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An evaluation of a pilot inpatient hospice unit and the impact it has on end-of-life care at an academic medical center

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An Evaluation of a Pilot Inpatient Hospice Unit and the Impact it has on End-of-Life Care at an Academic Medical Center

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Abstract

Background: Research shows that acute care hospitals with inpatient hospice units have an increase in hospice resource utilization and provide end-of-life care that is more aligned with patients' end-of-life goals compared to hospitals that do not have inpatient hospice units.

Methods: A pilot six-bed General Inpatient (GIP) hospice unit was implemented at an acute care hospital, located in Washington, D.C., to provide hospice care for patients that were not able to transfer to another inpatient setting for hospice care. A six-month evaluation of the pilot GIP hospice unit was done to evaluate the feasibility of the unit and the impact the GIP hospice unit had on end-of-life care at the hospital. Feasibility of the unit was assessed by patient admission characteristics and missed opportunities for admission to the unit. Patient charges were assessed to evaluate if there was a difference between patients that received end-of-life care in the GIP hospice unit compared to inpatient units in the hospital.

Interventions: A six-month evaluation of the pilot GIP hospice unit was done through a retrospective, cross sectional study design. The evaluation reviewed information from the Electronic Health Record (EHR), Vizient, Allscripts, and BiMart (internal financial system). The evaluation assessed if the GIP hospice unit affected recognition of end of life and patients that wanted hospice services through decreased Intensive Care Unit (ICU) length of stay and earlier hospice referrals (measured in days before death). Improved quality of end-of-life care was measured by the implementation of comfort care order sets.

Results: Between March 1st, 2019 and August 31st, 2019 there were 17 patients admitted the GIP hospice unit. There were 55 patient deaths at the hospital during that time that were identified as missed opportunities for admission to the GIP hospice unit. The most frequent reason for missed opportunities for admission to the GIP hospice unit was no or late referral to hospice (31%). There was a statistical difference between ICU length of stay between the pre-implementation

group (mean 7.7 days, $p < .05$) and the post-implementation group (mean 4.5 days, $p < .05$). There was statistical difference between the initiation of the Comfort Care Order Set between the pre-implementation group (11%, $p < .001$) mean and the post-implementation group (43%, $p < .001$).

Conclusions/ Implications: The six-month evaluation found that the GIP hospice unit was feasible, had decreased laboratory patient charges, and impacted end-of-life care for patients on other units in the hospital. Based on the evaluation the hospital will continue to improve the referral and admission process to the GIP hospice unit and consider expansion of the GIP hospice unit to patients who require compassionate extubation.

Background

Almost two-thirds of adults in the United States die in hospitals. This statistic illustrates the need for better approaches to caring for terminally ill hospitalized patients. Data shows that terminally ill patients who die in acute care hospital settings experience painful deaths and prolonged care with nonbeneficial procedures and mechanical ventilation (Erickson, Fried, Cherlin, Johnson-Hurzeler, Horwitz, & Bradley, 2002). Hospice care can offer other treatment options to reduce anxiety and improve satisfaction during end-of-life. Offering a General Inpatient (GIP) hospice unit for terminally ill patients has become an increased interest for acute care hospitals to bridge the gap for patients between curative treatments and hospice care (Erickson et al., 2002).

Studies show that hospice care has lower costs and higher quality and satisfaction, yet many patients do not receive hospice care until late in their care or not at all. Many barriers to hospice care can contribute to the lack of hospice enrollment of terminally ill patients in the hospital setting. Some end-of-life patients that want hospice care have an acute symptom that requires hospitalization and does not allow them to transfer to a hospice setting outside of the hospital. Patients also may not understand that they can receive hospital care and hospice care at the same time. And finally, healthcare providers at hospitals without hospice resources may lack the knowledge and acceptance of hospice care for terminally ill patients (Wang et al., 2011).

Another barrier to hospice is delayed referrals by physicians caring for patients who are receiving high-cost medical interventions. Referrals for hospice care do not occur for these types of patients until the patient or family decides to withdraw from these interventions (Jeiger et al., 2008). The study stated it is important that palliative care consultations and referrals to hospice happen appropriately in the Intensive Care Unit (ICU) because approximately 50% of all

hospital deaths occur after failed ICU care and one-third of patients who die in the acute care setting spend at least 10 days in the ICU before death (as cited in Digwood et al., 2011, p. 387).

According to the National Institute on Aging, palliative care can be initiated for anyone living with a serious illness and is best provided from the point of diagnosis. A patient can receive palliative care along with curative treatment. Alternatively, hospice care is provided to patients who are no longer receiving curative treatment for a terminal illness, with a life expectancy of six months if the illness runs its natural course (National Institute on Aging, 2017). The goals of palliative care and hospice care are both to improve quality of life, but these services can be offered at different points during an illness.

Patients admitted to inpatient hospice units are no longer receiving curative treatments while in the hospital. Both inpatient palliative care units and inpatient hospice units aim to provide care to patients that is in alignment with their wishes and goals, is cost-efficient, and high quality. Because both inpatient palliative care units and inpatient hospice units are a new phenomenon, when reviewing the literature both types of units were considered to assess the impact that they have on end-of-life care at the parent hospital.

Literature Review

A cross-sectional study of terminally ill cancer patients admitted to six hospitals in Connecticut was done to evaluate the effect of inpatient hospice units on hospice use post-admission. Two of the six hospitals included in the study had inpatient hospice units. Of the 232 patients included in the study, 25.4% used hospice services post-admission. Patients admitted to a hospital with an inpatient hospice unit were more likely to use hospice-services post-admission than those patients admitted to a hospital without an inpatient hospice unit (unadjusted odds ratio= 5.7, with a 95% confidence interval). The authors stated that the results of this study

supported older literature that the availability of local health resources influences the utilization of such services, like hospice. The limitations of this study included that the results cannot be generalized to all terminally ill patients and did not include any academic teaching hospitals (Erickson et al., 2008).

The literature shows that receiving care in inpatient palliative care units, or from palliative consultative teams is associated with shorter ICU days, fewer cardiopulmonary resuscitations (CPRs), less use of intubation and mechanical ventilation, and lower costs. Physicians and nurses from inpatient hospice units offer their expertise to other units and services within the hospital as consults about palliative care decisions for hospitalized cancer patients. Therefore, hospitals with inpatient hospice units have higher quality of palliative care for all cancer patients. The evidence-based practices of palliative and hospice care of the terminally ill now need to be translated to other terminally ill patient populations (Wang et al., 2011).

In 2012, Rush Medical Center and Horizon Hospice jointly opened a 13-bed centralized inpatient hospice unit in Chicago. A retrospective, cross-sectional study was done to compare cost and length of stay (LOS) for patients admitted to the centralized hospice unit compared to patients who received hospice care in a scattered bed model. The study found that 18% of patients admitted to the centralized hospice unit were admitted from the ICU compared to 14% in the scattered bed model. The hospice LOS in the centralized hospice unit (6 days) was three times higher than patient LOS in the scattered bed model (2 days). Since the LOS was statistically significantly ($P < .001$) higher in the centralized hospice unit compared to the scattered bed model, an additional analysis was done to compare the per day total cost (laboratory, pharmacy, and room and board) between the two units. The median total per day

cost for patients admitted to the scattered bed model was $1,297.40 compared to the centralized inpatient unit per day cost of $438.50. In hospice care, a longer length of stay is considered a favorable outcome because the patients could be entering hospice services earlier and avoiding unnecessary high-cost interventions and ICU days. The author stated that the longer hospice LOS could be a further sign of higher quality of life and patient satisfaction because providers discussed hospice alternatives sooner due to awareness of the new centralized inpatient hospice unit (Jegier et al., 2016).

A single retrospective study done at a University Hospital in New York found that a 10-bed inpatient acute Palliative Care Unit (PCU) decreased ICU length of stay from 4.6 days to 4.0 days. The goal of the acute PCU was to decompress the overly crowded ICUs while also providing care to patients likely to die despite aggressive treatment. The unit was staffed with one nurse per five patients. The medical care was provided by a board-certified hospice and palliative medicine medical director. Other members on the PCU included a nurse manager, social worker, chaplain, hospice and palliative medicine fellows, and an attending physician. Standardized palliative care orders were used to facilitate care on the unit (Digwood et al., 2011). A second study done at two southeast urban university hospitals found that transferring patients to a dedicated hospice unit saved 585 ICU days (Binney, Quest, Feingold, Buchman, & Majesko, 2013).

A 13-bed PCU at Vanderbilt University Hospital showed that a PCU can have a broader medical approach by staffing the unit with physicians and nurse practitioners from the division of internal medicine with palliative medicine oversight. All rooms in the PCU were private rooms, had pull out sleepers, and did not limit visitor hours. The nurses on the PCU unit received education based on the End-of-Life Nursing Education Consortium materials. Night coverage

was performed by a hospitalist with backup by a palliative care fellow and attending. In the PCU at Vanderbilt, most patient admissions to the PCU came from the ICU (50%), 43% were admitted from a hospital floor, and 7% from the emergency department (Shinall et al., 2018).

A retrospective cohort study was done between 2001 and 2006 of all cancer deaths in hospitals in Taiwan. One outcome variable the study used to evaluate the quality of palliative care in cancer patients was ICU admissions. Another outcome variable the study evaluated as an indicator of the quality of palliative care in the last month of life was underuse of hospice services as measured by a lack of or late referral to hospice (less than 3 days before death). The independent variable in the study was the availability of an inpatient hospice unit. The study found that Taiwanese cancer patients who received care in a hospital with an inpatient hospice unit (regardless if they received hospice care) were less likely than those who were cared for in a hospital without an inpatient hospice unit to use ICU care or life-sustaining treatments, but neither difference was statistically significant. The study did find that patients being cared for at a hospital with an inpatient hospice unit were statistically significantly more likely to use hospice services in their last year of life (adjusted odds ratio of .7, with a confidence interval of 95%) and less likely to be referred to hospice services in the last 3 days of life (Wang et at., 2011).

The authors of this study stated that a possible explanation for the statistically significant data was that hospice philosophy and practices may be passively diffused to healthcare professionals outside the GIP hospice unit, but stated further studies need to be done (Wang et al., 2011). The evidence shows that hospice impacts palliative care not only at the individual patient level, but also at the hospital or institutional level, regardless of a patient admission to hospice. At the institutional level, inpatient hospice programs have been shown to increase the proportion of patients using hospice care (Wang et al., 2011).

The literature shows that palliative care units and inpatient hospice units are feasible, cost-effective, and provide high quality of care. The studies reviewed provided level II evidence, using retrospective cohort study designs. Only one study was level III evidence and used a retrospective one group study design (Shinall et al., 2018). None of the studies reviewed demonstrated outcomes that would infer that an inpatient hospice unit would have a negative impact on end-of-life care. Four studies reported statistically significant results that inferred hospitals with inpatient palliative and hospice care units had better end-of-life care compared to hospitals without this resource (Digwood et al., 2011, Erickson et al., 2002, Jegier et al., 2015, & Wang et al., 2011).

The literature is limited on best practices for evaluating PCUs and general inpatient hospice units because they are a new phenomenon and not widely implemented (Weissman & Meier, 2009). Developing standards for the quality of these types of units requires learning from the experiences of other units, especially because the units need to be evaluated in different settings and patient populations. The more hospitals invest in these units, collect data, and share information, the more likely metrics and benchmarks will be established for quality of care in these specialized units.

Problem Statement/ Purpose/ Aims

Local Problem

As of 2018, only one hospital in Washington, D.C. has an inpatient hospice unit, located in the Northeast section of the city. There are no hospitals that provide inpatient hospice services in the North West section of the City. The hospital in this study is located in the North West section of Washington D.C. and on average cares for 17,000 inpatients annually. From April 1st, 2018 to September 30th, 2018, there were 219 adult patient deaths at the hospital.

Of the 219 adult patient deaths at the hospital from April 1st, 2018 to September 30th, 2018, 76.3% of the patients received care in the ICU setting. The average is higher than the United States average reported by the SUPPORT Principal Investigators that 50% of inpatient deaths occur after failed ICU care. The study also showed that one-third of inpatient deaths occurred after 10 days in the ICU (as cited in Digwood et al., 2011, p. 387). The average ICU LOS for patients that died at the hospital was 10 days. This data shows that there is an opportunity to decrease inpatient deaths in the ICU setting, as well as ICU LOS for patients who die at the hospital.

At the hospital, a code status "Do Not Resuscitate (DNR)" is interchangeable with a code status of "Allow Natural Death". Of the 219 adult inpatients that died at the hospital, 87.7% had a code status of DNR. Patients who die in the hospital with a code status of DNR could benefit from hospice resources but need to be in the hospital for an acute symptom. An order set available for patients at the hospital with a DNR code status is the Comfort Care Order Set (CCOS) (Appendix A). The CCOS was created by the hospital palliative care attendings to be initiated by any attending physician to provide end-of-life care to hospitalized patients. Currently, palliative care consults and the CCOS are the only end-of-life resources for patients who die in the hospital. Of the inpatients who died at the hospital with a DNR code status, only 30.60% also had the CCOS initiated, showing that even this end-of-life resource is underutilized.

Problem Statement

Acute care hospitals with inpatient hospice units have an increase in hospice resource utilization and provide end-of-life care that is more aligned with patients' end-of-life goals compared to hospitals that do not have inpatient hospice units.

Aim

The aim of this evidence-based practice project is to evaluate the operations of a pilot inpatient hospice unit and the impact it has on end-of-life care for patients at the hospital.

Objectives

- To assess if the six-bed pilot inpatient hospice unit is feasible for expansion through patient admission characteristics and missed opportunities for admission.
- To assess if the six-bed pilot inpatient hospice unit decreases patient charges for patients that receive end-of-life care at the hospital.
- To identify if the pilot inpatient hospice unit increases early identification of patients that want hospice services through decreased ICU LOS and earlier hospice referrals (measured in days before death).
- To identify if the pilot inpatient hospice unit benefits end-of-life care for patients outside of the unit through increased utilization of the CCOS for patients with a DNR code status.

Theoretical Framework

The theoretical framework used to guide this project was the Everett Roger's Diffusion of Innovation Theory. Change is constant in the hospital setting and trying to control the speed at which a new idea spreads within an organization is a priority for healthcare leadership, as change can have major impacts on cost, quality, and patient satisfaction (Cain & Mittman, 2002). Rogers states that "diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system" (as cited in Cain & Mittman, 2002). In this project, the innovation was the pilot inpatient hospice unit. The Diffusion S-Curve model demonstrates that any innovation is first adopted by a few people within the organization. As more people within the organization use the innovation, others will begin to

use it if it is better than what they are currently using. Once the diffusion reaches most of the organization, it spreads rapidly (Cain & Mittman, 2002).

The change agents were the key interdisciplinary stakeholders on the hospital Hospice Committee. Rogers states that change agents are individuals who influence individual's innovation-decisions in a desirable direction (As cited in Cain & Mittman, 2002). The Hospice Committee's role was to influence their professional peers in favor of adopting this innovative approach to delivering hospice care at the hospital.

There are ten critical dynamics of the Diffusion of Innovation: relative advantage, trialability, observability, communications channels, homophilous groups, pace of innovation, norms and social networks, opinion leaders, compatibility, and infrastructure. Trialability was one of the drivers of change because executive healthcare leaders at the hospital tried the inpatient hospice unit as a pilot program without having to fully commit. Physicians at the hospital were able to try the new hospice practice without having to discard the hospital's existing way of providing end-of-life care to other patients within the hospital. Communication channels were important in this process because the theory states that the diffusion of innovation is a social process that depends on new ideas being communicated from an individual who is aware of the innovation to other individuals. Within the concept of communication channels, the program implementation relied on diffusion of information within homophilous groups; nurses spread information to other nurses and physicians spread the information to other physicians.

In this theory, pace of innovation is faster if the innovation can be reinvented to fit the needs of different adopters (Cain & Mittman, 2002). While the pilot hospice unit did not evolve as the information was diffused to different groups within the healthcare system, how the different groups use the innovation or knowledge of the hospice program had the potential to

evolve. According to this theory, reinvention is often necessary for acceptance of an innovation into a complex social environment, like a hospital (Cain & Mittman, 2002). The pilot nature of the inpatient hospice unit allowed for the unit to be reinvented for future purposes based on the acceptance or rejection of the program from different groups within the hospital.

Project and Study Design

The hospital is a not-for-profit, acute-care academic medical center located in the District of Columbia with 609 licensed beds. The mission of the hospital, *cura personalis*- caring for the whole person, is aligned with the hospital's commitment to the Jesuit identity. The adult inpatient census runs over capacity on average annually. The hospital has a Hospice Committee composed of executive leadership, physician leadership, nursing leadership, clinical nurses, and social work leaders.

A six-month pilot evaluation of a GIP hospice unit was done to assess the potential for a larger scale inpatient hospice unit in the future. The six-month evaluation of the GIP hospice unit assessed if offering this service would improve the use of hospice resources for patients who receive end-of-life care at the hospital. The literature showed that the presence of a hospice unit can positively impact the parent hospital's use of hospice resources effectively to provide quality end-of-life care that is aligned with the goals of the patients and families.

The GIP unit model that was used at the hospital is the Hospital-Hospice partnership model. In this model, patients are admitted to a hospice program, but receive care at the hospital. The nurses and physicians caring for the patients were employed by the hospital, but oversight of the plan of care of the patients as well as all professional management responsibilities were the responsibility of the hospice program (National Hospice and Palliative Care Organization, 2001). Admission to the pilot GIP hospice unit did not require a specific disease or condition. Patients

were eligible for hospice care in the inpatient setting if they needed acute pain management or care of an acute symptom that could not be provided in the outpatient hospice setting (National Hospice and Palliative Care Organization, 2012).

The pilot GIP hospice unit was 6 beds located on 2 inpatient units (3 Bles and 4 Bles). Due to the high patient volume at the hospital, there were not dedicated inpatient beds on the unit for hospice; the patients could be admitted to any private inpatient bed on one of the two designated units. Inclusion criteria for admission to the pilot GIP hospice unit was: age 18+ years of age, DNR code status, criteria met for inpatient hospice care (acute pain or symptom management), and an expected life expectancy of less than 72 hours or an attending acknowledgement that the patient is too critical to transfer to another inpatient hospice setting. Exclusion criteria for the pilot GIP hospice unit was patients requiring mechanical ventilation or requiring titratable intravenous (IV) cardiac medications.

All clinical nurses on 3 and 4 Bles received 3 hours of specialized hospice training prior to the pilot GIP hospice unit opening. The medical care of the patients was provided by hospitalist physicians employed by the hospital who received 6 hours of specialized hospice training. The hospital partnered with a hospice organization and certified hospice attendings were always available for consultations. The hospice organization also provide a clinical nurse (RN) coordinator, social worker, chaplain, and volunteer services. A member of the hospice organization RN team saw the GIP hospice patients every day to collaborate with the RN team at the hospital to develop the plan of care for the patient.

The pilot GIP hospice unit opened for one month prior to the six-month evaluation of the program. During this one-month period, the nurses on the Hospice Committee and the two designated hospice units, early adopters according to the Diffusion of Innovation Theory,

educated their homophilous groups. The literature showed that hospice units had a statistically significant impact on end-of-life patients in the ICU (Binney et al., 2014, Digwood et al., 2011, & Shinall et al., 2018). According to the Shinall et al. (2014) study, 38% of patients admitted to the specialized PCU unit had a primary diagnosis of malignancy. Based on these findings from the literature, the acceptance of the pilot GIP hospice unit by the oncology physicians and the critical care physicians at the hospital were essential components of the early majority in the Diffusion of Innovation Theory. The physicians and nurses specially trained in hospice were responsible for leveraging their social networks within their professional groups to gain acceptance of the pilot GIP hospice unit. The hospital Hospice Committee meet once a week during this one-month period to assess any feedback that had been received and if any changes to the unit needed to be made prior to the six-month evaluation of the pilot GIP hospice unit.

This evidence-based project was approved by the Institutional Review Board at Georgetown University Hospital and James Madison University Hospital.

Data Analysis

Data were analyzed to evaluate the characteristics of the GIP hospice unit, missed opportunities for admission, patient charges at end of life, and end-of-life care at the hospital. Data were collected using the electronic health record (EHR), Vizient, Bi-Mart, and All-Scripts. To evaluate the characteristics of the GIP hospice unit and missed opportunities for admissions, all patient charts in the post-implementation group (March 1st, 2019 to August 31st, 2019) were reviewed. To evaluate end-of-life care at the hospital, a randomized retrospective chart review was performed. The pre-implementation group consisted of chart reviews from April 1st, 2018 to September 30th, 2018. The post-implementation group consisted of chart reviews from March 1st, 2019 to August 31st, 2019. Patient charts were eligible for review if the patient was over the

age of 18 and died in the hospital more than 24 hours after admission. After all potential patient charts were identified, every 20th chart was selected until an *n* of 64 was reached for both groups.

Patient characteristics were categorized as: age in years, patient gender (male and female), patient race (Asian, Black, Declined, Other, White), primary hospital service (Critical Care/Pulmonary, Medicine, Neurosurgical, Surgical, and Transplant) and patient unit (Intensive Care Unit (ICU), Intermediate Care Unit (IMC), Medical/Surgical Unit (Med/Surg)). The patient characteristics were obtained through the Vizient system and manually verified through a chart review of the patient's EHR. Vizient is an online clinical analytic platform. The feasibility of the unit was measured using the number of patients admitted to the GIP hospice unit and the number of missed opportunities for admission to the GIP hospice unit. A missed opportunity for GIP hospice admission was defined as a patient who died at the hospital and met admission criteria (DNR order, no curative medical treatment, non-ventilated, no IV titratable cardiac medication) for GIP hospice.

Patient charges were collected using the internal financial data system BiMart. Patient charges were reviewed for the last three days of admission at the hospital. Patient charges were placed into categories (unit room charges, laboratory charges, pharmacy charges, materials, respiratory, miscellaneous, and overall patient charges). The average patient charges were categorized into the type of unit (ICU, IMC, Med/Surg, and Hospice) for comparison. Financial data were reviewed for five patient charts in each of the unit types and then averaged for each category (unit room charges, laboratory charges, pharmacy charges, and overall patient charges).

Earlier recognition of desired end-of-life care was measured through ICU LOS and hospice referral days (measured in days before death). Hospice referral days were manually collected through Allscripts and also verified in the patient EHR. Allscripts is an electronic

system that allows case managers and social workers at the hospital to put in electronic referrals to hospice. Microsoft Excel Version 1809 and SPSS Statistical Package Software were used to analyze the data. Care consistent with the patient's end of life wishes was measured through the utilization of the provider order "Comfort Care Order Set" for patients with a DNR code status.

Results

There were 17 patients admitted to the GIP hospice unit between March 1st, 2019 and August 31st, 2019. The patients admitted to the GIP hospice unit ranged from 44 to 88 years of average, with the average of 70.5 years of age (Table 1). The gender on the unit was 41% female and 59% male. The patient race on the unit was 65% black, 24% white, and 12% other. The underlying disease process for patients admitted to the GIP hospice unit were divided into four categories: 65% cancer, 18% organ/transplant, 12% neurology, and 6% respiratory (Figure 1). Patient logistics for GIP hospice admissions included length of stay on the unit, referring medical team, and referring unit type (Table 2). Patients admitted to GIP hospice had a LOS on the unit ranging from 1 to 12 days, with 3.1 days being the unit average. The referring medical team for admission to the GIP hospice unit was 18% Critical Care/ Pulmonary, 71% Medicine, and 12% Neurosurgery. The referring unit type for admission to the GIP hospice unit was 47% IMC, 41% Medicine, and 12% ICU.

There were 55 patients identified as missed opportunities (DNR order, no curative medical treatment, non-ventilated, and no titratable IV medication) for admission to the GIP hospice unit (Table 3). The patients identified as missed opportunities ranged in age from 33 to 96 years, with the average being 69 years of age. The gender of missed opportunities was 42% female and 58% male. The race of missed opportunities was 45% black, 2% denied answering, 44% white, and 5% other. The underlying disease process for patients identified as missed

opportunities was 58% cancer, 5% infection, 13% organ/transplant, 16% neurology, 7% respiratory (Figure 3).

Patient logistics for missed opportunities for GIP hospice admission included hospice referral, primary medical team, and primary unit type (Table 4). Of the patients identified as missed opportunities, 35% were referred for hospice services and 65% did not have a referral for hospice services. The primary medical team caring for the patient was 15% Critical Care/ Pulmonary, 69% Medicine, 10% Neurology, 2% Surgery, and 4% Transplant. The primary unit location type for patients identified as missed opportunities was 35% IMC, 35% Medicine, and 31% ICU. The reason for the missed opportunity for admission was further investigated through EHR chart review. Of the patients that were eligible for admission to the GIP hospice unit: 7% were not put on comfort care until they were actively dying, 11% were referred to GIP hospice but were denied, 20% were referred to a hospice program outside of the hospital, 13% were family-related delays, 31% were not referred to hospice or referred during active death, 2% had an unknown delay, and 16% were delayed due to no weekend coverage (Figure 4).

Patient charges during end-of-life care were compared between the GIP hospice unit, Med/Surg unit, IMC unit, and ICU (Table 5). The patient charges that were evaluated were unit charge, laboratory charge, pharmacy charge, materials, respiratory, miscellaneous, and overall patient charges. For the purpose of this evaluation, quality care for actively dying patients should show a decrease in laboratory charges and overall patient charges. The average laboratory charges for actively dying patients was $12 in the GIP hospice unit, $146 in the Med/Surg unit, $332 in the IMC unit, and $2,643 in the ICU. The average overall patient charges for actively dying patients at MGUH was $10,163 in the GIP Hospice unit, $9,969 in the Med/Surg unit, $11,367 in the IMC unit, and $25,098 in the ICU. On further investigation total

patient charges in the GIP hospice unit were more than the Med/Surg unit because of patient charges for respiratory care.

To evaluate the difference between end-of-life care during the pre-implementation of the GIP hospice unit and post-implementation, data was collected including: hospice referrals, ICU LOS, and comfort care order data. There were 96 patients discharged to hospice services in the pre-implementation group and 108 patients discharged to hospice services in the post-implementation group (Figure 5). There was no statistical difference ($p > .05$) for the mean days before death that a hospice referral was initiated for the pre-implementation group (mean .6 days) and the post-implementation group (mean 1.2 days). The null hypothesis that hospice referral days would be unchanged after implementation of the GIP hospice unit was accepted. There was statistical significance ($p < .001$) in the number of patients that received the comfort care order set between the pre-implementation group (6 patients) and the post-implementation group (26 patients) (Figure 8). The null hypothesis that there would be no difference between the comfort care initiation in the pre-implementation group and the post-implementation group was rejected.

Of the 64 patients in the pre-implementation group, 92% of patients spent time in the ICU and 72% patients died in the ICU. Of the 63 patients in the post-implementation group, 78% of patients spent time in the ICU and 70% died in the ICU. An outlier patient of 74 days spent in the ICU was removed from the post-implementation group. There was statistical significance ($p < .05$) between the mean ICU LOS between in the pre-implementation group (mean 7.7 days) and the post-implementation group (mean 4.9 days) (Figure 7). The null hypothesis that ICU LOS would not change between pre-implementation of the GIP hospice unit and post-implementation of the GIP hospice unit was rejected.

Implications for Practice

Feasibility

The purpose of this study was to evaluate the implementation of a pilot GIP hospice unit and the effects on end-of-life care at the hospital. The patient demographics and underlying disease process of patients admitted to the GIP hospice unit was diverse and similar to the overall patient population of the hospital. The target LOS for patients admitted to the GIP hospice unit was 3 days and the actual length of stay average for patients on the unit was 3.1 days, indicating that patients that were admitted to the unit were appropriate based on prognosis.

The missed opportunities for admission to the GIP hospice unit had similar patient characteristics and underlying disease processes as the patients admitted to the GIP hospice unit and therefore no specific patient population needs to be targeted for further evaluation of admission to the GIP hospice unit. The referring provider team and referring unit type was similar in both the GIP hospice unit patients and missed opportunities. Future education does not need to be focused toward a specific provider team or nursing unit. Because there were 55 missed opportunities for admission, general education about GIP hospice and the admission process needs to be done throughout the hospital. The reasons for missed opportunities for admission to GIP hospice were related to late recognition of hospice eligibility and end of life. End-of-life education should be considered for providers at the hospital to better facilitate conversations with patients and family about end-of-life care and proper electronic health documentation to facilitate appropriate admission for hospice services. Case management and social work had a shared responsibility for hospice referral and documentation at the hospital and 31% of the missed opportunities had no referral or delayed referral documented. Further

investigation into the workflow and documentation of hospice referral should be done to identify barriers for proper admission to the GIP hospice unit.

Quality of Care

Studies have shown that Medicare patients who receive hospice care have $2309 less Medicare costs compared to patients who do not receive hospice care (Taylor, 2012). This statistic drove the decision to evaluate patient charges during end-of-life care at the hospital compared across the GIP hospice unit, Med/Surg unit, IMC unit, and ICU. Patients admitted to hospice programs not only receive care that is in better alignment with their end-of-life wishes, but also are more likely to avoid high patient charges for high-level of care unit type (ICU) and charges for non-beneficial procedures such as laboratory, imaging, and other procedures (Meier, 2011). Patient charges for end-of-life care was the most expensive in the ICU and least expensive on the Med/Surg units. Patients in the GIP hospice unit had lower charges for laboratory care compared to the other units. This indicates that patients in the GIP hospice unit were not receiving non-beneficial procedures during end of life. The patient charges in the GIP hospice unit for respiratory care were $519, which was higher than respiratory charges in the Med/Surg unit.

Limitations to the patient charges evaluation included the number of patient charges reviewed and the lack of ability to differentiate if care was in the best interest of making the patient comfortable. Data was not collected on the individual procedure charges and more information would need to be collected to evaluate if the respiratory procedures on the GIP hospice unit were beneficial to the comfort of the patient during end of life. Five patient charts were reviewed for patient charges in each of the unit types for a total of 20 patient chart reviews.

The literature review showed that hospice care has lower costs and higher quality and satisfaction, yet many patients do not receive hospice care until late in their care or not at all. Literature also showed that healthcare providers at hospitals without hospice resources may lack the knowledge and acceptance of hospice care for terminally ill patients (Wang et al., 2011). Hospice referral practices and end-of-life metrics were evaluated to assess if implementing the GIP hospice unit had an effect on end-of-life practices at the hospital. There was no statistical difference between hospice referral days before and after implementation of the GIP hospice unit. A limitation to this evaluation was the low volume of patients with a hospice referral documented in their EHR. Ten patients in the pre-implementation and twelve patients in the post-implementation group had a documented hospice referral in the EHR. All other patients were assigned zero days for hospice referrals. The test was skewed to zero due to the high number of patients that had no hospice documentation. Future evaluation with a larger sample size would be needed to test for statistical difference between hospice referral days before and after the implementation of a GIP hospice unit.

End-of-Life Resources

Comfort Care Order sets are a patient care plan developed with the expert consultation of the palliative care team for implementation of patients no longer receiving curative treatment during end of life in the hospital setting. The comfort care order set helps the primary provider team as well as the nurses develop a plan of care for the patient. The comfort care order set is considered a hospital best practice for end-of-life care. There was a statistical difference between the initiation of the comfort care order set between the pre-implementation group (11%) and the post-implementation group (43%). A limitation to this evaluation was the presence of a unexpected confounding variable. In June of 2019, during the post-implementation group, the

hospital hired a palliative care physician to lead the palliative care services at the hospital. The increase in the usage of the comfort care order set could have been impacted by both the increased presence of the palliative care provider team as well as the presence of the GIP hospice services.

There was a statistical difference between the mean ICU LOS of patients that died in the hospital from the pre-implementation group (mean: 7.7 days) compared to the post-implementation group (mean: 4.5 days). More research should be done to identify if early recognition of patient and family end-of-life wishes decreases costly ICU admission days for patients and allows patients and families to receive care that aligns with their wishes. During post-implementation (n=64) of the GIP hospice unit, 45 patient deaths (70% of all deaths in the hospital) occurred in the ICU. Of the patients that died in the hospital, 43 (96%) of the patients had a DNR order and 21 (33%) were documented as "comfort care only" patients. However, 41 (91%) patients were receiving ICU level care (intubated, IV titratable medications) during end of life (3 days before death).

Based on the statistical difference of ICU LOS and CCOS implementation, this evaluation identified a change in end-of-life care provided at the hospital. It cannot be differentiated if the change was impacted by the palliative care providers or the implementation of the GIP hospice unit. However, since there was an identified need for a GIP hospice unit as well as comfort care orders for patients actively dying in the hospital, future research and evaluation of end-of-life care at the hospital should include palliative care and hospice care to be a partnership and not mutually exclusive. The palliative care provider at the hospital has joined the Hospice Committee and is an advocate for the hospice partnership.

The evaluation of the GIP hospice unit supported the decision of the hospital to continue the implementation of the GIP hospice unit. The hospital was considering changing admission to the GIP hospice unit from Monday through Friday 7:00 am to 4:00pm to 24 hours and 7 days a week. Based on the evaluation of the GIP hospice unit, only 9 (16%) of patients missed possible admission to the GIP hospice unit based on weekend eligibility. The hospital decided to focus future efforts on expanding the admission eligibility for the unit to increase admission to the GIP hospice unit and provide care to patients and families that is more in alignment with their end-of-life wishes. The hospice providers will meet with the critical care providers to evaluate if the GIP hospice should accept patients who require compassionate extubation. Hospice education was not provided to the providers and nursing staff in the ICUs. Future considerations should be made for expanded hospice education to the ICU providers and nursing staff to facilitate end-of-life care to patients in the ICU setting.

Conclusion

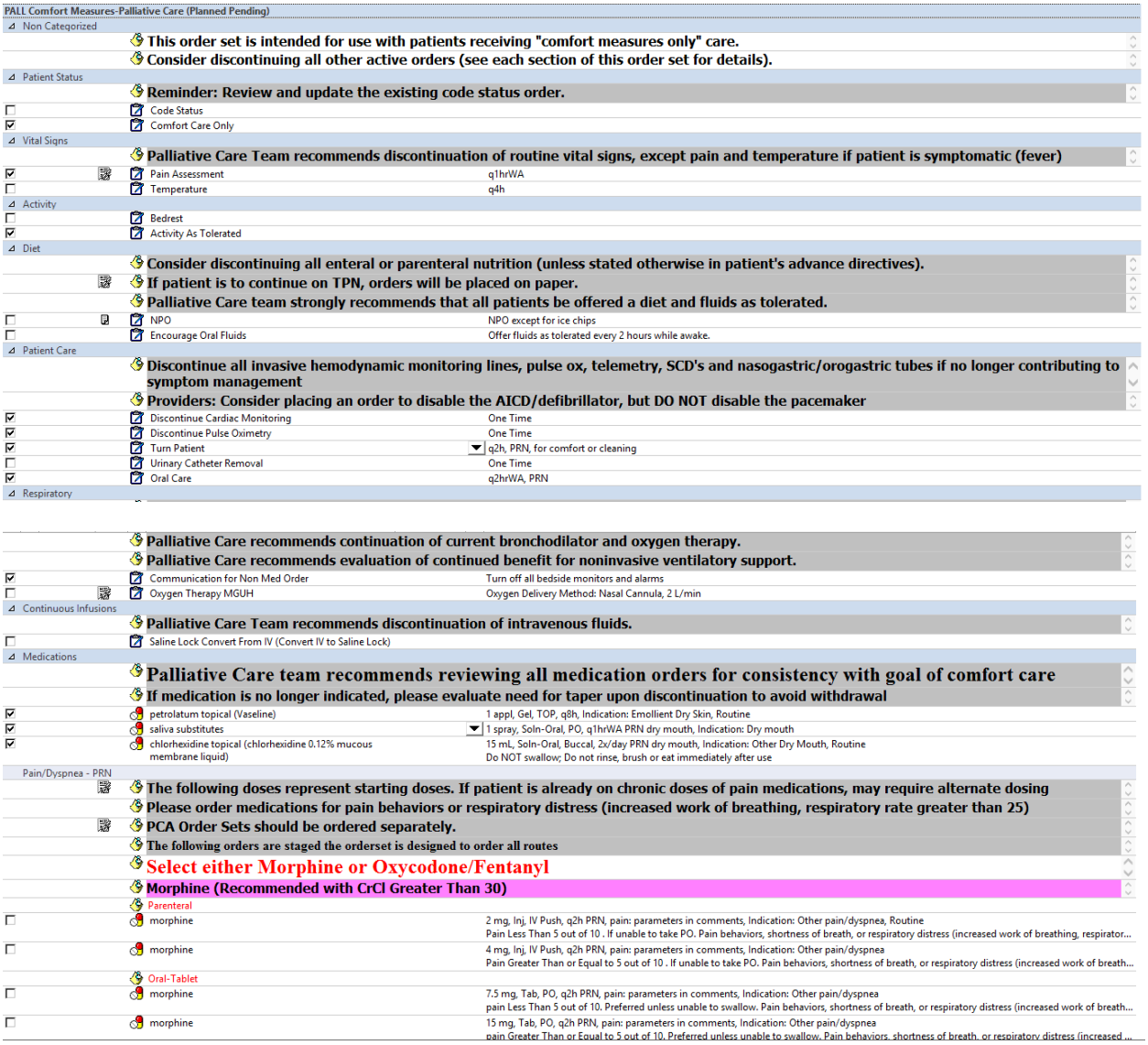
Often hospitals implement palliative and hospice services because it is the right thing to do for their patients and families. This belief should be further supported by evidence-based quality metrics of end-of-life care. The only evidence-based quality of care metric for end-of-life care at this time is patient satisfaction which was not able to be collected in this evaluation. More studies need to be done to identify quality metrics of end-of-life care. The evaluation found the development of the GIP hospice unit to be feasible, as well as supportive of decreased patient charges through elimination of nonbeneficial procedures. Also, of significance was the positive impact the program has on the provision of end-of-life care at the hospital.

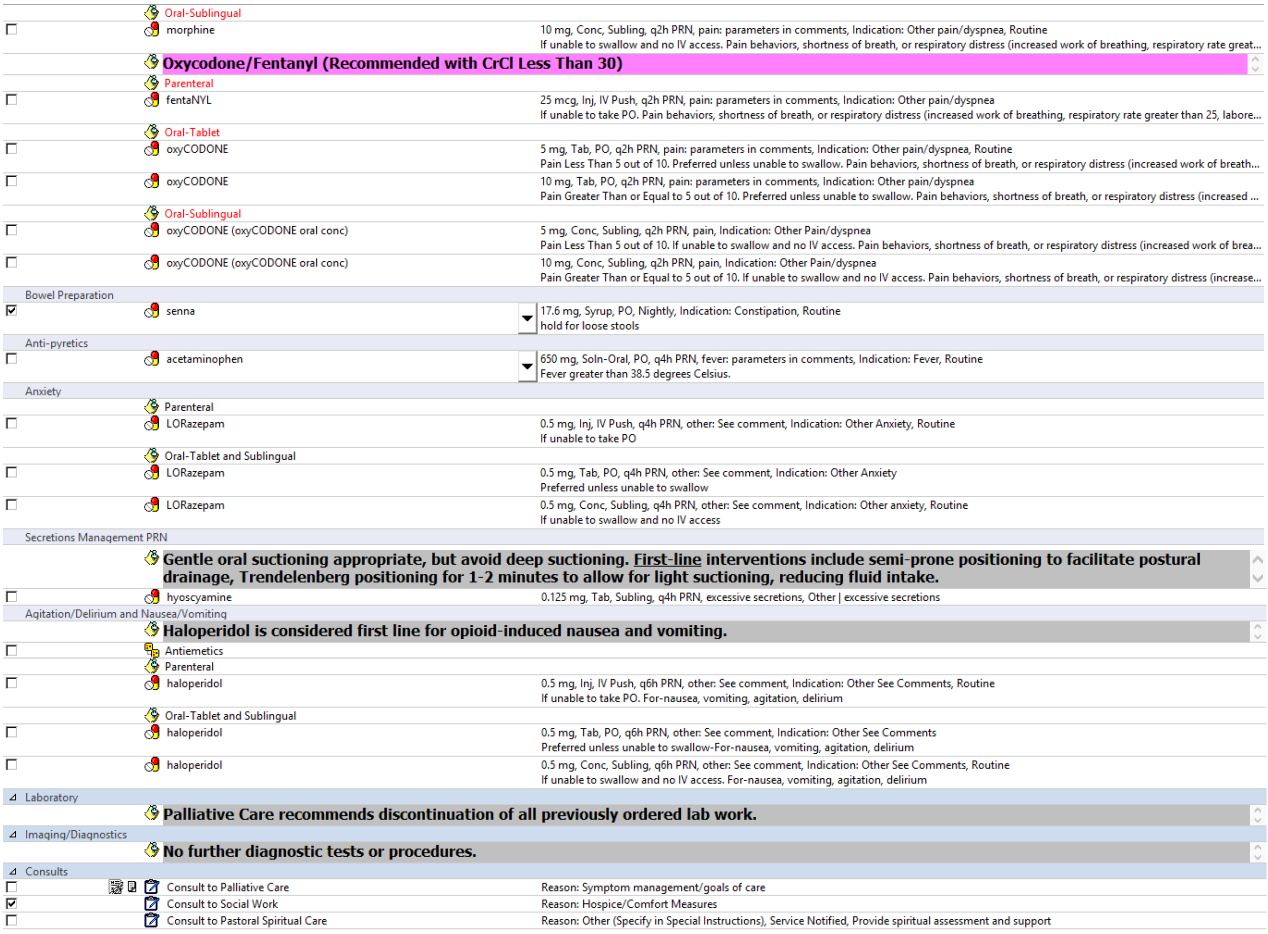
Appendix

Appendix A

Figure 1

Comfort Care Order Set





		Oral-Sublingual	
☐		morphine	10 mg, Conc, Subling, q2h PRN, pain: parameters in comments, Indication: Other pain/dyspnea, Routine If unable to swallow and no IV access. Pain behaviors, shortness of breath, or respiratory distress (increased work of breathing, respiratory rate great...
		Oxycodone/Fentanyl (Recommended with CrCl Less Than 30)	
		Parenteral	
☐		fentaNYL	25 mcg, Inj, IV Push, q2h PRN, pain: parameters in comments, Indication: Other pain/dyspnea If unable to take PO. Pain behaviors, shortness of breath, or respiratory distress (increased work of breathing, respiratory rate greater than 25, labore...
		Oral-Tablet	
☐		oxyCODONE	5 mg, Tab, PO, q2h PRN, pain: parameters in comments, Indication: Other pain/dyspnea, Routine Pain Less Than 5 out of 10. Preferred unless unable to swallow. Pain behaviors, shortness of breath, or respiratory distress (increased work of breath...
☐		oxyCODONE	10 mg, Tab, PO, q2h PRN, pain: parameters in comments, Indication: Other pain/dyspnea Pain Greater Than or Equal to 5 out of 10. Preferred unless unable to swallow. Pain behaviors, shortness of breath, or respiratory distress (increased ...
		Oral-Sublingual	
☐		oxyCODONE (oxyCODONE oral conc)	5 mg, Conc, Subling, q2h PRN, pain, Indication: Other Pain/dyspnea Pain Less Than 5 out of 10. If unable to swallow and no IV access. Pain behaviors, shortness of breath, or respiratory distress (increased work of brea...
☐		oxyCODONE (oxyCODONE oral conc)	10 mg, Conc, Subling, q2h PRN, pain, Indication: Other Pain/dyspnea Pain Greater Than or Equal to 5 out of 10. If unable to swallow and no IV access. Pain behaviors, shortness of breath, or respiratory distress (increase...
Bowel Preparation			
☑		senna	17.6 mg, Syrup, PO, Nightly, Indication: Constipation, Routine hold for loose stools
Anti-pyretics			
☐		acetaminophen	650 mg, Soln-Oral, PO, q4h PRN, fever: parameters in comments, Indication: Fever, Routine Fever greater than 38.5 degrees Celsius.
Anxiety			
		Parenteral	
☐		LORazepam	0.5 mg, Inj, IV Push, q4h PRN, other: See comment, Indication: Other Anxiety, Routine If unable to take PO
		Oral-Tablet and Sublingual	
☐		LORazepam	0.5 mg, Tab, PO, q4h PRN, other: See comment, Indication: Other Anxiety Preferred unless unable to swallow
☐		LORazepam	0.5 mg, Conc, Subling, q4h PRN, other: See comment, Indication: Other anxiety, Routine If unable to swallow and no IV access
Secretions Management PRN			
		Gentle oral suctioning appropriate, but avoid deep suctioning. First-line interventions include semi-prone positioning to facilitate postural drainage, Trendelenberg positioning for 1-2 minutes to allow for light suctioning, reducing fluid intake.	
☐		hyoscyamine	0.125 mg, Tab, Subling, q4h PRN, excessive secretions, Other | excessive secretions
Agitation/Delirium and Nausea/Vomiting			
		Haloperidol is considered first line for opioid-induced nausea and vomiting.	
☐		Antiemetics	
		Parenteral	
☐		haloperidol	0.5 mg, Inj, IV Push, q6h PRN, other: See comment, Indication: Other See Comments, Routine If unable to take PO. For-nausea, vomiting, agitation, delirium
		Oral-Tablet and Sublingual	
☐		haloperidol	0.5 mg, Tab, PO, q6h PRN, other: See comment, Indication: Other See Comments Preferred unless unable to swallow-For-nausea, vomiting, agitation, delirium
☐		haloperidol	0.5 mg, Conc, Subling, q6h PRN, other: See comment, Indication: Other See Comments, Routine If unable to swallow and no IV access. For-nausea, vomiting, agitation, delirium
Laboratory			
		Palliative Care recommends discontinuation of all previously ordered lab work.	
Imaging/Diagnostics			
		No further diagnostic tests or procedures.	
Consults			
☐		Consult to Palliative Care	Reason: Symptom management/goals of care
☑		Consult to Social Work	Reason: Hospice/Comfort Measures
☐		Consult to Pastoral Spiritual Care	Reason: Other (Specify in Special Instructions), Service Notified, Provide spiritual assessment and support

Appendix B

Table 1

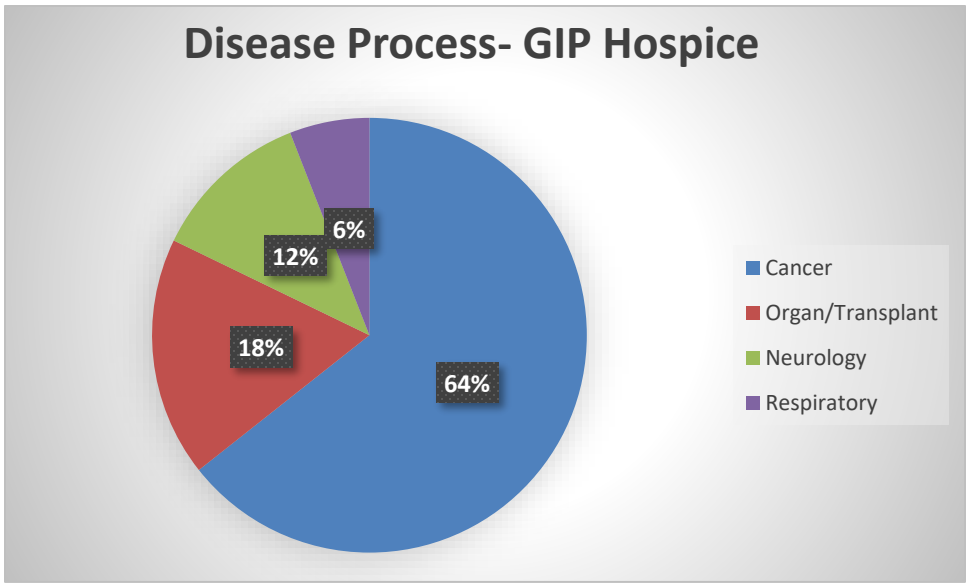
GIP Hospice Patient Characteristics

GIP Hospice Patient Characteristics	
Demographics	**Total: 17**
Age	Range: 44 to 88 years of age Average: 70.5 years of age
Gender	Female: 7 (41%) Female Male: 10 (59%) Male
Race	11 (65%) Black 4 (24%) White 2 (12%) Other

Appendix C

Figure 2

GIP Hospice Patient Underlying Disease Process



Appendix D

Table 2

GIP Hospice Patient Logistics

GIP Hospice Patient Logistics	
Length of Stay	
	Range: 1 to 12 days
	Average: 3.1 days
Referring Medical Team	
	3 (18%) Critical Care/ Pulmonary
	12 (71%) Medicine
	2 (12%) Neurosurgery
Referring Unit Type	
	8 (47%) IMC
	7 (41%) Med/Surg
	2 (12%) ICU

Appendix E

Table 3

GIP Hospice Missed Opportunities Patient Characteristics

GIP Hospice Missed Opportunities Patient Characteristics	
Demographics	**Total: 55**
Age	Range: 33 to 96 years of age Average: 69 years of age
Gender	23 (42%) Female 32 (58%) Male
Race	2 (4%) Asian 25 (45%) Black 1 (2%) Denied 24 (44%) White 3 (5%) Other

Appendix F

Table 4

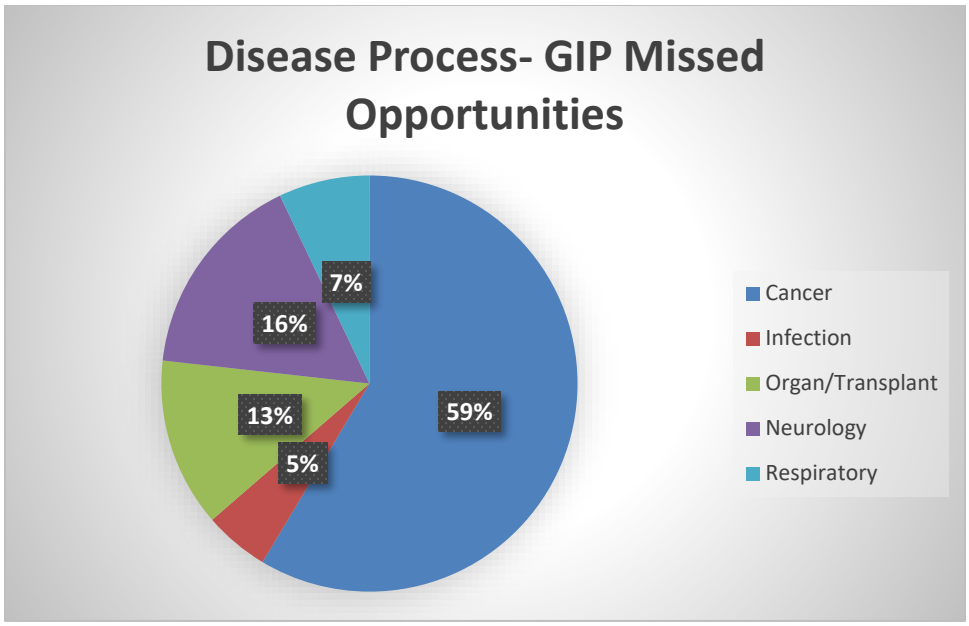
GIP Hospice Missed Opportunity Patient Logistics

GIP Hospice Missed Opportunity Patient Logistics	
Referred for Hospice Services	
	19 (35%) No
	36 (65%) Yes
Primary Medical Team	
	8 (15%) Critical Care/Pulmonary
	38 (69%) Medicine
	5 (10%) Neurology
	1 (2%) Surgery
	2 (4%) Transplant
Primary Unit Type	
	8 (35%) IMC
	7 (35%) Med/Surg
	2 (31%) ICU

Appendix G

Figure 3

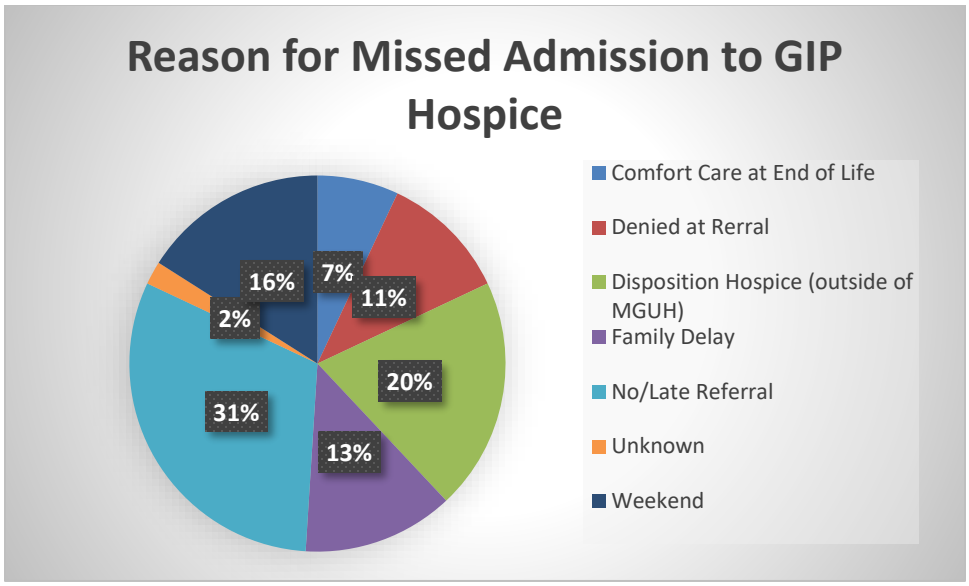
Disease Process for GIP Missed Opportunities



Appendix H

Figure 4

Reason for Missed Admission to GIP Hospice



Appendix I

Table 5

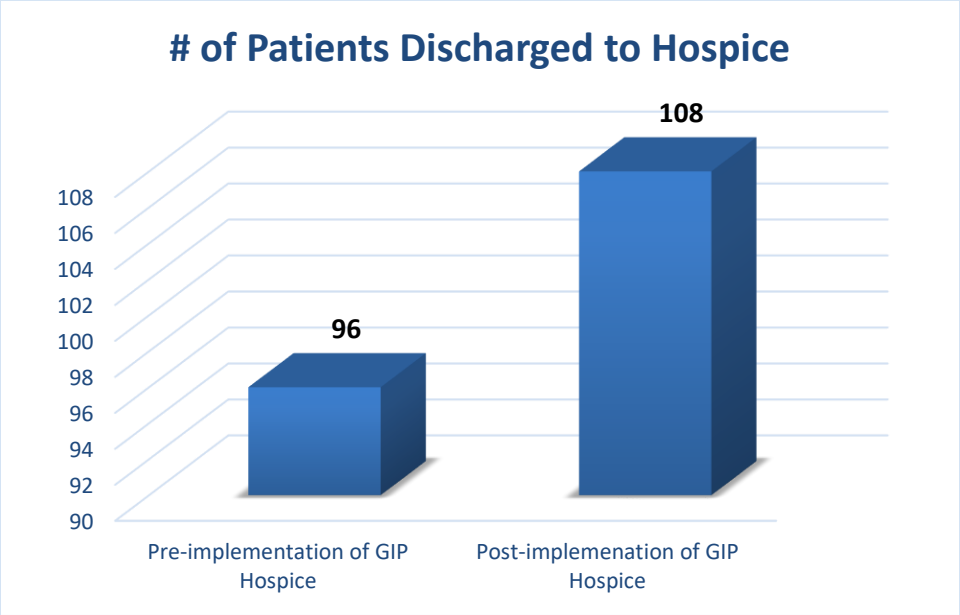
Patient Charges for End of Life Care

	Unit Charge	Laboratory	Pharmacy	Materials	Resp	Misc.	Overall
Hospice							
Day 1 (from death)	$2,948	$0	$189	$54	$193	$0	$3,460
Day 2	$2,948	$4	$260	$17	$163	$0	$3,446
Day 3	$2,948	$8	$268	$0	$163	$0	$3,440
Total	**$8,844**	**$12**	**$717**	**$71**	**$519**	**$0**	**$10,163**
Med/Surg							
Day 1	$2,966	$0	$315	$8	$0	$0	$3,289
Day 2	$2,966	$0	$272	$19	$0	$0	$3,256
Day3	$2,966	$146	$278	$33	$0	$0	$3,422
Total	**$8,898**	**$146**	**$865**	**$60**	**$0**	**$0**	**$9,969**
IMC							
Day 1	$2,948	$0	$129	$23	$240	$0	$3,340
Day 2	$2,948	$0	$184	$23	$261	$85	$3,501
Day 3	$2,948	$332	$810	$33	$247	$156	$4,526
Total	**$8,844**	**$332**	**$1,123**	**$79**	**$748**	**$241**	**$11,367**
ICU							
Day 1	$3,988	$0	$515	$24	$0	$0	$4,527
Day 2	$5,262	$1,439	$1,517	$289	$425	$3,209	$12,141
Day 3	$4,953	$1,204	$784	$164	$872	$453	$8,430
Total	**$14,203**	**$2,643**	**$2,816**	**$477**	**$1,297**	**$3,662**	**$25,098**

Appendix J

Figure 5

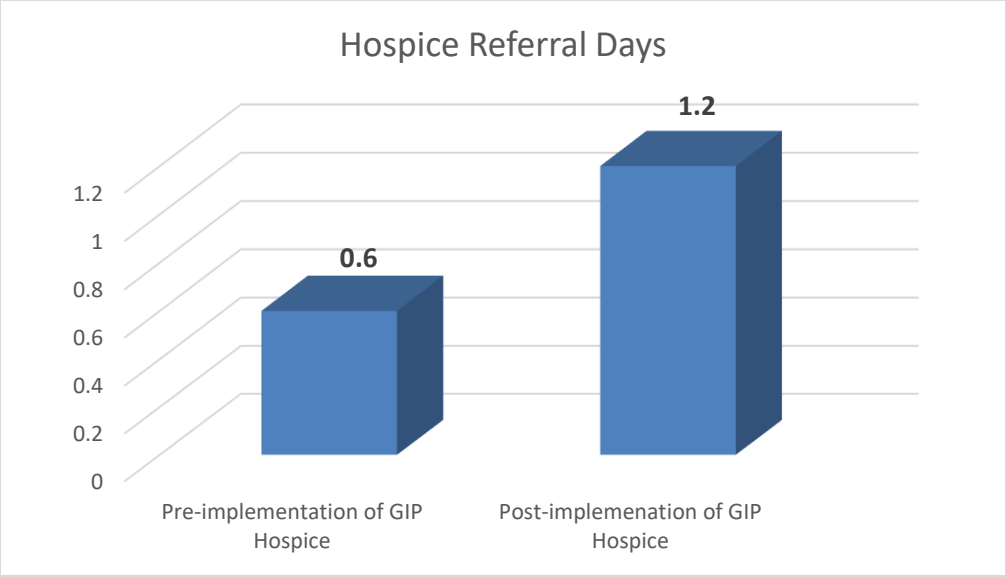
Number of Patients Discharged to Hospice



Appendix K

Figure 6

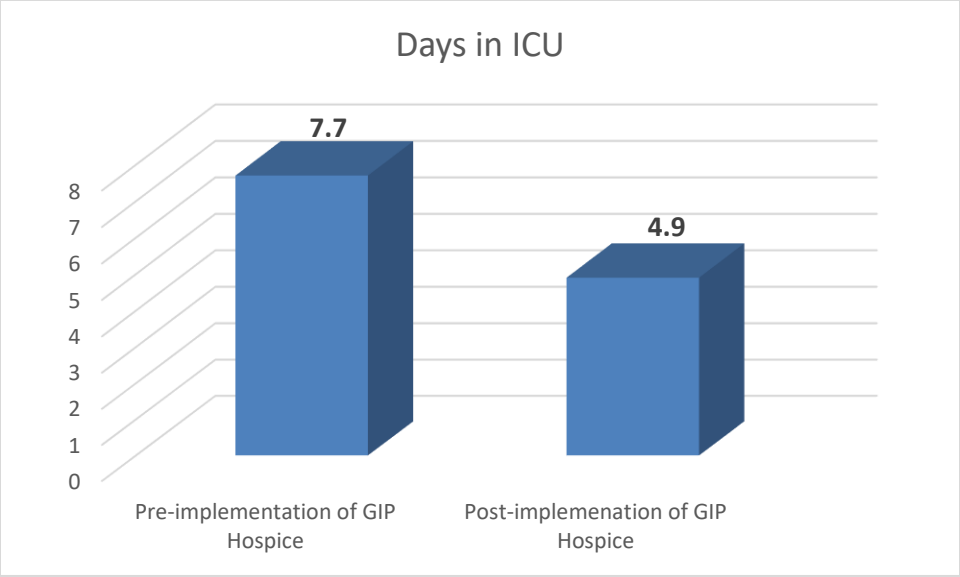
Hospice Referral Days



Appendix L

Figure 7

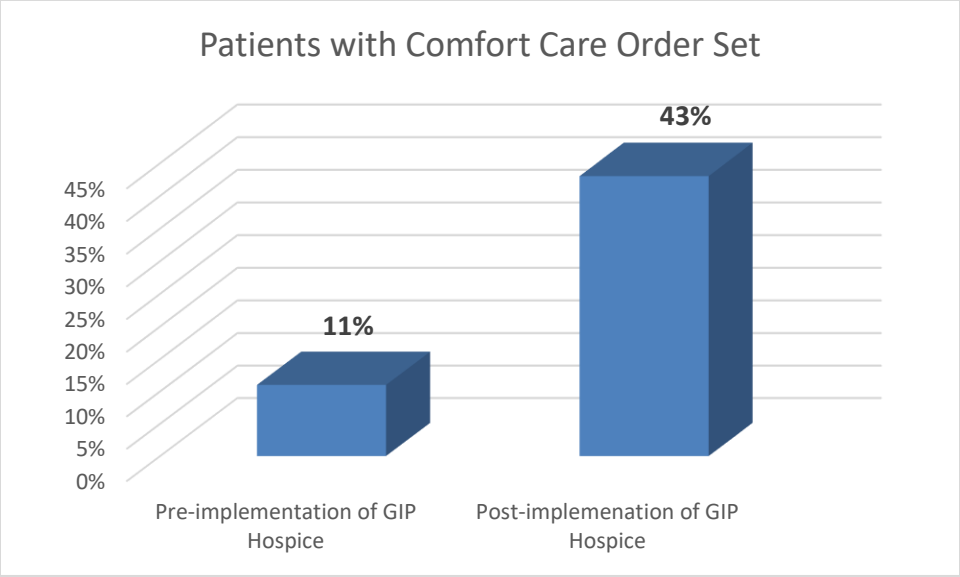
Patient Days in the Intensive Care Unit



Appendix M

Figure 8

Patients with Comfort Care Order Set



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