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Early Discharge Planning to Improve Throughput

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Early Discharge Planning to Improve Throughput

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This Manuscript Partially Fulfills the Requirements for the

Doctor of Nursing Practice Program and is Approved by:

Hilary Morgan, PhD, CNM, CNE Robert David Rice, PhD, MSN, RN, NP, NEA-BC November 26, 2023

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Abstract

Early discharge planning can improve the safety and outcomes of hospitalized patients. The aim of the multidisciplinary team early discharge rounds was to manage patient flow by removing discharge barriers to reduce the length of stay in the medical/surgical unit. The overall goal of the process improvement project was to make inpatient beds available to admit patients from the emergency department, reducing long ED boarding, and decrease the hours of diversion. The PICOT question for this project was: in the Veteran population (P) in the VA medical/surgical unit, early discharge planning with an interdisciplinary team (I) compared to regular discharge rounds alone (C) will improve patient flow and will result in decreased emergency room medical diversion or prolonged ED boarding (O) within 10 weeks (T). The early discharge planning had a significant impact on the medical/surgical unit in helping to decrease the ED medical diversion. Although the mean length of stay from 2022 to 2023 was not significantly changed, the early discharge intervention for the 10-week period on the medical/surgical unit concurred simultaneously with a decreased in diversion hours in the emergency department by 72 hours from the 2022 to 2023 time frames.

Early Discharge Planning to Improve Patient Throughput

The Veterans Affairs Health System in Southern California has experienced increases in hospital diversions due to overcrowding over the past six months, occasionally as many as two to three times a day. To sustain hospital throughput for medical/surgical admissions, early discharge planning is crucial in controlling hospital capacity as it can help decongest the crowded emergency department (ED). When the patient flow slows or stops, it leaves those who meet admission criteria at risk for morbidity and mortality, including higher rates of infection, and an overall reduction in patients' mobility and ability to conduct daily living activities after discharge (Henry et al., 2022). The VA and other hospitals have drawn attention to the issue of ED overcrowding, and long boarding times and have emphasized that the most significant factor is the difficulty to transfer emergency patients to inpatient beds (Patel et al., 2017). ED diversion means the ED is no longer able to serve incoming patients because the available beds are full and the waiting areas are also crowded with patients waiting to be seen. The patient who is coming by ambulance will be diverted to nearby EDs in the community, causing their flow to slow down as well. This longer ride to other EDs can also put the Veterans at an increased risk of injuries or death with delayed life-saving treatments.

To help decongest EDs with long hours of boarded patients which leads to diversion, early discharge planning in the medical/surgical unit can improve patient flow. Early discharge starts with projecting a safe discharge date, then the interdisciplinary team sets a discharge date to remove actual or potential barriers that would delay discharge longer than the identified date. Discharge planning begins at admission. The case manager would lead the meeting with the multidisciplinary team to identify a safe discharge date according to their diagnostic-related group (DRG) with the providers. This entails the patient's chief complaint on admission, therapeutic and diagnostic assessment, treatment plan, and communication among patients, caregivers, and healthcare professionals. Suggestions for ongoing care options are then coordinated with neighborhood organizations and patient support (Socwell et al., 2022). The case manager includes the family to discuss a plan of care, anticipated length of stay, and any discharge needs.

Significance of the Practice Problem

The Veterans Affairs hospital in Southern California is experiencing medical diversion two to three times per day due to not having available inpatient medical-surgical unit beds for admissions. This leads to patients boarding in the ED for longer than 12 hours and eventually leads to medical diversion because there is no patient movement. The hospital holds patient discharge huddles twice a day to facilitate care planning for all patients, especially those with complex discharge needs. Each nurse in the medical-surgical unit holds huddles with the charge nurse in the morning and afternoon to identify patients for discharge. Then hospital huddle is held by off-tour supervisors (OTS) or house supervisors at 7:30 a.m. and 2:30 p.m. where each inpatient unit charge nurse or unit manager reports their census, potential discharges, and bed availability. Yet, even with these interventions, the ED continues to have long ED boarding and experiences medical diversions. When Veteran patients are diverted to community hospitals in Los Angeles County, it takes away beds from those communities and increases the cost of care for our Veterans since the VA will pay the cost of services through the Veteran Health Administration.

When patients are not discharged in a timely way, planned admissions or surgical treatments for other Veterans who need hospital admission may be delayed or diverted to other facilities to have their procedures. This leaves the bills for the VA to pick up and the costs

associated with medical transport from the outside hospital when the VA hospital has available beds for admissions. This leads to disconnected care and poor patient experience.

With an identified estimated discharge date, the hospital will be able to plan focused treatments, enhance bed capacity management, and cut down on unnecessary hospital days (Henry et al., 2020). The discharge huddle allows the medical/surgical teams to take a proactive approach to managing and rehabilitating patients with complicated care needs and allows for earlier planning which is more relevant to the patient's hospital journey (Randles et al., 2019). Once patients are identified for discharge, discharging patients early, before noon, will help to improve patient flow because it allows housekeeping and nurses to get the bed and room cleaned and ready for admission.

PICOT Question

For the Veteran population (P) in the VA medical surgical unit, early discharge planning with an interdisciplinary team (I) compared to regular discharge rounds alone (C) will improve patient flow and will result in decreased emergency room medical diversion or prolonged ED boarding (O) within 10 weeks (T). According to VHA policy (dvagov.sharepoint.gov, 2022), long ED boarding is when there are more than six inpatients boarded in the ED for more than four hours, and initiation of diversion is when patients are waiting longer than eight hours for ED beds. **P**: The Medical/Surgical unit with Veterans Population is chosen because of their prolonged length of stay (LOS) and the ED patients waiting for beds are medical patients. **I**: The intervention of early discharge planning is to estimate a discharge date based on patient diagnosis to reduce LOS, make beds available for admissions, and decongest the ED. **C**: the medical/surgical unit does not perform regular discharge rounds with the multidisciplinary team. The comparison is of practice data from the previous year with the current early discharge data after implementation. **O**: The intended outcome is early MDRs is to reduce the LOS, make beds available for ED admissions, reduce prolonged ED boarding time, and prevent patient diversion. **T**: The proposed timeline for the implementation of an early discharge plan is 10 weeks. The overall LOS differed considerably among patient-related and hospital-related components (Numico et al., 2020). The implementation data for early discharge planning after 10 weeks will be compared to the same time in the prior year for analysis of improvement.

Late afternoon patient discharge might result in emergency room boarding, overcrowding, and admission bottlenecks (Patel et al., 2017). According to Lovett et al. (2021), accelerating discharges to accommodate admission from both planned procedures and the emergency department is a challenge in acute care. It has been discovered that interdisciplinary rounding models to improve discharge procedures take time. Once every patient has been reviewed and requires providers to estimate the patient's discharge date (Henry et al., 2022), a systemic framework intervention is utilized to improve early discharge (Patel et al., 2017). A multidisciplinary team round to identify discharge barriers and interventions through communication, and early rounding can improve patient flow and decrease the ED wait time (NewsRX,2019). Discharge planning with interdisciplinary rounds identifying barriers and discharge dates will help the team to work toward the overall decrease in hospital length of stay and improved coordination of care. Early identification of patients requiring referral for a different level of care and services after discharge will help patients to be discharged closer to the estimated date and reduce readmission (Henry et al., 2022). This will help reduce cost, reduce morbidity and mortality, and overall improve patient outcomes and experiences.

Evidence-Based Practice Framework and Change Theory

Through evidence-based practice (EBP), hospitals around the world and in the United States are always working to achieve the Institute of Health Improvement's triple aim to improve population health, enhance the experience and outcomes, and reduce costs per capita for community benefit as well clinician empowerment. Johns Hopkins's EBP model is an approach to problem-solving clinical decision-making within the healthcare organization that integrates the best available practice and evidence by considering the internal and external influences of practice and encourages critical thinking of the evidence of the individual or care population. It is specifically created to satisfy practice demands and employs a three-step method known as PET: practice question, evidence, and translation. The PET process allows individuals and teams to gain knowledge that impacts practice, which leads to other learning opportunities for change. (Melnyk & Fineout-Overholt, 2019).

In the healthcare environment, change is constant as new research and studies are seeking to find efficient ways to achieve positive patient outcomes. Changes in organizational structure or aims, accreditation standards, economic drivers, or breakthroughs in diagnosis, treatment, and patient outcomes may necessitate change (Udod &Wagner, 2018). In this scholarly project, Roger's Five-Stage of Change Theory will serve as a foundation for the implementation of early discharge planning to improve patient throughput. The five stages will guide the project because the change in this project is consistent with the VA's organizational mission, vision, and values. Stage 1 will allow the employee to know the reason for the change, how it will occur, and who will be involved. Identifying the reason for planning early discharge will help persuade employees to accept change by relaying essential information that will allow them to express themselves and note that attitudes, both favorable and unfavorable are formed (Stage 2). By

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breaking down the data the organization will decide whether to implement a pilot study on the medical/surgical unit that will trigger the change (Stage 3). After the pilot on the unit, the organization may implement the change permanently as it evolves to accommodate the change to other units in the hospital (Stage 4). Finally, reevaluating the change process and outcomes will confirm the adoption of the change by the employees responsible for and affected by the change (Stage 5).

Evidence Search Strategy

Searching for evidence must come from multiple databases that serve healthcare disciplines. Using the USA (University of St. Augustine) library website that incorporates multiple databases including CINAHL Complete, ProQuest, PubMed, Ovid, and DynaMed to search for keywords for early discharge. Nursing sub-categories were selected including Joanna Brigs Institute EBP Database, Nursing & Allied Database, and Ovid Emcare. In the keyword section "early discharge", "ED boarding" and "length of stay" were used for the search. Then selecting the inclusion criteria from 2018 to 2023 for articles that are less than five years old yielded 136 full-text articles. Other inclusion criteria included searching within the full-text articles and applying equivalent subjects reducing the number to 36 articles.

Evidence Search Results

The USA library, which incorporates many databases, includes content providers such as MEDLINE, Academic Search Index, Gale Academic OneFile, Gale OneFile: Health and Medicine, and CINAHL. For the current search, the limited time is five years old, from 2018 to the present day, and it yielded 1591 articles with keywords used "early discharge". The other keyword used is "ED boarding" which yielded 113 articles. By refining the search, "hospital admission and discharge" and "nursing and medical subject" were checked off, reducing the

number to 474. Pruning the search further to include "inpatient and descriptive statistics" reduced the article to 136.

The results of the screening process to examine the titles for inclusion criteria further reduced the number of articles to 11 that meet the criteria for early discharge, decreased ED boarding, and improved throughput. These range from discharge efficacy, disposition, and throughput. A Prisma table built to diagram the topic search results is available after the references (Moher et al., 2009). Twenty-five articles were excluded from the study synthesis. These articles contain mental health or pediatric in their title. The abstract section helped to reduce the findings to further screen from the title. The remaining articles were research studies with varying degrees of evidence ranging from grade level I to V (Dang et al., 2022). The Johns Hopkins EBP Model evidence is available in Appendix A and Appendix B.

Themes with Practice Recommendations

The review of the studies revealed some common evidence that suggests early discharge planning can be achieved through various interventions related to decreasing the length of stay (LOS). These four themes are discharge done before noon, estimating a discharge date, removing barriers, and multidisciplinary team rounds. The study design varies from qualitative to quasi-experimental, experimental, direct observational, and descriptive retrospective cohort studies. Some of the studies in the current literature reviews have one or more of these elements to help patients reduce the length of stay through early discharge.

Reducing Length of Stay

The overall goal of PICOT is to increase patient flow and reduce ED boarding time which may lead to diversion. Working to reduce the length of stay includes discharging patients early in the day. Late afternoon patient discharges can cause Intensive Care Units (ICU)s, emergency departments, and other hospital units to become overcrowded, board patients, and experience admission delays (Patel et al., 2017). Five out of the 11 studies reviewed in Appendix A pointed out different interventions for early discharge. According to Keverline et al. (2021), identifying the long length of stay of high-risk patients early in the admission will strengthen the relationship with community-based services that will receive the patient after their acute disposition. This will remove a barrier to discharge by reducing the length of stay. Other interventions include identifying or assigning a discharge date at admission based on the diagnostic-related group (DRG). Assessing factors that impact the variability of discharge accuracy, such as disposition, equipment, and transportation, allows the hospital to target interventions that will improve discharge planning and reduce LOS (Henry et al., 2022).

Discharge by Noon

Discharging patients earlier in the day will also help with patient flow from the ED as well as from procedure areas which will require hospital admission or overnight hospital stay. According to Relias Media (2020), the University Hospital in San Antonio, TX improved its throughput significantly in the ED by communicating with other hospital services. This internal process includes the ED staff working with inpatient staff on discharge schedules earlier in the day to better accommodate daily admission. The amount of time between a bed request and a bed being occupied or boarded has significantly decreased as a result of the hospital's efforts to encourage discharge by midday. The administrator reported this figure reduced from 240 minutes before the modifications to 120 minutes after (Relias Media, 2020). According to Epstein et al., (2020), discharging patients by noon also has an economic rationale because it impacts LOS, and improves patient ED throughput by using it as a benchmark to guide the effort to increase bed capacity (Epstein et al., 2020) and decrease excess days per diagnosis-related group (Fon et al., 2021).

Multidisciplinary Discharge Rounds

Communication is key for positive workflow, and it is vital to patient discharge planning among disciplines. Working with interdisciplinary teams and doing multidisciplinary discharge rounds (MDR) get ancillary staff involved to assist with the ED boarding problem (Relias Media, 2020). During MDR, assigning a discharge date according to the patient's diagnosis will help the team work toward a targeted discharge date. It is also an opportunity for each team member to learn something unique about the patient that may hinder the discharge process. Communication among interdisciplinary members will help remove barriers that may delay the discharge process and deviate from the assigned discharge date.

Barriers to Timely Discharge

Daily MDRs will render the discharges timelier through education, audits, lessons learned, and continual improvement. Each participant is accountable for their tasks to help remove barriers. Collaborating as a team to include patients and family members (where possible) involvement in the process will uncover potential problems that the team may not know (Schoeb et al., 2019). For example, if the patients are discharged home, are they able to perform ADL (activities of daily living) without assistance and do they understand and can perform aftercare on their own? If not, do they have in-home support after discharge? The team must assess if they have transportation from home to their next appointment or if will they need to go to a rehabilitation facility or skilled nursing facility for assistance while they are recovering (Keverline et al., (2021). These barriers can be identified during the MDR, and the team can work to remove these barriers quickly. Knowing and removing these barriers will help the patient discharge on time with the defined date, reduce complications that may cause rehospitalization, and exasperate the problem of patient throughput.

Continuing Current Practice and Recommendation

In the medical/surgical unit in a Southern California VA Hospital, discharge rounds are being done by case managers but are not being done consistently. Implementing daily MDRs to identify discharge dates will not increase costs because it does not require new equipment or more staff. It will require coordination and time to keep the interdisciplinary team engaged in daily MDRs to ensure patients move along in their hospital stay continuum. This change in practice will give the team the ability to create targeted discharge interventions, enhance bed capacity management, and cut down on unnecessary hospital days. Expected discharge dates will assist the team in identifying certain hospital services and patient factors that are susceptible to discharge delay and will guide operational decisions on discharge planning to assist patient flow and decrease ED boarding and diversions (Henry et al., 2021).

The Setting, Stakeholders, and System Change

The DNP scholarly project setting is an acute care medical/surgical unit in a large Southern California VA hospital, part of a multi-county healthcare system. The 24-bed unit has a staffing ratio of one nurse to five patients. The mission of the Department of Veterans Affairs is to care for those "who shall have borne the battle" and their families, caregivers, and survivors by offering options for timely, quality services for Veterans through care and respect for one's physical, psychological, and spiritual health (va.gov, 2023). The healthcare system provides

services at 11 locations in a five-county area and eight community-based outpatient clinics in southern California (va.gov, 2023). Services include primary care, mental health, specialty care, and a variety of social programs and services for homeless Veterans.

As part of this great organization, the medical/surgical unit staff collaborates and coordinates with these services to provide wrap-around care for the Veteran population. This process improvement project was presented to the Associated Director of Patient Care Services and Nurse Executive, the unit Nurse Manager, and the Assistant Nurse Manager to propose making inpatient beds available for admission and helping to reduce long ED boarding and diversions. The stakeholders are the hospital executives, nursing leadership, and nursing staff working with the multidisciplinary team to establish early discharge rounds. The DNP student solicited approval from University of St. Augustine for Health Science Doctoral of Nursing Practice Evidence-Based practice Review Board Council (EPRC). The GLA VHA Internal Review Board also granted permission to conduct the study prior to implementation.

The multidisciplinary team is comprised of nurses, the case manager, medical providers, physical and occupational therapists, social workers, pharmacists, and dieticians. The multidisciplinary discharge rounds will facilitate communication by identifying estimated discharge dates and removing barriers to aid in timely discharge. Performing a SWOT analysis is important to identify the unit's strengths, weaknesses, opportunities, and threats (Appendix C). A SWOT analysis can help organizations identify issues and develop strategies to overcome barriers. It is used to evaluate an organization's internal strengths and weaknesses as well as the possibilities and threats in the external environment (Topor et al., 2018).

The unit's strengths are the dedication to improving patient care, open communication, and collaborations within the multidisciplinary team. The unit members and leadership support

quality improvement and encourage change that improves throughput, reduces the length of stay (LOS), cost-effectiveness, and opens communication. Multidisciplinary discharge rounds (MDRs) are convenient, take about 30 minutes daily, approximately five minutes per nurse, and are done on the unit in the conference room. The weaknesses are the limited resources for discharge planning. The shortage of staff and inconsistent discharge round practices takes them away from the bedside, leaving patient and family unable to participate. It took time for staff to learn a new process. The opportunities were to increase throughput, improve communication between disciplines, early identification of barriers to discharge, and improve throughput. Discharging patients early to reduce LOS, making beds available to admissions, and decreasing ED boardings and diversions. The threats are no clear guidelines to support discharge planning, shortage of staff, and resistance to new work routines. Limited resources outside the VA to discharge the veteran population threaten the workflow. Sustaining new practices takes staff buy-in and using the Plan-Do-Study-Act (PDSA) cycle to monitor progress (jhi.org.)

The level of change will be micro, starting in the medical/surgical unit. After implementation for 10 weeks in the unit, the EBP was evaluated for sustainability. Then if successful, a proposal to adopt the plan at an organizational (meso) level in all inpatient units as a standardized practice will be put forth and supported by a written standard operating policy (SOP).

Implementation Plan with Timeline and Budget

To improve Veteran patient throughput on the Medical/Surgical unit, daily early discharge rounds led by the case managers with stakeholders (multidisciplinary team) will reduce medical ED boarding by 5% within ten weeks compared to the same timeframe in the prior year by reducing the length of stay (LOS) and making inpatient beds available for admissions.

Communication of the objectives is key to educating the multidisciplinary team on this project: who the stakeholders are, when the project will take place, how it will be rolled out, what is measured, and when to evaluate the implementation.

SMART Objectives

The goal is to reduce prolonged ED boarding that leads to diversions by reducing LOS with early discharge planning of MDRs to identify patients on the Medical/Surgical unit for timely discharge. When patients are discharged by their DRGs, the identified discharge date will decrease LOS and reduce the bottleneck of patients awaiting inpatient beds in the ED. When six or more patients are waiting for beds for more than four hours, the ED has to divert incoming patients to other facilities in the community. The people involved with this project implementation are the multidisciplinary team members. The stakeholders are the nurse managers, nurses, case managers, medical providers, and other ancillary staff involved with the patient discharge process (physical and occupational therapists, pharmacists, environmental management services, and dieticians) to perform early discharge rounds to achieve the goal of decreasing long ED boarding by 5% compared to prior year without early discharge MDRs. The team will measure the unit length of stay, the percentage of ED boardings, and the number of diversion hours that took place during the implementation stage. At the end of the ten-week implementation period, data LOS and percentage of diversion will be compared to the same time in the prior year.

When inpatient beds are not available for admission, patient flow is stagnant which leads to long ED boarding, if prolonged, it will lead to diversion. The project will take place in the unit in the conference room and on a virtual Team channel facilitated by the Case Manager. The MDRs began at the end of May 2023, from Monday to Friday from 10:00 to 10:30 a.m. By this

time, the medical providers would have made rounds and input orders, and the nurses would have already performed AM patient care tasks and reviewed the MD orders. Nurses will take about five minutes each to update the team on their patient's health status and progression toward discharge goals. For example, if the patient's pain is controlled with pills after three days of total knee replacement and is cleared by the physical therapist, then the patient is progressing as planned and is ready for discharge. On the other hand, if the patient's pain is not controlled and cannot participate in physical therapy (PT) then the discharge process is delayed. MDRs early in the day will open dialogues on potential discharge problems and allow time for specific disciplines to remove barriers that may prevent timely discharge. A request to change pain medication or increase the dosage may be necessary and the patient will continue work with PT for clearance. The CM will communicate with the MD to order a transfer of the patient to the rehabilitation unit for continued physical therapy, making beds available for acute patient admission. The change in practice is to satisfy practice demands that employ a three-step method known as PET: practice question, evidence, and translation that allows individuals and teams to gain knowledge that impacts their practice and to learn opportunities for change (Melnyk & Fine-Overholt, 2019).

Implementation

Communication is the first step for the stakeholders to understand the reason behind the new process. First, a flyer will be posted on the unit and emailed to stakeholders two weeks before beginning the PI project (Appendix D). An educational flyer will provide hospital leadership and nursing leadership with the reasons why this process improvement project is taking place. It outlines how it will take place, who is responsible for leading the MDRs, and the stakeholders involved. Second, weekly monitoring of the process and offering support by

leadership to ensure stakeholders are participating, understand the process and progress, and adjust as needed. At the end of ten weeks, the outcome of the project will be evaluated and shared with the multidisciplinary team. The third and final step will be maintaining the new multidisciplinary discharge rounds. Continuous monitoring of the MDRs is key to ensuring they become part of the unit's daily discharge routines. A Gantt chart will outline the project start date, how the new discharge rounds take place, how long it takes per day by participating parties (stakeholders), and who will lead the MDRs (Appendix E).

Lewin's Change Theory

The Johns Hopkins Nursing Evidence-Based (JHNEBP) Model guides this change in practice by helping nurses apply the best available research to clinical, instructional, and operational practice (Melnyk & Fine-Overholt, 2019). The desired outcomes also enhance nurse autonomy and engagement with the multidisciplinary team. Healthcare is constantly changing as new research, studies, and advances in technology are looking for better ways to achieve positive patient outcomes. The theory used for this project is Kurt Lewin's change theory which has three components that push in a direction that causes change to occur: unfreezing, change, and refreezing (nursing-theory.org, 2023).

The unfreezing process entails a way to help people let go of old patterns that perhaps are counterproductive. Change in practice for early discharge rounds to overcome individual habits and group norms by changing the old discharge rounds by the Case Managers to include the multidisciplinary team daily. The transition or change stage refers to a movement when there is a process of change in thoughts, feelings, behavior, or all three, which is in some manner more liberated and more productive (nurse-theory.org, 2023). Refreezing is the stage for the change to become "the standard operating procedure" (nurse-theory.org. org, 2023). Without this stage, the

team can revert to their old ways of discharging patients, which is counterproductive to hospital operations and the organization's mission.

Budget

A problem-solving approach will require the integration of evidence-based practice available by considering internal and external influences and critical thinking for the care population (Melnyk & Fine-Overholt, 2019). Implementing the new multidisciplinary discharge rounds will not require a budget since the project is to restructure the discharge rounds. The costs of integrating the new discharge process into other inpatient departments will depend on team structure, nurse hours per patient day (NHPPD), and staffing skill mix, but should also remain cost neutral.

Results

This EBP project goal to improve ED medical boarding by five percent with early discharge planning in the medical/surgical unit to make beds available for admissions for Veterans from the ED was not achieved in decreasing the LOS but did decrease the ED diversion by 72 hours, achieving a 23% reduction.

The data was collected daily to analyze the unit patient census by the manager and case manager after they spoke with the primary nurses to discuss the plan of care. The collaboration included the care the patients needed and potential discharge dates and discussed any barriers. The mutual goal of patient flow was to ensure patients were discharged timely, to make room for incoming patients from the emergency department. Once these potential or actual barriers were identified, they worked on them to ensure the patients didn't stay past their estimated discharge date. The data was stored in the student's work computer which requires using an ID and password to access, to ensure patients' privacy is protected and prevent any HIPAA concerns. Creating and maintaining a high-quality data set in which mistakes have been detected and controlled, and the structure accomplishes what was initially specified in the data analysis plan, is the most crucial goal in establishing the final analysis data set (Sylvia et al., 2018). Each week, the number of discharge days beyond the dependent variable of estimated dates for each patient was reported and discussed with the team. Descriptive statistics were used to evaluate the theme of variables that contribute to the discharge delay. These includes lack of beds in the community, transportation, and home health arrangement prior to discharge. Descriptive statistics also summarize the data in a meaningful and logical way (Kim et al., 2022). The average length of stay for the unit was compared weekly for progression. Depending on the theme, the team worked toward removing variables that delay discharge to help expedite the process to meet the estimated discharge date.

The data collection tool was created by the DNP student for the team to input the data daily (Appendix F). The case manager and unit manager extracted the data from the patient's EMR and updated the tool for the next day's census. Any missing data was not included in the tool and omitted from LOS information. A trend was identified in evaluating the data. The medical teams were not able to participate in the daily discharge huddles. This VA hospital is a teaching hospital, and the medical groups are divided into three teams which conduct patient rounds at three different times. When the medical team rounded, the nurses were encouraged to be at the bedside to collaborate on the plan of care and ask questions related to the plan of care, to anticipate any discharge barrier. The MDR did not go as planned. Depending on the plan and patient's need, the primary nurse and case manager worked with ancillary teams to ensure all procedures and orders were executed timely to reduce the LOS and discharge patients timely to improve patient flow to make beds available to admit patients from the ED.

After the 10 weeks of early discharge planning interventions, the ALOS was 3.98 days (reports.vssc.med.va.gov, 2023), 0.02 days higher than the prior year of the same time frame. Their average daily census for 2023 was 24.7. The ALOS was increased by 0.05%. A two-tailed sample t-test was conducted to examine whether the mean difference of Means LOS in quarter four 2022 and Means LOS of quarter four 2023 was significant from zero (analyze.intellictussstatistics.com, 2023). The result of the to-tailed paired sample *t*-test was not significant based on an alpha value of .05, t(4) = -0.10, p=.922, indicating the null hypothesis cannot be rejected. (See full report in Appendix H).

The hours of medical diversion were plotted on a graph to compare the previous year's hours of ED medical diversion were 306 of diversion, to the current year with the interventions of 234 total diversion hours in 2023, (Appendix G). From the data analysis, the reason for increased LOS was not having enough skilled nursing facility beds within the VA as well as not enough contracted beds in the community where some patients were waiting for community beds for up to 30 days. Although the early discharge intervention did not decrease the ALOS, 2022:4.25 and 2023:4.33, (reports.vssc.med.va.gov, 2023), the ED diversion hours show an improvement in medical diversion by 72 hours, a 23% improvement in decreasing medical diversion from the ED (VAWW.bms.va.gov,2023). The benchmark is to improve ED medical diversion after the intervention of early discharge planning by five percent. This intervention improved medical diversion beyond the goal by 18%. According to studies, early discharge planning improves patient flow, reduced, reduces LOS, and decreases or prevents ED diversion (Relias Media, 2020).

There are factors outside of the hospital setting that affect patient flow besides what is identified with inpatients. External factors may lead certain population to visit the ED with

increased frequency. The average daily census during the study comparison period in July to Mid-September 2022 from 18.6 to 24.57 in the same time in 2023. July 2023 was identified as the hottest month on record worldwide (UN.org) and in August 2023, Hurricane Hillary unexpectedly impacted Southern California. It is possible these two events may have contributed to the higher average census on the medical/surgical unit.

Impact

The early discharge planning had a significant impact on the medical/surgical unit in helping to decrease the ED medical diversion. The EBP of anticipating patients' needs and working toward the estimated discharge date prevented delays that improved patient flow. Despite the increased number of patients coming to the unit with higher acuity, an increase in the daily census, and an increased ALOS, and other disciplines not able to attend the huddle regularly, the interventions of early discharge planning with the CM, Unit Manager, and nurses had decreased the ED medical diversions. This can have an impact on patient safety, positive patient experiences, improved patient outcomes, and decreased costs.

The post-change evaluation was done at week ten and the diversion data was compared to the pre-change diversion data at the same time in the prior year to evaluate if it is clinically significant. According to Kim et al., (2020), when the EBP is used to guide practice, it is clinically significant in which relevant outcomes are used to assess the effectiveness of the treatment modality. Early discharge implementation in one unit had a positive impact on patient flow and can be adopted by other inpatient departments. A formal rollout with nursing and medical leadership support will have a greater impact on the patient flow, increased patient satisfaction, and improved patient outcomes.

Dissemination Plan

The project outcomes are shared with the hospital leaders during the Nurse Executive Council meeting that consist of the Director of Nursing of the VA, Deputy Chief Nurses, and Nursing Mangers of various departments in Teams meeting with the PowerPoint presentation. The results were also shared during Daily Morning Report, the Nursing Throughput Huddle, the multidisciplinary team members, and other stakeholders. An Executive Summary was presented to the hospital executive leaders. A peer review was conducted with the organization's nurse leaders in preparation for the article's publication. It provides a structured learning process to critique and provide feedback on the importance of the project. A peer review also provides the student with skills to self-assess and improve the work. The project results will be shared through publication in the National Medical/Surgical Organization, American Nursing Association Journal, *Emergency Medical Journal*, and publication to SOAR@USA. The healthcare industry is facing many challenges since the COVID-19 pandemic. These challenges include the healthcare worker shortage and medical resources leading to long ED boarding across large cities in America. The outcome of this project demonstrates that multidisciplinary rounds can facilitate early discharge planning and support overall teamwork to meet the challenges of long ED boarding.

Completed Proposal

To help decongest the ED with long hours of boarded patients which leads to diversion, early discharge planning in the medical/surgical unit can improve patient flow by decreasing the LOS of inpatient beds for admissions. Early discharge starts with projecting a safe discharge date, then the interdisciplinary team meets to remove actual or potential barriers that would delay discharge. The multidisciplinary team starts discharge planning at admission to determine a safe discharge date per the providers' diagnostic-related group (DRG). This includes the patient's

primary complaint at the time of admission, a therapeutic and diagnostic evaluation, a treatment plan, and communication between patients and medical staff. Suggestions for ongoing care options are then coordinated with community organizations and patient support (Socwell et al., 2022). The case manager needs to include the family in the plan of care with the anticipated length of stay and any special care needs after discharge.

Early discharge planning was piloted on the 24-bed medical/surgical unit, led by the case manager with the interdisciplinary team. Implementation took place in July 2023 for ten weeks. Weekly progress was monitored, and support given to staff to help improve this new throughput workflow. The goal is to increase inpatient-bed capacity for admissions and reduce potential poor patient outcomes when diverted to other facilities. The lengthier ride raised the veteran's chance of injury or death due to delayed life-saving procedures. The EBP of early discharge planning served to be clinically significant in reducing LOS and MDRs should be adopted as part of the unit's routine.

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Figure 1

PRISMA Flowchart



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Appendix A

Evidence Table: Research Studies

Citation	Design	Level and Quality Grade	Key Features of Intervention	Outcome Measures	Findings	Conclusion: Usefulness of Research
Henry, O. P. Li, G., Freundlich, R. E., Sandberg, W. S. & Wanderer, J. P. (2022). Understanding the accuracy of clinician-provided estimated discharge dates. <i>Journal of Medical System</i> , 46(1), 1-11. <u>https://doi.org10.1007/s109</u> <u>16-021-01793-w</u>	Qualitative retrospective observational cohort	Level III Grading- high	Assign discharge date on each hospital stay.	Discharged on the actual date assigned.	Assigning discharge dates helps reduce LOS and cost.	Assessing factors that impact variability in discharge accuracy allows hospitals to target interventions to improve discharge planning and reduce LOS.
Patel, H., Morduchowicz, S. & Mourad, M. (2017). Using the systematic interventions to improve discharge. <i>The</i> <i>Joint Commission Journal</i> <i>of Quality and Patient</i> <i>Safety</i> , 43, 187-196. <u>https://doi.org/10.1016/j.jcjq</u> .2016.12.003	Quasi- experimental study	Level II Grading- moderate	Education, process change, and audit and feedback to discharge patient by noon	Using the PDSA cycle to build standard processes into daily work to increase communication between team members	ALOS was tracked and found that 93% of the team who attended the meeting identified 74% of patients to be discharged by noon (DBN)	Improving the number of early discharges can be achieved through PI and sustained with ongoing education, audit, and feedback to
Keverline, K. J., Mow, S. J., Cyr, J. M., Platts-Mills, T. & Brice, J. H. (2021). Barriers to discharge in geriatric long staying inpatient and emergency department admissions: a descriptive study. Geriatrics, 6(78), 1-8.	Descriptive study retrospective cohort study	Level IV Grading- low	Identify barriers to discharge and LLOS in ED	LLOS of Geriatric patients and accounted for ED visits.	Barrier to discharge and SDOH play a role in prolonging LOS.	The primary reason for the barrier to discharge in the ED setting lack of available beds for patients. Geriatric patients experience a significant delay in discharge due to facility placement issues. Identifying LLOS of high-risk patients early and strengthening relationships with community-based services.

https://do trics6030	<u>bi.org/10.3390/geria</u> 1078						
Epstein, R., Dexter (2020). 7 discharge hospitals Florida w 2010 to 2 <i>Medical</i> 10. <u>https://dc</u> <u>16-1496-</u>	er, F. & Diaz, C. The distributions of e times at acute care in the state of vere static from 2018. <i>Journal of</i> <i>Systems</i> , 44 (47), 1- bi.org/10.1007/s109 X	Observational cross- sectional study	Level III Grading- moderate	The economic rationale for discharging patients before noon	Of the 202 hospitals in Florida, analyze data for each hospital to discharge patients before noon	There was no significant trend in the average LOS. Only 19 hospitals (9.4%) achieved discharge before 3 pm.	Based on no improvement in early discharge, only 20% were observed to be successful in D/C patients before noon. Administrators can use the result as a benchmark to guide efforts that bed will not be available until late afternoon.
Fon, K., Piken, N. Elsabrou McMaho An interp of stay re improver <i>Nursing J</i> 5-22. Ob30ef6 eds-s-ebs usa.lirn.n ?vid=1& a105-432 992a771	, Dusseldorp, E., t, K., Wood, K. & m, L. A. (2021). professional length eduction: a process nent project. <i>Economics</i> , 39(1), d2-mp01-y-https- scohost-com.prx net/eds/detail/detail sid=bcb6e9b0- 2d-82d5- 1834%440	Experimental study	Level I Grading- moderate	Form a steering committee through education, demonstrati on, and accountabilit y of each staff to engage in communicat ing in the MDR to reduce LOS and D/C by 11:00 a.m.	MDR of each work group to anticipate the date of discharge and TDR to measure impact using linear regression analysis for LOS, early discharges, ED throughput, and excess patient days per DRG	Improved efficiency and overall growth were accomplished through early discharge. In December 2019, 18.5% of patients were discharged by 11:00 am compared to 7.7% in 2018	The multidimensional collection of initiatives decreased the LOS, improved ED throughput, and achieved an increase in earlier-day discharge
Schoeb, V., Staffo Influence structure participal interprofe planning rehabilita Journal o Care, 330	ni, L. & Keel, L. e of interactional on patient's tion during essional discharge meetings in ation centers. of Interprofessional (5), 536-545.	Observational cohort study	Level III Grading- low	Discharge planning with an interdiscipli nary team with patients	Discussing and planning discharge with patients ensures timely discharge from rehabilitation	Allows the patient to give additional information on social context to enhance the D/C process.	Patient participation in the interprofessional meeting can give opportunities to influence discussion of their discharge process

https://doi.org/10.1080/1356 1820.2018.1538112						
Lyons, J., McCauley, L., Maronian, N. & Hardacre, J. M.(2019). A targeted initiative to discharge surgical patients earlier in the day is associated with a decreased length of stay and improved hospital throughput. <i>The</i> <i>American Journal of</i> <i>Surgery</i> , 217, 419-422. <u>https://doi.org/10.1016/j.amjsurg.201</u> <u>8.08.017</u>	Experimental study	Level I Grading- High	Communicat e to the patient and family the anticipated discharge date (ADD)	Measure patient discharge before noon, and LOS by case mix index	From 2016- 2017 the overall LOS decreased from 6.1-5.9 days and the adjusted LOS was a 6.6% decrease from 2.17 to 2.02 days.	A targeted initiative to discharge surgical patients by noon resulted in a 50% proportion of patients being discharged, resulting in decreased boarding time in ED, ICU, and PACU, improving hospital throughput, and reduced LOS.
Internal process improvements, focus on early discharge help relieve throughput pressure. Instead of small fixes, examine the entire process as a whole, from patient arrival to discharge.[Article 245710] 2020. <i>Relias Media.</i> <u>https://doi.org/www.reliasm</u> <u>edias.com/article/145710-</u> <u>internal-process-</u> <u>improvements-focus-on-</u> <u>early-discharge-help-</u> <u>relieve-throughput-pressure</u>	Descriptive Prevalence study	Level V Grading- moderate	Report of University in Texas on how the ED works with inpatient dept. discharge scheduling to push D/C by noon.	Time of patient boarding in the ED.	From Oct-Dec 2012 ED boarding time dropped from 240 minutes to 120 minutes.	Hospital administrators work with ED flow to accommodate patients and work with inpatient staff to work on discharging patient earl through a weekly meeting to decrease ED boarding time.

Legend: ADD-anticipated discharge date, ALOS-adjusted length of stay, DBN-discharge by noon, D/C-discharge, LOS- length of stay, LLOS-long length of stay, MDR-multidisciplinary round, PDSA-plan do study act

Appendix B

Evidence Table: Systematic Review

Citation	Design	Level of Quality Grade	Key Features of Intervention	Outcome Measures	Finding	Conclusion
Socwell, C.P., Kanagasaba, K., & Pope, R. (2022). The utility of Mayo Clinic early screen for discharge planning (ESDP) tool: a critical narrative review. <i>Journal of Acute Care</i> <i>Physical Therapy</i> , 13(1), 24-44. <u>https://DOI:10.1097/JAT.00000000000159</u>	Comparative	Level III Grading- High	Searching databases to identify studies on ESDP.	A narrative review of research evidence that supports early discharge.	There is no standardized guideline to help with discharge planning.	To optimize outcomes, early identification of patients for ESDP has the potential to reduce LOS.
Shaikh, S., Robinson, R. D., Cheeti, R., Rath, S., Cowden, C. D. & Rosinia, F. (2018). Risks predicting prolonged hospital discharge boarding in a regional acute care hospital. BMC Health Research, 18(1), 1-11. <u>http://dx.doi.org/10.1186/s12913-018-2879-2</u>	Non- experimental Cross-sectional study	Level III Grading- moderate	Retrospective review of a hospital database on prolonged hospital discharge.	Determining the risks predicting prolonged discharge and the effect on patient flow.	Patient severity of illness, type and time of disposition, and case management timely consultation affect discharge boarding.	Prolonged discharge boarding harms overall hospital resources and finances.
Cornes, M., Whiteford, M., Manthorpe, J., Neale, J., Byng, R., Hewett, N., Clark, M., Kilmister, A., Fuller, J., Aldridge, R. & Tinelli, M. (2017). Improving hospital discharge arrangements for people who are homeless: a realist synthesis of the intermediate care literature. <i>Health and</i> <i>Social Care in the Community</i> , 26, 345-359. <u>https://doi.org/10.111/hsc.12474</u>	Observational Cross-sectional study	Level V Grading- very low	Articles and reports search on intermediate care of homeless people of UK "Homeless Hospital Discharge Fund".	Improve hospital discharge arrangements for homeless people.	Collaboration, planning, and integration to effective intermediate care by working together to prevent hospital readmission.	Evidence suggests that improved service user outcomes may be achieved in intermediate care for all service users including the homeless.

Legend: ESDP-early screen for discharge plan, ED-emergency department, UK-United Kingdom

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Appendix C

SWOT Analysis

Strengths	Weaknesses
 Multidisciplinary-informed intervention Convenient unit location Cost-effective for a healthcare system Utilization of pre-existing programs Staff support quality improvement Improve patient throughput 	 Limited pressure to discharge patients Inconsistent discharge round practices Shortage of staff, taking time away from the bedside Rounds take place in a conference room rather than bedside, leaving family and patient out Takes time to learn the new process
Opportunities	Threats
 The need for judicious use of acute care resources Improved communications between disciplines. Currently, there is no standard workflow on how to conduct daily discharge rounds Daily rounds include purposeful discharge planning to reduce LOS Increase patient throughput Identify estimated discharge date based on diagnosis 	 No clear outpatient guidelines to support discharge planning Staff buy-in to adopt the new process Resistance to change in practice Limited resources outside of VA for disposition Sustaining multidisciplinary discharge rounds

Appendix D

Communication Flyer

Multidisciplinary Discharge Rounds (MDRs): A Process Improve Pilot To Improve Patient Throughput

Why- There has been an increase in ED boarding and diversions due to not having enough medical beds for inpatient admissions.

Who- The Case manager will lead the MDRs with Registered Nurses, Medical Providers, Social workers, Physical and Occupational Therapists, Pharmacists, Environmental Management Services (EVS), and Dieticians.

How- MDRs will take place on the unit to improve communication and work toward an estimated discharge date. The nurse will take about 5 minutes to update the team on their patient's status.

When- MDRs will take place Monday to Friday from 10:00-10:30 AM for 10 weeks.

Where- The interdisciplinary team will meet in the unit conference room and via Team.

Outcomes- MDRs is an evidence-based practice that will improve communication within the Multidisciplinary team by removing barriers that will facilitate timely discharge, reduce the length of stay, make inpatient bed available for admissions, prevent hospital readmissions, and increase patient satisfaction (Henry et al., 2021).

Appendix E

Gantt Chart Early Discharge Planning Rounds

Timeline (May 8-July 21)

Project Phase	Activity	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Communication	Meet with stakeholders	Graduate				Provide						
	Present plan	student				feedback						
						on progress						
						То						
						Stake-						
						holders						
Unfreezing Phase	Implementation of		Case	Stake-	Stake-							
	Change		Manager	holders	holders							
	Plan		Lead									
	-Determine what		with									
	needs to change		Stake-									
	-Ensure strong		holders									
	Support from											
	Management											
	-Create the need for											
	change											
	-Manage & understand											
	doubts and concerns											
Change Dhase	Monitoring		Graduata	Gradua	Graduata	Graduata	Graduate	Graduata	Graduate	Graduata	Graduata	
Change I hase	Change		Student	te	Student	Student	Student	Student	Student	Student	Student	
	Process		Leaders	student	Leaders	Leaders	Leaders	Leaders	Leaders	Leaders	Leaders	
	-Communicate often		&	S	&	&	&	&	&	&	&	
	-Dispel rumors		Stake-	leaders	Stake-	Stake-	Stake-	Stake-	Stake-	Stake-	Stake-	
	-Involve people in the		holders	&	holders	holders	holders	holders	holders	holders	holders	
	process			Stake-								
	r			holders								
Evaluation	Feedback/					Graduate		Graduate		Graduate	Graduate	Report
	Share					Student,		Student,		Student,	student	Results
	Results					CM, NM		CM, NM		CM, NM		with Stake-
						Stake-		Stake-		Stake-		holders
						holders		holders		holders		
Refreezing Phase	Adoption of new MDRs											Leaders &
	-Anchor the changes											Stakeholders
	into the culture											
	-Develop ways to						1					
	sustain											
	-Provide support and											
	training											
	-Celebrate successes											

Responsible Parties- Graduate Student, Stakeholders: CN/Staff Nurse, Case Managers, MDs, PT/OT, Dietician, EVS, & Pharmacy

(nurse-theory.org, 2023)

Appendix F

Data Collection

Patient's Initials	Diagnosis	Date of admission	Estimated	Actual Discharge	# of Days Pass	Reason for
			Discharge Date	Date	Estimated Date	Discharge Delay
J.P.	Right Arm	3/15/23	3/20/23	3/22/23	2	Need PICC line for
(Example)	Cellulitis		With home IV ABX			Home IV ABX
						Arrangement

Appendix G



Emergency Department Medical Diversion by Hours from July 1st to September 15th, resulted in 72hours less after intervention.

Appendix H

Included Analyses

• Two-Tailed Paired Samples t-Test between Means_LOS_2022 and Means_LOS_2023

Results

Two-Tailed Paired Samples *t***-Test**

Introduction

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of Means_LOS_2022 and Means_LOS_2023 was significantly different from zero.

Assumptions

Normality. A Shapiro-Wilk test was conducted to determine whether the differences in Means_LOS_2022 and Means_LOS_2023 could have been produced by a normal distribution (Razali & Wah, 2011). The results of the Shapiro-Wilk test were not significant based on an alpha value of .05, W = 0.90, p = .402. This result suggests the possibility that the differences in Means_LOS_2022 and Means_LOS_2023 were produced by a normal distribution cannot be ruled out, indicating the normality assumption is met.

Results

The result of the two-tailed paired samples *t*-test was not significant based on an alpha value of .05, t(4) = -0.10, p = .922, indicating the null hypothesis cannot be rejected. This finding suggests the difference in the mean of Means_LOS_2022 and the mean of Means_LOS_2023 was not significantly different from zero. The results are presented in Table 1. A bar plot of the means is presented in Figure 1.

Table 1

Two-Tailed Paired Samples t-Test for the Difference Between Means_LOS_2022 and Means_LOS_2023

Means_	LOS_2022	Means_L	OS_2023			
М	SD	M	SD	t	р	d
3.96	0.22	3.98	0.23	-0.10	.922	0.05

Note. N = 5. Degrees of Freedom for the *t*-statistic = 4. *d* represents Cohen's *d*.

Figure 1

The means of Means_LOS_2022 and Means_LOS_2023 with 95.00% CI Error Bars



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Glossaries

Paired Samples t-Test

The paired (dependent) samples *t*-test is used to assess for significant differences between two scale variables that can be matched. Typically, the scale variables are matched by time (e.g. pretest vs. posttest), but the data can also be matched in other ways (e.g. husband vs. wife). The test uses the average difference between each pair of matched scores to compute the t statistic, which is used with the *df* to compute the *p*-value (i.e., significance level). A significant result indicates the observed test statistic would be unlikely under the null hypothesis. The dependent samples *t*-test assumes that the differences between pairs of matched scores are normally distributed (i.e., normality).

Paired Samples *t***-Test Formula:**

 $t = \frac{\overline{X}_1 - \overline{X}_2}{s/\sqrt{n}}$ $\overline{X}_1 = \text{sample 1 mean}$ $\overline{X}_2 = \text{sample 2 mean}$ s = sample standard deviation

n =sample size

Fun Fact! This test is based on the Student's t distribution. This distribution was named after William Sealy Gosset, who published a paper about the distribution in 1908 under the pseudonym "Student."

Cohen's *d***:** Effect size for the *t*-test; determines the strength of the differences between the matched scores. The larger the effect size, the greater the differences in the matched scores.

Degrees of Freedom (df): Refers to the number of values used to compute a statistic. The df is determined by the number of observations in the sample and equal the number of observations - 1; used with t to compute the p-value.

Mean (M): The average value of a scale-level variable.

Normality: Refers to the distribution of the data. The assumption is that the data follows the bell-shaped curve.

p-value: The probability of obtaining the observed results if the null hypothesis is true. A result is usually considered statistically significant if the *p*-value is $\leq .05$.

Shapiro-Wilk Test: A test to assess if the assumption of normality is met. If statistical significance is found in this test, the data is *not* normally distributed.

Standard Deviation (SD): The spread of the data around the mean of a scale-level variable.

t-Test Statistic (*t*): Used with the *df* to determine the *p* value.

Raw Output

Paired t-Test for Means_LOS_2022 and Means_LOS_2023

Included Variables: Means_LOS_2022 and Means_LOS_2023

Sample Size (Complete Cases): N = 5

Shapiro-Wilk Test: W = 0.899, p = 0.402

Results:

Means_L	os_2022	Means_L	OS_2023			
М	SD	М	SD	t	р	d
3.962	0.224	3.975	0.235	-0.105	0.922	0.0468
Noto n	- 5 df	- 1				

Note. n = 5, df = 4.

Confidence Interval Based on α = 0.0500: Lower Limit = -0.367, Mean Difference = -0.0133, Upper Limit = 0.341

Included Analyses

□ Two-Tailed Paired Samples t-Test between Means LOS 2022 and Means LOS 2023

Results

Two-Tailed Paired Samples *t***-Test**

Introduction

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of Means_LOS_2022 and Means_LOS_2023 was significantly different from zero.

Assumptions

Normality. A Shapiro-Wilk test was conducted to determine whether the differences in Means_LOS_2022 and Means_LOS_2023 could have been produced by a normal distribution (Razali & Wah, 2011). The results of the Shapiro-Wilk test were not significant based on an alpha value of .05, W = 0.90, p = .402. This result suggests the possibility that the differences in Means_LOS_2022 and Means_LOS_2023 were produced by a normal distribution cannot be ruled out, indicating the normality assumption is met.

Results

The result of the two-tailed paired samples *t*-test was not significant based on an alpha value of .05, t(4) = -0.10, *p* = .922, indicating the null hypothesis cannot be rejected. This finding suggests the difference in the mean of Means_LOS_2022 and the mean of Means_LOS_2023 was not significantly different from zero. The results are presented in Table 1. A bar plot of the means is presented in Figure 1.

Table 1

Two-Tailed Paired Samples t-Test for the Difference Between Means LOS 2022 and Means LOS 2023