SQUIRE REPORT

Using Technology to Improve Behavior Outcomes in Nursing Homes

A Care Coordination Quality Improvement Project

Quality Insights Quality Innovation Network

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Abstract (2,485 characters)

Background: Behavior issues have been a long standing problem in nursing homes. It is difficult to understand what triggers the adverse behavior, determine the most successful manner to calm the behavior, or prevent future behavioral problems. In the past, many nursing homes have inappropriately used antipsychotic medications to control behavior, but that practice is no longer acceptable. Nursing facilities need to find non-pharmacological methods instead. Uncontrolled adverse behaviors often lead to residents being sent to the emergency department (ED) or hospitalized.

Objective: To improve the incidence of behavior episodes and related outcomes in patients in a nursing home.

Design: A quality improvement project with an observational design and a convenience sample.

Setting: Nursing and rehabilitation center in south Louisiana.

Patients: All residents in the nursing facility.

Intervention: A new technology, Foresight, was implemented allowing real time documentation of adverse behaviors and strategies for redirection.

Measurements: Measures pertaining to the use of the intervention include the number of status checks using Foresight. Outcome measures include: (1) rate of adverse behaviors observed, (2) average number of ED visits per resident, (3) average number of hospitalizations per resident, and (4) percent of residents on antipsychotics.

Results: The process measures demonstrated a high use of the technology. The nursing facility realized a decrease in the number of behaviors observed as well as the number of residents admitted to the ED. The average number of hospitalizations rose from pre-intervention to post-intervention measured time periods, but these results may warrant further investigation. The nursing facility lowered its use of antipsychotic medications, which has been an ongoing goal.

Limitations: This was a convenience sample with no control group. Limitations may exist in some of the data, such as ED and hospitalizations, since it was primarily based on text matching.

Conclusions: The use of Foresight proved beneficial to the nursing facility. They experienced a reduction in adverse behaviors observed as well as a decrease in the rate of ED transfers and antipsychotic use for their residents. They have also experienced some auxiliary improvements in overall management of their patients. Staff reported positive feedback of the intervention and expressed an increase in job satisfaction with the use of this technology.

Introduction

Problem Description (3,700 characters)

Maison de Lafayette (MDL) is a nursing and rehabilitation center located in Lafayette, Louisiana. This 189-bed facility is family owned and provides short-term rehabilitation and/or long-term care. The facility is divided up into individually named halls or "neighborhoods." MDL is progressive in its care of patients and strives to promote quality. Behavior issues have been a long standing problem in nursing homes, and MDL is not immune to the consequences of poorly controlled adverse behaviors in its residents. MDL thought if residents' behaviors could be managed and controlled in the presence of staff, then it could expect that behaviors would be reduced at other times as well. This could result in several positive outcomes.

Resident readmissions to the hospital, and overall hospitalizations, are also of great concern for MDL. The federal government has been penalizing hospitals since 2012 for high rates of patients returning within 30 days of discharge. But now, nursing homes (NHs) are also held accountable for hospital readmissions. Starting in October 2018, skilled nursing facilities (SNFs) with high re-hospitalization rates will be penalized, with the Centers for Medicare & Medicaid Services (CMS) withholding two percent of Medicare reimbursements and redirecting some of those funds to higher-performing facilities. [1] MDL's readmission data, as reported by Quality Insights, shows overall readmission rates for skilled patients who were in the facility between the time of the hospital discharge and readmission within 30 days after the initial hospital discharge. This information includes a year of rolling data and was reported in the ending quarters. The data for MDL compared to the state average is shown in **Table 1**.

MDL's rates were below the Louisiana average SNF rates for each quarter. It should be noted that the denominators included in the calculations for MDL ranged from 18-33, with only one quarter having more than 30 patients.

Data related to antipsychotic use also demonstrated good performance when compared to the state or national average. For Quarter 3 of 2017, MDL has a rate of antipsychotic use of 12.7% compared to the national average of around 15%.

CMS assigns each nursing home facility a publically reported star rating, ranging between 1-5, according to the quality of care and services it provides to its residents. MDL's overall star rating is a 4. The three areas measured along with the individual scores are: (1) health inspection rating–5, (2) staffing rating–1,

and (3) quality measures rating–4. The quality rating report measures results for short-stay residents and long-stay residents. There are a total of 24 measures encompassing several aspects related to quality care. Some of those measures report the percentage of residents who have experienced a hospital readmission or ED visit as well as those who received an antipsychotic medication. According to the most recent report for Q1 2018, all of the measures related to readmission or antipsychotic use indicate MDL's rates were below both the state and national averages with one exception. Of the percentage of short-stay residents who were re-hospitalized after a nursing home admission, MDL had a rate of 22.1%. The state and national averages were 24.7% and 21.1% respectively. The area with the most opportunity for improvement according to the CMS star rating is staffing. MDL had a low staff-to-resident ratio as reported during their most recent health inspection. It was below the state and national averages for registered nurses (RNs), licensed practical nurses (LPNs), certified nursing assistants (CNAs), and physical therapy staff.

Available Knowledge (5,019 characters)

In the United States, there are 16,000 nursing homes (NHs) with 1.7 million beds and 1.4 million residents. Most NH residents are over 65 years of age–70% are female, 85% are Caucasian, and 50% are widowed. Nearly 14% of older adults aged 85 years or over in the United States live in a NH.[2] Statistically, the most common reason that older people live in nursing homes is due to some type of disability with activities of daily living (ADLs). In addition to physical problems, behavioral health conditions are common in nursing home residents. At least one-third of nursing home residents have conditions leading to problematic behaviors. Communication problems are also common – almost half of nursing home residents have difficulty both being understood and understanding others. Dementia, a syndrome of several progressive disorders that erases memory and alters a person's usual way of interacting with the world, is usually one of the most prevalent mental problems in NH residents. It affects over 50-70% of residents.[3] NH residents with dementia experience more decline in ability to perform daily activities than cognitively intact residents and are dependent on NH staff for assistance with these activities. Consequently, annual health care costs for NH residents with dementia are much higher than those for residents who are cognitively intact ($71,917 vs. $14,452).[2] One reason for these increased costs is residents with dementia are more likely to exhibit disruptive behaviors. These adverse behaviors, also known as "problematic behaviors," "disturbing behaviors," or "challenging behaviors," refer to inappropriate, repetitive, or dangerous behaviors that are disruptive to living and working in the

NH environment. These behaviors may include verbal and physical abuse, acting inappropriately in public, resisting necessary care, and wandering. While wandering, aggressive, and agitated behaviors are the three most common types of disruptive behaviors, other disruptive behaviors include repetitive vocalization, sexual disinhibition, delusions, and hallucinations. Residents often act out for a variety of reasons. It may be because they are in pain from a urinary tract infection but are unable to communicate their discomfort to staff, or are bored and become agitated, increasing the risk of a fall and injury.

Challenging behaviors of residents in NHs can have negative effects on the staff. Caregiver reactions to being victims of aggressive resident behavior (i.e., physical or verbal abuse) include anger, stress, fear, job dissatisfaction, and decreased feelings of safety. Although there is literature to substantiate the abuse of residents by NH staff, not much exists to report the abuse of staff by residents. A 2005 national survey of the work and health of nursing (Ottawa: Statistics Canada, 2006) found that 50% of nursing home nurses have been physically abused by a patient in the past year, and 48% have suffered emotional abuse by a patient. In the 2011 American Nurses Association Health and Safety Survey, 34 % of registered nurses ranked on-the-job assault as one of their three greatest safety concerns.[4] Too often, however, the repercussion for the resident is, the mental illness behavior is treated with psychotropic medications or restraint instead of behavioral modification methods.

Treating behavioral health disorders is often controversial. Many NHs have used antipsychotic medications to treat unwanted behaviors in their residents. While antipsychotics are approved to treat serious psychiatric conditions such as bipolar disorder and schizophrenia, they provide modest benefit for patients with dementia, and are not recommended. Behavior problems such as wandering, fidgeting, poor self-care, disrobing, and hoarding do not respond to medications. The Food and Drug Administration (FDA) has not deemed antipsychotic drugs an effective or safe way to treat symptoms associated with dementia–including dementia-related psychosis, for which there is no approved drug. In fact, in 2008, the FDA cautioned that these drugs pose dangers for elderly patients with dementia, making them more susceptible to falls and even doubling the risk of death.[5]

It is preferred to manage symptoms of dementia with a non-pharmacological approach. Non-pharmacologic interventions in patients with dementia are often focused on individualizing care and altering personal behavioral and/or environmental factors that may contribute to the inappropriate

behaviors. It is encouraged to train NH staff members to focus on resolving specific issues bothering the patients and not to automatically sedate them. A behavioral management program that complies with federal nursing home surveyor guidelines includes five components: 1) identification of problem behavior, 2) patient assessment, 3) specific systematic behavioral interventions, 4) documentation of outcomes for behavioral interventions, and 5) necessary adjustments of the program based on observed results.[6]

Rationale (1,465 characters)

Of course, there is pressure from many sides of healthcare to manage patient care and improve outcomes. NHs are now being scrutinized for their readmission rates as well as their use of antipsychotic medications. MDL has taken pride in its hard work to promote quality outcomes.

With government regulations, such as those to reduce the use of antipsychotics and reduce readmissions/hospitalizations, MDL looked very hard at ways to train staff to individualize care for residents with dementia and other behavior disorders. The facility explored the use of Foresight, a behavioral healthcare delivery and tracking tool. It is a web-based software and analytic platform that empowers care staff to optimize behavioral outcomes for patients. It equips the caregivers with technology to assist them in identifying specific patient behavior patterns, understanding the person behind the symptoms, and collaborating to find solutions. Foresight uses predictive analytics to predict when problems were likely to occur before they started and before they escalated. It also provides the nursing home with data to improve their behavioral health tracking, trending, and staff education. MDL expected a reduction in behavioral problems and related hospitalizations, staff burnout/turnover, citations/fines, litigation, etc. They also expected it to improve the resident's quality of life and assist MDL in further achieving its goal of providing person-centered care.

Specific Aims (483 characters)

MDL expected several areas to improve with the use of Foresight. Specific outcomes targeted and measured included:

1. Number of adverse behaviors observed
2. Average number of ED visits per resident

3. Average number of hospital admissions per resident
4. Percentage of residents on antipsychotics

An additional and important result was staff satisfaction which is often indicated by staff turnover. MDL did not directly measure staff turnover, but monitored it for changes and trends.

Methods

Context (1,049 characters)

Prior to the implementation of the intervention, MDL identified a team to oversee the process. This team consisted of members of administrative staff, nursing staff (including RNs and LPNs), CNAs, and Mark deClouet, representative for VisibleHand®, which is the developer of Foresight. The team met on several occasions to determine the best process for implementation. The plan was to perform a rapid cycle improvement and roll out the intervention on a limited sample size for a couple of months. It is often considered best practice to test a change idea on a small scale to see how it works, minimize the risks of potential failure, and learn how to adapt the change as needed. MDL chose a hall named Barbara's Neighborhood as the best place to implement the intervention. They intended to use Foresight in that area for two months while meeting regularly with the team to discuss successes and barriers, making changes as needed. If no limiting barriers existed after that time, the intervention would then roll out to the entire facility.

Intervention (2,164 characters)

As previously stated, the intervention involved the implementation and use of a behavioral healthcare delivery and tracking tool named Foresight. It is a web-based software and analytic platform used on a mobile handheld device. The intervention requires staff members, such as CNAs, to use Foresight to perform status checks on the residents at MDL. In the initial phase of implementation, the status checks were required every two hours, but changed to every four hours when the intervention went facility-wide. The documentation captured by Foresight includes date and time, location of the resident, type of behavior observed, and techniques offered and attempted for behavior change. If a resident is demonstrating signs of challenging behavior, the staff member will document the behavior in the

handheld device, which in turn, will prompt the user to try various techniques to calm or change the behavior. These techniques vary and may include changing the environment or offering redirection. The staff member documents the results of the strategies attempted. Outcome results are tracked and are part of the Quality Assurance Performance Improvement (QAPI) program. As needed, staff had the ability to print notes for placement into the hard chart, or they could scan to electronically file into the EHR.

With the collection of this type of data, staff members can distinguish which behavioral modification methods work with specific patients. They could track and trend several aspects related to behavior such as time of day it occurred or even if the behavior seemed to occur when the resident was in the presence of a certain staff member. The tool also offers additional benefits to administration of the NH. MDL's director of nursing stated they can ensure that staff members were where they are supposed to be and were attending to patients as expected, since the charting is electronic. They can also determine which staff members may have increased success of negotiating challenging behaviors. Once identified, staff members with success in managing behaviors can be asked to mentor others who have greater improvement opportunities.

Study of Intervention (818 characters)

As with any type of improvement intervention, success can only be attributed to the intervention if the pertinent components, including the expected process and outcomes, are identified and measured appropriately. Mixed methods of evaluation were to be used to assess the effectiveness of this intervention. In the beginning, MDL met with Mark deClouet of VisibleHand® and Donna Wascom of Quality Insights to discuss the study of the intervention. It was at this meeting the parties decided on which measures and data components would best demonstrate the effectiveness of the intervention. Much of the data was to be gathered and reported from the Foresight software, which allows data exchange with the electronic medical records (EMR) of MDL. Some data, such as staffing levels, were to be reported by MDL.

Measures (2,605 characters)

The team knew it was essential to have measurements in place, including both process and outcome measures. One of the major barriers with any new intervention implementation is staff buy-in and comfort with the new process or technology. MDL and VisibleHand® wanted to ensure the platform was being used regularly. They kept track of the number of times status checks were being performed with Foresight. Since the intervention was implemented initially on one unit then spread across the facility, this number was projected to increase dramatically after the first two months. Several areas of improved outcomes were also expected. Outcome measures include: (1) rate of adverse behaviors observed, (2) average number of hospitalizations per resident, (3) average number of ED visits per resident, and (4) percent of residents on antipsychotics. These outcome measures would be reported through Foresight software. Resident hospitalizations were chosen in lieu of hospital readmissions simply because it was an easier measure to readily capture. This was especially true for pre-intervention data. MDL made the assumption that if hospitalizations were reduced, then readmissions would be reduced as well.

Using Foresight software, MDL collected data on its nursing home residents between January 2017 and February 2018. Six pieces of data were collected on each resident, as defined in **Table 2**, which lists the measures and their component numerators and denominators.

MDL submitted its data to Quality Insights on a monthly basis, which was processed and evaluated using time series graphs and trend analysis to determine intervention efficacy. A findings report of this aggregate, community-level information provided crucial feedback to the organization. Negative trends in the data would spur a Plan-Do-Study-Act (PDSA) cycle to determine root causes and identify appropriate corrective action. As such, Quality Insights served as a resource for recommending necessary improvements identified through analysis of this data.

MDL believed staffing levels was another important area. Staff turnover can have a negative impact on the staff-to-resident ratio in the nursing home. MDL hypothesized less staff turnover due to the increased autonomy of the staff since they are more involved in the decision making process of managing their residents. Joe McPherson III, administrator of MDL, theorized, “The more power you give them, the harder they will try.” They did not put a process in place to collect this data; however, they were attuned to the amount of staff turnover experienced.

Analysis (1,558 characters)

Quality Insights collected and analyzed intervention data monthly from MDL beginning in September 2017. At the time of writing this paper, data was collected through February 2018.

Quality Insights evaluated five measures (one process measure and four short-term outcome measures) by graphical analysis. The process measure was used to gauge the reach of the intervention. Three short-term outcome measures were used to gauge the likelihood that the intervention would be effective in reducing the readmission rate, which is the long-term objective. The additional outcome measure was the use of antipsychotic medications.

Quality Insights used a time-series graph of each measure to monitor interim progress and evaluation. The graphs produced for this paper used SAS/STAT software, Version 9.3 of the SAS System for Windows, Copyright 2002-2010, SAS Institute Inc., Cary, NC. Ordinary least squares regression was employed to calculate and plot a trend line (best-fit line) through the data for each measure. The slopes of the trend lines were then assessed from the graph. Improvement was indicated by upward trending lines (positive slope) for measures where higher values were desirable (and downward trending lines for measures where lower values are desirable). Flat trend lines indicated no improvement, except in cases where the overall measure value was greater than 90% (where higher rates desired), or less than 10% (where lower rates desired). Lines trending in a direction opposite to that desired indicated the process or outcome had worsened.

Ethical Considerations (675 characters)

Involving providers, patients, and families in quality improvement work presents potential issues with the security of confidential information. As appropriate, personal health information data was de-identified and Maison de Lafayette and Quality Insights followed all Health Insurance Portability and Accountability Act (HIPAA) regulations for privacy of personal health information. The confidentiality and privacy of the residents are guarded at the entity level.

All residents involved in the pilot received the medically-appropriate level of care. All medical professionals treating patients were licensed by the appropriate board as required in the State of Louisiana.

Results (5,395 characters)

In the first couple of months post-implementation, the results demonstrated Foresight was being used often. While this was desired, it wasn't necessarily expected. Mark deClouet stated when Foresight is initially implemented in a facility, they typically see a dip in the usage rate shortly afterwards. This can be seen at various times but is especially true on weekends. MDL's usage rate was steady at between 1,200 and 1,500 uses per week, which is the highest that Foresight had seen to date with new implementations. The overall usage was determined by the number of status checks done, and it was reported monthly as shown in **Graph 1**. This intervention's reach into the target population–residents of MDL-improved between September 2017 and February 2018 as demonstrated in **Chart 1**.

- **Process Measure M1:** The number of targeted patients ranged between 24 in September 2017 to 194 in February 2018. The number of status checks ranged between 5,359 and 37,410 per month, with a mean of 21,265. The average number of status checks performed per resident per month was 157.5.

As Foresight assisted staff in behavior modification, the rationale remained that adverse behaviors would decline over time. This would be a direct result of increased staff knowledge in the most effective ways to control specific behaviors of their residents. The vast data provided by Foresight included the number of behaviors observed. The easiest manner to demonstrate improvement in behavior was to calculate the rate of adverse behavior to the number of status checks on a monthly basis. Those monthly rates showed improvement as depicted in **Graph 2.**

- **Short-term Outcome Measure M2:** The average rate of decrease in the average number of behaviors observed per status check was 0.005 per month. The number of behaviors observed ranged between 15 and 217 per month, with a mean of 109. The average number of behaviors observed per status check was 0.005.

MDL staff gathered data related to ED visits and hospitalizations of the residents. They gathered this data on current residents, but also went back to pre-intervention months. Since manual chart reviews would have been too laborious, they chose to access the data using Foresight software, allowing it to search text in their EMR. Data for ED visits and hospitalizations were provided for 14 months, in which eight of those months were pre-intervention. The results were reported as pre vs. post using difference in differences as shown in **Charts 2** and **3**. The average number of ED visits per hundred residents fell from 4.39 during the pre-intervention period of January through August 2017 to 4.03 during the

intervention period of September 2017 through February 2018. The average number of hospitalizations per hundred residents rose from 6.54 during the pre-intervention period of January through August 2017 to 7.07 during the intervention period of September 2017 through February 2018.

- **Short-term Outcome Measure M3:** On average, there were 0.04025 ER visits per resident during the intervention period, compared to 0.04387 prior to its start.
- **Short-term Outcome Measure M4:** On average, there were 0.07066 hospitalizations per resident during the intervention period, compared to 0.06540 prior to its start.

As previously stated, reducing readmission rates is the long term goal of this project. There is currently not sufficient data available to determine the effectiveness of this intervention on that measure. Quality Insights will look at claims data for Medicare beneficiaries residing in MDL for the pre- and post-intervention period and compare that data. Unfortunately, we did not have mature data available in time for this report and will defer reporting on this measure until that data is available.

Use of antipsychotics in nursing homes is monitored by government agencies. It is best practice to only use these medications when it is deemed medically necessary. MDL has improved this area in the past, but they anticipated further improvement with the implementation of Foresight. Staff monitored monthly the percentage of residents on antipsychotics. The rates for these measures declined and are shown in **Graph 3**. The average rate of decrease in the percentage of residents on antipsychotic medications was 0.0031 per month. The number of targeted patients on an antipsychotic medication ranged between 20 and 27 per month, with a mean of 23.5. Overall, 13% of targeted patients were on an antipsychotic medication.

As previously mentioned, staffing is a very important component involved in nursing home quality. Obtaining and retaining quality staff is imperative for smooth operating performance. MDL anticipated lower staff turnover during this project, which would assist in maintaining a desired staff-to-resident ratio. Although there was no formal mechanism in place to monitor staff-to-resident ratio or staff turnover, it had been an ongoing problem, with most occurring in Barbara's Neighborhood. Abby Fontenot, assistant administrator, indicated she consistently had a high turnover of CNAs in that neighborhood prior to the intervention. She went further to predict it was probably close to 100%

turnover every month or two. She was excited to report that since inception of Foresight and through February 2018, that neighborhood has retained its full time day CNAs with zero turnovers.

Discussion

Summary (1,377 characters)

The use of Foresight had a significant impact on outcomes for the NH. Improvements were noted in several desired areas. MDL was very pleased with the staff acceptance and use of Foresight. They attribute much of the ease of implementation to thorough planning and training of staff. The CNAs seem to feel the increased charting is not a burden when compared to the charting detail that is available to them. They feel that they are a more powerful part of the healthcare team now. As expected, the number of adverse behaviors observed has been reduced, further signifying that behaviors are being better controlled. Person-centered care is more prevalent now since staff has a better understanding of their residents. This is especially true for those residents who are less verbal or less able to articulate their needs.

One short-term outcome that improved with the use of Foresight included overall ED visits per resident. With skilled nursing facilities now being held more accountable for their readmission rates, MDL is encouraged its rates will begin to see improvement. The hospitalization measure did not show improvement, however, MDL expects to analyze further data before concluding a direct relationship. They will look at their internal data as well as pre- and post- intervention readmission data provided by Quality Insights when it becomes available.

Interpretation (3,904 characters)

Although MDL was hoping for improved staffing morale, they were initially concerned with the increased labor involved with the intervention. Using Foresight required double charting efforts by the CNA. Upon implementation, the rate at which the staff used the tool quickly discredited this concern. They realized their hypothesis of “increasing the quality of life of the residents would make them easier to manage, and thus make the CNA’s job more enjoyable” seemed to be correct. When asked about her opinion of using this tool, one CNA stated how much she loved Foresight and how it has helped her so

much. She liked the fact that she can chart in "full detail" much better than she was able to do on the facility's computer. She feels this documentation paints a better picture and allows other staff, such as nursing, the ability to see the patient as she sees him. Overall, the CNA staff felt they had more power in the decision making process in managing the residents.

The enhanced information gained from the tracking capabilities of the software seemed profound in reducing the number of adverse behaviors. As described earlier, Foresight allowed staff to track several aspects of behaviors in residents, including type of behavior observed and modification therapies along with the associated outcomes. When the staff members identified adverse behavior from a resident, the member notated it in the device, which in turn, offered some evidence based strategies for redirection. The staff member further documented the success of the strategies attempted. Over time, staff became more aware of which interventions work for specific patients and which interventions to stay away from. This increased knowledge contributed to the decrease number of adverse behaviors observed.

As previously stated, the average number of ED visits per resident decreased. However, overall hospitalizations increased slightly from pre-intervention to post-intervention periods. Readmission reduction is the projected long term goal, but the facility had no mechanism in place at the time of this report to accurately capture that measure. They thought the data captured through Foresight would be useful in providing results that would substantiate the influence this intervention would have on reducing hospitalizations, which should also hold true for readmissions. However, the data did not show improvement. MDL was not overly concerned with this lack of improvement, since they understood this measure to include ALL resident hospitalizations, and the associated data had some limitations. While one would want to infer that a decrease in hospitalizations due to behavior issues would lead to a decrease in all hospitalizations, it may not necessarily be the case. MDL will dig into its internal data related to hospital transfers, specific to behavior, in order to determine the affect the intervention may have had on them. This data will not differentiate between ED visits and hospitalizations, but it should provide more relevant information. Nonetheless, MDL is still hopeful hospitalizations will be decreasing more in the future due to the use of Foresight. Not only as a result of behaviors being better managed, but also through the detailed documentation now available.

Antipsychotic use in nursing homes is an area that MDL has worked to reduce in recent years. Although they have made good progress in this area, they knew that managing behaviors non-pharmacologically was essential. They were impressed with the documentation of Foresight and the process it entails in prompting staff and suggesting techniques for behavior modification. The thoroughness of the staff in identifying trends in resident behavior along with success in managing it have assisted reducing the need for these types of medications. This was demonstrated in the data associated with this measure.

Limitations (928 characters)

Data that was provided by Foresight software via scrubbing the residents' charts in the electronic medical record (EMR) of the nursing facility had some limitations. The process of searching text involves identifying key words that are indicative of the outcomes measured. For example, hospitalizations include looking for "hospital" in the progress notes along with "send" or "sent" co-occurring, and ED visits included searches of "ER" and "Emergency Room." Undoubtedly, this would incur some false positives and false negatives, but Visible Hands and MDL felt that the estimates were pretty close, and they felt the variance would likely be uniform across all months. Additionally, the post intervention data for these two measures did not necessarily represent a reach of the intervention to all patients. During the first two months post implementation, the intervention only involved residents in one neighborhood, namely Barbara's neighborhood.

Conclusions (2,881 characters)

MDL has been very pleased with the overall improvement related to this intervention. Staff feels they are better able to provide person-centered care by being able to individualize care for their patients. They are better able to identify triggers to behavior, and this applies to both negative and positive behaviors. With the collection of this type of data, staff members could distinguish which behavioral modification methods worked with specific patients. They could track and trend several aspects related to behavior, such as time of day it occurred or even if the behavior seemed to occur when the resident was in the presence of a certain staff member. The tool also offered additional benefits to administration of the NH. MDL's assistant administrator stated they could ensure staff members were where they are supposed to be and were attending to patients as expected, since the charting is electronic. They became more aware of staff members who have increased success of negotiating

challenging behaviors. Those staff members with success in managing behaviors were often asked to mentor other members who had greater improvement opportunities. Reducing hospital readmissions is the long term goal of this intervention. Although the data related to overall hospitalizations as reported by Foresight did not demonstrate improvement from pre- to post- intervention, MDL feels strongly that further evaluation of this measure is warranted. They will further look into their internal data to distinguish hospitalizations and/or ED visits that occurred for behavioral reasons. The administrative staff at MDL also verbalized they predict a reduction in re-hospitalizations, especially as they become more aware of the many ways to use Foresight data. Abby Fontenot recounted a recent resident who avoided an acute hospitalization as a direct result of Foresight. This resident was having ongoing behavior issues and had become unmanageable. In the past, the NH would have transferred the patient to the local acute care hospital. This time, however, they recovered the data and notes from Foresight and had it assessed by a contracted nurse practitioner specializing in psychiatric care. The information reviewed was sufficient to allow him to make the determination that this resident truly needed transferring to a behavior hospital. Not only was this resident spared an unnecessary acute hospital admission, but rather was placed in a facility that was equipped to provide the "right" care. MDL feels this new process is just the tip of the iceberg in managing their residents, and the future is bright for increased improvement opportunities. They plan to continue using this technology, and would like to continue to monitor data with the possibility of expanding potential outcomes measurements as their knowledge of the technology increases.

Funding (254 characters)

Maison de Lafayette implemented this intervention without any special funding. Analysis of the data was performed by the Quality Insights QIN under the IDIQ base contract for the 11th Scope contract awarded by the Centers for Medicare & Medicaid Services 7/18/14.

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