more medical errors. These problems can be traced back to staffing discrepancies between state and federal regulations which allow facilities to shift important responsibilities to less trained nursing staff. As a consequence, patients may experience a rehospitalization because current staffing regulations do not protect patients from facility mismanagement.

INSURANCE AND FOR-PROFIT FACILITIES

Some of the other main issues contributing to cyclical hospitalizations are related to complications with health insurance plans. As of 2019, health insurance coverage for the US

population was broken down into the following groups: employer-covered (49.6%), non-group (5.9%), Medicaid (19.8%), Medicare (14.2%), military (1.4%) and uninsured (9.2%) (KFF, 2019). For the purposes of this paper, I will mainly focus on patients who are insured through Medicare, because these patients are disproportionately sent to SNFs than other medicare beneficiaries (Figure 2). Medicare insurance is available to anyone 65 years or older and includes hospital insurance and prescription drug coverage. Since the average American retires around age 66, most people transition from employer insurance to Medicare (Gallup Inc, 2018). Additionally, as of 1990, 96 percent of the nation's elderly population (65 years or older) are covered by Medicare (Medicare and Lohr, 1990). Since most of the elderly population have Medicare, it is likely that SNFs will encounter Medicare payments frequently.

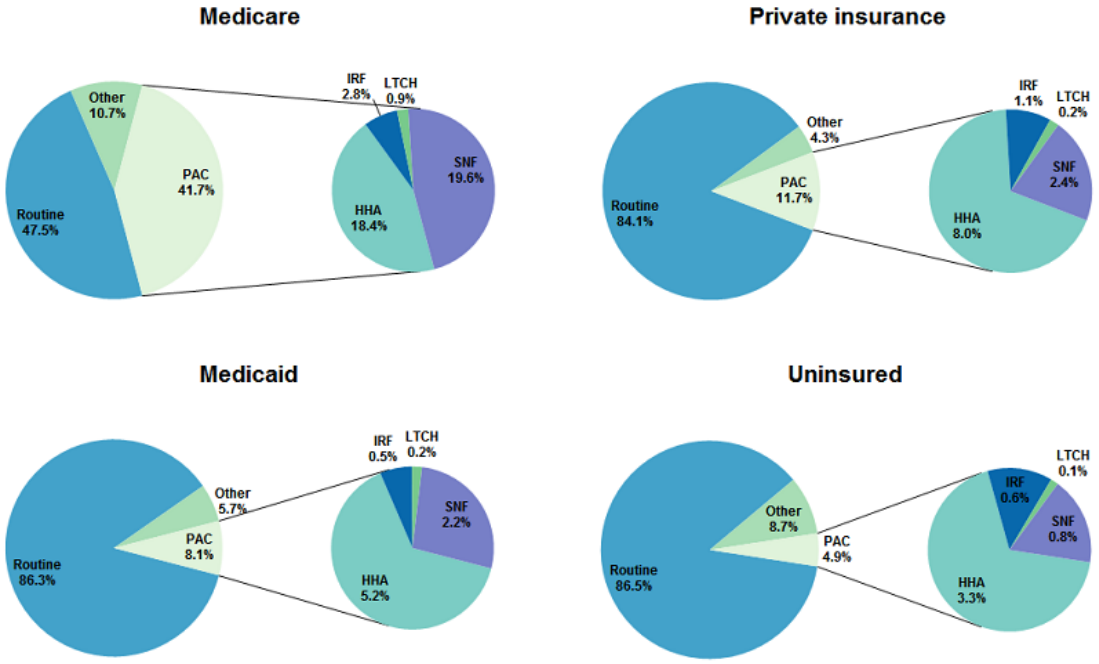

Figure 2. "Abbreviations: HHA, home health agency; IRF, inpatient rehabilitation facility; LTCH, long-term care hospital; PAC, post-acute care; SNF, skilled nursing facility Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and

Markets, Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013" (Tien, 2016)

Medicare patients are more likely to be sent to a post-acute center than any other insurance (Tien, 2016). Patients with Medicare insurance were discharged to SNFs at a rate of 41.7 percent, compared to 11.7 percent for private insurance, 8.1 percent for Medicaid, and 4.8 percent for uninsured (Figure 1; Tien, 2016). One reason for this high referral rate is due to the Affordable Care Act, which aimed to prevent the rate of readmissions to hospitals and thus encouraged patients to stay at skilled nursing facilities (Coe et al., 2019).

With more Medicare patients utilizing SNFs, the majority of the payments SNFs receive are from Medicare coverage services. With Medicare insurance, patients can receive fee discounts on their SNF stays and hospital charges, meaning they do not pay for the full cost of care. However, this discount for patients leads to a financial loss for healthcare institutions, including both hospitals and nursing facilities. A yearly report on insurance payments showed that only 87 cents for every dollar spent by hospitals were covered by Medicare reimbursements (AHA, 2021). While helpful to the patient, these financial losses can burden the healthcare institutions that desperately need the money to operate effectively. However, SNFs may face more underpayments by Medicare because patients with Medicare insurance are sent to SNFs more frequently (Tien, 2016).

Without adequate funding, nursing facilities may save money by decreasing staff numbers, purchasing the bare minimum for medical equipment, and replacing technology only when it breaks. An RN from an AllNurses.com forum stated, "Supplies are often nonexistent… The facility does not always keep the correct [medical equipment] in stock because it is too

‘expensive.’ We cannot find colostomy bags when we need them. Equipment… can be hard to locate” (amyca, 2012). While there does not seem to be easily accessible reports on the lack of equipment in SNFs, there have been cases of severe mismanagement seen across the country. For example, the Office of Inspector General (OIG) investigators found that a facility owner in Georgia “neglected to buy food and basic nursing and hygiene supplies for 400 residents… failed to fix leaky roofs, provided worthless heating/air conditioning systems, and did not pay for a trash service… one patient eventually died in this facility, suffering from serious malnutrition and dehydration” (OIG, 2021). It is imperative that there are more surveys on the stock of supplies in SNFs to further understand how widespread this issue is and to prevent more facilities from harming patients.

Unfortunately, nursing facilities may not be facing issues with equipment shortages solely because of inadequate insurance reimbursements. I argue that some corruption may be occurring in SNF management due to our capitalist healthcare system. According to the Office of Statewide Health Planning and Development, 88 percent of nursing facilities are for-profit, while 12 percent are nonprofit (CAHF, 2021). In order to make money on the services the facility provides, SNFs must cut back on staff expenses and costs of care to make a profit on a limited budget. This corruption is noticed in a study by the United States General Accounting Office (GAO, 2002), which tracked the results of an increase in Medicare payments to SNFs. For background, Congress passed a temporary increase in Medicare payments in 2000 to encourage SNFs to hire more nursing staff and hopefully prevent burnout. This payment increase would be able to pay for about “10 added minutes of nursing time per patient day for all SNF patients,” which could be added by hiring new staff to cover those extra minutes. However, the payment increase did not specifically require facilities to spend the money on staff, and the outcome

showed that SNFs took advantage of this loophole. The GAO study found that RN time only increased by 1.9 minutes per patient day and staffing did not increase substantially across the facilities studied. Some highly staffed SNFs even decreased their staffing ratios. These results show that nursing staff hours actually worsened during this period, since no new staff were hired to help the workload. In the end, we do not know where that money went, but we do know that it did not go toward improving the work environment of nursing staff. Because of this study, discounted Medicare payments may not be the cause of inadequate nurse-to-patient ratios and limited access to medical equipment. The root of the issue may be within the management of SNFs themselves.

IMPACT ON PATIENT CARE

Knowing that nursing staff is either burned out, undertrained, or lacking adequate medical equipment, how do these problems directly translate to patients? A study by the Office of Inspector General (OIG) observed the experience of patients in SNFs to measure how many of them experienced harm at the hands of a flawed system. More specifically, this study examined instances of an "adverse event," which is harm to a patient or resident as a result of medical care, including the failure to provide needed care. The study aimed to understand which events happened most frequently, how those events impacted patients' health, and whether those events may have been preventable.

The OIG study focused mainly on patients with Medicare insurance by tracking the status of 653 beneficiaries discharged in August 2011 (2014). The research group used the National Coordinating Council for Medication Errors Reporting and Prevention Index (NCC MERP

Index) to classify medical errors into nine categories: A-D as harm that does not reach the patient or resident, and E-I as harm that does reach the patient or resident. Categories A-D could be exemplified as events that "had the capacity to cause error," (e.g. a mislabeled medication that was identified by a nurse) or a medical error that "reached the patient but did not cause patient harm" (e.g. gave the wrong dosage of medication but did not result in any health consequences). Categories E-I could be exemplified as events that may have "contributed to or resulted in harm and required an initial or prolonged facility stay" (e.g. re-sprained an ankle) or even "required intervention to sustain the patient's life" (e.g. patient's heart stopped and now requires CPR). Categories F-I were defined in this study as "adverse events" in SNFs, which were the four most serious categories. The following table summarizes the results pertaining to the most serious categories adapted from the OIG study after multiple retrospective medical record reviews.

Table 1. "Adverse Events Classified as F-I on OIG's Modified NCC MERP Index for Categorizing Adverse Events by Level of Harm"

Level of Harm	**Percentage of Adverse Events**
F level: Resulted in prolonged SNF stay, transfer to a different SNF or other post-acute facility, and/or hospitalization (i.e. admission to inpatient care, hospital observation unit, or emergency department)	79%
G level: Contributed to or resulted in permanent resident harm*	--
H level: Required intervention to sustain the resident's life	14%
I level: Contributed to or resulted in resident death	6%

From the OIG study: "*We are unable to reliably project the weighted point estimate for adverse events classified as G level harm because of the small number of sample occurrences."

Of these results, patients often experienced a prolonged stay, transfer, or rehospitalization as a result of an adverse event. And one might expect that adverse events are rare; however, the OIG study showed that approximately 22 percent of Medicare patients experienced at least one adverse event during their stay at a SNF. As a comparison, 13 percent of Medicare patients at hospitals experience an adverse event during their stay (OIG, 2010). While these numbers do not seem drastically different, it is expected that hospitals have some adverse events due to a high-stress environment in the emergency room and more critical patients with more complicated health issues. However, SNFs are expected to have more stable patients, since the patients were healthy enough to be discharged. Patients should not be in as critical of a state as they may be in hospitals. Yet OIG's findings suggest that one in five SNF patients will experience an adverse event, compared to one in ten hospital patients. These findings suggest that adverse events may be occurring at SNFs at higher than expected rates.

The OIG study also categorized the most common adverse events into three groups: events related to medication (37%), events related to resident care (37%), and events related to infections (26%). Among the fifteen types of adverse events seen in OIG's study, "medication-induced delirium or other change in mental status" (occurring to 12 percent of patients) and "fall or other trauma with injury related to resident care" (occurring to 6 percent of patients) were two adverse events that I have decided to focus on. I chose these two adverse events because not only are they seen most frequently at SNFs, but also because medication-induced delirium and falls are inextricably correlated to one another. If a patient is given the wrong medication or is not properly monitored and assisted, the patient may experience another adverse event. As an example, medication-induced delirium can make it harder for a patient to balance, which causes them to fall. A patient who has fallen may be

prescribed medication, such as non-steroidal anti-inflammatory drugs (NSAIDs), to aid the pain from the traumatic injury, which has been shown to cause delirium (Cadario, 2004).

Patients may be subject to these high rates of adverse events as a result of the fundamental issues felt in SNFs. The OIG study determined that 59 percent of all adverse events in SNFs were "clearly or likely preventable… [attributed to] substandard treatment, inadequate resident monitoring, and failure or delay of necessary care" (OIG, 2014). Patients may be receiving substandard treatment because the facility cannot afford the correct equipment to take care of the patient. Additionally, patients may not be monitored adequately as a consequence of understaffing, because nursing staff may be overworked and unable to provide the time required to monitor patients properly.

These adverse events may be specific to SNFs because hospital patients experienced these same adverse events at lower rates: 7 percent for delirium and 1 percent for fall with injury (OIG, 2010). On top of that, only 44 percent of adverse events at hospitals were deemed preventable by similar standards to SNFs (OIG, 2010). Cyclical hospitalizations seem to be occurring disproportionately at nursing facilities compared to other healthcare settings, because SNFs face fundamental issues separate from hospitals.

COMPLICATING FACTORS: PHYSIOLOGY

Certain factors worsen the effect of adverse events and even cause them to happen more frequently. Physiological factors like aging can drastically change the way healthcare is administered to older patients, especially related to medications. However, to preface the discussion on certain physiological factors, it is important to note that medications and their

reactions in the body differ from person to person. We cannot account for every exception to the rule, but we can talk about the most common ways falls and medication-induced delirium are related in order to provide a potential explanation for the high incidence of falling in SNFs. Other than SNFs being understaffed and underfunded, what other factors may contribute to this high incidence?

As the body ages, it experiences deterioration as cells age and die. Body systems function differently because of this deterioration. Cells are limited in their ability to divide and replace themselves by genetic structures called telomeres. Telomeres act as buffers for the DNA during DNA replication to prevent important genetic information from being cut into. With each cell division, telomeres shorten slightly on each end until eventually telomeres run out and DNA begins to be cut (Shammas, 2011). When DNA is altered during cell replication, new cells may function incorrectly and may even die off prematurely. Dysfunctional cells can influence body systems like the digestive or musculatory system to operate differently. With age, one may experience more constipation because cells and organs are unable to process food as quickly. One may also experience more muscle fatigue and less bone density, which can affect coordination, stability, and balance, and cause one to experience more traumatic injuries from a fall (Mayo Clinic Staff, 2020). On top of the normal effects of aging, other factors from life choices may compound as one engages in unhealthy behaviors for a longer period of time. For instance, a lack of exercise, an unhealthy diet (e.g. not enough fluids, low-fiber, low-calcium), and substance abuse can contribute to more digestive and muscular system malfunctions (Mayo Clinic Staff, 2020). Since the majority of SNF patients are older, age-related body deterioration is a pertinent risk factor in increasing the incidence of adverse events. Related to delirium and falls, patients may not be able to clear medications from their body as quickly and may

experience unintended side effects as a result. Patients may also be unable to stabilize themselves when walking on their own because their muscles have deteriorated with age. These normal effects of aging often require more dependency on nursing staff to make sure patients are being monitored and assisted as needed.

Adverse events can also occur more easily if patients have comorbidities. Comorbidity refers to the presence of one or more health conditions that can co-occur with a primary condition, such as age-related deterioration on top of previous heart issues. Unfortunately, comorbidities can present frequently in older patients in the US. The ten most common health problems and their frequency in the total US population are: hypertension (13.8%), high cholesterol (10.4%), major depression (8.8%), coronary artery disease (8.0%), diabetes type II (5.5%), substance use disorder (3.3%), alcohol use disorder (3.1%), hypothyroidism (2.8%), COPD (2.6%), and psychotic disorders (2.5%) (BCBS, 2021). Any pre-existing health conditions can complicate the healthcare process, as doctors and pharmacists need to cross-check medications to make sure there is no potential for an adverse drug event, where drugs may react together in the body and cause undue harm. However, even if healthcare providers account for harmful drug interactions, there are still ways that medications can react poorly in the body and cause patient delirium, leading to other medication-related adverse events.

Aging and Medication-Induced Delirium

Delirium is medically defined as a serious disturbance in mental abilities that results in confused thinking and reduced awareness of surroundings (Alagiakrishnan & Wiens, 2004). The mechanism through which delirium is induced is not fully researched, however there are a few hypotheses that attempt to understand its pathophysiology (Table 2).

Table 2. Theories of Pathophysiologies of Delirium (van der Mast, 1998).

Theory	Potential Pathophysiology of Delirium	Result
Neurotransmitter Hypothesis	Decreased oxidative metabolism in the brain causes cerebral dysfunction due to abnormalities of various neurotransmitter systems	Excess release of certain chemicals that create symptoms of delirium
Inflammatory Hypothesis	Increased cerebral secretion of cytokines; severe illness and physiologic stress may give rise to modification of blood-brain barrier permeability	Disturbance of neurotransmitter systems; drugs are able to be processed in the brain faster

Once delirium has been induced, it can increase the risk of falls by causing an alteration in consciousness and inattention (Doherty et al., 2014). Medications like antihypertensive drugs, alpha-blockers, calcium channel blockers, and central nervous system (CNS)-active drugs have been shown to cause delirium-like symptoms such as dizziness, nausea, sedation, and impaired motor coordination (Hatahira et al., 2018). CNS-active drugs include opioids, benzodiazepines, hypnotics and sedatives, non-selective monoamine reuptake inhibitors, and selective serotonin reuptake inhibitors (SSRIs). All of these drugs affect the central nervous system by either speeding up activity (stimulants), slowing down activity (depressants), or altering sensory perceptions (hallucinogens) (AU Dept. of Health, 2004). CNS-active drugs alter the consciousness of patients by changing how the body responds to certain stimuli, which can lead to drowsiness, dizziness, impaired motor coordination, hypotension (low blood pressure), and vision disturbance (Cadario, 2004). Additionally, antihypertensive drugs, alpha-blockers, and calcium channel blockers can cause dizziness and hypotension (low blood pressure) (Cadario, 2004).

The above list of delirium-inducing drugs directly correlates to the top ten health issues in the US reviewed previously. Antihypertensive drugs, alpha-blockers, and calcium channel blockers are used for patients who suffer from high blood pressure, while CNS-active drugs can be used for patients who suffer from psychotic disorders and major depression (Hatahira et al., 2018). Since these drugs commonly appear in healthcare settings, it is not surprising that the most common medication-related adverse event is delirium (OIG, 2014). Additionally, aging may also intensify this effect of medication-induced delirium due to changes in the renal system and how the body processes medications. With aging, the body may have a decrease in kidney filtration, which will change how quickly medication is processed and expelled from the body. If kidney filtration rate is low, it is possible for medication to stay in the body longer than planned and unexpectedly react with other medications (Alagiakrishnan & Wiens, 2004). Also, receptors in the body that react to medications may become more sensitive with aging, which can lead to a more pronounced drug effect to a standard dosage (Alagiakrishnan & Wiens, 2004). It is important that doctors and nursing staff alike adjust medications as needed to prevent adverse drug events. Regardless, with all of these factors at play, it is clear why so many patients encounter medication-induced delirium.

Aging, Falls, and Traumatic Injuries

Falls and traumatic injuries can occur due to multiple reasons. With the added factor of aging, older patients may not have the muscle strength to stabilize themselves when they do experience delirium. Nursing staff may also be unavailable to provide walking assistance when patients move. As a result, older patients may fall more frequently and even experience serious traumatic injuries due to having less bone density. This means that a fall from a standing position

may cause a broken arm, compared to a younger person who may fall and rebound uninjured. If the fall is serious enough, patients may return to the hospital to undergo surgery and/or stay another night for further care.

Moreover, falls can lead to more issues than a traumatic injury. Recent studies have shown that one out of every five patients who fall can experience a psychological disorder called "post-fall syndrome" (Morisod and Coutaz, 2007). As a result of fear, an older patient may refuse to move independently, thinking they may fall and injure themselves again (Vaishya and Vaish, 2020). On top of psychological trauma, falls and injuries can add difficulty to daily activities due to a worsening balance and gait, as well as a loss of confidence in performance (Keil et al., 1991). This can cause patients to become more dependent on nursing staff, as they cannot complete normal tasks for themselves without assistance.

From a study on the type of injuries patients suffered from a fall, 37.9 percent of patients who fell fractured their hip, which can lead to an increase in dependence simply because the patient cannot move on their own post-fall. Another part of the same study observed physiological effects post-fall, which showed that 20.6 percent of patients experienced functional decline, 13.7 percent experienced functional dependence and loss of autonomy, and 10.3 percent experienced depression (Terroso et al., 2014). For older patients, these major changes in dependency can drastically change their quality of life. Without being able to move around without assistance, or even completing daily tasks like feeding oneself or going to the bathroom independently, patients may become solely dependent on the nursing staff to help them. On top of that, as more patients become dependent, nursing staff have more duties to attend to, increasing their already overwhelming workload.

As a final note, medication-induced delirium and falls can occur simultaneously, as well as separately. Patients may solely experience delirium without experiencing a fall, and patients may fall without experiencing side effects from medications. However, since common medications do lead to symptoms like confusion, dizziness, and impaired motor coordination, patients can be more at risk for falling when taking medications. The added interactions between medication-induced delirium and falls should alert healthcare workers to carefully monitor elderly patients, since elderly patients are more at risk for these adverse events. Yet this careful monitoring requires more work on the part of nursing staff, exacerbating the issues felt by understaffing further. In summary, physiological factors like aging can significantly impact how patients receive care in nursing facilities and often add more stress to nursing staff to provide the best care.

COMPLICATING FACTORS: SOCIO-STRUCTURAL

At a physiological level, medications can have their risks when they are processed by the body. However, even if those medications did not cause delirium, there are tendencies to have errors in providing medications to patients. Errors related to incorrect medications, dosages, or administrations have been seen in SNFs, and these errors can increase the risk for adverse events as well. These errors seem to be due to serious socio-structural issues that impact nursing staff and their work environments, causing staff to make more mistakes.

There are multiple steps that nursing staff must follow before administering a drug to a patient. According to a study by Wheeler et al. (2018), medication errors often occur during one of the following steps: “Ordering/prescribing, documenting, transcribing, dispensing,

administering, or monitoring." Wheeler et al. also showed that 50 percent of medication errors occur during the ordering stage, where healthcare providers either "write down the wrong medication, the wrong route or dose, or the wrong frequency." One potential reason for these specific kinds of errors could be due to physicians and nursing staff alike becoming distracted while ordering medications. This proposition is supported by a separate study, which showed that 75 percent of medication errors could be attributed to distractions, since healthcare providers have multiple duties to attend to and may "scribble in a drug order," not paying attention to what was written (Rodziewicz et al., 2021).

If distraction due to multiple responsibilities underlies these errors, it is possible to remedy this by giving physicians and nursing staff adequate time to correctly fill out medication orders. Another potential solution involves implementing a double-checking system by other nurses. However, it does not seem either of these systems are in place to prevent these errors, as "nurses and pharmacists identify anywhere from 30 percent to 70 percent of medication-ordering errors" (Tariq et al., 2021). With such a wide range of errors not being caught, it is critical to implement structural changes to better prevent these errors from occurring.

On another note, RNs comprise the numerical minority at SNFs, which limits the ability of a facility to send in drug orders and double-check mistakes. As mentioned earlier, only 16 percent of nursing staff at SNFs are registered nurses. While there are multiple reasons that influence an RN's decision to work at a hospital or a nursing facility, RNs do not usually choose to work at SNFs. These decisions may be influenced by certain financial and social factors experienced at SNFs that are not experienced at hospitals. In California, the mean wage for a SNF nurse is around $72,000/year, while salaries for hospital nurses are around $80-90,000 (BLS, 2020). On top of the long hours and overwhelming number of patients, there is a social

hierarchy of nursing jobs that steers some RNs away from working at SNFs. From an article written by a veteran nursing home RN, Janice Nargi states, “I thought the only place ‘real nurses’ should work is the Hospital setting… I used to think [nursing facilities were] where patients, and retiring nurses went to pasture” (Nargi, 2014). Due to financial and social factors, a limited number of RNs are willing to work in nursing facilities, thus limiting the capacity of the facility to provide patients with the care they need.

POTENTIAL SOLUTIONS

The main issues contributing to cyclical hospitalizations are discrepancies in staffing regulations set by state and federal entities as well as inadequate insurance reimbursements. Added factors of patient aging, social stigmas, and burnout can significantly increase the risk of adverse events felt by patients. To combat these issues, the following suggestions hope to improve the health outcomes of multiple patients currently in the healthcare system. Some suggestions may be easy to implement, while others may take more time to execute.

First, it is important to update the existing staffing regulations described in the NHRA to require the suggested 1:5 nurse-to-patient ratio. Previous studies have found that higher RN staffing levels led to improved quality outcomes for patients, such as lower mortality rates, lower hospitalization rates, improved physical functioning, and more (IOM, 2004). It is important for either national or state governments to create a universal standard for what is expected at nursing facilities. It is astonishing that a law created in 1987 regarding the staffing requirements for nursing facilities has not seen an update to reflect the current healthcare climate in the US.

Secondly, facilities may benefit from having more frequent audits and surveys by government groups to enforce new regulations. These audits can ensure better health outcomes for patients by making sure facilities are staffed appropriately, stocked with sufficient medical equipment, and up to date with tech systems. These audits will also be the most beneficial if they are unannounced. From personal experience, when companies are aware of audits beforehand, they will over-staff on the day of the audit, prepare weeks in advance to make sure the facility is up to code, and the surveyor may not catch the sudden change in facility management. Yet everything returns back to normal once the surveyor leaves the building, and issues remain unresolved.

On another note, we cannot expect facilities to provide more medical equipment and staff their facilities accordingly without changing how SNFs are being funded. Since most facilities deal with Medicare beneficiaries, there is a financial loss when providing care to these patients. For my third suggestion, providing a similar increase in Medicare payments as seen in the GAO study will give management more flexibility in finances to operate their facilities adequately. However, it will be imperative to specify that the increase in payments must be used towards staffing and/or updating medical equipment and tech systems. This specification will ensure that facilities are held accountable for their spending, rather than allowing a generous increase in funding to dissipate without creating any change. Additionally, with this increase in funding and hopefully an increase in staffing, nursing staff will have lower nurse-to-patient ratios. This means that nurses can take more time with each patient's needs, write and process patient's medications with less mistakes, and work more with LVNs and CNAs to prevent other adverse events. Providing more support to healthcare providers will in turn provide better care to patients.

Fourth, in order to begin fixing the shortage of higher-level healthcare professionals, it would be beneficial to encourage and fund programs for CNAs and LVNs who already work in SNFs to obtain RN licenses. If a government-sponsored program worked with CNAs and LVNs who already have clinical hours and months of experience, employees may be more likely to stay in post-acute settings because they have become accustomed to the job and the expectations of the kind of care they provide.

Lastly, by improving the work environment of SNFs, the social stigma of working at a SNF will improve as RNs' work-life balance improves. This may entice new RNs to work at SNFs and solve the issue of RNs steering away from post-acute environments. RNs are desperately needed in the post-acute setting because they are the most qualified to provide advanced care outside of the hospital. In an AllNurses.com forum, an RN shares their preconceived notion of the SNF industry:

> I have no experience working [at a nursing facility], however, my perception of why I would never work at such a facility is simply that of the work environment. The stories I have heard about patient med passes and being the only RN in a facility for an astronomical number of human beings who are dependent on my ability to care for them, scares me to death. Being at the mercy of my employers who care more about money than their patients also is very unattractive. So, for me, it's not a status thing, but more of self-preservation.

It is obvious from this RN's account that "horror stories" of nursing facilities are shared among nurses and nursing staff. Since nursing can be a flexible career, one can be just as qualified to

work in a hospital as they are in a SNF. Why would they choose to work overtime for less pay and more stress? In hopes to change that stigma, improvement to SNF management and staffing ratios may encourage RNs to want to work at nursing facilities more. With more nurses turning to careers in SNFs, the quality of care that SNFs provide will improve and thus prevent more adverse events.

CONCLUSION

Drastic changes need to be made to prevent the gaps in the healthcare system between hospitals and home. Post-acute centers have become a "stepping-stone" facility that many people have used to walk right back into an emergency room. Once patients experience a problem serious enough to land them in the hospital, one in five patients will not return home in accordance with their discharge plan. They will instead be subject to an adverse event which either extends their stay or even sends them back to square one at the hospital.

For one in five patients to become stuck within the healthcare system, to be billed continuously for something that may not be their fault, to not be able to go home for months, this problem will only worsen as more patients flood into nursing facilities and hospitals. By the year 2030, all people born during the baby boomer generation will be older than age 65. In fact, by 2034, older people are projected to outnumber children for the first time in U.S. history, with 77.0 million aged 65 or older, compared to 76.5 million under age 18 (Bureau, 2018). This will substantially change how the healthcare system operates, as more healthcare professionals will be needed to care for the growing elderly population. Additionally, nursing facilities and other post-acute centers will need to adjust for the influx of more and more patients. In California,

nursing facilities already have an average occupancy rate of 86 percent and nursing staff are still understaffed and ill-equipped to handle the current patient load. As more patients demand a bed, SNFs will be at a loss to provide adequate care to every patient.

Making efforts to change our healthcare system will raise the quality of care provided at SNFs, decrease the cost to patients, improve the work-life balance of nursing staff, and overall send more patients home. Patients will be less likely to experience adverse events like delirium and falls during their stays at SNFs, which will allow patients to complete their discharge plan and recover from their original health issue. Sending more patients home not only improves the patients' quality of life, but the quick turnover rate will also benefit SNFs by preventing overcrowding with the nearing baby boomer generation.

Currently, the mismanagement of SNFs fails and will continue to fail patients if major changes are not made to prevent cyclical hospitalizations. These changes fall on both SNFs and state entities to be implemented, upheld, and sustained. After all, who can patients turn to if the healthcare system cannot be trusted to do no harm?

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