PROGRAM ANALYSIS: DEMENTIA FALL PREVENTION

by

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ABSTRACT

As the sixth biggest killer in the United States and the number one in the United Kingdom, Alzheimer's is edging its way towards becoming a new public health crisis. Falling, a symptom of dementia, comes with a large financial burden and high medical care utilization. In Pittsburgh, Pennsylvania, the Jewish Association on Aging has recently opened an Alzheimer's assisted living facility (ALF). They have seen a concerning number of falls that prompted them to implement a dementia fall reduction program previously implemented on a dementia specific floor of one of their personal care facilities (PCF). The program combines recommendations from the CDC and other elderly fall prevention research. The first full month of implementation at the ALF occurred in December of 2018. Utilizing the PCF data, from January 2016 through January 2019, a regression model provides a slope value of a monthly reduction rate of -1.011875 falls per 1,000 patient days. Taking the ALF average over the first 12 months prior to implementation of 17.61, the program has the potential to reduce that rate to 5.47 falls per 1,000 patient days by December 2019. Through proper implementation of the program the promising result of a tremendous reduction in fall rate can contribute to an increase in the resident's quality of life.

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PREFACE

1.0   INTRODUCTION

Society forever faces the inevitable human aging process. With age can come many varying health concerns. As medical research grows, and diagnosis capabilities expand; the United States has begun to see more and more diagnosable cases of dementia each year. Dementia is not just genetic and can potentially affect anyone; especially the aged. The number of individuals entering their last quarter of life will grow enormously in the upcoming years with the generation of the baby boomers entering that stage. Therefore, more elderly individuals mean a higher number of dementia patients. Dementia has many different aspects that are extremely detrimental to physical and mental health; one prime focus is a person's increase in falling.

The population age shift plagues nations worldwide. Two factors are said to create this trend. First, an increase in the average life expectancy that stems from overall better infection control and healthier lifestyles. Second, with improvements in education there have been notable decreases in birth rates in conjunction with more effective methods of birth control. These influences result in a projection of about 72.1 million elderly individuals in the United States by 2030.[1] Elders officially enter the bracket at age 65 and in 2030 all baby boomers will have entered. The U.S. census bureau's most recent 2019 findings claim that by 2035 there will be 78.0 million above age 65 or a 55% increase.[2] On a global level the number of older people is said to grow to 2 billion in 2050, which is more than double from 2013. A notable observation was that, "Today's older population may demand more health and aged services than previous cohorts, because longer lives may also mean longer stretches of frailty, disability, and dependence."[1] (Kulik et al., 930) Such key information cannot be overlooked. Although many people can maintain health

throughout their entire life many suffer from a multiplicity of ailments. An aging population influences a country to review their needs on a policy, managerial, and personal level.

2.0   BACKGROUND

2.1   PUBLIC HEALTH & DEMENTIA

2.1.1   Dementia Growth in Aged

In specific, the World Health Organization acknowledges Alzheimer's Disease, a type of dementia, as a global public health priority. Epidemiologically, Alzheimer's Disease accounts for somewhere between 60-80% of all dementia cases. [3] Alzheimer's disease warrants investigation into all aspects of the illness that can impact an individual. A definition says that dementia in general is an "acquired progressive cognitive impairment sufficient to impact on activities of daily living".[4] Although no one can give a fully positive Alzheimer's diagnosis until looking at the brain post-death, there does need to be Aβ shown while the individual is still alive. Just dying with significant β-amyloid deposition while not showing dementia symptoms is not enough information to say someone suffered from Alzheimer's Disease based dementia. A further explanations iterates that, "recent diagnostic criteria from both the National Institute of Aging and the International Working Group now incorporate one of more preclinical Alzheimer's disease phases, where biomarker evidence of Alzheimer's disease pathology exists in the absence of symptoms".[4] Acceptance of both externally visible symptoms and internal biological markers means that there are more ways to diagnose someone, which could lead to increase in overall rate of the number of cases.

Even with an increase in indication markers of Alzheimer's disease, the most common way to diagnose remains a clinical assessment that involves interviewing the patient and someone close

to them in conjunction with cognitive and physical exams. Also, Lane et al mentioned, "blood tests are performed routinely to exclude conditions which may cause, or more commonly contribute, to cognitive symptoms and typically include full blood count, renal function, thyroid function, vitamin B12 and folate".[4] (Lane et al., 64). Another portion of diagnostic tools are the structural imaging from magnetic resonance imaging or computed tomography to eliminate structural abnormalities that could act as positive diagnostic data.

An obvious result from an increase in testing and diagnosing of dementia comes higher frequency rates within the United States. The 2007 Aging, Demographics, and Memory Study (ADAMS) investigated population-based dementia that included people from all regions of the country. The studied bracket started with people aged 71 and older. Out of the total 3,407,000 documented cases of dementia an estimated 2,381,000 or 69.9% were Alzheimer's specific. Stratifying the data through further demographics revealed that, "dementia risk increased with older age, fewer years of education and presence of at least one APOE ε4 allele."[5] Surprisingly and contrary to other publishing, race and gender were not showing an associated risk towards dementia; age held as the most influential predictor.

The ADAMS research can help the country better prepare for the varying needs of care for those with dementia and their families. Not only can the study provide prevalence estimates that show the numerical impact from treatment advances, but it can act as an indicator on how well the United States is progressing in their efforts to treat and prevent. In addition, smaller community-based studies can now utilize ADAMS to compare their results to a national scale. These are all necessary steps, "As the elderly US population grows, the number of individuals with dementia will also increase, making planning for the long-term care needs of these individuals increasingly important."[5] (Plassman et al., 130)

2.1.2 Dementia Costs & Expenditure

Financial investments are a known component to any form of medical treatment and care. Dementia care ranks as one of the costliest out of all diseases. Hurd et al. wrote that, "the total monetary cost of dementia in 2010 was between $157 billion and $215 billion" (Hurd et al., 1326).[6] The more shocking part is that Medicare only covered an estimated $11 billion in 2013. By 2016 the annual Medicare cost increased to an estimated $31.3 billion for both fatal and non-fatal falls.[7] A reason these individuals accumulate so many costs result from the high likelihood of having co-morbidities along with their dementia diagnosis. The calculated costs are divided into two sectors. One area is the costs from medical care purchase such as out-of-pocket expenditures, Medicare dollars, nursing home spending, and the in-home spending. The other area comes from calculating the monetary value of unpaid caregiver's time spent helping and the wages they may have lost too.[6]

The cumulative large-scale figure can be broken down into annual dementia costs on an individual basis. The cost for market purchased care came out to $33,329, but reduced to $28,501 once adjusted for co-morbidities. Then one needs to add in the unpaid caregiver value, which brings the total to $56,290. The division illustrates that more than half of one's yearly dementia-based costs come from the informal caregiver. Based on their 2010 estimation that 14.7% of those aged 70 and older suffer from dementia equates to an annual population cost of between $159 billion to $215 billion. $109 billion of that money comes from market purchases and the remaining amounts are from informal care.[6] Majority of the costs come from nursing home care and formal and informal home care; the medical services only equated for a range of 16-25%. Many projections find that by 2050 the population of the elderly will at least double if not grow more. If one presumes the costs stay the same, then those 2010 numbers will more than double by 2040.[6]

2.1.3   Falls in Aged

A 2014 study found that from those aged 65 and older an estimated 27,000 died from a fall. 2.8 million fallers came for treatment in an emergency department and about 800,000 were admitted. With 28.7% of elderly reporting their falls, approximately 7 million of the 29.0 million falls caused an injury. Those who claimed excellent health had 69 falls with injuries per 1,000 people and those who stated poor health had 480 falls with injuries per 1,000 people. In addition to age, frailty exponentially increases the fall injury rate. The percentage of adults who fell increased in sync with age; falls occurred in 26.7% of those from ages 65-74, 29.8% for those ages 75-84, and 36.5% for those ages 85 and older. Percentage of falls resulting in injuries also increased with age.[7]

Once a person enters a nursing home their spending will rise, but that can vary based on their risk of falling. Doorn et al. emphasized, "Approximately half of nursing home residents fall annually, a proportion that is two or three times that of community residents." (Doorn et al., 1213).[8] Additionally, those who have dementia are at an even higher fall risk due to their inability to recognize hazards, visual limitations, impaired judgement, and poor balance. In two ways falls can affect an increase towards medical costs. First, if the person gets injured those fractures have said to result in billions of dollars of annual expenditure throughout the country. Second, even if the resident does not hurt themselves, there is a costly component for the time related to assessing, observing, and reporting on the incident. The injurious fall rate for the residents with dementia came out at 1.69 falls per person-year compared to residents without dementia who experienced only .99 injurious falls per a person-year.[8] Meaning those with dementia are more likely to injure themselves from the fall and accrue those previously mentioned additional costs.

The results concluded that, "One thousand seventeen people fell 5,438 times during the 2-year follow-up period. The rate of falls was 4.05 per person-year in the nursing home for residents with dementia, compared with 2.33 per person-year for those without dementia" (Doorn et al., 1215).[8] A notable variable to the results is that those with dementia were much less likely to self-report a fall, which could assert an underestimation in the fall risk calculations. Therefore, numerous minor injuries could go unaccounted for. Another interesting component discovered that the likelihood of falling between those with severe cognitive impairment and others with mild to moderate levels had the same amount of fall risk.

Prior to 2003, nobody had analyzed to see if dementia qualified as an independent risk factor for falling. Now results indicate dementia as such, and this could lead to an increase in both fall prevention strategies with more screening. Prevention programs have risen over the years towards both elderly and dementia populations. Currently in general people only know that those with dementia have a higher risk to falling, but not about their capability to positively respond to fall prevention methods. Evidence shows an ability for those with dementia to comply with interventional measures such as, "multifactorial intervention including modification of gait and balance, medication, environmental factors and cardiovascular risk training programmes to improve physical function and flexibility assessments." (Shaw, 1260). In addition, after 16 weeks of physical training some of those with dementia increased their mobility abilities.[9]

2.2　FALL PREVENTION PROGRAMS

2.2.1　Public Programs of Reference

Over the years of research people have shared views on some valuable recommendations for further fall reduction programs. Beyond just the proven effective physical training programs, researchers have increased data regarding the side-effects of environmental changes. Many studies have indicated that although an environment, like an Alzheimer's specific unit, can medically pass as the safe it could still prove more unsafe for those with dementia because of the effects of entering a previously unknown location. In addition, continuing the interventions towards medication and proper pharmaceutical usage will remain a reliable method. These are some opportunities to progress further towards greater safety for the dementia-stricken community.

Acknowledging the startling fall rates and their extravagant costs, the federal government used the Centers for Medicare & Medicaid Services (CMS) reimbursement payment system to incentivize physicians and health care providers to include fall prevention methods as part of procedure. The new 2019 Merit-Based Incentive Payment System (MIPS) carries on the two quality measures from the previous Physician Quality Reporting System (PQRS) and added on one more measure. A program that includes services required within a quality measure creates an easier entry of acceptance. Once approved, the association to their payment system pressures health providers to comply with implementation. CMS only began using PQRS in 2016; no prior program had ever included the use of physician quality data. Making payment heavily dependent on the physician creates delivery reform that opens doors for the use of quality related programs.[7]

In 2014, as many as 25% of elderly 65+ adults reported falling and 10% said it resulted in an injury. The CDC created a program to better manage modifiable risk factors. They developed

the Stopping Elderly Accident Deaths, and Injuries (STEADI) program. The initiative is for health care provider use as a guide for fall assessment and assistance. STEADI first says to screen the elder for their level of fall risk. Second, the provider is to assess the modifiable risk factors known as vestibular disorders, postural hypotension, vision impairment, foot problems, and medication adverse effects. CDC recognized that in 2013 53% of older adults took at least one medication with side effects linked to falling. Although other modifiable risk factors hold importance, medication management can potentially influence change in over half of the elderly population. Nurses using STEADI are directed to learn the SAFE (screen, assess, facilitate, and educate) Medication Review Framework.[10] These risk factors must all be acknowledged in the creation of any new fall prevention program.

Implementing just one intervention has the potential to prevent between 9,563 to 45,164 medically treated falls, heavily dependent on the number of people eligible. Dementia sufferers may need to refrain participation with some programs that go beyond the scope of their cognitive or physical abilities. From fall reduction can yield a decrease in annual direct medical costs by $94 to $442 million. In addition to medication management, other interventions posed to bring large fall reduction to the elderly. Modification of the patient's environment by an occupational therapist adding a potential 38.2 million person reduction or a 16.7 million person reduction through utilization of a vitamin D supplement.[11] From either, one interventional method or a combination, the results hope to decrease falls to improve the quality of life for each individual.

3.0   PRELIMINARY STUDY & FINDINGS

3.1   EXPERIENCE ON CURRENT DEMENTIA FLOOR: PERSONAL CARE FACILITY 4TH FLOOR ANALYSIS

Graphical data has been assessed for the personal care's dementia floor since January 2016, their first full month of program implementation. The floor is secured to keep those of wander risk from living the premise. The staff on this floor have also been taught the "I'm Still Here" approach from the Hearthstone Institute. They too used to have the same issues that the Alzheimer's unit is currently experiencing. They implemented the fall prevention program in December of 2016 and immediately saw desired reductions in their fall rates. Below document the trends over time.

Figure 3.1 illustrates the extremely high fall rate the dementia floor was experiencing in the beginning of 2016. The program was just implemented, but the rates accounting for fluctuation do trend down. Changes can occur due to shifts in residents' needs. Through figures 3.2 through 3.7, one can see the continuous downward fall rate trend over the years. In addition, there is equality between the number of falls by shift illustrated in figures 3.4, 3.5, 3.6 and for frequent fallers seen in figure 3.3. The graphs show evidence that once implementing the program fall rates per 1,000 patient days went from above 40.0 down to 0.0 in December of 2018. Now those rates are staying consistent with those from research at a standard of 5.4 from a 12-month data span.[12]
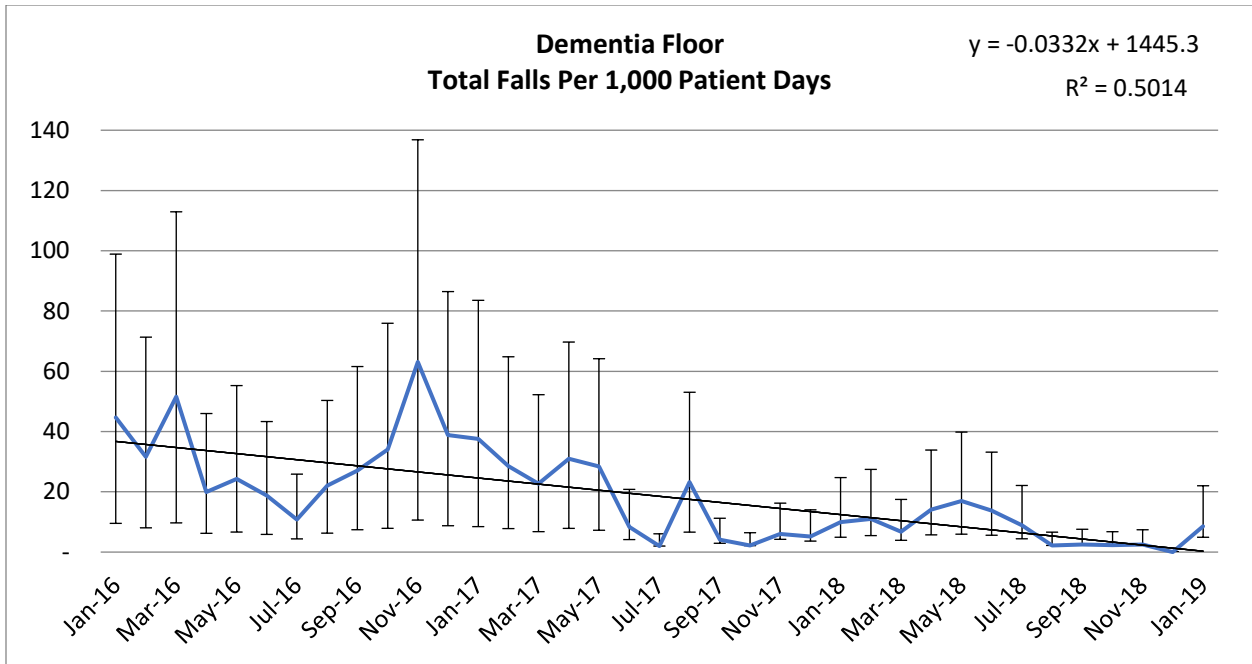
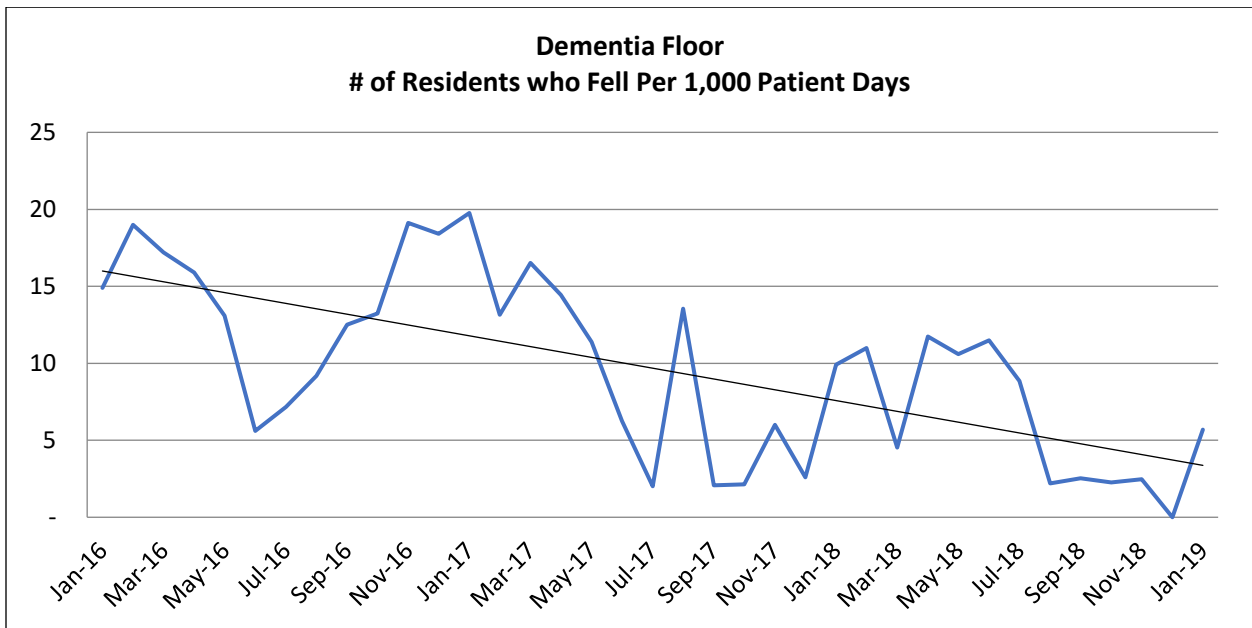**Figure 3.1 Dementia Floor - Total Falls Per 1,000 Patient Days**

Figure 3.2 Dementia Floor - # of Residents who Fell Per 1,000 Patient Days
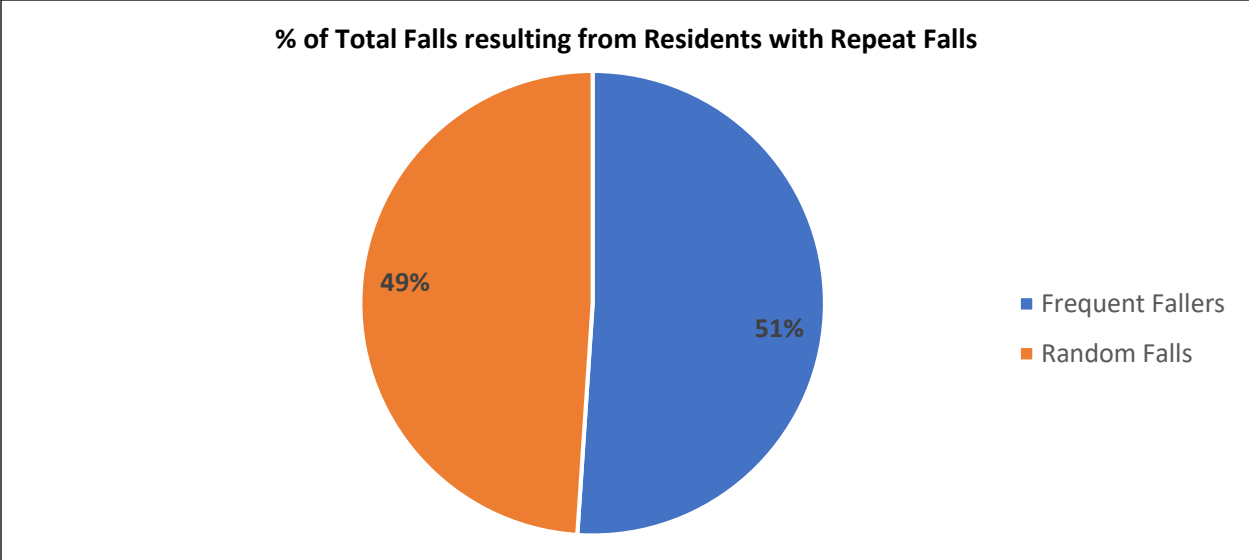
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Figure 3.3 % of Total Falls Resulting from Residents with Repeat Falls
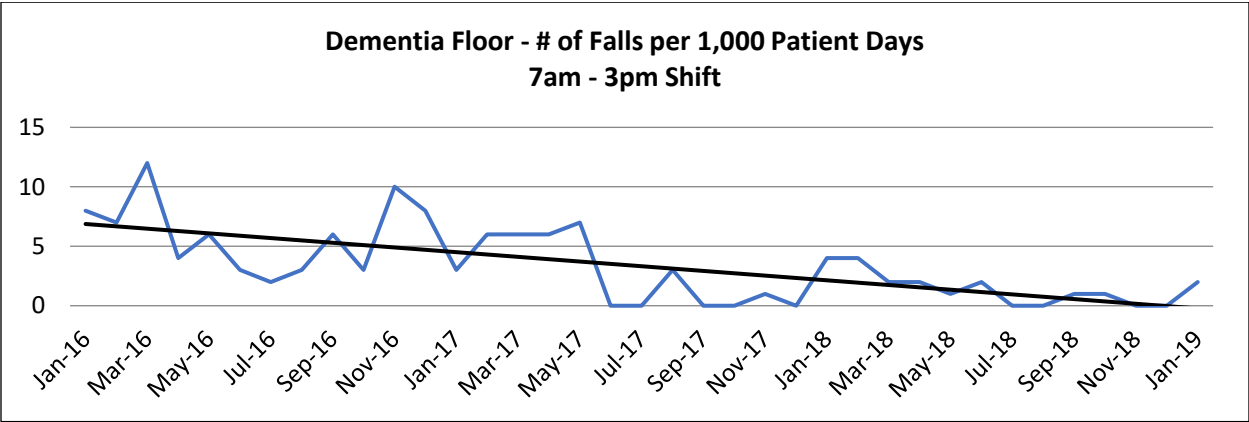

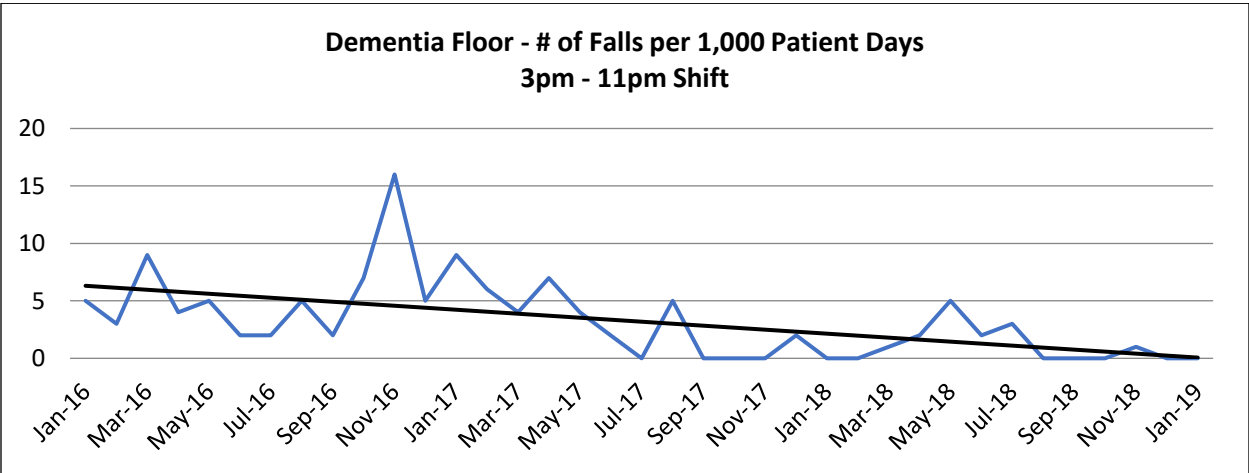**Figure 3.4 Dementia Floor - # of Falls per 1,000 Patient Days 7am-3pm Shift**

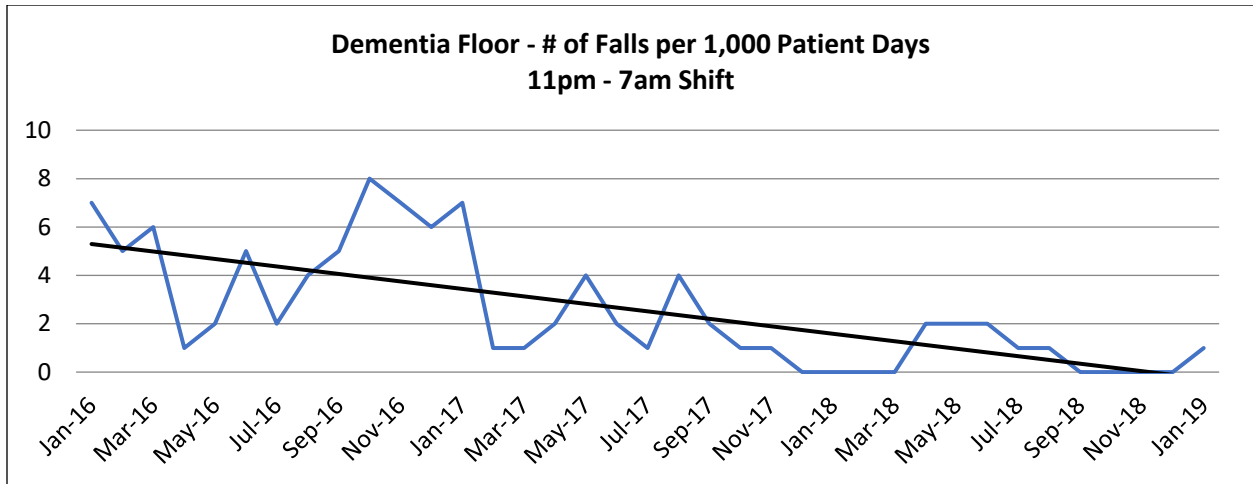**Figure 3.5 Dementia Floor - # of Falls per 1,000 Patient Days 3pm-11pm Shift**

Figure 3.6 Dementia Floor - # of Falls per 1,000 Patient Days 11pm-7am Shift
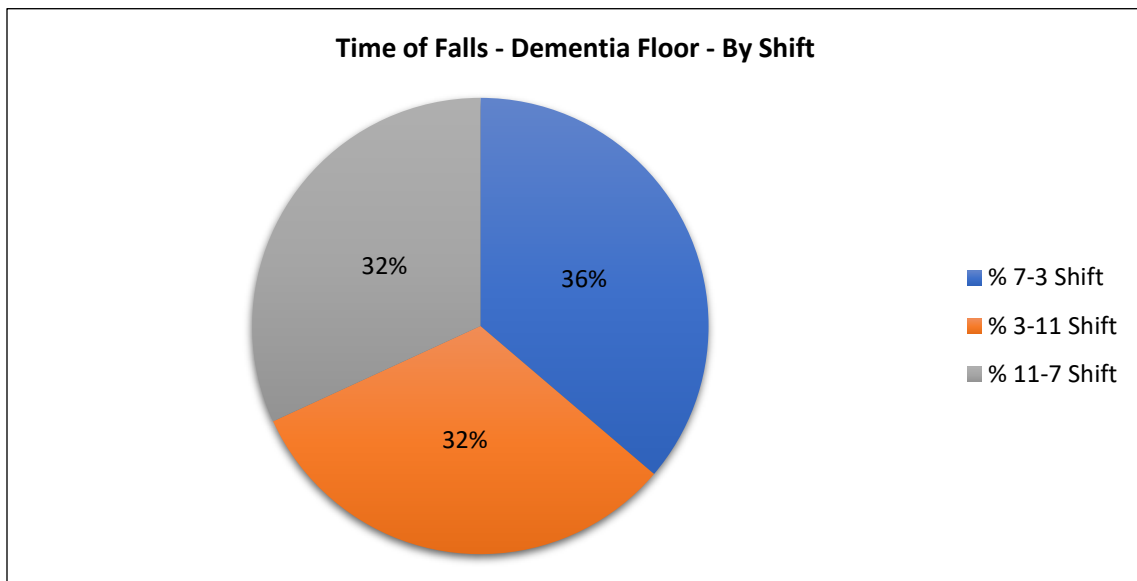

Figure 3.7 Time of Falls - Dementia Floor - By Shift

4.0   METHODOLOGY

4.1   THE INTERVENTION FOR ALZHEIMER'S ASSISTED LIVING FACILTY

In the Fall of 2016, a new administrator came to one of the Jewish Association on Aging's personal care facilities (PCF) and recognized a need to create a fall intervention program for the dementia floor. A team formed to research and collaborate to discover best practices to implement. By December of 2016 a program was created and initiated. Over time, the data proves their strategy as highly effective in dementia fall prevention.

Center for Disease Control (CDC) provides multiple methods to educate society on how to reduce fall risk in the elderly. Many of their tips include the ones that the PCF at the Jewish Association on Aging brought into practice. As previously mentioned, key areas of assessment include a form of physical or exercise therapy and reviewing medication for proper management. The program, STEADI was a result of the CDC proactivity from realization of their need for a prevention method. Within STEADI are a multistep medication management process of screen, assess, facilitate, and educate (SAFE).[10] The components of STEADI are easily seen within the customized one for the PCF dementia floor.

The first step is the use of a fall risk assessment tool form completed prior to entry into the facility. Based on an individual's answer the tool creates a score that indicates if they are of low or high fall risk. There are seven categories and within each a question with differently valued answers. The categories used are age, fall history, continence, medications, patient care equipment, mobility, and cognition. 0-5 points indicates low to no fall risk. 6-13 total points means a moderate level of fall risk. Then any score above 13 equates to a high fall risk. Throughout a regular intake

people may answer these questions, but having one specific form ensures that all necessary pieces of information are collected in an orderly manner.

Another pre-screen component is referring the incoming resident to physical therapy and occupational therapy through the home health coverage. The referral allows for the therapist to review the bedroom environment and create the best fitting space for the new resident. For many people this can be placing the bed on the wall of their non-dominant side to restrict them from getting out of bed that way. This one method acts as a barrier as opposed to a restraint.

Even though the interdisciplinary team of administrators, nurses, and therapists take ample time to prepare for the new residents, falls still occur. Therefore, the program also involves the use of both clinical and non-clinical post fall methods. Each category's success relies on proper education of all staff from care attendants to nursing directors. A collaboration of efforts is required to obtain the results desired from the post-fall component of the program.

On the clinical side, when an individual falls the immediate action after the resident is attended to is a team huddle. These post-fall team huddles act as a rapid root cause analysis. In this huddle they discuss what happened, why they think the fall occurred if not obvious, and a short brainstorming session if the problem is easily resolvable. In addition, whoever witnessed or was first to the scene of the fall will fill out a report indicating the resident, time, location, situation, if any injuries occurred, if it is a reportable event, and if the situation was preventable. Then a nurse from that team will create a new referral to the resident's home health provider requesting for the therapist to come asses the environment and the resident. Even though the environment was reviewed prior to entry the needs of the resident can always change warranting new accommodations necessary to increase safety. Some common changes are increased lighting, clear walkways or nonskid footwear. Other criteria to analyze are the resident's continence ability, an

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investigation into a need of equipment modification, and a thorough medication review. Many times, a switch in a drug can react poorly with a person for varying reasons.

The non-clinical post fall tools involve essential participation of non-medical staff. One example is the need for those in data analysis management to take the information from those fall reports and track the trends. Another component comes from the environmental assessment. If hazards are found than many times housekeeping or security must enter the vicinity to replace or fix specified items. Examples can include modifications to the mattress, wheelchair, or walker. A key player is the programming and activities department. When those conducting an activity are aware of the abilities of every individual, then they can better customize to their needs. Personal care and assisted living facilities try their best to personalize the daily care everyone receives. Lastly, the program recommends using a system to indicate those at the highest risk of falling. In order to follow resident's rights and maintain confidentiality the nurses currently will put a leaf cutout on the doors of those with a high fall risk. The sign serves its purpose without telling other residents or visitors the meaning. Now when rounding the floor aids and nurses know which bedrooms to keep a higher watch on.

The program comes with its core structure of policies to abide by that provide the standardization necessary to reduce the number of falls. From over two years of data, the PCF's dementia floor reflects the success of proper staff education and use of an elemental guideline. Now an effort has initiated to deploy the program throughout the continuum.

4.2   EVALUATION APPROACH

Prior to program implementation in December 2018, the mean falls per 1,000 patient days was 17.61. Since only a couple months of data have been provided, a method of projection of future reduction can be attained through assessing the dementia floor's rate of change over time. From the valuable data accumulated over three years a linear regression model was used to find the estimated overall slope. Identifying confidence interval-based variance in the data trends is important, especially with the amount of noise occurring over the months.

The formula took the number of falls per 1,000 patient days from the start of the first full month of the program in January 2016 until the most current input of data for January 2019. The first regression output estimated overall slope on the dementia unit for the entire 37 months at -0.03, as seen in equation of figure 3.1. Then that regression was looked at on a monthly basis and outputted an estimated overall slope of -1.01, which illustrates the reduction amount each month for the number of falls per 1,000 patient days. The 95% confidence interval for the dementia floor is (-1.36, -0.67). The confidence interval sheds light onto the visible large and small variances occurring at different points within the data. Using the information from this regression model, the twelve-month projections for the Alzheimer's ALF can be estimated.

5.0   FINDINGS

5.1   PRE-INTERVENTION TRENDS

In October of 2017, the Jewish Association on Aging opened the doors to their new Alzheimer's Assisted Living Facility (ALF). They are one of the few ALFs in southwestern Pennsylvania. The former skilled nursing unit had been completely redone to fit both the regulatory standards and integrate the use of a dementia specific approach called, "I'm Still Here". Dr. John Zeisel founded the Hearthstone Institute that utilizes this "I'm Still Here" method throughout multiple facilities in the Northeast area of the United States. The concept bases its theories on the fact that although many cognitive functions diminish over time, the person still has internal feelings and desires. Through specific types of activities and environments these individuals can continue to flourish in the ways that remain capable.

The initial opening took place on the first half of the unit allowing for 15 residents to enter the facility. That population had more people with late stage Alzheimer's and lower mobility. Not until phase two opened in May of 2018 did a true indication of fall frequency come to light. Those who entered in phase two encompassed many more mid-stage Alzheimer's residents who had a higher degree of mobility and therefore a heightened risk towards falling. Prior to phase two opening, the need for a fall prevention program did not rank as highly as other priority areas. Then once the second half opened and the population almost double to the full capacity of 30 residents, the issue quickly became problematic.

Nursing and administration knew an intervention needed to occur soon in order to maintain the level of quality they desire to obtain within the facility. Based off incident reports, the data

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could track back to the first month of occupancy to analyze the monthly fall trends. The tracking tool was first used for the interventional fall program implementation at one of the Jewish Association on Aging's PCF's dementia floors.

Below the trends are shown and stratified based on shift, over 1,000 patient days, and frequently falling residents. The Knowledge to Action (KTA) framework used during a study on reducing falls for people with dementia and their caregivers can help create key performance indicators to evaluate average fall rates. During active use of KTA falls came to a value of 5.4 fall per 1,000 patient days, which was higher than their initial baseline data of 3.86 falls per 1,000 patient days. The increase of fall rate post implementation of KTA is most likely due to proper reporting.[12] Figure 5.1 represents the current trends of the Alzheimer's unit fall rate per 1,000 patient days with even their lowest monthly rates way above those of the KTA study. The average falls per 1,000 patient days, prior to the first full month of program implementation, from November 2017 through November 2018 is 17.61 falls per 1,000 patient days.

When following these trends there is value in understanding how many of those who fell are frequent fallers. Figure 5.2 elaborates how many people per 1,000 patient days fell over the course of the months. Those on the Alzheimer's unit are quite consistent to the actual number of total falls. Therefore, the number of frequent fallers is about 55% of total falls as indicated in figure 5.3.

An important method for program evaluation is to understand if there is a concentration of falls during certain shifts. Figures 5.4, 5.5, and 5.6 show the fluctuations of fall rates between the three different shifts. Recently for the Alzheimer's facility, figure 5.4 shows how 7am to 3pm shift has seen an increase in the number of falls. These evaluations allow for a better understanding of nursing needs, training, or standardization. For ease of view the fall rates of the different shifts

over the course of all the months can be seen in Figure 5.7. The monthly graphs can help to pinpoint specific months of issue to evaluate what may have impacted those changes. These are all highly necessary components of data in order to properly implement and sustain the dementia fall prevention program.
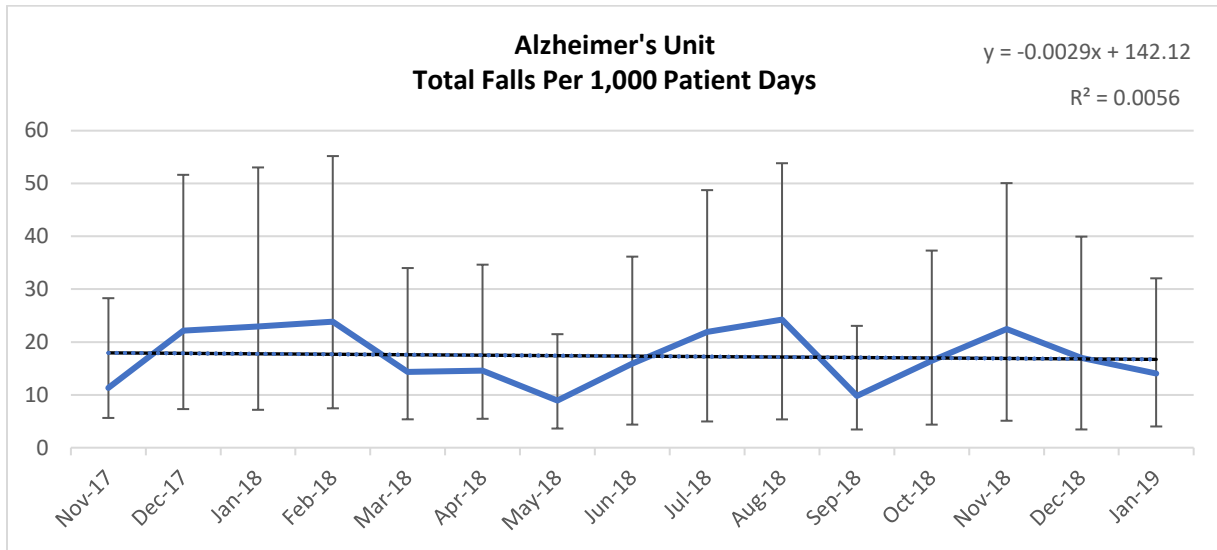

Figure 5.1 Alzheimer's Unit - Total Falls per l,000 Patient Days
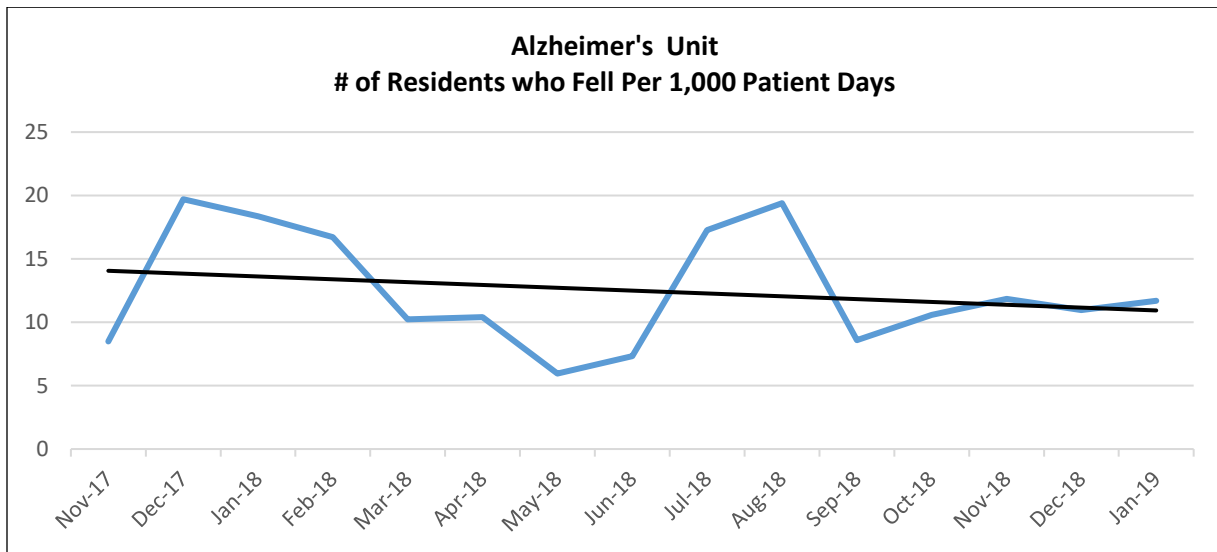

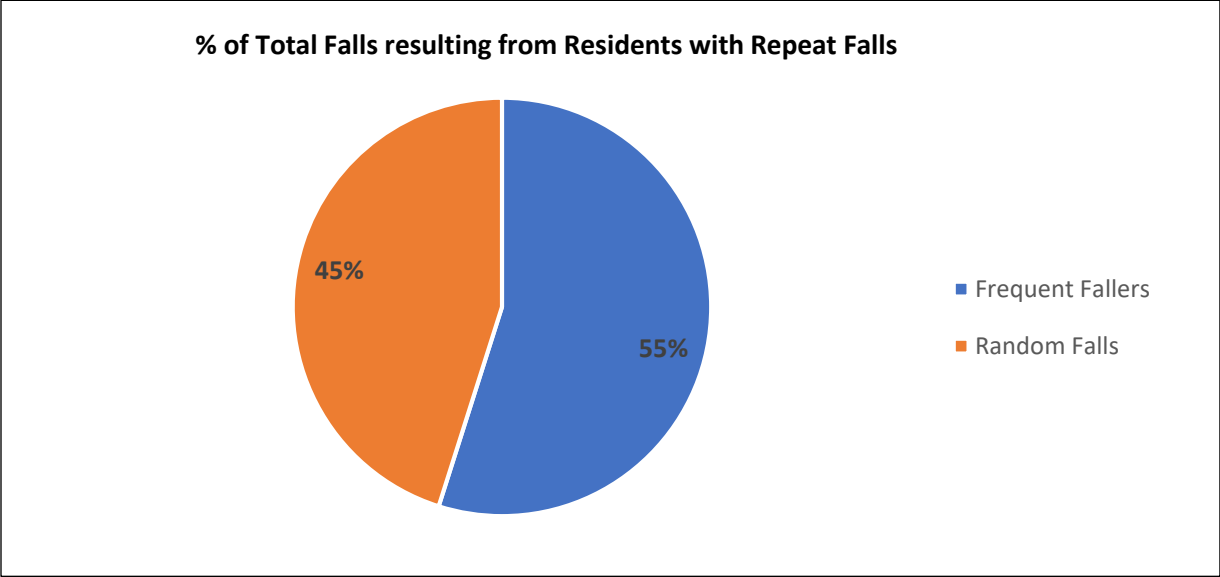**Figure 5.2 Alzheimer's Unit - # of Residents who Fell Per 1,000 Patient Days**

Figure 5.3 % of Total Falls Resulting from Residents with Repeat Falls
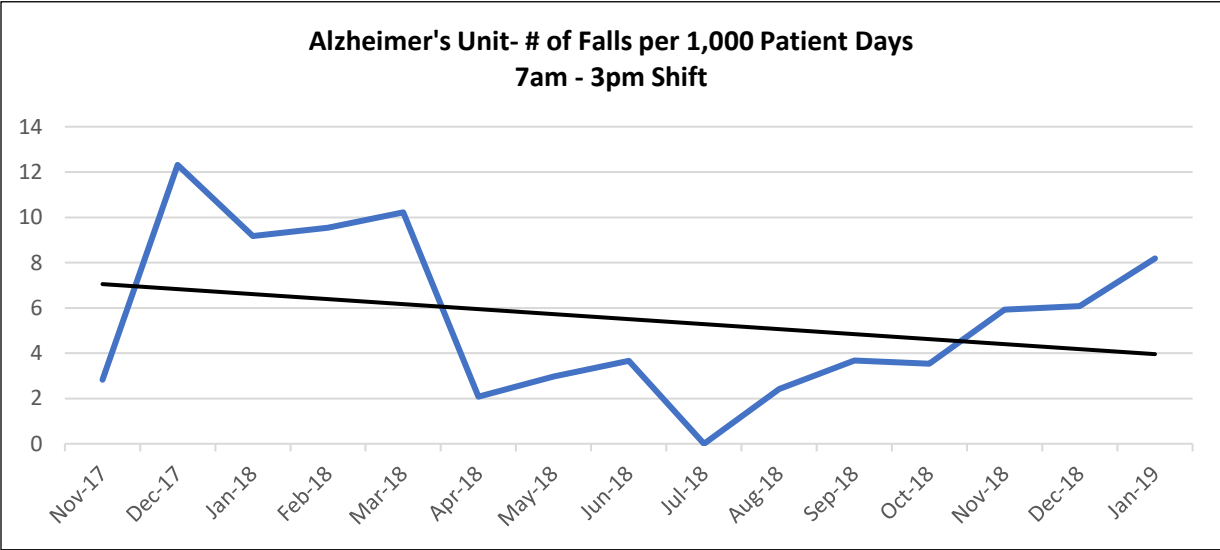

Figure 5.4 Alzheimer's Unit - # Falls per 1,000 Patient Days 7am-3pm Shift
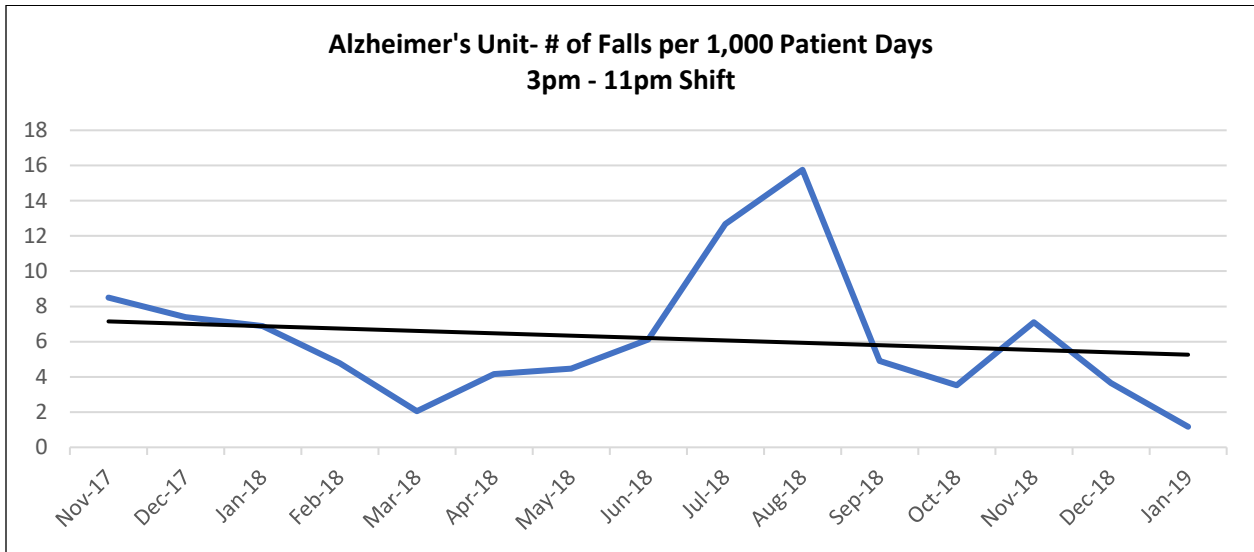
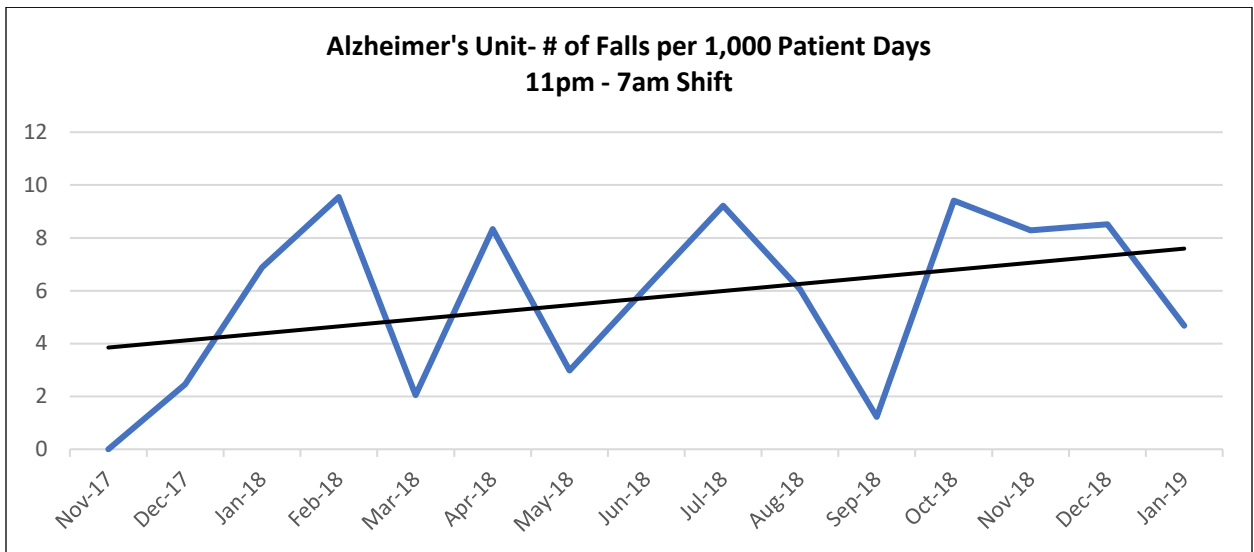**Figure 5.5 Alzheimer's Unit - # Falls per 1,000 Patient Days 3pm-11pm Shift**

Figure 5.6 Alzheimer's Unit - # Falls per 1,000 Patient Days 11pm-7am Shift
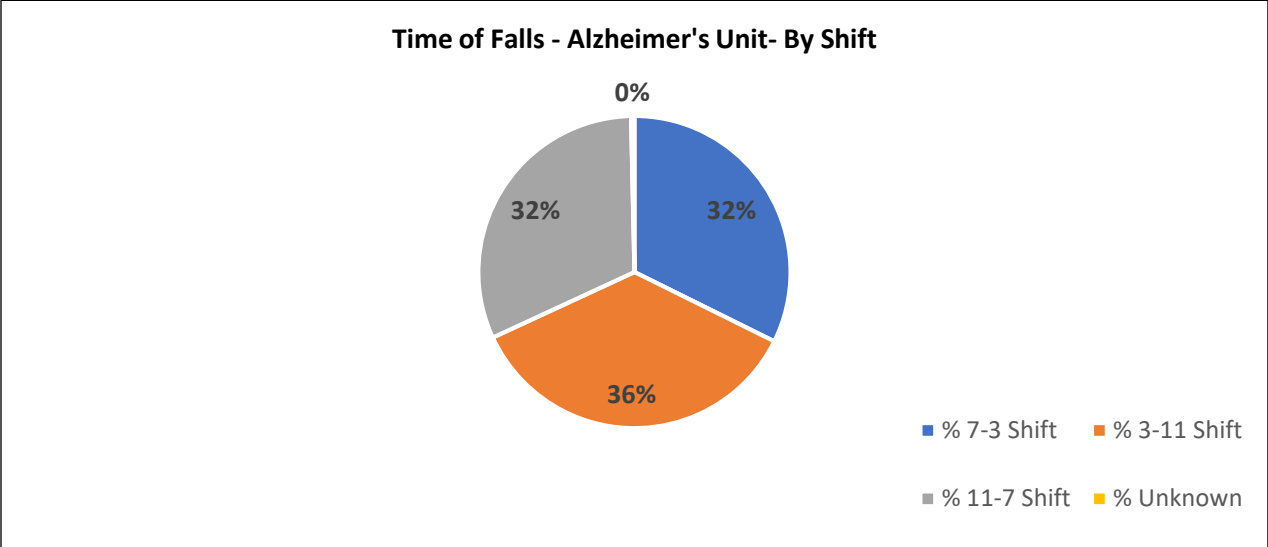
Time of Falls - Alzheimer's Unit- By Shift

Figure 5.7 Time of Falls - Alzheimer's Unit - By Shift

5.2 PROJECTED TRENDS

Taking the average of number of falls per 1,000 patient days prior to implementation at 17.61 and adding the slope of -1.01 from the linear regression model, the first month of change would result to 16.60. Repeating this equation over the course of 12 months using the preceding month's result, indicated that one year of programming would reduce the rate to 5.47 falls per 1,000 patient days. Next, there remains the need to evaluate the high and low variance that can occur, which is found from the 95% confidence interval values. Once again, 17.61 falls per 1,000 patient days will be added to -1.36 and multiplying by 12 months, the estimated year high rate change is 1.31 falls per 1,000 patient days. Also, taking the 17.61 falls per 1,000 patient days and adding -0.67 then multiplying by 12 months, the projected year low rate change is 9.62 falls per 1,000 patient days. Since the p-value from the regression model is below 0.05, the assumption can

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be made that there is a strong relationship between the independent variable of falls and the dependent variable of patient days.

6.0   DISCUSSION

The focal recipient of the program is the newly opened Alzheimer's unit due to their recently high trending fall rates. Administration thought the best solution would encompass integrating a fall prevention program that they knew provided them success at another one of their facilities. The data analysis side started prior to other components as it was a means to emphasize the issue at hand.

The implementation of the program has been split up to accommodate starting some additional processes and a notable change in management. Formerly one person filled both the director of nursing and administrator role. Now the position has been divided into two parts in order to provide adequate time towards both duties. Regarding specific fall prevention changes, three efforts have started. Two come from the program specifically and another is a commonly used daily activity that helps collaborate streamlined care in all aspects. First, they implemented the post fall team huddles. Prior, if someone fell, staff would assist them and move on. Now the team on duty comes together to converse about the event and reflect on their strengths and weaknesses of care. Second, they now review the mobility of the person who fell. A noticeable change in one's gait can act as a predictor of future falls and indicate modifications may need to happen in their environment. Lastly, from beyond the program, the Alzheimer's unit now does a daily morning interdisciplinary stand-up. The short mandatory meeting allows for the day nurses to have a set time to discuss any changes seen in residents or issues on the unit to administration and other team members. Although, the program does not entail this component, it is vital to strengthen overall communication for any facility.

Over time, the fall rates should decrease due to the implementation of the dementia fall reduction program, a division of the two leadership roles, and daily meetings to enhance communication. In a post one-year evaluation better statistical significance can act as key evidence towards the program's effectiveness. External influences can alter those conclusions, such as a shift in the populations need dependent of what level of Alzheimer's the majority is at. Also, properly educated consistent staffing is a must to ensure the program is followed correctly. Success is desired, but not always guaranteed and outside factors can easily influence results.

The projected 12-month change based on the chosen methodology would reduce the falls per 1,000 patient days from 17.61 pre-intervention trend to 5.47 post 12-month intervention trend. The 95% confidence interval variance for 12 months would assume a high rate of reduction as 1.31 falls per 1,000 patient days and the low rate as 9.62 falls per 1,000 patient days. The large variation results from many external factors outside of the program's control. Those factors include, but are not limited to the following. First, the resident population acuity level can vary greatly both as they age in the facility and when new residents enter. Second, the level of turn-over for staff can increase the need of both education and then the rebuilding of trust necessary for the program teams to work effectively. Lastly, the number of residents to staff ratio can fluctuate depending on if the facility is at capacity level of 30.

In addition to external factors, there are assumptions and limitations made with these projections, both regarding the data and for the program implementation. First, the consistency of a wave pattern seen across the months of falls data shows that there is dependence in the data, but for the analysis of this paper that dependence was ignored. Second, since the variability of the data does not remain equal over the course of time one must assume there is heteroscedasticity occurring. Those are the core assumptions regarding the statistical component.

The other factors that could influence that data reflect the program and it's involved parties. One must acknowledge that the phase one population who resided from October 2017 through April 2018 had a much different level of need than the phase two group that entered in May 2018. First, one assumes that a higher acuity level will lead to less mobility; therefore, easier for staff to watch the resident who remains in one location. The phase one group came to the facility already at a later stage of their Alzheimer's illness. Between having half the number of residents and the fact that they were much less mobile could have led to a statistical difference in that population than those in phase two. Meaning the program's effectiveness taken from the 6-month mean fall rate of phase one could show significantly different year-long program implementation results, if no second phase entered. The data analyzed within this paper merged the two populations together in order to gain as much information as possible. Inferring, the data risks being skewed by having two different acuity level groups viewed as one, due to their residence within the same facility. In addition, even though a person enters with the ability to move independently that skill could decrease over the course of time. Second, that analysis presupposes that the director or nursing, the charge registered nurse, and all staff at the facility will buy-in to the use of this program. A noticeable difference between daylight (7am-3pm) and night (11pm-7am) shift fall rates should be documented. Even if the program proves to reduce the fall rates over the course of one year, the shift when the most falls occur needs to be recognized. Regulations allow for staffing levels to differ during those two shifts. There are two visible differences, one is that the "I'm Still Here" programming only takes place during daytime hours to occupy and keep residents in central locations. The other factor is that the residents sleep with closed doors meaning that the fewer employees during the night shift must use hearing over vision to notice movement from the bedroom fall alarms. Even so, once that alarm goes off a fall could have already occurred, no

matter the staff's response time. Program modifications may need to take place dependent on the shift time. Lastly, the organization assumes that since the program proved effective on the dementia floor at the PCF it will be able to scale up on the Alzheimer's ALF which has double the occupancy and a larger physical space. The regulations although similar vary slightly between the two different facilities, which does allow an ALF the capability to care for people of higher needs.

7.0   CONCLUSION

Since initiating changes in the end of December 2018, administration has already begun to project goals and further implementation of other tools from the program. Once the fall prevention program has fully been put into action and enough time has passed, the desired outcome is to reflect the monthly fall rate reduction of -1.01 falls per 1,000 patient days, as seen at the first facility of program use. Another goal that stems from a decrease in fall rate is a higher patient quality and safety. When residents' personal mobility needs are accommodated for the care staff can focus into additional areas to create the best experience possible. Lastly, the administration hopes that the program will bring an increase in overall satisfaction scores from both families and residents. When people know their loved ones are properly attended to, they themselves become calmer and trusting of the facility. The Alzheimer's unit wants to embody a safe and well managed environment that feels inviting to all, even residents at a high risk of falling. Fruitful results can assist in the future scaling up of the program throughout the entire care continuum to help people at all stages of dementia.

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