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Prospectus for Improving Measure II Scores of *Hospice Visits when Death is Imminent* in the Hospice Item Set

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Abstract

Hospice is a valued service for patients who reach the end of their lives. Unfortunately, care can vary from agency to agency, especially as patients near death. To address these variances, the Center for Medicare Services (CMS) created a new quality measure pair to collect data on visit patterns by a registered nurse in the last three days of life. As part of this new measure pair, they also track a combination of at least two visits by a social worker, home health aide, licensed vocational nurse or spiritual counselor in the last seven days of life. A hospital-based hospice organization created a quality improvement project to address this problem and improve both parts of the measure pair, but special emphasis was placed on improving the second part, as initial data revealed the team met the goal only 41% of the time. Interventions were created to improve the outcomes. Standardizing daily workflow, improving communication and correctly identifying imminent patients were all aspects of care that were targeted. The results showed dramatic success, not only improving visit frequency patterns up to 80%, but also, importantly, there was a consistent and marked improvement in patient satisfaction scores. The data identified clear opportunities for further improvement and the project showed imminent patient visit patterns do impact patient satisfaction and need to be tracked by the hospice team each day to assure success.

Prospectus for Improving Measure II of the Hospice Item Set

Introduction

Improving and standardizing the hospice clinical workflow for patients nearing death directly impacts the end-of-life experience. Increasing the visits patients and their caregivers receive allows for greater opportunities for emotional support as well as important education on how to manage symptoms that may arise as death approaches. It also fosters a multidisciplinary approach to care, which helps to address the many issues that arise when someone dies. Hardwiring workflows help to improve the quality of care, especially in a home setting and it is in close alignment with most organizational priorities to provide a better dying experience (Center for Clinical Standards and Quality, 2016). Congress created the modern-day Center for Medicare Services (CMS) hospice benefit in 1982, after a long history of successful volunteer hospice practices (Center for Medicare & Medicaid Services, 2018). CMS envisioned the program would reduce healthcare costs and, at the same time, improve care at home, primarily for those with a terminal cancer diagnosis. After initial successes, the hospice benefit was extended to nursing facilities in 1986 (Mor and Teno, 2016), which resulted in a considerable increase in hospice utilization. Non-cancer patients enrolled, using the benefit for the first time. Chronic disease patients increased the average length of their hospice stay, creating new costs for Medicare. By the year 2015, hospice was a multi-billion-dollar business, with some 50% of all patients insured by Medicare electing the hospice benefit (Broyles, 2016). Although Shepperd et al. (2016) showed there is a direct benefit for patients who sign onto hospice in that they, by and large, stay out of the hospital and die at home, which does reduce cost, it became clear to CMS through data submission

(Medicare Program; FY 2019 Hospice Wage Index and Payment Rate Update and Hospice Quality Reporting Requirements, 2018) that variations in care were occurring. As the idea of dying at home gained mainstream appeal, new and unforeseen problems arose.

Problem Description

Hospice popularity continued to grow. As a result, according to Teno et al. (2016), with many seeing new business opportunities, hospice provider growth ensued nationwide to support the increase in demand for care. As death approached, providers were ready to accept new patients, but were inconsistent with their care. Plotzke et al. (2014) found, for example, in the last two days of life some 15% of hospice patients received no clinician visit. Wehri, (2016) also estimated up to 29%, three out of ten-hospice patients, received no visit on the last day of life. CMS assessments were more extreme, finding up to 42% of all hospice patients received no skilled visit in the last seven days of life (Medicare Program; FY 2019 Hospice Wage Index and Payment Rate Update and Hospice Quality Reporting Requirements, 2018). During the times when symptom burden and emotional need was expected to be the greatest, some hospices were simply not there for their patients or families.

New Hospice Item Set (HIS) quality measures were created in 2014 to address many of the care-related issues CMS saw in its data submissions. Initially focused on the aspects of care that occur on admission to hospice, HIS measured the nurse’s pain assessment, whether goals of care conversations were taking place, assessments for trouble with breathing, as well as opioid-related bowel management practices. Hospices have a financial cost associated with HIS submissions, in that they are required to submit HIS data to CMS regularly, or have their annual payment update (APU) reduced by 2% (Centers for Medicare & Medicaid Services, 2017). In 2017, HIS measures were expanded to include a new measure pair on discharge, called *Hospice Visits when Death is Imminent.* CMS would now measure the number of RN visits in the last three days of life (Measure I) as well as the number of medical social work (MSW), licensed vocational nurse (LVN), spiritual counselor (SPC) and home health aide (HHA) visits (Measure II) in the last seven days of life (Centers for Medicare & Medicaid Services, 2016). As one visit would be required to meet Measure I, at least two visits would then be required to meet Measure II. Knowing it may be difficult to predict imminence, CMS does not expect 100% on either score (Hospice Item Set Questions and Answers and Quarterly Updates, 2017). However, believing improved scores will translate to better care and patient outcomes, CMS requires all Medicare-certified hospices to participate and submit their visit data.

A hospice department, which is part of a large health care system, created a quality improvement project to measure and improve the HIS visit pair outcomes for both Measure I and Measure II as part of a strategy to boost patient satisfaction Hospice CAHPS® Survey (HOCAHPS) scores. A review of data for January 2017 showed the local hospice met Measure I only 74% of the time. Even more striking, the hospice met Measure II only 41% (n=34) of the time (see Appendix E). At the same time the overall rating of the hospice agency from HOCAHPS scores was as low as 72.7% (see Appendix I), below the 25th percentile of all hospices in the nation. The significance of this problem is that patient and families may not be getting the timely care they need, especially with non-nursing psychosocial and emotional support. As a result, the hospice may lose its competitive edge if satisfaction scores remain low.

Available Knowledge

Since the HIS outcomes for Hospice Visits when Death is Imminent for both Measure I and Measure II began data collection in April of 2017 by CMS (Centers for Medicare & Medicaid Services, 2018) there is limited evidence in the literature on best practices. The hospice PI project will help to address a gap in the current knowledge base. CMS built the new quality measure pair through ongoing monitoring of data submissions and evaluations of visit patterns. The PICO question used to search for current literature asked (P) where visit intensities are increased for hospice patients at the end of life (I), compared to the usual hospice practice (C) what would be the best clinician visit practices to reduce variation (O)? Literature search data was synthesized after utilizing CINAHL with the phrases that included *hospice, visits and service intensity.* The search was filtered for peer-reviewed journal articles published after 2010. The accepted studies were then rated as LIIIA using the *John Hopkins Research Evidence Based Practice Appraisal Tool* (see Appendix P) Results of the literature search are summarized in Table 1 of Appendix B.

Evaluating performance improvement, Gonzalo et al. (2017) assessed the effectiveness of having payment incentives to help increase visits by hospices. They identified some eye-opening disparities in the last seven days of service. For example, African American and Hispanic patients had no visit 39.2% and 34.6% of the time respectively. They also found patients who resided in a facility had no eligible RN visit 32.6% of the time. They suggested service intensity add-on payments would encourage better performance for improving visit scheduling. Unroe et al. (2017) also looked at the issue from the perspective of where the patient resided and found variations in the mix of services provided, which were noted to decrease when a patient was residing at a facility that provided non-skilled patient care.

Ellington et al. (2016) completed a retrospective cohort analysis examining patients who died in hospice where the team utilized an interdisciplinary group (IDG) to meet patient and family needs and coordinate care. They suggested utilizing flexible staffing patterns and lower caseloads to address visit frequency deficits. Perhaps the seminal study was completed by Teno et al. (2013) who examined clinician visits in the last two days of life. This study reaffirmed themes of variation from hospice to hospice, which included decreases in service intensity by race, geographic location and by the size of the hospice providing care. Stearns et al. (2014) discussed the now standard U-shaped visit curve for hospice clinician need. With this model, services are increased during the admission process and then again as a patient nears death, with a flattened lower period of utilization during the middle of the hospice stay.

Finally, Harold et at. (2014) suggested using an acuity index for shorter length of stay patients, especially those who are on service for seven days or less. This acuity index aligns well with imminent death measures as many of the services needed would be the same (i.e. symptom management, emotional support, final arrangement determinations, and/or increased home health aide need, for example.)

Summary of Evidence

A summary of the evidence shows there is a wide variation in the care provided to hospice patients in the last seven days of life. Care varies by race, location of the hospice, especially if the hospice is rural in nature, as well as the size of the hospice in which the patient has enrolled. Extrapolating themes from the literature review leads to a host of methods and possibilities to improve HIS visit scores. These include adding and/or updating payment incentives to encourage better organization of visit patterns within the hospice interdisciplinary group (IDG), better targeting patient who are imminent, possibly with an acuity index, as well as improving communication and coordination to affect scores more positively.

Rationale

The rationale for this project was to standardize workflow process and coordination of care through the utilization of a framework that helps guide changes suggested by evidence-based literature (Melnyk & Fineout-Overholt, 2015). The framework chosen, the ACE Star Model of Knowledge Transformation (Stevens, 2012), was well adapted not only to facilitate nursing change, but to better understand the knowledge behind that change. Developed at the University of Texas, the model has five aspects including: discovery of knowledge, a summary of the evidence, translating the evidence to clinical practice, integrating the recommended change into practice, and then evaluating the outcome once the changes are incorporated (Schaffer et al, 2012). Using the ACE Star model, it was felt the interventions would be sustainable through the re-evaluation process noted allowing for adjustment and continuous improvement.

One aspect of the ACE Star Model (see Appendix M) that applies well to the Hospice Item Set is that clinical information or research is not enough to use for a successful change process. A crucial step must include knowledge transformation or a systematic method of organizing knowledge and applying the knowledge operationally. The ACE Star Model guides the Clinical Nurse Leader (CNL) to organize information from various sources, so the best evidence can be used for success in a proposed change in practice, which can then be applied and sustained for better operational outcomes.

The PI project also incorporated the Model for Improvement (MFI) advocated by the Institute for Healthcare Improvement (Langley et al. 2009, see Appendix M) to work in union with the ACE Star Model. The MFI worked well, especially for this project as it asks three simple questions: What are we trying to accomplish? How will we know the change is an improvement? What change can we make that will result in improvement? Answering these questions helped to guide the work, which is discussed further in the intervention section of this paper.

Specific Project Aim

The specific project aim is to improve Hospice Item Set: *Hospice Visits when Death is Imminent* measure pair (HIS Measure II), Measure II scores, which include the percent of non-RN visits (Medical Social Worker, Home Health Aid or Spiritual Counselor) for all hospice patients to 80% from a baseline of 41% in the last seven days of life, by December 2018. We expect, because of improvements in HIS Measure II, we will see a corresponding improvement in HOCAHPS *Rate Hospice Agency* scores from 72.7% to at least 79%.

Context

The hospice microsystem was assessed using the Dartmouth Microsystem Assessment tool (Dartmouth Institute, 2015). The assessment identified some organizational context and dynamics that affect the outcomes of HIS Measure II. The primary organizational dynamic is the hospice does not utilize licensed vocational nursing (LVN) staff. When compared to other organizations, it may seem a disadvantage. LVN staff can be a valuable addition to the team. Many hospices use them, as they are less expensive than fellow registered nurses. However, their visits count towards HIS Measure II outcomes and not Measure I (RN visit in the last three days of life.) As a result, most other local external hospice agencies utilize LVN staff in this manner.

The organizational hospice must rely on other staff members to meet Measure II scores, such as home health aides, medical social workers and spiritual counselors. If LVN staff are not available, it also means there are fewer nursing visits being made. As a result, RN staff increase their visit frequencies as death nears. The unintended, but positive effect is it helps to meet HIS Measure I. One could argue it also improves the overall patient and family care experience. RN staff function at a higher level of care and serve in many capacities to patients and families. Their roles may include case manager duties, educator roles, skilled clinician, advocacy, supervisory roles and team coordinators. LVN staff are limited in their scope to primarily educating patients and caregivers as well as reporting symptom care needs and changes in status.

At the same time there is an increased opportunity for social and emotional support from social work, spiritual counselor and home health aide staff who are trained to provide just such care. However, this could affect the overall effectiveness of the project its implementation over time in a negative way, especially during vacation and periods when staff are sick as there are fewer staff to provide the same care, as compared to agencies who employ LVNs.

The hospice microsystem was assessed for cultural, respect, communication and disclosure issues using the IHI Cultural Assessment Tool. No outstanding issues were identified. A SWOT analysis was also competed and can be seen in Appendix D. Key areas of the SWOT analysis have been incorporated into the prospectus. The strengths help to guide the planned return on investment with improvements in satisfaction of care and an overall increase in HOCAHPS scores. A communication plan helps to address weaknesses, especially for expectations on education to help the hospice staff understand the reason to undertake the project and to better predict imminence to impact scores more positively.

Finally, the operational hospice must work with current headcount within the allotted budget (see Appendix N) for Cost/Benefit Analysis and Appendix O for Budget). In the future we may look to increase the staffing budget to better meet HIS needs, which may include adding a home health aide. Based our current full-time equivalent (FTE) staff, if there are difficulties meeting these metrics when staff are out on holidays and vacations, we may advocate for one additional home health aide employee. Cost savings and avoidance may come in the form of competitive advantages, as many believe Medicare star ratings are in the near-term future for hospice. These star ratings could be affected by both HIS as well as hospice patient satisfaction scores.

Intervention

The Process Improvement (PI) Team set an initial target of 80% for Measure II. Utilizing the ACE Star Model for this project, the team suggested reviewing and creating retrospective data of charts to identify who met and did not meet HIS Measure II to understand what interventions were necessary. This discovery data also included a review of HOCAHPS surveys, emphasizing overall satisfaction with care, as well as focusing on whether symptom and education needs were met.

Interventions discussed by the PI team to improve HIS visit Measure II scores included a multifaceted approach to reach the goal of 80%. Based on the driver diagram (see Project Charter, Appendix C) two key areas emerged: coordination of care and reporting of imminent patients by the clinical staff. Through a variety of PDSA cycles, inputs and outputs were identified and organized into a new imminent workflow. Appendix Q lists the interventions targeted to improve HIS, which include:

1. Improving tracking of imminent patients through the use of an imminent filter installed in the electronic health record
2. Reporting imminent patients each day, utilizing a new imminent report that is tied to the use of the imminent filter, to encourage adjust visit patterns
3. Improving the communication between team members to coordinate visits when patients are identified as imminent utilizing Cortext ® secure text messaging system

The main output from the new workflow would be structured communication that allows for more organized scheduling for all imminent patients. The outputs affecting the change for the better would include improved identification of imminent patients, better coordination with the team and improved visit scheduling for imminent patients. The interventions utilize a monthly run chart to measure the success of the project.

The interventions are expected to improve patient satisfaction through increased touches that enhance family members and care provider education, symptom management, emotional and social support and, most importantly, a better end-of-life experience through simple presence. The interventions use HOCAHP scores, based on the *Rate the* Agency measure, for identifying success in overall patient satisfaction (see Appendix I for benchmark satisfaction scores.)

A charter document was also created (see Appendix C), which addresses the Model for Improvement questions to identify interventions for improving Measure II HIS scores for visits. We would know the change is an improvement if the HIS scores are improved. We identified key process changes to affect improvement. Knowing we want to meet and sustain the goal of increasing visits, measurement strategies were set to see if the changes were working. We identified team members, data collection methods, selecting changes that we thought will work to test and implement these changes to help drive improvement through Plan-Do-Study-Act (PDSA) cycles. The results would be evaluated, and the process would begin again. Education was and will be created to teach clinicians on new workflows. The hospice clinical microsystem understands the need for HIS Measure II improvement as the team knows this data will be publicly reported in the new CMS Hospice Compare website (https://www.medicare.gov/hospicecompare/) in the fall of 2019 (Center for Medicare & Medicaid Services, 2018.)

Study of the Intervention

The team organized interventions through a series of plan/do/study/act (PDSA) cycles (see Appendix L). The first PDSA cycle coordinated visits through the normal interdisciplinary group (IDG) weekly meeting. Other PDSA cycles included the primary interventions of team secure text messaging for coordination of care, utilizing an imminence filter in the electronic medical record, and creating a new report to utilize the imminent filter to track imminent patients daily. The team charter was used to organize the interventions and measures and included a driver diagram and a proposed timeline to meet the measures.

To study the impact of the interventions and their success toward the measures the team will be given a satisfaction survey. The survey will utilize a Likert scale to examine the perceived effects of the interventions by the team. The PI Team meeting will also undergo a focus group to discuss the interventions and their outcomes. The survey will be given after the more data is available, in approximately the fall of 2018. The focus group session will be held in 2019 for further modifications of the PDSA cycles.

Measures

Three measures were created to assess the successful implementation of the interventions to improve HIS scores (see Appendix C, Measure Description.) Two process measures tracked the percent of patients with at least two visits scheduled prior to death and the number of times clinicians were notified of imminence. One outcome measure tracked the outcome success after the patient passed directly from the electronic health record as submitted to CMS for compilation by the Strategic Healthcare Program (SHP) website (see Appendix G) The HIS Measure II monthly run chart provided a resource to the PI Team for successful progress.

The Measure II goal at baseline was at least 80% (two non-RN clinician visits in the last seven days of life.) This goal was increased as a stretch goal by the PI Team in January to 85% by December of 2018. The hospice supervisors tracked team communication via Cortext® secure text through a spreadsheet, targeting 90% successful identification and communication of imminence. The PI Team also met monthly to evaluate and modify the project through PDSA cycles. PDSA failures were ended, with fail-fast methods, so as not to delay project outcomes. The imminent death report was distributed each day during business work hours. This report was used by both staff and supervisors to coordinate visits.

Thirty charts were audited to validate the imminent death report was being utilized by clinicians to reorganize schedules to meet the measure of visits. The target identified a 90% success rate for Measure II (see Appendix H.) Thirty-five charts were also audited to determine if the imminence filter was successfully being selected to activate the patient in the imminence report for tracking. The target was also 90% see Appendix R.)

The rationale for these measures primarily is that they are objective, and the data shows success toward the target. Mor and Teno (2016) suggest actionable performance measure like those created in this project will better help monitor visits at the end of life. The entire process was made visible through imminent reports, communication spreadsheets and daily huddles, it will be possible to promote patient preferences and family-centered care. A run chart is especially valid for measurement and reliable to repeat if others are interested in utilizing the newly created workflow. The quality team helps to ensure completeness and accuracy of the data.

Ethical Considerations

The project was reviewed by faculty and is determined to qualify as an *Evidence-based Change in Practice Project*, rather than a *Research Project*. Institutional review board (IRB) review is not required (see Appendix A, *Statement of Non-Research Determination Form*.) The goal of the project was to improve service to hospice patients.

Perhaps the greatest ethical consideration is that the team treats all imminent patients in a comparable manner. When a patient is identified as nearing end-of-life, the imminent workflow is engaged. Thereby, most families will receive an increase in services. The nurse may visit three times per week. A home health aide may be started and visit three to five times per week. Social work and spiritual counselor clinicians may reach out to family members to schedule visits. This added attention may be appreciated by family members and caregivers to be sure. But these nearly daily visits and calls and connections may overwhelm some. While the team may want to meet our measures, we must always be aware of the needs of the family involved and determine in each case what the goals of care might be. Some families, for example, may not enjoy a visit by a spiritual counselor. It is an ethical consideration the team must incorporate into their work. It also helps to individualize the plans of care, which is a required part of the hospice Medicare guidelines.

One must also consider opportunity costs relating to the project. As clinicians spend more time meeting each measure, it will invariably take them away from other tasks or patients. Those tasks may lead to shortcuts in documentation, or perhaps spending less time with non-imminent patients. The PI Team is aware of these opportunity costs and will monitor to determine if any alternative workflows need to be developed to address them.

Results

As noted, HIS, *Hospice Visits when Death is Imminent,* Measure II baseline data for 2017 (n=34) was collected and calculated to have an initial 41% success rate for the local hospice. Implementation of the project interventions was completed using multiple PDSA cycles. The three measures that tracked the progress of the interventions included two process measures monitoring the percent of patients with at least two visits scheduled prior to death (see run chart, Appendix H) and the number of times clinicians were notified of imminence via secure messaging (see Appendix S). One outcome measure tracked the Measure II success after the patient passed (see run chart, Appendix F).

As a result of the interventions, Measure II scores have shown dramatic improvement. The most recent reporting from SHP compiled from March through May of 2018 show the successful attainment of the initial goal of 80% for Measure II (reported to CMS as 80.77%, n=52, see Appendix G). The PI Team agreed to increase the target score for Measure II to 85% as a stretch goal.

In terms of the evolution of the project, early PDSA cycle interventions showed little success. For example, PDSA cycle 2 measured the use of Cortext secure texting by the team to notify each other of imminence. This cycle had a target of 90% and was only successful 29% percent of the time (see Appendix S). The run chart for Measure II after implementation showed no improvement. PDSA cycle 3, however showed dramatic improvement (see run chart, Appendix F). Using a daily report that was sent to the team with all imminent patients, and then having supervisors monitor visit frequencies of these patients resulted in improvement from December to April 2018 from 41% to 74%. SHP excluded several patients due to exclusion criteria (for example, patients who die within twenty-four hours of coming onto service are excluded) for the successful reported level to CMS of 80.77% for March through May of 2018.

The results of the retrospective analysis of all deaths in December of 2017 (n=35) for proper identification of imminence show that in 14 of 35 charts, 40% of the time, the RN visiting did not identify the patient correctly as imminent. This in turn affected notification of the team to include them in imminence tracking. When patients were not identified as imminent and subsequently died, Measure II was not met ~97% of the time (see Appendix R).

Most importantly the hospice saw a marked improvement in overall patient satisfaction scores during the period from summer 2017 through April 2018. *Rating of Patient Care* scores, the overall rating of the agency, improved from 72.7% to 83%, a ~11% increase, well above the expected improvement to 79%. It improved from the bottom 15th percentile to nearly the 50th percentile of the nation (see Appendix K).

Discussion

Key Findings

Key findings of this project include a dramatic improvement in meeting the measures for visits for both HIS Measure I and Measure II. For Measure II we achieved our initial goal reaching 80.77%. Equally dramatic improvements were seen in patient satisfaction scores, which increased from 72.7% (Q2, 2017) to 80% (6/17-4/18). Q1, 2018 further increased to 83%. To achieve this goal, it required concerted daily efforts by the clinical and supervisory team, as evidenced by the poor results of the secure text intervention, averaging only 28%.

Lessons Learned

One lesson learned, which was surprising to the team, was just how much this project impacted patient satisfaction scores. As noted, hospice services have tended to focus on the beginning of care. As care transitions to more routine care the services tend to decrease as need and routine dictate. This project required the clinicians to re-think that model and develop ways to stay connected with the patient and caregivers, and better track who is reaching the end of their journey with hospice. Prior to this project no imminent patients were tracked regularly. The results show that hospice care has shifted from heavy admission focus to an admission and end-of-life focus on care, which is what one might expect. Increases in patient satisfaction was a goal and was a hoped-for, but not expected, outcome. When looking at overall satisfaction scores within the same timeframe as the PI project we saw dramatic improvement in scores, to the point we reached 100% for one month, in April 2018, for the overall rating hospice 9-10, which was a score we have not seen in at least the past year.

A second lesson learned and a major contribution to the success of the interventions was the realization that perhaps the most important takeaway from the project to meet HIS Measure II is that HIS visit frequency is multi-faceted, and patterns need to be tracked each day, *both by clinicians and by supervisory staff* to stay organized. Supervisor input is important as they help create clinician focus, as there are many demands on clinician time. Daily reporting is important, as it creates accountability and expectations for the clinicians to achieve. If scheduling is left to the clinicians alone, it is unlikely to be met. Nowhere was this more clearly illustrated than in the failed PDSA using Cortext to have the clinicians update each other so they can adjust visit frequencies. It was clear to the team, that secure texting, while a good idea, was often missed as clinicians get busy and forget to notify each other of their findings. Alternatively, they may be discussing needs more informally in hallway discussions, over the phone or in team meetings.

It took over one year to see positive and sustained results for this project. Even with the changes there is room for growth. A milestone was reached in May 2018, reaching 80% for the first time. The stretch goal target was increased to 85% in 2018, which now appears to be a difficult, but attainable goal, as there is some unpredictability prognostication. The PDSA cycle that showed the greatest impact was incorporating the daily morning imminence report for the team to use. This required correctly identifying patients who were imminent and using the electronic health record filter to help communicate imminence to the other team members, so they could organize their day early.

A third lesson learned was the unexpected outcome that clinicians sometimes struggle to determine prognosis. Sometimes it is not possible to know when a patient is close to passing. Patients sometimes suffer acute medical issues, such as heart attacks or strokes, making it difficult to predict death with certainty, which adds complexity to visit planning. White et al. (2016) noted this is not an unknown phenomenon. In their article they found successful imminent prognosis was identified by clinicians as little as 23% of the time. The PI Team had a robust discussion about imminence. It was clear from the discussion there were differing views about what constituted imminence. As a result, the team created a reference card to assist with identification of common end-of-life indicators based on publications commonly used by hospice clinicians, *When the Time Comes (Hospice of Santa Cruz, 2008)* and *Gone from my Sight (Karnes, 2013)*. The team narrowed imminence to more common terms of *hours to days, days to weeks,* and non-imminent, *weeks to months.* The reference card helps as a psychomotor tool, but more robust work needs be done to help clinicians better identify the subtleties of patient symptoms that typically occur as a patient nears death.

Summary

The interventions showed dramatic results in achieving the stated goals to improve HIS Measure II scores to at least 80%. Measure II improved via new workflow to track visits and report on imminent patients. HIS visit frequency improvement was tied to increases in patient satisfaction. The sustainability plan includes ensuring hardwiring of imminent workflow tracking for clinical, clerical and supervisory staff. More work needs to be done to improve clinician imminence prognostication.

In terms of cost avoidance and return on investment (ROI) the project helped to address a possible future risk. CMS has voiced that it is considering a future star-rating for hospice, which has already been implemented in Home Health. These future star-ratings would be a combination of HIS and patient satisfaction scores and would be reported on the new hospice compare website. By ignoring these scores now, it may cost future hospice business revenue as families may select other hospices with higher scores. The return on investment is great as it helps to reduce that risk.

Conclusion

Improving patient and family satisfaction with care as patients near the end of their life requires careful understanding of what patients and family need as they move through the hospice journey. Increasing visit patterns provides multiple ways to improve care, through education, training, active listening, and perhaps most importantly simple presence. People need to know they are not alone. This project showed it is possible to increase the number of non-RN clinician visits through organized interventions and measures, though it takes daily reporting and oversight to reach ~80%. The return on investment is great in that it can in turn increase patient satisfaction scores and avoid future costs through increased competitiveness, as these results are due to be reported in the fall of 2019.

The implications for other hospices who face the same issues are that HIS scores should not be ignored. Projects such as this one, aimed at improving the hospice item visit measure pair, can help pave the way to more successful outcomes – through daily reporting and tracking of imminence. By having a coordinated interdisciplinary team approach to organizing care visits, it can help to make what some consider to be a sacred journey toward death an experience that is valued and positively remembered.

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Appendix A

CNL Project: Statement of Non-Research Determination Form

Student Name: David Ainsworth

Title of Project: Improving Measure II Scores of *Hospice Visits when Death is Imminent,* in the Hospice Item Set (HIS) in the Greater San Francisco Kaiser Hospice Microsystem

Brief Description of Project:

A) Aim Statement: To improve HIS Measure II scores, which include the percent of patients with at least two non-RN visits (Medical Social Worker, Home Health Aid or Spiritual Counselor) for all Greater San Francisco Kaiser Hospice patients to 90% from a baseline of 66% in the last seven days of life, by December 2018.

B) Description of Intervention: The intervention will include implementing tracking mechanisms and education on predicting who is imminent, how the hospice team are communicating and coordinating their visit disciplines, and then measuring whether the outcomes were or were not achieved.

C) How will this intervention change practice? By increasing the ability of clinicians to identify imminence, then tracking that imminence in daily operations, visits will increase to meet HIS measures, and will improve the overall perception of care in the hospice microsystem.

D) Outcome measurements: The outcome measurement will aim for improvement of process, with at least two visits by non-RN clinician in the last sever days of life measured at 80% (2017 data 66%), # patients identified as imminent, # patients with clinician notified of imminence

CNL Project: Statement of Non-Research Determination Form

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

Instructions: Answer YES or NO to each of the following statements:

Project Title:	YES	NO
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	x	
The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care.	x	
The project is **NOT** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does **NOT** follow a protocol that overrides clinical decision-making.	x	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	x	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	x	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	x	

The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	**x**	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	**x**	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."*	**x**	

ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

STUDENT NAME (Please print): David Ainsworth, RN, DATE 01/31/18

SUPERVISING FACULTY MEMBER NAME (Please print): Nancy Taquino, DNP

Appendix B

Literature Review

Table B1

Literature evaluation table

Study	Design	Sample	Outcome/Feasibility	Evidence rating
Gozalo et al. (2017). Hospice Visit Patterns in the Last Seven Days of Life and the Service Intensity Add-On Payment. *Journal of Palliative Medicine.*	Retrospective cohort study	Hospice patients who died on service from 2005-2010, sample size 313,778 decedents	Evaluates incentive payment for increasing visits in last 7 days Useful for understanding the disparities of hospice are in last 7 days and how to address	L IIIA
Ellington et al. (2016). Interdisciplinary Team Care and Hospice Team Provider Visit Patterns during the Last Week of Life. *Journal of Palliative Medicine.*	Retrospective cohort study	Hospice patients who died on service with length of stay at least 7 days, sample size 92,250 records	Evaluated visit patterns, with each patient averaging 1.36 visits per day in last 7 days. Useful to help align interdisciplinary team visit timing to meet patient/family needs	L IIIA

Teno et al. (2013). Examining Variation in Hospice Visits by Professional Staff in the Last 2 Days of Life. *JAMA Internal Medicine.*	Retrospective Cohort Study	Medicare Hospice patients who died in fiscal year 2014 on routine home hospice care, sample size 661,557 Medicare hospice beneficiaries	Showed wide variation in visit patterns by hospice clinical staff, including by race and geographic region Useful for identifying hospice variations in practice and in suggesting new payment methods may help address	L IIIA
Unroe et al. (2017). Variation in Hospice Services by Location of Care: Nursing Home Versus Assisted Living Facility Versus Home. *Journal of the American Geriatrics Society*	Retrospective Cohort Study	Hospice patients receiving routine home care between 2009-2014, sample size 32,605 hospice patients who received routine hospice care	Demonstrated wide variety in mix of services, especially depending on location. Useful for increased awareness of patient residing in facilities, as they may receive less hospice care	L IIIA

Stearns et al. (2014). Explaining Variation in Hospice Visit Intensity for Routine Home Care. *Medical Care*	Retrospective Cohort Study	Hospice patients receiving Routine Home Care in 2010, sample size 758,386 Medicare hospice episodes	Showed U-shaped visit curve, intensity of services especially upon admission. Useful for identifying longer length of stay patients who receive fewer services after initial admission.	L IIIA
Harold et at. (2014). All Hospice Patients Are Not Equal: Development of a Visit-Based Acuity Index *Journal of Palliative Medicine.*	Retrospective Cohort Study	Hospice patients on routine home care admitted between 2008 and 2011, sample size 35,232 patients	Describes visit intensity upon admission, including those patients who die after a short length of stay. Useful for identifying needs for short length of stay patients, especially hospital discharges and being mindful of demographic influences	L IIIA

Appendix C

Project Charter

Improving Measure II Scores of *Hospice Visits When Death is Imminent,* in the Hospice Item Set in the Hospice Microsystem

David Ainsworth, RN

University of San Francisco

School of Nursing and Health Professions

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Project Charter

Title

Improving Measure II Scores of *Hospice Visits When Death is Imminent*, in the Hospice Item Set in the Hospice Microsystem

Global Aim

To standardize implementation of the Hospice Item Set (HIS), based on the new Medicare Hospice Quality Measures, by December 2018 as a part of a San Francisco Service Area Medical Center.

Specific Aim:

To improve HIS Measure II scores, which include the percent of non-RN visits (Medical Social Worker, Home Health Aid or Spiritual Counselor) for all hospice patients to 80% from a baseline of 41% in the last seven days of life, by December 2018.

Background:

In 1982 Congress created the Medicare hospice benefit. With the idea of reducing Medicare costs and improving care at the end-of-life the benefit was extended to nursing home residents in 1986 (More and Teno, 2016). This resulted in a dramatic increase in hospice utilization and cost to Medicare. Non-cancer patients with chronic diseases dramatically increased the average hospice length of stay, which in turn increased hospice costs for Medicare. In addition, according to Teno et al. (2016), an explosion in hospice provider growth nationwide created wide variations in care. Plotzke et al. (2014) found, for example in 2012, nearly 15% of patients received no hospice visit in the last two days of life, just when families need these visits the most. Hospice quality measures, called the Hospice Item Set were created in 2015 to measure pain, goals of care conversations, education on delirium and shortness of breath, as well and bowel management associated with opioid use. In 2017, those measures were increased to include (Measure I) submission to Medicare the number of RN visits in the last three days of life and (Measure II) submission of non-nurse clinician visits in the last seven days of life (Centers for Medicare & Medicaid Services, 2016). A hospital-based hospice agency in San Francisco has created a quality improvement project to measure and improve both Measure I and Measure II scores. Measure I is currently at 74%, while Measure II is running at approximately 41%.

Goals

The goal of this charter is to improve and standardize hospice service intensity near death to help families better manage pain and other symptoms, as well as receive emotional support and end-of-life education using a multidisciplinary team approach for hospice patients that includes the following:

1. Education to clinicians on proper identification of hospice patients near end-of-life
2. Improve team communication when patients are imminent to coordinate care
3. Streamlining reporting for daily morning hospice rounding

Measures, Outcomes, Processes and Balancing

Measure	**Data Source**	**Target**
Outcome		
% hospice patients with at least 2 non-RN visit within 7 days of death	HIS Crystal report	80%
Process		
% patients with communication to team from RN of imminence	Imminent tracking spreadsheet	80%
Balancing		
No early mis-identification of imminence	Imminent Death Crystal report	80%

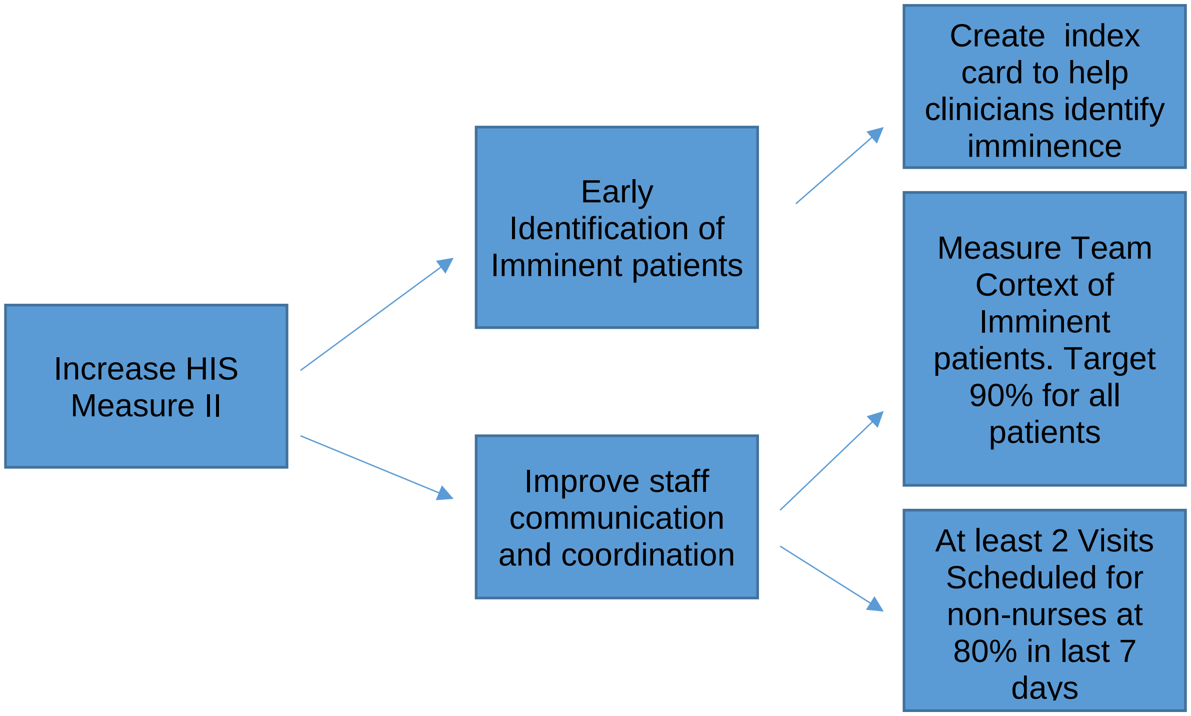
Team

MD Co lead	Dr Karla Lovett
RN Co Lead	David Ainsworth
Quality Nurse	Ahn Dubose
Staff nurse champions	Jennifer Langum-McNeeley, Dolores Suarez
Supervisor champions	Victoria Evans, Nobit Gonzaga
Social Work champion	William Luhr
Spiritual Counselor Champion	James Christie

Sponsors

Continuum Administrator	Pam Johnson
Hospice Administrator	JoeAnne Hahn
Quality Leader	Kristy Ensunsa

Driver Diagram



Measurement Strategy

Background (Global Aim) To standardize implementation of the Hospice Item Set, based on the new Medicare Hospice Quality Measures, by December 2018 as a part of the Greater San Francisco Service Area Medical Center.

Population Criteria: Patients admitted to the hospice program

Data Collection Method: Data will be obtained from reports pulled from deceased hospice patient medical records and hospice imminent death tracking spreadsheets from a sample of 30 hospice patient records to establish baseline. 30 records will also be tracked to assure visits are scheduled and organized based on the *Imminent Death Report* by July 2018. Data plan will be reevaluated based on results.

Data Definitions

Data Element	**Definition**
HIS Imminent Death Measure II	Number of non-RN visits in the last seven days of life in the electronic medical record (EMR)
Imminent Death Report	Identified patients expected to die in the next few days, and those who are immediately imminent
Cortext Measure	Text communication notifying team of imminent death, measured via spreadsheet

Measure Description

Measure	**Measure Definition**	**Data Collection source**	**Goal**
At least two visits by non-RN clinician in the last seven days of life	N=# patients with 2 non-RN visits in the last 7 days of life D=# total death	HIS Imminent Death Measure II run chart	80%

% # patients with ≥2 visits scheduled prior to death	N= # patients with imminent filter used ≥2 visits scheduled
	D=# total imminent patients
		Imminent Death Report chart audit	90%

% # patients with clinician notified of imminence	N= # patients noted as imminent via Cortext
	D=# imminent patients
		Imminent Death Spreadsheet	90%

Recommendations for Changes

Changes to Test

The main changes to test will be in closely tracking who is imminent, how the team are communicating and coordinating their visit disciplines, and then measuring whether the outcomes were or were not achieved. Changes will be incorporated in to the PI Team monthly meeting and outcomes will be reported at the monthly hospice team meeting. The PI Team will also provide any feedback in the PDSA cycle to help accommodate any needed real-time changes based on data and feedback.

Project Timeline

	8/17	10/17	1/18	3/18	5/18	8/18
Define the Project	■					
Develop Aim		■				
Microsystem Assessment		■				
Develop Charter			■			
Create Measurement, Outcomes, Processes and Balancing			■			
Review Literature			■			
Identify Changes to Test				■		
Driver Diagram				■		
Complete Charter					■	
Final Presentation						■

Lessons Learned

Several insights arose based on the creation of the project charter. Firstly, the background research revealed a more complex background of the history, which helped to determine the current, HIS measures. More specifically, when Medicare decided to open the hospice benefit to facility patients had the unintended consequence of dramatically increasing hospice cost. At the same time, new businesses saw opportunity in the hospice space, they created models for care that were widely variable in their outcomes, including a focus on keeping patients on service for longer periods of time, with fewer resources utilized. This resulted in a loss of focus of the whole point of hospice services, namely clinicians being there for patients as they near end of life. HIS measures are timely and needed.

However, the HIS measures create a unique problem for the hospice throughout the region. The hospice has a model of care that does not include the use of licensed vocational nursing (LVN) staff, which are a common and less expensive clinician widely used by all other hospices. LVN staff factor in to Measure II as they are non-RN and their visits do not count for Measure I. Since the hospice does not utilize LVN staff, they must rely on their other clinicians to meet this measure, namely medical social workers (MSW), spiritual counselors (SPC), and home health aides. This requires different coordination, as RN/LVN coordination is more focused on symptom management, and MSW/SPC/HHA coordination focuses more on emotional, personal care and existential care. Thus, the RN visit, must both identify imminence, and identify the emotional, personal and/or existential needs, then relay those needs to the team.

CNL Competencies

Clinician

- In this role the CNL would serve as a clinician. They can help to coordinate and integrate the care of Measure II, through a thorough understanding of how hospice care works. They would be able to incorporate best practice to allow for organized and coordinated care.

Outcome Manager

- As an outcome manager, the CNL would be able to synthesize complex data and review literature to help organize and help to create and evaluate PDSA workflows for changes and improved outcomes.

Educator

- As an educator, the CNL role would play an important role, as much of the information created will be new to clinicians and will require an organized approach for the dissemination of that information. The CNL can incorporate the many, complex aspects of the project and provide a simplified and straight forward approach of knowledge acquisition using the appropriate change strategy implementation.

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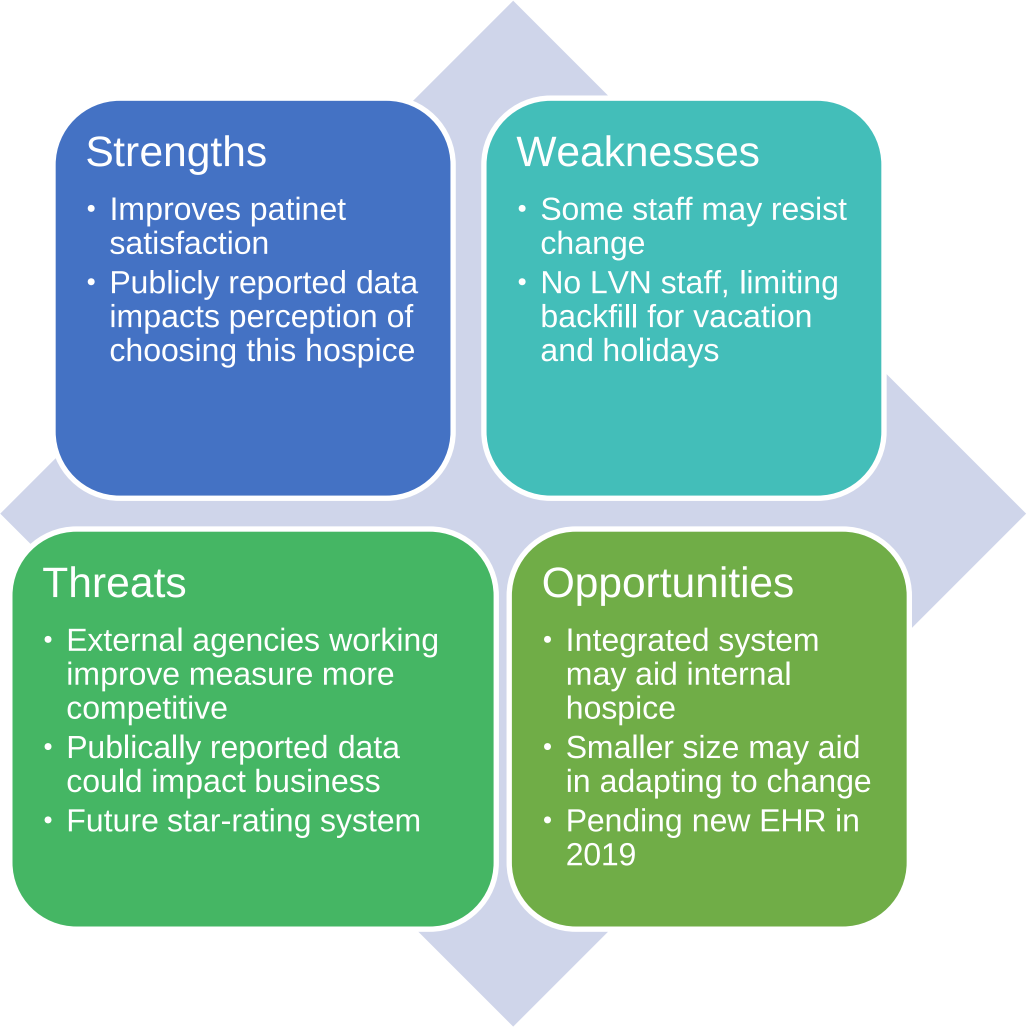
Appendix D

SWOT Analysis

SWOT Analysis:



Strengths

- Improves patinet satisfaction
- Publicly reported data impacts perception of choosing this hospice

Weaknesses

- Some staff may resist change
- No LVN staff, limiting backfill for vacation and holidays

Threats

- External agencies working improve measure more competitive
- Publically reported data could impact business
- Future star-rating system

Opportunities

- Integrated system may aid internal hospice
- Smaller size may aid in adapting to change
- Pending new EHR in 2019

Appendix E

HIS Benchmark Data

Table E1

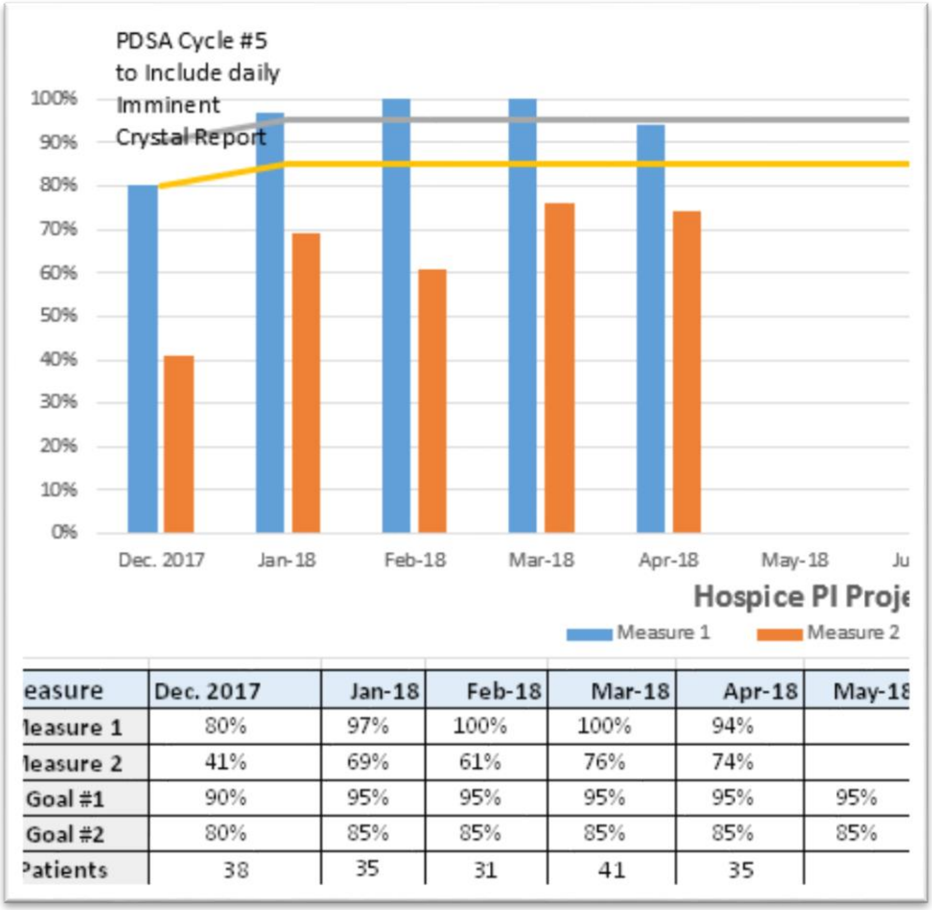
HIS Measure Benchmark Data

HIS Measure: Hospice Visits when Death is Imminent **Benchmark** showing HIS Measure II data at 41% in January of 2017 and at 61% in December of 2017.

Measure	**Jan 17**	**Dec 17**
Measure 1	74%	84%
Measure 2	**41%**	**61%**
Goal #1	90%	90%
Goal #2	80%	80%
# Patients	34	38

Appendix F

HIS Measure I and Measure II Run Chart



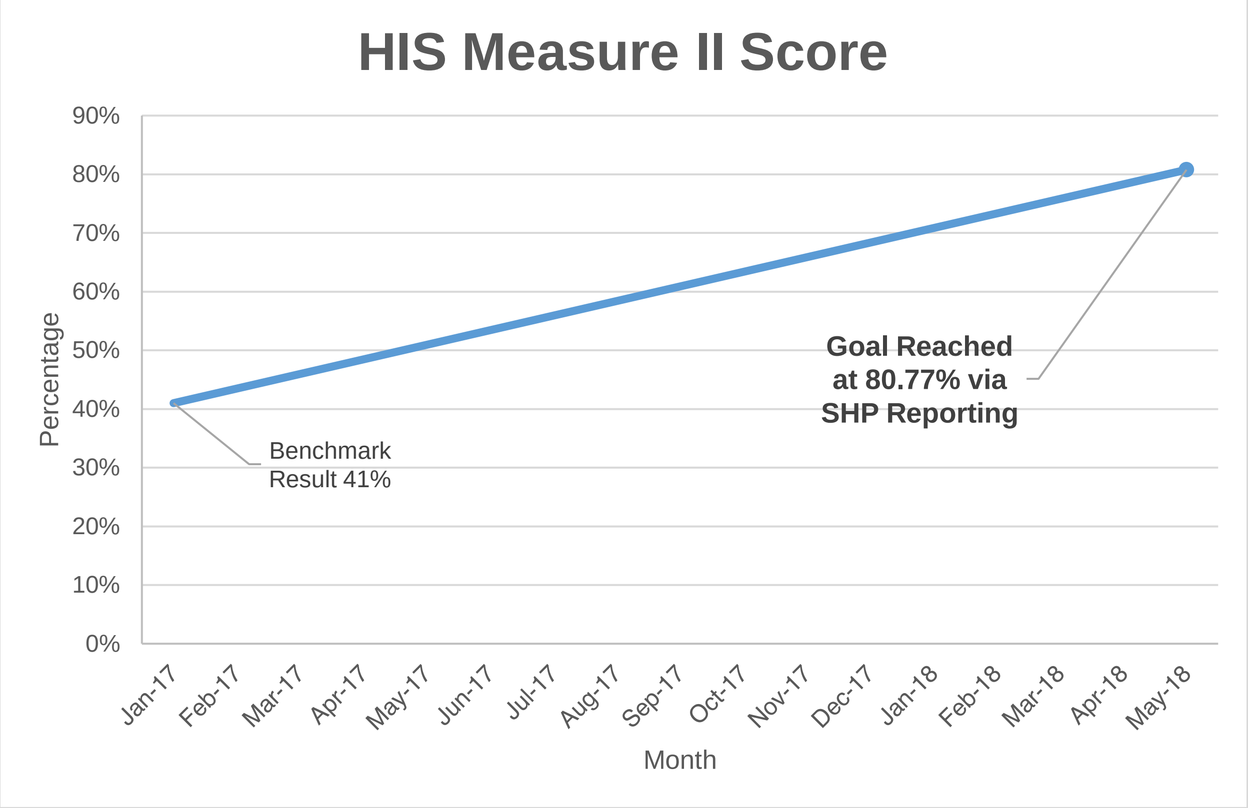
easure	Dec. 2017	Jan-18	Feb-18	Mar-18	Apr-18	May-1
easure 1	80%	97%	100%	100%	94%	
easure 2	41%	69%	61%	76%	74%	
Goal #1	90%	95%	95%	95%	95%	95%
Goal #2	80%	85%	85%	85%	85%	85%
atients	38	35	31	41	35	

Figure F1 HIS Measure: Hospice Visits when Death is Imminent ***2018 Run Chart, Jan-April***. Blue bar – Measure I, Orange bar – Measure II, Baseline Measure II = **41%** Improvement = Measure II improved to 74% as of April 2018 (does not filter CMS exclusions, such as for patients on service less than 24 hours)

Appendix G

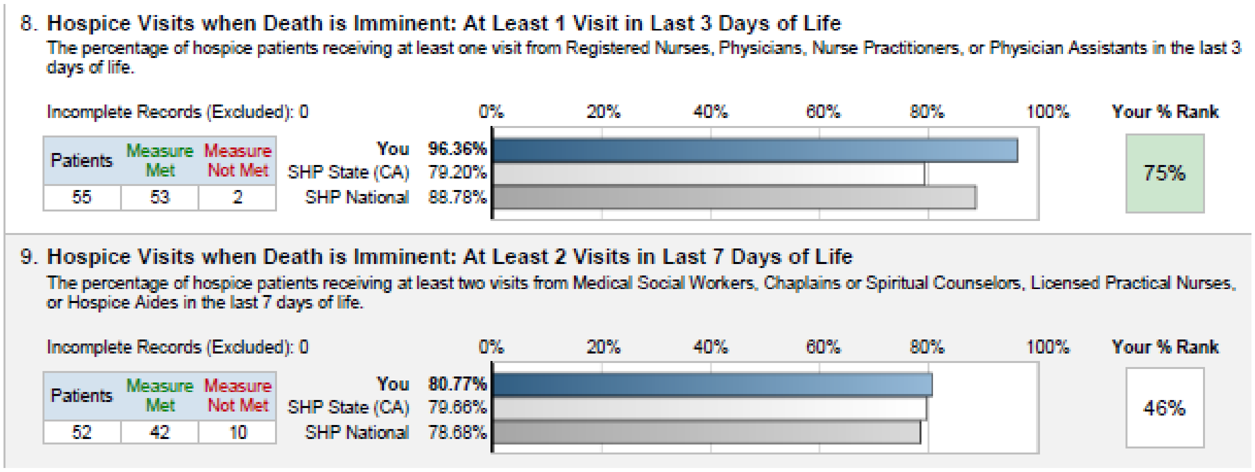
Hospice Visits when Death is Imminent 2018, SHP Report

Table G1 Hospice Visits Measure II Data. Initial goal reached in May 2018.



Appendix G

Hospice Visits when Death is Imminent 2018, SHP Report



8. **Hospice Visits when Death is Imminent: At Least 1 Visit in Last 3 Days of Life**

The percentage of hospice patients receiving at least one visit from Registered Nurses, Physicians, Nurse Practitioners, or Physician Assistants in the last 3 days of life.

Incomplete Records (Excluded): 0

Patients	Measure Met	Measure Not Met
55	53	2

You	96.36%
SHP State (CA)	79.20%
SHP National	88.78%

Your % Rank: 75%

9. **Hospice Visits when Death is Imminent: At Least 2 Visits in Last 7 Days of Life**

The percentage of hospice patients receiving at least two visits from Medical Social Workers, Chaplains or Spiritual Counselors, Licensed Practical Nurses, or Hospice Aides in the last 7 days of life.

Incomplete Records (Excluded): 0

Patients	Measure Met	Measure Not Met
52	42	10

You	80.77%
SHP State (CA)	79.66%
SHP National	78.68%

Your % Rank: 46%

Figure G1. HIS Measure: Hospice Visits when Death is Imminent 2018, SHP Report Mar-May 2018.

Number nine in the report above shows the CMS reportable data for HIS Measure II: *Hospice visits when death is imminent: At least 2 visits in the last 7 days of life.* The blue line indicates the local hospice score of 80.77%, reaching the initial 80% goal for the first time. This score beats the California state average of 79.66% and the national average of 78.68%. The data includes total patients (n=52), those who met the goal (n=42) as well as fallouts (n=10). Comparing these scores to other hospices nationally a percentile rank of 46% would place the local hospice near the 50th percentile. The data also includes scores for Measure1, which are reaching 96.36%. This measure as a result is in the 75th percentile of the nation.

Appendix H

Visit Scheduling Data Analysis

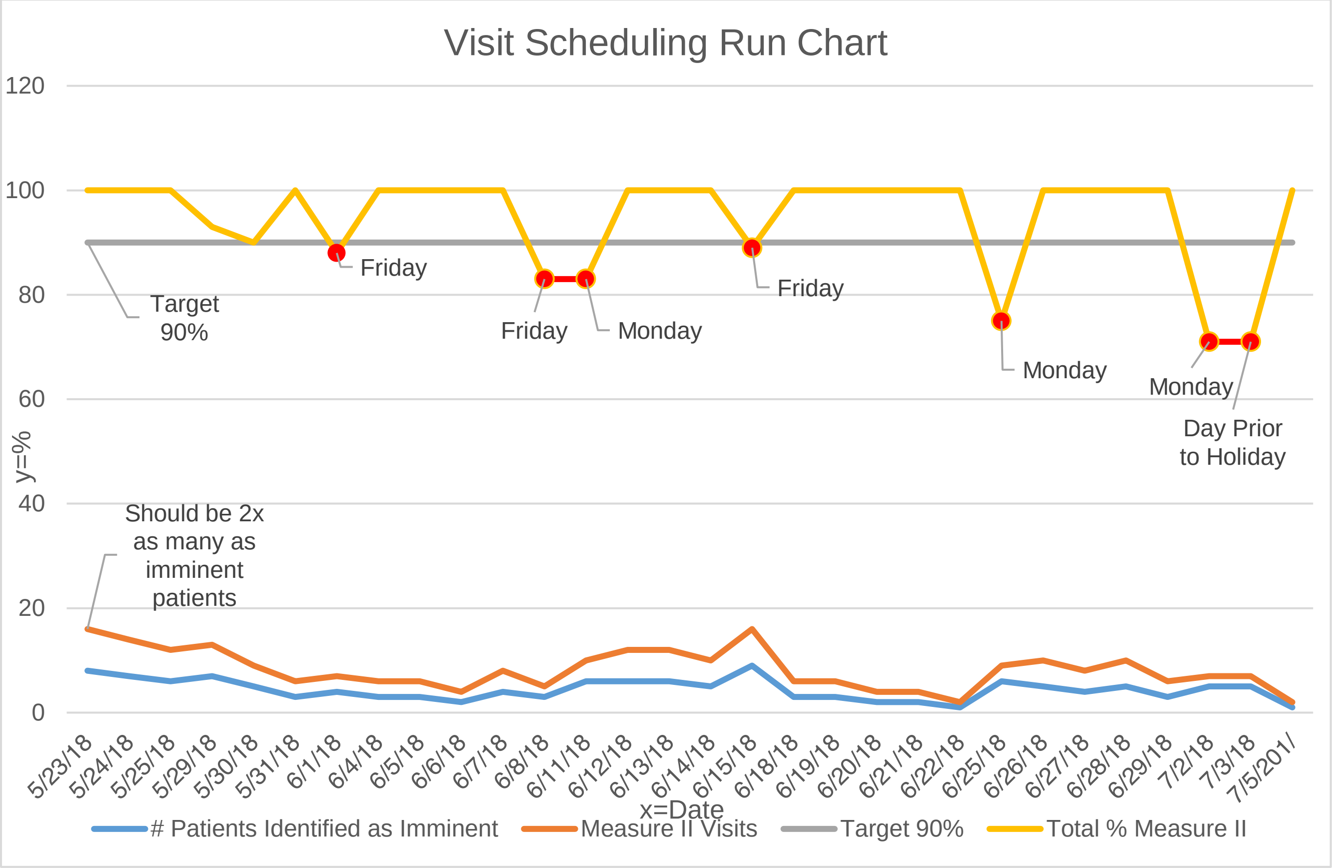
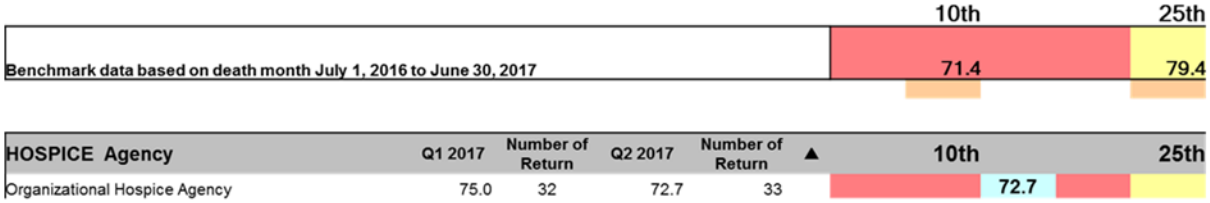


Figure H1. Daily HIS Measure II Totals (Measure II Target 90%, n=132, final average 94%).

This is a daily chart audit of patient records who were identified as imminent. We looked for at least 2 visits scheduled by a home health aide, social worker and/or spiritual counselor. The red items identify dates where HIS Measure II visit scheduling was **not** met. Dates noted to have fallen on either a Monday, a Friday (before or after a weekend) or the day before a holiday comprised all fallouts. Data identifies possible scheduling pattern difficulties due to staffing mix.

Appendix I

Patient Satisfaction Scores impacted by HIS PI Project



	10th	25th
Benchmark data based on death month July 1, 2016 to June 30, 2017	71.4	79.4

HOSPICE Agency	Q1 2017	Number of Return	Q2 2017	Number of Return	▲	10th	25th
Organizational Hospice Agency	75.0	32	72.7	33		72.7	

Figure I2. **Benchmark** patient satisfaction scores for Q1-Q2 2017 (n=65)

Benchmark scores for hospice for caregivers who answered the question “Rating of Patient Care” for Q1-Q2 2017 were noted to be 72.7% which was below the 25th percentile of the nation.

Appendix J

Patient Satisfaction Scores impacted by HIS PI Project

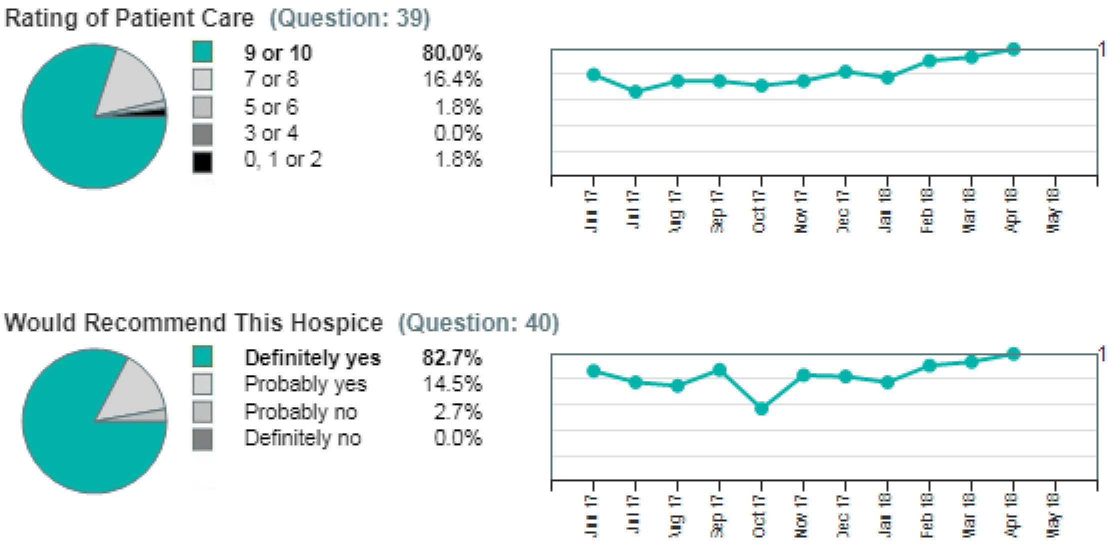


Figure J1. Patient Satisfaction ***after project*** *implementation Jan-Apr 2018* (n=111, score 0-100, average 80%, via Deyta reporting, baseline 72.7%).

The above data comes from Hospice satisfaction scores. The scores are rated from zero to 100. A noted increase in overall satisfaction scores were seen with implementation of the project. Satisfaction scores also include an indicator if families would recommend the hospice. These scores also increased with the project, showing very successful improvement over time. Scores improved to 80% by April of 2018, and again (reporting from new vendor SHP) up to 83%, placing the hospice near the 50th percentile in the nation.

Appendix K

Patient Satisfaction Scores impacted by HIS PI Project

7. Overall Rating of Hospice Measure Details	**83%**		82%	84%

Figure K1. Patient Satisfaction after project implementation May 2018 (n=24, score 0-100, average 83%, CA state average 82%, national average 84%, via SHP reporting)

Appendix L

PDSA Cycle

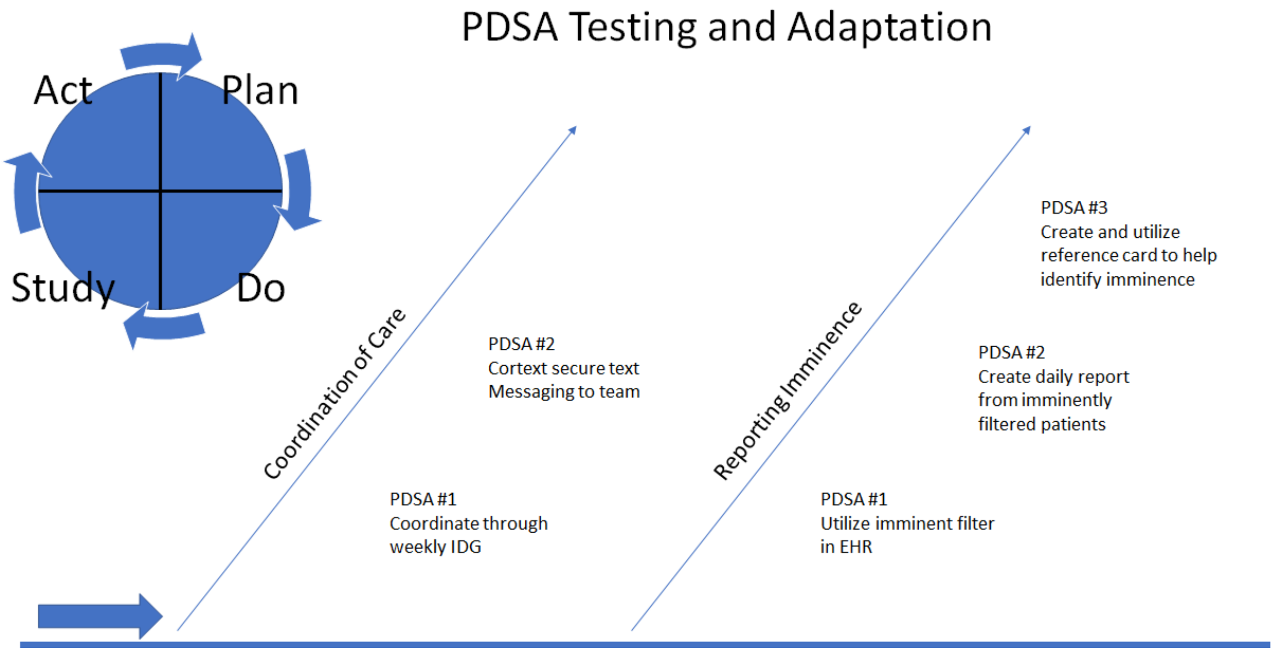


Figure L1 PDSA Testing and Adaptation

Appendix M

The ACE Star Model of Knowledge Transformation and the Model for Improvement

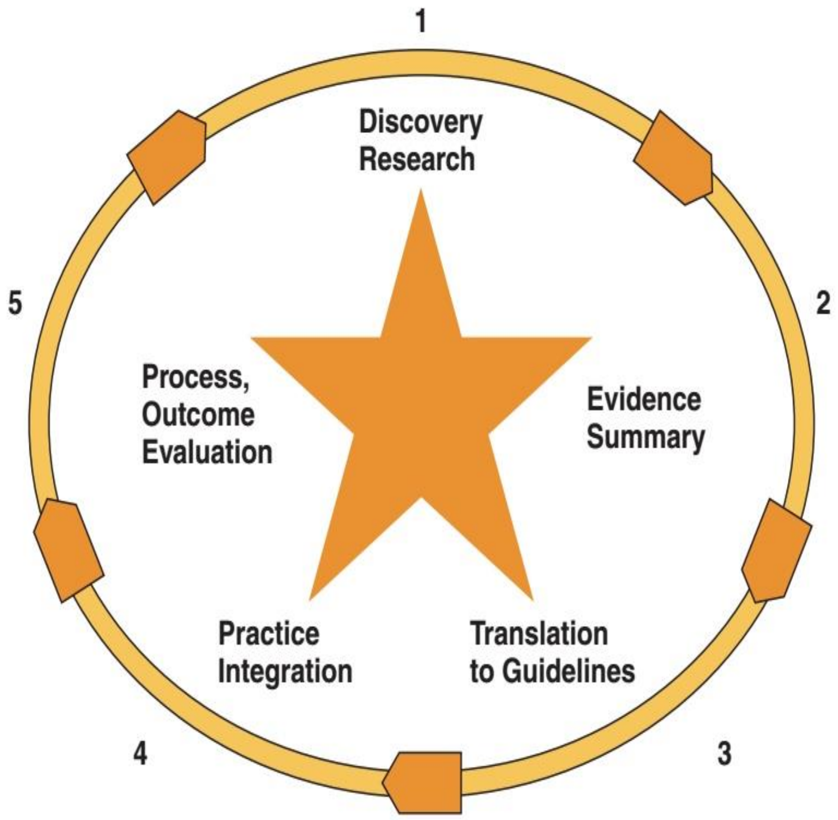


Figure M1. ACE Star Model of Knowledge Transformation (Stevens, 2012).

The ACE Star Model of Knowledge Transformation lends itself well to projects such as this one where knowledge needs to be translated into practice integration. The practice outcomes are then evaluated, and the process starts anew.

Appendix M

The ACE Star Model of Knowledge Transformation and the Model for Improvement

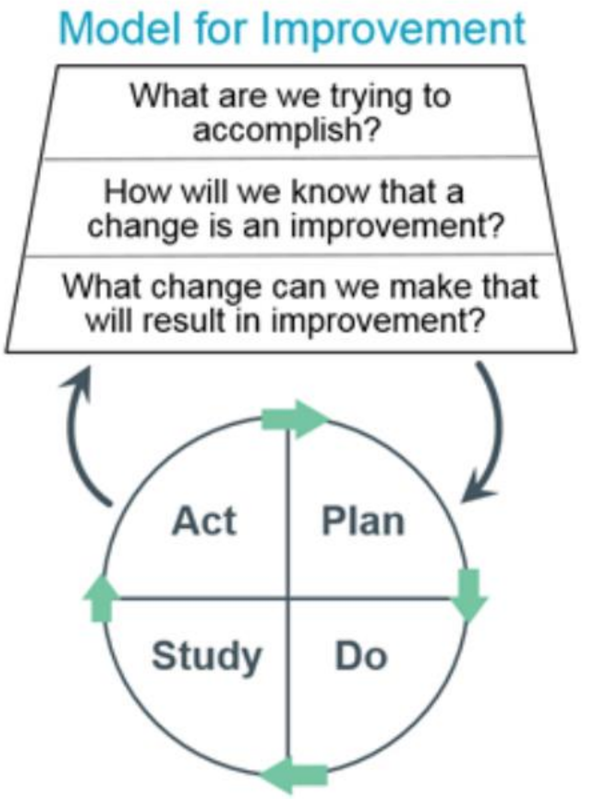


Figure M2. Model for Improvement (MFI) advocated by the Institute for Healthcare Improvement (Langley et al. 2009). The MFI works well with the ACE Star Model utilizing the plan/do/study/act (PDSA) cycles and focuses the work around three simple questions:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What change can we make that will result in improvement?

Appendix N

Cost Benefit Analysis

Perhaps one of the most important aspects of improving HIS Measure II for hospice is the realization that in 2019 Medicare will publicly release the reported results. It would not be difficult to imagine that a star rating system, which would be a combination of HIS scores and HOCAHPS scores, may follow soon after. Doing nothing may result in a long-term negative outcome for the organizational hospice in that it could result in lower star ratings. Lower star ratings could impact patient choice, as hospice is a Medicare carve-out service. If patients were to choose other hospices, it could impact the business viability and the future of the business. The relatively low amount of ~$35,000 (see Table 1) for 2018 cost of the project, could have a great benefit and positive impact on future business.

The cost benefit analysis for the first year includes the clinician time participating in the PI Project team and educating staff on the improved workflows. Monthly clinician participation and then staff education created make most of the cost for the project. The benefit of the improvement project will be seen in improved patient satisfaction scores because of increased participation by clinicians in the patient plan of care as well as maintaining or improving market share and prevention of a lower rating by Medicare. The cost of the project can be absorbed in the operating budget for 2018 and included as a budget line item for 2019.

Appendix N

Cost Benefit Analysis

A third potential cost would be creation of orientation workflow education (see Appendix I for projected budget and Appendix C for the projected timeline.) Any potential head count requests for staff, especially HHA staff, would be a request for the 2019 budget.

Appendix O

Table 1

Project Budget

	FY 2018	FY 2019
FTE Expense		
PI Team, 10 clinicians, 4 hours per month salary annualized @$60/hour, 6 hours 2019	$28,800	$43,200
Team education for 30 clinicians at $50/hour, for 2 hours in 2018 and 2 hours in 2019	$3,000	$3,000
Orientation material creation by education CNS @ $60/hour x24 hours		
Non-FTE Expenses		
Office Supplies	$1,000	$1,000
Nursing Education Printing	$800	$800
Patient Education Printing	$800	$800
Total Non-FTE Expenses	$2,600	$2,600
Total Expenses	**$34,400**	**$51,400**

Appendix P

John Hopkins Research Evidence Appraisal Tool

Johns Hopkins Nursing Evidence-Based Practice
Appendix E: Research Evidence Appraisal Tool

Evidence Level and Quality:________________________

Article Title:		Number:
Author(s):		Publication Date:
Journal:		
Setting:		Sample (Composition & size):
Does this evidence address my EBP question?	☐Yes	☐No Do not proceed with appraisal of this evidence

Level of Evidence (Study Design)			
A. Is this a report of a single research study? ***If No, go to B.***		☐Yes	☐No
1. Was there manipulation of an independent variable?		☐Yes	☐No
2. Was there a control group?		☐Yes	☐No
3. Were study participants randomly assigned to the intervention and control groups?		☐Yes	☐No
If Yes to all three, this is a Randomized Controlled Trial (RCT) or Experimental Study →	☐ LEVEL I		
If Yes to #1 and #2 and No to #3, OR Yes to #1 and No to #2 and #3, this is Quasi Experimental (some degree of investigator control, some manipulation of an independent variable, lacks random assignment to groups, may have a control group) →	☐ LEVEL II		
If No to #1, #2, and #3, this is Non-Experimental (no manipulation of independent variable, can be descriptive, comparative, or correlational, often uses secondary data) **or Qualitative** (exploratory in nature such as interviews or focus groups, a starting point for studies for which little research currently exists, has small sample sizes, may use results to design empirical studies) →	☐ LEVEL III		
NEXT, COMPLETE THE BOTTOM SECTION ON THE FOLLOWING PAGE, "STUDY FINDINGS THAT HELP YOU ANSWER THE EBP QUESTION"			

Johns Hopkins Nursing Evidence-Based Practice
Appendix E: Research Evidence Appraisal Tool

B. Is this a summary of multiple research studies? ***If No, go to Non-Research Evidence Appraisal Form.***		☐Yes	☐No
1. Does it employ a comprehensive search strategy and rigorous appraisal method (**Systematic Review)?** ***If No, use Non-Research Evidence Appraisal Tool; if Yes:***		☐Yes	☐No
a. Does it combine and analyze results from the studies to generate a new statistic (effect size)? (**Systematic review with meta-analysis**)		☐Yes	☐No
b. Does it analyze and synthesize concepts from qualitative studies? (**Systematic review with meta-synthesis**)		☐Yes	☐No
If Yes to either a or b, go to #2B below.			
2. For Systematic Reviews and Systematic Reviews with meta-analysis or meta-synthesis:			
a. Are all studies included RCTs? →	☐ LEVEL I		
b. Are the studies a combination of RCTs and quasi-experimental or quasi-experimental only? →	☐ LEVEL II		
c. Are the studies a combination of RCTs, quasi-experimental and non-experimental or non-experimental only? →	☐ LEVEL III		
d. Are any or all of the included studies qualitative? →	☐ LEVEL III		
COMPLETE THE NEXT SECTION, *"*STUDY FINDINGS THAT HELP YOU ANSWER THE EBP QUESTION"			
STUDY FINDINGS THAT HELP YOU ANSWER THE EBP QUESTION:			

NOW COMPLETE THE FOLLOWING PAGE, "QUALITY APPRAISAL OF RESEARCH STUDIES", AND ASSIGN A QUALITY SCORE TO YOUR ARTICLE

Johns Hopkins Nursing Evidence-Based Practice
Appendix E: Research Evidence Appraisal Tool

Quality Appraisal of Research Studies			
• Does the researcher identify what is known and not known about the problem and how the study will address any gaps in knowledge?	☐Yes	☐No	
• Was the purpose of the study clearly presented?	☐Yes	☐No	
• Was the literature review current (most sources within last 5 years or classic)?	☐Yes	☐No	
• Was sample size sufficient based on study design and rationale?	☐Yes	☐No	
• If there is a control group:			
o Were the characteristics and/or demographics similar in both the control and intervention groups?	☐Yes	☐No	☐NA
o If multiple settings were used, were the settings similar?	☐Yes	☐No	☐NA
o Were all groups equally treated except for the intervention group(s)?	☐Yes	☐No	☐NA
• Are data collection methods described clearly?	☐Yes	☐No	
• Were the instruments reliable (Cronbach's α [alpha] $\geq$ 0.70)?	☐Yes	☐No	☐NA
• Was instrument validity discussed?	☐Yes	☐No	☐NA
• If surveys/questionnaires were used, was the response rate $\geq$ 25%?	☐Yes	☐No	☐NA
• Were the results presented clearly?	☐Yes	☐No	
• If tables were presented, was the narrative consistent with the table content?	☐Yes	☐No	☐NA
• Were study limitations identified and addressed?	☐Yes	☐No	
• Were conclusions based on results?	☐Yes	☐No	

Quality Appraisal of Systematic Review with or without Meta-Analysis or Meta-Synthesis		
• Was the purpose of the systematic review clearly stated?	☐Yes	☐No
• Were reports comprehensive, with reproducible search strategy?	☐Yes	☐No
o Key search terms stated	☐Yes	☐No
o Multiple databases searched and identified	☐Yes	☐No
o Inclusion and exclusion criteria stated	☐Yes	☐No
• Was there a flow diagram showing the number of studies eliminated at each level of review?	☐Yes	☐No
• Were details of included studies presented (design, sample, methods, results, outcomes, strengths and limitations)?	☐Yes	☐No
• Were methods for appraising the strength of evidence (level and quality) described?	☐Yes	☐No
• Were conclusions based on results?	☐Yes	☐No
o Results were interpreted	☐Yes	☐No
o Conclusions flowed logically from the interpretation and systematic review question	☐Yes	☐No
• Did the systematic review include both a section addressing limitations and how they were addressed?	☐Yes	☐No

QUALITY RATING BASED ON QUALITY APPRAISAL

A **High quality:** consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence

B **Good quality:** reasonably consistent results; sufficient sample size for the study design; some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence

C **Low quality or major flaws:** little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn

Appendix Q

Interventions

Table Q1

Table of Interventions separated by the themes of ***Reporting Imminence*** *and* ***Coordination of Care.*** These interventions were discussed and agreed upon by the Hospice PI Team based on discussion and feedback from visits. The imminent filter and report are new options in the electronic health record (EHR). The hospice expects to transition to a new EHR record in 2019 but expects the new EHR to also have an imminent filter and report available. Cortext secure texting is currently available in each clinician's provided work cell phone (iPhone).

Intervention	**Reporting Imminence**	**Coordination of Care**
Cortext secure text Messaging to team		x
Utilize imminent filter in Electronic Health Record	x	
Create daily report from imminently filtered patients	x	

Appendix R

Identifying Imminence

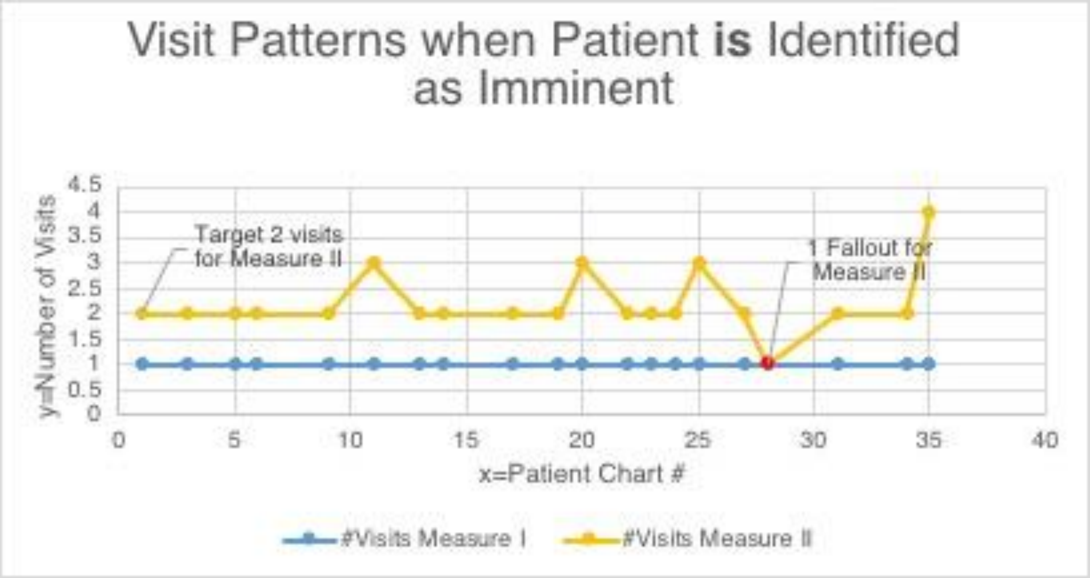


Figure R1 - Identifying imminence, run chart for patient correctly identified as imminent December 2017 Deaths, n=35. When a patient was correctly identified as imminent, Measure I was met 100% and Measure II met 97%.

Appendix R

Identifying Imminence

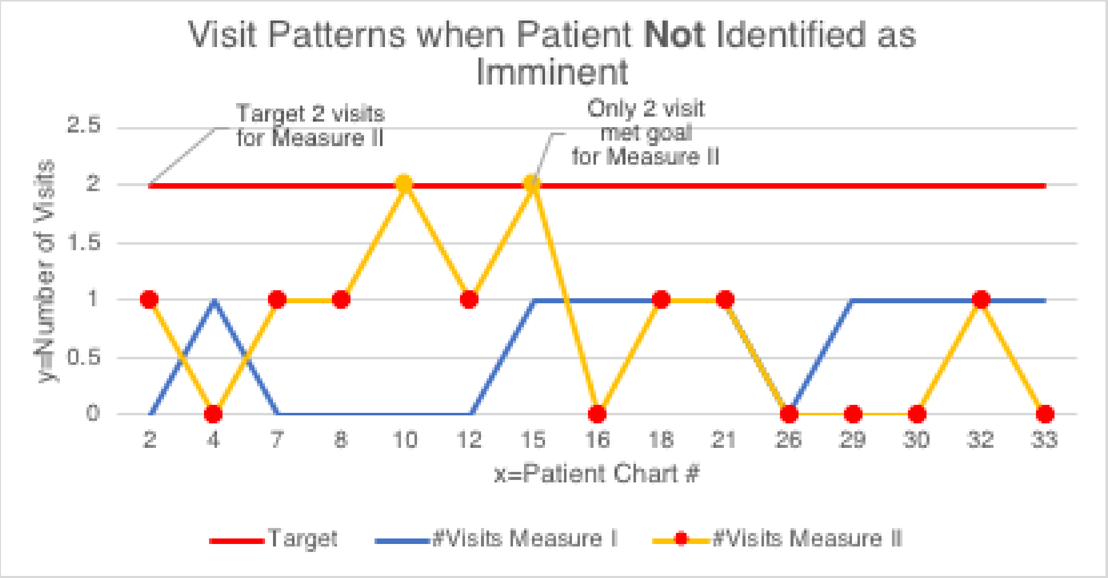


Figure R2 - Identifying imminence, run chart for patient **not** identified as imminent and the patient died, December 2017 Deaths, n=35. When a patient was not identified as imminent, Measure I was met **60%** of the time. Measure II was noted to have been met only **13%** of the time.

Appendix S

Cortext Run Chart

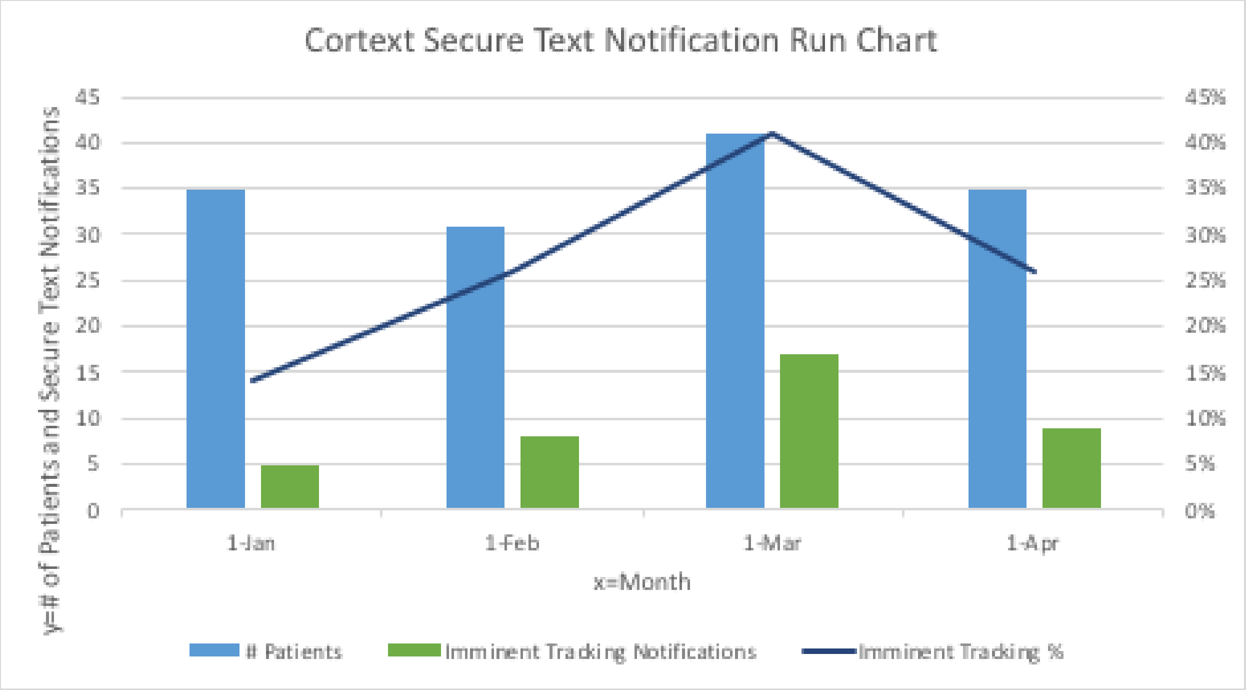


Figure S1 Cortext Notification Imminence Tracking

Between January and April 2018, the hospice team averaged 27% success with notifying the supervisor and team of imminence. The target was 90%. The team agreed PDSA cycle 2 was considered a failure and was ended in favor of utilizing the more automated filter in the EHR and then utilizing a daily report to inform other clinicians.