Implementation of a Daily Goals Checklist Utilizing Care Pathways into Interdisciplinary Rounds

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Abstract

Problem: The Vascular Surgery Progressive Care Unit at a large urban hospital has an average 4-hour discharge time, with only 8.7% of patients being discharged by noon, falling short of its 20% discharge by noon and 3-hour discharge time goals for fiscal year 2024. Longer discharge time impacts patient satisfaction, costs, and limits bed availability. Multidisciplinary care pathways in place improved recovery and discharge, with potential to enhance nurse communication through better integration. **Purpose**: The purpose of this quality improvement project is to implement a practice change to improve communication during daily interdisciplinary rounds (IDR) and adherence to evidence-based clinical pathways through the use of structured Daily Goals Checklist (DGC) tools, to enhance discharge time, increase discharges by noon, and further shorten the length of stay. **Methods**: The DGC tool from the Agency for Healthcare Research and Quality was adapted to meet the unit specific needs and implemented during a 15-week period in the Fall of 2024. Nurses selected the appropriate DGC pathways for nine vascular surgeries and a non-pathway for other patients completing a tool for each during the IDR for adults over eighteen admitted to this unit. The project lead performed weekly audits of completed tools and retrospective chart analysis. Huddles, snacks, and daily secure text reminders were utilized for adherence. **Results:** There was an adherence rate of 59.2% and an average discharge time of 4.9 hours, with 14.6% of discharges done by noon if ordered by 9 am. The average length of stay remained seven days. **Conclusions**: Using evidence-based care pathways in the DGC tool during IDR can improve the discharges by noon, and serve as a proactive measure for nurses to advocate for enhanced patient care and discharge readiness during IDR and shift change handoffs. Future embedment into the electronic health record will improve sustainability.

Keywords: daily goals checklist, care pathway, interdisciplinary round

Implementation of a Daily Goals Checklist Utilizing Care Pathways into Interdisciplinary Rounds

Care pathways are evidence-based, multidisciplinary care plans designed for surgical patients to promote rapid recovery and decrease hospital discharge time (Li et al., 2018). In a 12-bed Vascular Surgery Progressive Care Unit (VSPCU) at a large urban hospital that primarily admits adults with vascular diagnoses, care pathways had been established and proven effective. These pathways were compiled in binders created by the multidisciplinary team for staff nurses to utilize during post-operative patient care, aiming to decrease the length of stay and improve readiness for discharge. Additionally, a daily interdisciplinary round (IDR) was held on weekdays at around 9 a.m. at the nursing station. This meeting facilitated the coordination of patient care and discharge planning. The IDR served as a platform to address patients' concerns, set daily goals, and determine the necessary actions to achieve those goals (Institute for Healthcare Improvement [IHI], 2015). However, despite these initiatives, the average discharge time was four hours, which fell short of the organization's goal of three hours. Furthermore, only 8.7% of patients were discharged by noon, in contrast to the 20% target set for the fiscal year 2024. The average length of stay (ALOS) was seven days within the goal. Longer discharge times negatively affected patient satisfaction, increased costs, and limited bed availability for incoming patients. A root cause analysis was performed that identified the lack of proactive advocacy, miscommunication, and a gap in practice adherence to current pathways, as potential root causes and opportunities to enhance communication through further integration of care pathways for nurse utilization during IDR (see the fishbone diagram in Appendix A).

Therefore, the purpose of this quality improvement (QI) project was to implement a practice change to improve communication during daily IDRs and adherence to evidence-based

clinical pathways through the use of structured Daily Goals Checklist (DGC) tools, to enhance discharge time, increase discharges by noon, and further shorten the ALOS.

Available Knowledge and Specific Aims

A comprehensive literature search as shown in the PRISMA diagram (see Appendix B) was conducted using the PubMed database with the keywords “clinical pathway,” “enhanced recovery after surgery,” and “length of stay,” yielding 489 articles from 2017 to 2024. After screening titles and abstracts, four articles were selected. A similar search in the Journal of Vascular Surgery with keywords “clinical pathway” and “length of stay” resulted in 160 articles, but only one was included after further screening and duplicate removal. Two additional articles were identified through the snowball technique, resulting in a total of seven studies. The quality of these studies was assessed according to the Johns Hopkins Evidence-Based Practice Model: three Level I study (Li et al., 2018; Sauro et al., 2024; Trimarchi et al., 2021), one Level II study (Aicher et al., 2019), and three Level III studies (Malik et al., 2021; McGinigle et al., 2019; Tariq et al., 2024), resulting in a good overall quality of evidence (Grade B). Based on the evidence review in Appendix C and the synthesis in Appendix D, the recommendations from the evidence reviewed suggested utilizing care pathways for perioperative care in vascular patients.

Li et al. (2018) on their single-center randomized controlled trial (RCT) in cardiac surgery patients, showed that enhanced recovery after surgery (ERAS)-based care reduced hospital stays from seven to six days, lowered medical costs, promoted earlier return of gastrointestinal function, facilitated quicker mobilization, and led to faster recovery. Similarly, Sauro et al. (2024) conducted a systematic review and meta-analysis of randomized controlled trials, confirming that ERAS care shortened hospital stays and reduced postoperative complications without increasing readmission rates. Additionally, Malik et al. (2021), in a cohort

study on abdominal aortic aneurysm patients, found improvements in clinical outcomes and earlier discharge with no increase in 30-day readmissions. Furthermore, Trimarchi et al. (2021), through a systematic review and meta-analysis of randomized controlled trials, found that structured clinical pathways significantly reduced hospital stays, improved care coordination, and lowered complication rates. Likewise, McGinigle et al. (2019) supported this through the systematic review with meta-analysis of randomized controlled trials and observational studies by showing that ERAS concepts need to be individualized for specific vascular procedures while maintaining the same core benefits. Furthermore, Aicher et al. (2019) conducted a quasi-experimental study in vascular surgery patients, noting that restructuring rounding processes and utilizing care pathways and outpatient management by the advanced practice providers led to reduced lengths of stay without increasing 30-day readmissions. Similarly, Tariq et al. (2024) also found in his cohort study that ERAS pathways after the vascular surgery were associated with shorter hospital stays, less opioid use, and more direct discharges to home.

Overall, the evidence strongly supported the effectiveness of ERAS-based care pathways in optimizing recovery and improving patient outcomes in cardiac and vascular surgery. These pathways helped to reduce hospital stays and enhanced patient discharge planning, providing a clear advantage in improving the quality of care. Since vascular surgical patients had peri-operative burdens, it was imperative to have adhered to these guidelines when taking care of these patients and during the discharge planning process.

To reach the specific aims of this QI initiative, the structure goals of this project were to adapt a validated rounding tool incorporating the current clinical pathways that are based on ERAS and further adapted for the unit needs, and to educate 100% of end-users including nurses and advanced practice providers (APPs) by creating and providing a one-page handout on the

Daily Goals Checklist tools. The process goal was that 100% of nurses will utilize the DGC tool for IDR. Furthermore, the outcome goals were to improve the discharge time and discharges by noon to the organization's goal of three hours and twenty percent respectively, and to further reduce the current ALOS.

Rationale

The Promoting Action on Research Implementation in Health Services (PARIHS) Framework was chosen as the theoretical framework for implementing the DGC tool, as shown in Appendix E. This framework was deemed appropriate as it provided valuable heuristics in the design of the intervention and the evaluation of the implementation process (Rycroft-Malone et al., 2013). Kitson and her colleagues developed the framework and supported its use and adaptation as long as it was appropriately cited (Kitson et al., 2008). The framework's simplicity made it easy to understand and utilize, consisted of three constructs: evidence, context, and facilitation (Rycroft-Malone et al., 2013). If these three constructs were strong enough, the intervention could be successfully implemented. The intervention proposed as implementing the DGC tool to provide a formal structure to IDR had robust evidence with an overall grading of B (good), context was receptive with solid teamwork, and values given to patient safety, satisfaction, evidence-based care to provide qualitative care, with care pathways that were already in place and proven to be effective. Additionally, the implementation was facilitated with the help of charge nurses, efforts to raise awareness of the need for change, and solid leadership backing, as the department manager was also on board for support and guidance.

Methods

This QI project was conducted at the VSPCU at a large academic medical center implemented over fifteen weeks during the Fall of 2024. All adult patients over the age of 18

years admitted to this twelve-bed unit were eligible for participation. The current and desired processes were depicted in Appendix F and Appendix G process maps respectively.

The organization's cultural readiness to adopt the DGC tool was assessed using the validated Context Assessment Index (CAI) tool (McCormack et al., 2009). The CAI, comprising 30 Likert-scale items across five domains, revealed strong support for practice change with an overall context score of 73.72%. Culture and leadership scored 75% and 74.97%, respectively, indicating strong teamwork and supportive leadership. However, the evaluation score of 71.2% highlighted a need for better feedback mechanisms. As a result, implementation focused on a non-hierarchical feedback approach and recognition for end users.

For the intervention, a DGC tool developed by the Agency for Healthcare Research and Quality (AHRQ) was adapted to make it unit-specific. According to the AHRQ (2012), this tool helped healthcare team members to focus on the daily care plan that needs to be fulfilled to quickly and safely move patients to discharge and ensured care communication. A stakeholder team, including the nurse manager, six staff nurses, and four APPs, refined the tool to meet unit needs. Additional feedback was gathered from the Unit Operations and Clinical Practice Council. Then, guided by the advanced practice clinical manager, effective existing care pathways were integrated, resulting in a final version approved for implementation.

Nine pathway-specific DGC tools were developed for nine different vascular diagnoses (see Appendix H for an example of DGC tool for thoracic outlet syndrome pathway, where nursing care plans are removed to protect the site identifier), plus a general tool for non-pathway patients (Appendix I). Before rounds, day-shift nurses selected the appropriate DGC tool for each of their assigned patients from a designated binder and completed the checklist elements during the weekday IDRs at 9 am, while the APP led the rounds. The pathway specific tools had

expected milestones for that post op day. All tools had the Daily Goals column at the end to include the patient's goal and discharge plan for that day. Nurses were encouraged to include the estimated discharge date when discussed in IDR and to expedite any discharges to home utilizing the organization's discharge lounge if patient met the criteria set forth by the organization. Then, the completed tools were kept back in the yellow binder.

Bingham's ABCDE strategies and tactics guided the implementation (Bingham, 2023), with strategies including early stakeholder buy-in, formal site commitment, staff meetings, weekly huddles, weekly to biweekly updates, snack incentives, and secure text reminders by 8:45 am to support engagement. Timelines were detailed in GANTT chart in Appendix J.

Measures

For evaluating the intervention's effectiveness, a coordinated measurement plan was implemented, addressing structure, process, and outcome goals described above with a clearly defined data sources and collection methods. To measure the structure change of tracking education, an attendance sheet was used to track participation when the one-page handout on the DGC tools was provided to nurses and APPs one week before the implementation of the project. They signed their names on the attendance sheet when they received the handouts. This attendance was compared to the total number of nurses and APPs working in the unit, as reported by the leadership team.

Likewise, the process goal was measured through weekly audits conducted on Sunday, Monday, or Friday, where the doctor of nursing practice student project lead (DNP PL) collected the completed DGC tools from the yellow binder, entered the data into audit tools stored on an electronic, The Health Insurance Portability and Accountability Act (HIPAA) compliant REDCap server, as shown in Appendix K. This data was then compared against the unit's daily

census via retrospective chart review in Epic to assess implementation fidelity and adherence with the tool. Furthermore, the outcome measures of discharge time, discharge by noon, and length of stay were collected through retrospective chart review from Monday to Friday via Epic (electronic health record). The admission date and time, written discharge order date and time, and actual discharge date and time were entered into REDCap audit tools as shown in Appendix L and Appendix M. This helped for objective tracking of patient flow and discharge efficiency.

Only the DNP PL consistently collected and entered the data into REDCap to ensure completeness and accuracy. Data entry was cross-checked weekly with Epic records and validated against the daily census to ensure inclusion of all eligible patients.

Analysis

Descriptive statistics were used to draw inferences from the data collected, incorporating both quantitative and qualitative methods to evaluate structure, process, and outcome goals. In addition to creating a unit-adapted DGC from the AHRQ DGC with existing care pathways to meet the structure goals, the education handouts provided were reported in percentage. Likewise, the process goal of adherence to the DGC tool utilization was reported in percentage and run chart was created to analyze adherence and statistically significant changes over time through the presence of trends, shifts, and runs.

The discharge time was reported in hours from the time the discharge order was written to the time the patient was actually discharged from the unit. Furthermore, the number of patients discharged by noon was analyzed in percentage. The length of stay was reported in days from the admission date and time to the actual discharge date and time. Weekly to biweekly data on the process goal and outcome goals were e-mailed to the nurse manager to share with the staff nurses. Likewise, qualitative feedback was gathered through weekly on-site visits by the project

lead, who engaged with the nursing staff working in the unit at that time to inquire about opportunities for improvement.

Ethical Considerations

The project received a Non-Human Subject's Research determination from the Human Research Protections Office (HRPO) of the University of Maryland School of Medicine (UMSOM) Institutional Review Board (IRB), that was also approved by the project site's IRB. The DNP PL complied with The HIPAA and The Collaborative Institutional Training Initiative (CITI). The data stewardship was maintained by using the REDCap, a HIPAA-compliant server for de-identified data entry and storage, which was only accessible to the DNP PL and the project faculty. The privacy protection included the DNP PL using a side-by-side screen method in a private area at the site when collecting data from the electronic health record. All paper tools were discarded in the unit's shredding machine by the DNP PL post data entry into REDCap. There was no conflict of interest to disclose throughout the project. To ensure no staff nurses were excluded from this project, information was shared via huddles, staff meetings, and e-mails. Likewise, all patients in the unit daily census before 9 am on weekdays were included through the implementation of both pathway specific and a non-pathway DGC tool to ensure inclusion of all eligible patients. At the conclusion of the project, aggregated data was disseminated to site and externally with permission.

Results

The results of this project demonstrated that the structural goal was achieved by developing and implementing unit-specific DGC tools adapted from the AHRQ DGC tool that utilized current clinical pathways for easy access by nurses in the IDR. During the first week of the education period, twenty five percent of APPs and seventy nine percent of nurses received

the education handouts, as shown in Appendix N.

Regarding the process measure, the adherence rate of the DGC tool utilization during the IDR was 59.2% over the fifteen-week implementation period. The upward trends were seen between weeks zero to four and again from weeks five to nine, but they were not concurrent as illustrated in the run chart below in Appendix O. Overall, a statistically significant change was not seen on the run chart. Beyond week nine, adherence rates were oscillating. Initially, barriers such as staff nurses forgetting to use the tools were encountered. However, these challenges were addressed by implementing daily secure messaging to charge nurses before 8:45 am from week five onwards. Additionally, expectations and project goals were reinforced during week three by the assistant nurse manager at a monthly staff meeting, which helped re-engage nursing staff.

For the outcome goals, out of 138 discharges that occurred during the implementation period, the average discharge time was 4.9 hours, which was an increase compared to the pre-intervention phase. The discharge time ranged from 24 minutes to 11.4 hours, with the median discharge time being 4.8 hours. Notably, 14.6% of patients were discharged by noon when the nursing staff received discharge orders by 9 am. While the organization's goal of 20% discharges by noon was not met, this was an improvement from the baseline phase of 8.7%. The average length of stay remained unchanged at 7 days. Contextual factors such as leadership support, consistent secured messaging, and staff engagement served as key facilitators for this project. No major negative consequences were seen. Likewise, there were no significant costs associated with this project since the organization already had the secure messaging system and IDR in place. The paper tools and binder were provided by the DNP PL.

Discussion

This QI project aimed to improve communication during daily IDR and adherence to

clinical pathways through the structured implementation of DGC tools with the clinical pathways' integration during IDRs, with the hope of reducing discharge time, increasing discharges by noon, and reducing the ALOS. The findings showed that the use of secure messaging for daily reminders proved to be the most effective strategy for ensuring adherence to the DGC tool utilization during the IDRs. By reminding charge nurses right before the interdisciplinary rounds reinforced accountability, leading to a more consistent implementation of the care pathways. Likewise, consolidating each care pathway into each single, structured front-and-back page DGC tool simplified workflow and improved accessibility for nurses consistent with the literature suggesting that the care pathways should be patient-centered and specific to vascular or cardiac procedures. In addition, there is no bias in project design to limit the internal validity. The structural goal of providing handouts to all APPs and staff nurses was not fully met, due to the reason that the DNP PL was present on the site once a week except for the one-week rollout education period. The APPs and staff nurses might not have worked on that day when the DNP PL was on site. This signals the need for ongoing education to accommodate staff nurses and APPs varying schedule.

Although the outcome data showed that the discharge time post-intervention was 4.9 hours in comparison to pre-intervention of 4 hours, the improvement in discharges by noon to 14.6% when orders in place by 9 am is appealing. This observed increase in discharges by noon supports existing literature that enhanced recovery after surgery pathways contribute to early recovery and discharge. While all outcome goals were not fully met according to the organization's targets, anecdotal feedback from nurses had been promising. They found the tools helpful for reminding them of their patients' daily goals and the specific milestones to focus on for each post-operative day while delivering care.

However, there were some limitations for the observed outcomes that included the challenge of selecting and documenting multiple papers. Early in the morning, nurses had a busy schedule with morning rounds to complete and attend the IDRs which made them feel overwhelmed with limited time to open the binder and find the right DGC tools for each of their patients. Likewise, float nurses were utilized to cover the periodic low staffing in the unit, who were completely unaware of the DGC tools and its utilization. Furthermore, there was another competing DNP project underway that nurses find stressful on top of having to perform their shift responsibilities. In addition, 15 weeks implementation was a short project timeframe to compare the post-intervention results as the pre-intervention results were for a whole fiscal year. Thus, these limitations may have impacted the full implementation and evaluation of the project.

Some efforts were made to mitigate these barriers like routine reinforcement by the leadership and the project lead, staff meeting, visual cues in the unit, providing snacks, and weekly to biweekly audit data. However, the potentially biggest barrier was the periodic use of supplemental staffing who needed constant education on these tools during implementation due to their unfamiliarity with the QI initiative. Furthermore, staff nurses were encouraged to use the organization's new discharge lounge to expedite discharges if the patient met criteria, to facilitate patients while waiting for their transportation. However, this project did not formally track the utilization of this new discharge lounge.

A financial analysis was not performed, but successful project implementation could potentially lead to significant cost savings in the long-term and increase their return on investments through the reduced length of stay, reduced discharge time, and improved patient flow. Sustainability is supported through routine reinforcement, ongoing staff feedback, education, monitoring, new-staff orientation, and inclusion on the electronic health record for

broader dissemination and awareness to all staff.

Conclusion

In conclusion, utilizing evidence-based care pathways in the DGC tool during IDRs can lead to more efficient patient discharges by ensuring that key care milestones are met proactively. Nurses can use the tool to advocate for enhanced patient care and discharge readiness, helping to identify and address potential delays early. The tool also improves communication during IDRs and shift change handoffs, ensuring continuity of care and addressing any outstanding milestones. Additionally, it supports documentation, including daily nursing care plans, which helps track patient progress systematically. To enhance adherence and sustainability, the "MOCHA" (Measurement, Ownership, Communication, Hardwiring the Change, Assessment of the Workload) framework from the Institute for Healthcare Improvement (IHI) needs to be utilized. Furthermore, ongoing nursing education, leadership support, and also including the advanced practice providers in using the tool during the IDRs are essential. This quality improvement project enhances healthcare delivery, patient safety, and the quality of care by using DGC tools with care pathways that prevents omissions and keeps care teams focused on patient goals through structured checklists and reminders. Thus, this aligns with the principles of the DNP by translating the evidence into current best practice.

Future integration into electronic health records and onboarding programs will further sustain and expand its impact. Furthermore, this project will be presented at a local conference that may help with the spread to other institutions as well. Upcoming quality improvement project should focus on the effectiveness of key discharge outcomes and patient outcomes by having APPs use the tool during the IDRs and after integration into the electronic health record and also assessment of return on investment through improved patient flow.

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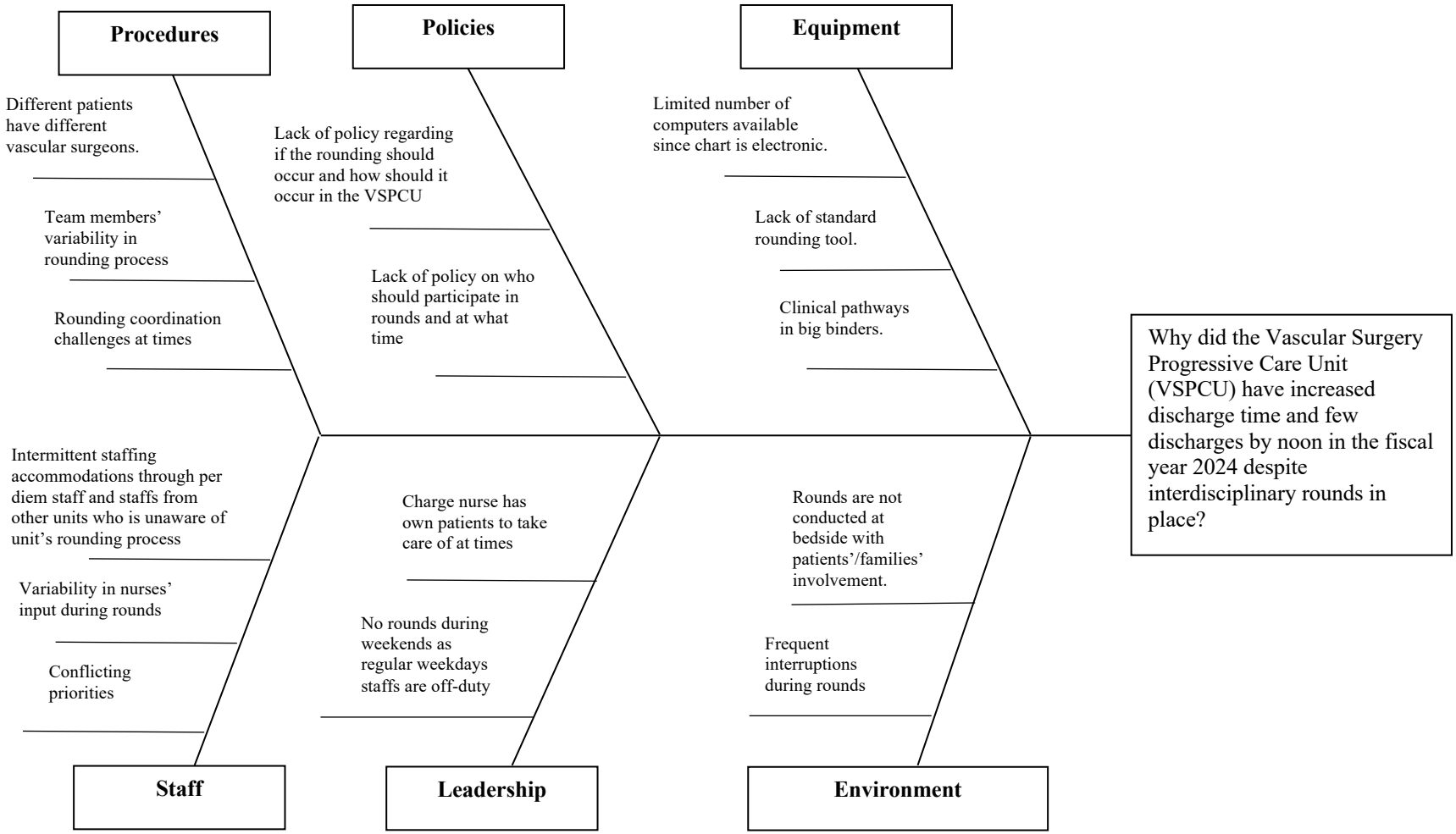
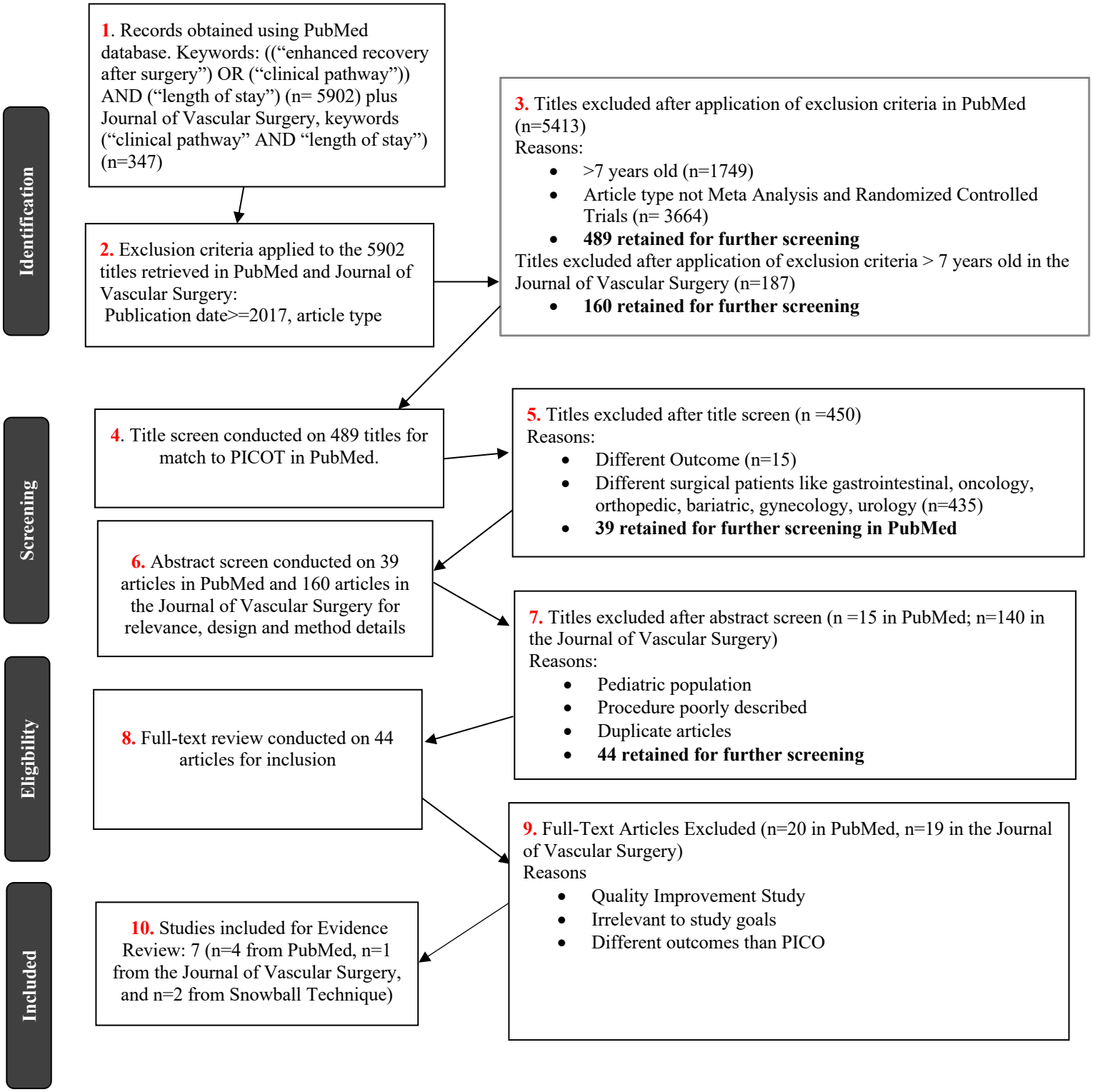
Appendix A

Fishbone Diagram for Interdisciplinary Rounding



Appendix B

PRISMA Search Flow Diagram for Clinical Pathways



Appendix C

Evidence Based Review Table for Structured Interdisciplinary Rounding Based on Clinical Pathways

Citation #1: Aicher, B. O., Hanlon, E., Rosenberger, S., Toursavadkohi, S., & Crawford, R. S. (2019). Reduced length of stay and 30-day readmission rate on an inpatient vascular surgery service. *Journal of Vascular Nursing: Official Publication of the Society for Peripheral Vascular Nursing*, *37*(2), 78–85. https://doi.org/10.1016/j.jvn.2018.11.004 **Level and Quality**: II-B

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this study was to "evaluate the implementation and efficacy of a system designed to reduce average length of stay on a vascular surgery service."	Experimental: Quasi-experimental Study	**Sampling Technique**: Convenience **Eligible Participants**: Adult vascular surgery patients discharged from July 1, 2013 to June 30, 2016 under the care of vascular surgeon. n=1723 **Setting**: University of Maryland Medical Center **Excluded**: Twenty-six patients who had length of stay with 0 days. **Accepted**: 1697 patients. **Control**: n=631 pre-implementation phase from July 1, 2013 to June 30, 2014. **Intervention**: n=1066 from July 1, 2014 to June 30, 2016. **Power Analysis:** Not performed. **Group Homogeneity**: Patient volumes between the two groups measured by the number of discharges per month and case-mix index were similar between the two	**Control Protocol**: Usual care of vascular surgery patients **Intervention Protocol:** Restructured a vascular surgery attending and APP rounds at 6 am daily, and multidisciplinary rounds at 8:30 am daily for improving communication. Implemented clinical pathways to guide postoperative care. To enhance hospital resources, some procedures were done in catheterization laboratory that opened more rooms in the main operating room for other complex vascular surgeries. The unused space in the hospital was utilized to provide postoperative outpatient management	**Dependent Variable**: The average length of stay. **DV Measure**: Measured from the admission date and time to discharge date and time, and analyzed through Epic as an electronic health record.	**Statistical Results**: There was a statistically significant decrease in the average length of stay after the interventions were implemented (10.8 days vs. 8.0 days, $p<0.001$). Patients who had carotid artery stent, carotid endarterectomy, lower extremity amputations, angiography, endovascular repair of abdominal aortic aneurysm for non-ruptured abdominal aortic aneurysm, or aorta-iliac-femoral bypass had greater reductions in the length of stay as compared to other vascular surgical procedures. There was no statistically difference in the mean cost of inpatient care before and after the implementations ($p=0.70$).

		groups.	with a team of nurses and APP to resolve any problems that occurs after discharge. Patients discharged to home will answer standard questionnaire through a telephone call within 72 hours after discharge that triggers the outpatient management needs. **Treatment Fidelity**: Treatments implemented by the vascular surgery physicians and APPs.		**Conclusions**: Multidisciplinary round is an effective method to improve communication, care outcomes, and the average length of stay. Likewise, APP led rounds are effective in improving nurse and physician satisfaction as well as the average length of stay. Furthermore, clinical pathways are evidence-based care approach that improve average length of stay, care quality, and reduce costs.

Citation #2: Li, M., Zhang, J., Gan, T. J., Qin, G., Wang, L., Zhu, M., Zhang, Z., Pan, Y., Ye, Z., Zhang, F., Chen, X., Lin, G., Huang, L., Luo, W., Guo, Q., & Wang, E. (2018). Enhanced recovery after surgery pathway for patients undergoing cardiac surgery: A randomized clinical trial. *European Journal of Cardio-Thoracic Surgery*, *54*(3), 491–497. https://doi-org.proxy-hs.researchport.umd.edu/10.1093/ejcts/ezy100 **Level and Quality**: I-B

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this study was to assess "the impact of an ERAS protocol in patients undergoing cardiac surgery."	Experimental: Prospective randomized controlled trial	**Sampling Technique**: Convenience **Eligible Participants**: Patients undergoing cardiac valve surgery from July 2015 and November 2016 (n=230) **Setting**: Single-center, Xiangya Hospital, Central South University, China **Excluded**: A New York Heart Association (NYHA) class of heart function of IV, history of stroke, creatinine levels >300 μmol/l, an	**Control Protocol**: Routine conventional care of these patients **Intervention Protocol**: ERAS clinical pathway outlined in detail on Table 1 for preoperative, intraoperative, and postoperative period to care for these patients. **Treatment Fidelity**: Research coordinator-maintained compliance with every protocol	**Dependent Variable**: Time to readiness for hospital discharge as primary outcome. The secondary outcomes were length of ICU stay, time to first bowel movement, length of postoperative vasoactive drug support, duration of mechanical ventilation, removal of surgical drain, and hospitalization costs except artificial heart valve costs.	**Statistical Results:** Statistically significant shorter post-operative time to readiness for discharge noted in the ERAS pathway group as compared to the control group (p=0.01). The duration of ICU stay and duration of mechanical ventilation were also significantly shorter in the ERAS group than the no-ERAS group (p=0.001, p<0.0001).

		international normalized ratio >2.0, an abnormal liver function test, presence of thyroid and adrenal diseases, has infection, severe mental disorder, emergent surgery, has pacemaker, a history of alcohol and drug abuse, and patient refusal. (n=21) **Accepted**: Patients eighteen to seventy years old, has body mass index of 15-30 kg/m^2, and getting elective heart valve surgery. (n=209) An independent personnel used computer based random digit table to place participant in either the intervention group or the control group. **Control**: 105 participants who got standard care. **Intervention**: 104 participants who got ERAS protocol-based care. **Power Analysis**: 98 participants required in each group to meet 90% Beta. Power Analysis met, low risk for Type II error. **Group Homogeneity**: Both groups had similar patient demographics and other characteristics as demonstrated on Table 2.	during the study. Patients followed up at 1-, 3-, and 6-months post-discharge. The institutional discharge criteria from the intensive care unit (ICU) were assessed by the ICU doctor blinded to both groups. The study was approved by the institutional ethics committee of the Xiangya Hospital of Central South University.	**DV Measure**: Time to readiness for hospital discharge is measured when patients had stable heart rhythm, tolerated oral solid and liquid, pain controlled with oral analgesia, ambulated, normal range temperature, voided, had a bowel movement, no drainage tubes, normal lab tests, normal wound healing process, and transthoracic echocardiogram showing adequate valvular function.	Hospitalizations costs were also significantly less in the ERAS group (p=0.002). **Conclusions**: Patients requiring cardiac valvular surgery will have shorter readiness for hospital discharge time, save costs, stays less in ICU with ERAS pathway of care.

Citation #3: Malik, K., Poletto, G., Musto, L., Giustiniano, E., Cecconi, M., & Civilini, E. (2021). Implementation of a perioperative protocol to enhance open aortic repair. *Journal of Vascular Surgery*, *74*(2), 434–441.e2. https://doi-org.proxy-hs.researchport.umd.edu/10.1016/j.jvs.2020.12.102

Level and Quality: III-B

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this study was to "evaluate whether partial or strict implementation of a perioperative protocol may influence postoperative complication rates and length of hospital stay after abdominal aortic aneurysms (AAA) open repair and thus, enhance recovery."	Observation: Cohort study, retrospective analysis of prospectively collected data	**Sampling Technique**: Convenience **Eligible Participants**: Patients undergoing elective open surgical repair (OSR) of infrarenal and juxta renal aortic aneurysms, with or without involvement of iliac arteries from September 2007 to February 2019. **Setting:** The Vascular Surgery department of Humanitas Research Hospital, Milan. **Excluded**: (n=55) emergency cases, (n=134) endovascular surgical approach. Others were ruptured or symptomatic AAA, interventions with concurrent repair of any other organ, history of previous aortic repair, and occlusive disease aortic surgery. **Accepted**: Group A cohort (n=66) between September 2007 to March 2009, had AAA repair with conventional perioperative care. Group B cohort (n=225) between April 2009 to March 2015, had incomplete protocol with early discontinuation of the nasogastric tube, avoidance of opioids, and early feeding and ambulation.	**Control Protocol**: Group A with traditional operative management and group B with some elements of perioperative protocol used as control for comparison. **Intervention Protocol:** Complete perioperative protocol based on evidence-based interventions involving multidisciplinary team members modified twice with all elements of the protocol shown in Table 1. **Treatment Fidelity**: All interventions during the study time were done by a team of four senior vascular surgeons. All study participants signed an informed consent. Approved by the local Ethics Committee.	**Dependent Variable:** The primary outcome was the impact of complete perioperative protocol on in-hospital complication rates and 30 days after surgery. The secondary outcomes were first day of return of bowel function, first ambulation, pain control, post-operative nausea and vomiting (PONV) control and the length of hospital stay. **DV Measure**: Surgical morbidity measured by the Clavien-Dindo classification. Only Groups III and IV complications that required interventions were analyzed. Pain score significant if scored >4.	**Statistical Results**: There was a significant reduction in the overall complications rates in group C (21% vs. 10% vs. 8%; p=0.019) and decrease in discharge times in group C ($p<0.001$). The median discharge time was on day 6 for group A, day 5 for group B, and day 3 for group C. There were no readmissions within 30 days after surgery and no mortality in group C. Statistically significant reduction in PONV and adequate pain control in group C ($p<0.001$). The first day of ambulation was noted to post-op day 0 in group C and median return of bowel function on post-op day 1 for group C. **Conclusions**: The adoption of the perioperative protocol in AAA open repair is feasible, and reveals improved clinical

		Group C cohort (n=103) between April 2015 to February 2019, had complete and strict application of perioperative protocol based on enhanced recovery after surgery. **Control**: Not applicable to this study design, but Group A cohort and Group B cohort are used as comparison. **Intervention**: Complete implementation of a perioperative protocol in Group C cohort. **Power Analysis**: Not performed. **Group Homogeneity**: Comorbidities like hypertension, diabetes, chronic obstructive pulmonary disease, chronic renal failure and American Society of Anesthesiologists scores were similar among all cohorts. Group C cohorts were older than the rest of cohorts. Demographics shown in Table 2.			outcomes with early discharge, without readmissions within 30 days of discharge.

Citation #4: McGinigle, K. L., Eldrup-Jorgensen, J., McCall, R., Freeman, N. L., Pascarella, L., Farber, M. A., Marston, W. A., & Crowner, J. R. (2019). A systematic review of enhanced recovery after surgery for vascular operations. *Journal of Vascular Surgery*, *70*(2), 629–640.e1. https://doi-org.proxy-hs.researchport.umd.edu/10.1016/j.jvs.2019.01.050 **Level and Quality:** III-B

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this systematic review (SR) was to examine the usage and benefits of Enhanced Recovery After	Synthesis: Systematic review (SR) with meta-analysis of randomized controlled trials	**Sampling Technique**: A search was done using the MEDLINE (through PubMed), Embase, Web of Science, Scopus, ProQuest Dissertations and Theses Global, Cochrane Central Register of Controlled Trials, Prospero, and	**Control**: Non-ERAS pathways, standard care. Four RCTs and six observational studies had a control group. **Intervention:** ERAS-like	**Dependent Variable**: Time to regular diet and the length of stay **DV Measure**: Time to regular diet and the length of stay were measured in	**Statistical Results**: Twelve studies conducted on infrarenal aneurysmal disease and aortoiliac occlusive disease showed statistically significant results with patients

Surgery (ERAS) in the care of all types of vascular operations.	(RCTs) and observational studies.	Google Scholar using the search terms for ERAS or components of ERAS pathways like patient education, coordinated perioperative care, multimodal analgesia, early mobility AND terms for vascular surgery and an adult population from January 1, 1997 to December 7, 2017. **Eligible Participants**: A total of 957 studies were initially identified and screened for eligibility from the above databases and one study was identified via manual search. Two independent reviewers reviewed the articles to match the inclusion and exclusion criteria and assessed the internal validity as per the Let Evidence Guide Every New Decision (LEGEND) evidence evaluation tools. Any disagreements were resolved mutually with a third reviewer. **Setting:** Any **Excluded**: Age less than 18 years old, rehabilitation pathways in the postoperative, outpatient setting, publications before 1997. **Accepted**: Other inclusion criteria were that the components of ERAS pathways should be implemented from first preoperative clinic visit or inpatient preoperative evaluation until one week after surgery. A total of nineteen studies with 2,977 participants (four RCTs and fifteen observational studies) were included in the final review.	pathway or ERAS pathway components (some are early mobilization and feeding, 1L limit on post-operative IV fluids, clear daily goals, nasogastric tube removed in post-anesthesia care unit) in the immediate perioperative timeframe **Protocol**: Not applicable to this study design critique **Treatment Fidelity**: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines followed for this SR. Any bias is clearly reported.	days after surgery.	tolerating regular diets within three days of surgery, reduced length of stay to 3.5 days sooner (p=0.0012), no rise in postoperative complications and thirty-day mortality. **Conclusions**: Implementation of ERAS pathways in vascular surgery showed improved length of stay, postoperative ambulation and diet intake. However, the pathways have to be designed to the patient needs with specific vascular procedures.

		Random-effects meta-analysis done on five studies. Studies conducted in the United States, Italy, Germany, Japan, England, China, Switzerland. **Power Analysis**: Not applicable to this study design. **Group Homogeneity**: Diverse with various vascular surgeries			

Citation #5: Sauro, K. M., Smith, C., Ibadin, S., Thomas, A., Ganshorn, H., Bakunda, L., Bajgain, B., Bisch, S. P., & Nelson, G. (2024). Enhanced recovery after surgery guidelines and hospital length of stay, readmission, complications, and mortality: A meta-analysis of randomized clinical trials. *JAMA Network Open*, *7*(6), e2417310. https://doi-org.proxy-hs.researchport.umd.edu/10.1001/jamanetworkopen.2024.17310 **Level and Quality**: I-A

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this study was to "synthesize the evidence on the efficacy of ERAS and determine if the adoption of ERAS guidelines improves hospital length of stay, hospital readmission, mortality, and postoperative complications compared with usual surgical care?"	Synthesis: Systematic review (SR) with meta-analysis of randomized controlled trials (RCTs)	**Sampling Technique**: A search was conducted using MEDLINE, Embase, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Cochrane Central Register of Controlled Trials on June 18, 2021 using vocabulary and keywords such as "patients undergoing surgery", "ERAS, fast track, enhanced recovery", "length of hospital stays, hospital readmission, complications, mortality". **Eligible Participants**: Included if they have at least one ERAS outcomes reported, adult population, undergoing surgery before and after ERAS guidelines implementation. Only RCTs included in meta-analysis.1493 studies.	**Control**: Usual care **Intervention**: ERAS guideline **Protocol:** Not applicable to this study design critique. **Treatment Fidelity**: The two independent reviewers had graduate training in epidemiology and evaluated the included studies for risk of bias using the Cochrane Risk of Bias Tool. The ERAS components were examines using the Reporting on ERAS Compliance, Outcomes, and Elements Research (RECOvER) checklist.	**Dependent Variable**: Hospital length of stay, hospital readmission within 30 days of surgery, postoperative complications within 30 days, mortality within 30 days post-surgery. **DV Measure**: No measurement tool explained. Meta-analysis of studies of studies conducted using a random effects meta-analysis to pool estimates for each outcome variable, and meta-regression to determine sources of heterogeneity under each variable.	**Statistical Results**: Statistically significant decrease in length of hospital stay in ERAS group by 1.88 days (95% CI, 0.95-2.81 days; I2=86.5%; P<0.001). There was statistically significant decrease in postoperative complications in the ERAS group compared to usual group (risk ratio, 0.71; 95% CI, 0.59-0.87; I2=78.6%; p<0.001). No statistically significant results identified in hospital readmission within 30 days of surgery and mortality within 30 days after surgery between the two groups.

		Setting: Perioperative setting in hospitals. **Excluded**: Pediatric patients, not providing estimates or sufficient data to calculate estimates, sample size less than 50 patients, conference proceedings or abstracts, reviews, guidelines, and commentaries. Two independent reviewers screened the articles and resolve any disagreements via discussion or with a third reviewer. **Accepted**: 495 studies for systematic review and 74 RCTs (9076 participants) for meta-analysis. 4577 patients in control group and 4375 patients in the ERAS group. Followed the PRISMA guideline for including and excluding studies from the systematic review. **Power Analysis**: Not applicable to this study design. **Group Homogeneity**: Studies in 21 countries and nine various surgical procedures. Heterogenous. Most studies conducted in high income and high-middle income countries.			**Conclusions**: Using ERAS guidelines for perioperative care of surgical patients are effective in reducing hospital length of stay with post operative complications, with no increase in hospital readmission within 30 days of surgery.

Citation #6: Tariq, M., Novak, Z., Spangler, E. L., Passman, M. A., Patterson, M. A., Pearce, B. J., Sutzko, D. C., Brokus, S. D., Busby, C., & Beck, A. W. (2024). Clinical impact of an enhanced recovery program for lower extremity bypass. *Annals of Surgery*, *279*(6), 1077–1081. https://doi-org.proxy-hs.researchport.umd.edu/10.1097/SLA.0000000000006212 **Level and Quality:** III-B

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this study was to determine the effects of enhanced recovery program (ERP) on the length of stay (LOS) and perioperative outcomes post lower-extremity bypass (LEB).	Correlational: Cohort study, retrospective	**Sampling Technique**: Convenience **Eligible Participants**: Patients admitted from January 1, 2016 to July 31, 2022 for infra inguinal LEB surgery. **Setting**: Peri-operative setting for vascular surgery at tertiary care center in Birmingham, Alabama **Excluded**: Trauma patients, pregnant, open surgical intra-abdominal or retroperitoneal inflow revascularization **Accepted**: Patients ≥ 18 years old, had infrainguinal LEB for elective, urgent, and emergent needs. (n=393) **Control**: Pre-ERP group (n=161) who had LEB from January 1, 2016 to May 13, 2018 **Intervention**: ERP implemented on May 14, 2018. ERP group (n=232) who had LEB from May 14, 2018 to July 31, 2022. **Power Analysis:** Not performed **Group Homogeneity**: Heterogenous. The Majority were males-65%, Whites-60%,	**Control Protocol**: Pre-ERP group who received routine perioperative care for LEB surgery **Intervention Protocol:** ERP group who received ERP based care for LEB surgery. ERP are evidence-based multidisciplinary approach of care to decrease surgical recovery time and to increase patient outcomes based on the standards set forth by the Enhanced Recovery after Surgery Society. **Treatment Fidelity**: A nurse coordinator performed manual auditing to ensure adherence to all ERP items.	**Dependent Variable**: Total and postoperative LOS were primary outcomes. Postoperative opioid usage, discharge disposition, readmission rates were secondary outcomes. **DV Measure**: The total LOS was computed from the date of hospital admission to discharge. The postoperative LOS was computed from the date of surgery to discharge.	**Statistical Results**: The ERP group had a significantly shorter total LOS (6 vs. 7 days, p=0.01) and postoperative LOS than the pre-ERP group (5 vs. 6 days, p<0.001). There was reduction on the median daily usage of oral morphine equivalents per day in ERP group (52.5 vs. 44.12, p=0.019). The rate of direct discharge to home also improved on the ERP group (83% vs. 69%, p=0.002). There were no statistically significant differences on the 30-day post-operative complications and readmissions after the ERP implementation. **Conclusions**: The ERP care measures after the vascular surgery is associated with reduced total LOS, post-operative LOS, lower postoperative opioid use for pain, with increased rates of direct

		American Society of Anesthesiologists Physical Status Classification System class 3-81%, and possessed government insurance-67%.			discharges to home.

Citation #7: Trimarchi, L., Caruso, R., Magon, G., Odone, A., & Arrigoni, C. (2021). Clinical pathways and patient-related outcomes in hospital-based settings: A systematic review and meta-analysis of randomized controlled trials. *Acta Bio-medica: Atenei Parmensis*, *92*(1), e2021093. https://doi-org.proxy-hs.researchport.umd.edu/10.23750/abm.v92i1.10639 **Level and Quality**: I-A

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this systematic review was to examine the "efficacy of clinical pathways, compared with standard of care, on patient-related outcomes in different populations and to determine the effects of clinical pathways on patient outcomes."	Synthesis: Systematic review (SR) with meta-analysis of randomized controlled trials (RCTs)	**Sampling Technique**: A search was conducted using PubMed, CINAHL, and Scopus databases on July 2019 with keywords such as "clinical pathway" and "patient outcome" with their synonyms. The reference lists of all full-text articles were also reviewed to search articles that were not found in the above databases. Three hundred and fifty-five articles from above databases and five articles from the reference lists were initially identified and then screened for duplicates, inclusion and exclusion criteria. **Eligible Participants**: Inclusion criteria included experimental studies in adult populations, English language, between January 2010 to September 2019 (review done), indexed abstract, operational definition of clinical pathway, aimed to evaluate clinical pathways on patient-related	**Control**: Various controls included between studies like standard in-home nursing care, usual care for falls like Morse Fall Scale, usual COPD care like COPD book, bedside dysphagia screen. **Intervention**: Telehealth-care multi-interventions, structured multi-interventions, clinical pathways on pneumonia, clinical pathway on COPD, chronic heart failure, and standardized multi-program in head and neck cancer and lung cancer. **Protocol**: Not applicable to this study design critique **Treatment Fidelity**: Any flaws and bias risk are clearly reported.	**Dependent Variable**: Length of stay by four articles, quality of life by eight articles, and satisfaction by four articles. **DV Measure**: Quality of life (QoL), depression, patient falls, length of stay, hospitalizations, pneumonia, satisfaction, incontinence, anxiety, readmission for disease exacerbation, mortality, clinical outcomes.	**Statistical Results**: Four studies conducted in the United States, five studies in Europe, one study in Australia, and one study in Asia. No significant differences between the clinical pathways versus control and quality of life (OR=1.472 [0.483-4.486]; *p*=0.496), but cancer as a subgroup had greater quality of care reported. No significant differences between clinical pathway group versus usual care with the levels of satisfaction (OR=2.226 [0.868-5.708]; *p*=0.096). However, clinical pathway leads to statistically significant decrease in the length of stay compared to usual care (OR=0,585 [0.349-0.982]; *p*=0.042).

		outcomes such as the length of stay, the quality of life, and satisfaction. Fifteen studies were eligible and evaluated according to the "Cochrane Effective Practice and Organization of Care Review Group (EPOC) checklist for the quality of RCTs and the risk of bias on the seven standard criteria. **Setting**: Hospital-based settings. Populations separated into chronic obstructive pulmonary disease (COPD) and diverse (stroke, hospitalized adults, fecal incontinence, breast cancer, lung cancer). **Excluded**: Low-quality studies during the eligibility stage of the quality appraisal and pediatric setting. **Accepted**: Eleven RCTs (13,015 participants). Two investigators performed independent data extractions, and resolved any discrepancies through mutual discussions in each stage. Used Comprehensive Meta -Analysis software for analyses. Followed the PRISMA guideline for including and excluding studies from the systematic review. **Power Analysis**: Not applicable to this study design. **Group Homogeneity**: Diverse populations of included studies.			**Conclusions**: Patients with cancer will benefit from the multi-disciplinary approach of care interventions tied in the clinical pathways. Additional research is needed to study patient-related outcomes, but length of stay is decreased with care pathways due to involvement of multi-disciplinary team members.

Appendix D

Evidence Based Synthesis on Structured Interdisciplinary Rounding Based on Clinical Pathways

Project Title: Implementation of daily goals tool based on the Agency for Healthcare Research and Quality and care pathways in structured interdisciplinary rounds.

PICOT: In vascular surgery, does the use of care pathways with multidisciplinary teams compared to usual care improve length of stay, patient discharge, collaboration and communication of patient's daily goals?

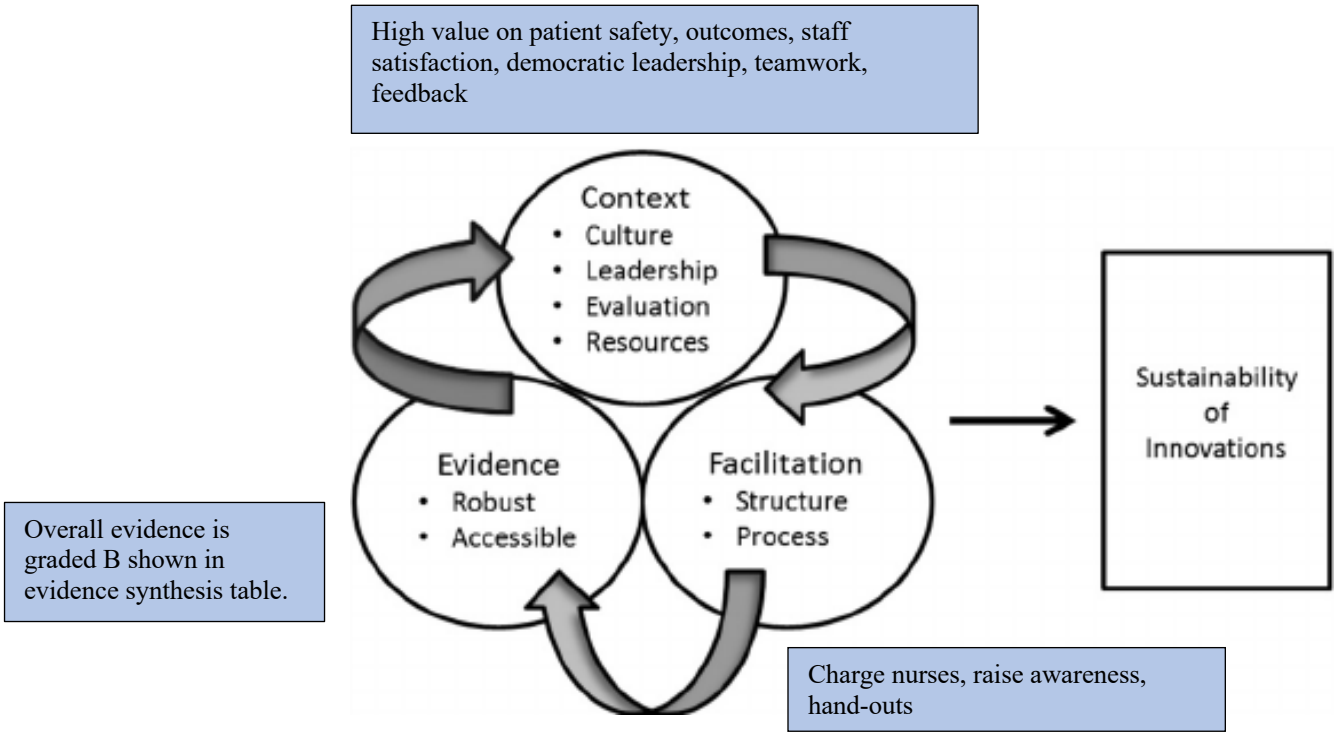
JHNEBP Model Level	Total Number of Sources	Author and Quality Rating of each study	Synthesis of Findings
Level 1 Experimental study ·Randomized Controlled Trial (RCT) · Systematic review of RCTs with or without meta-analysis	3	(Li et al., 2018). Good (B): Consistent, generalizable results; sufficient sample for the study design shown by the power analysis, Group homogeneity is maintained. Inclusion and exclusion criteria well defined. Clear recommendations. Limitations to include single site study, inclusion criteria limited to ASA Grade II and III patients only. Although binding was performed for the most part, but complete binding was not performed. (Sauro et al., 2024). High (A): Detailed inclusion and exclusion criteria defined. Use of two independent researchers and the PRSIMA guidelines followed. Based on the methodology described using the Cochrane Risk of Bias tool, bias risk is low. Included studies for meta-analysis are all RCTs. Adequate sample size with 74 RCTs and 9076 patients for meta-analysis. (Trimarchi et al., 2021) High (A): Low quality appraised studies were excluded. All eleven chosen studies were of high	Patients requiring cardiac valvular surgery will have shorter readiness for hospital discharge time, will save costs, will stay less in ICU with ERAS pathway of care. The ERAS clinical pathways include evidence-based approaches to decrease surgical stress and to promote better postoperative recovery. Using ERAS guidelines for perioperative care of surgical patients are effective in reducing hospital length of stay with post operative complications, with no increase in hospital readmission within 30 days of surgery. Clinical pathways are structured care plans outlined for multi-disciplinary care for particular disease process based

		quality as appraised per the Cochrane EPOC checklist. Well defined inclusion and exclusion criteria. Sufficient sample with 13,015 total participants in eleven studies. Adequate control. Recommendation is clear.	on the evidence. These clinical pathways showed reduction in patient's length of stay, although additional research is needed to study on patient-related outcomes and satisfaction.
Level II Quasi-experimental studies · Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis	1	(Aicher et al., 2019) Good (B): Consistent, generalizable results; sufficient sample. Group homogeneity maintained in both groups as shown by the case-mix index. Possibility of bias due to non-randomized study design. Limited to single site that may limits generalizability. Inclusion and exclusion criteria defined. Clear recommendations.	Multidisciplinary round is an effective method to improve communication, care outcomes, and the average length of stay. Likewise, APP led rounds are effective in improving nurse and physician satisfaction as well as the average length of stay. Furthermore, clinical pathways are evidence-based care approach that improve average length of stay, care quality, and reduce costs by defining appropriate care interventions, milestones, and expected outcomes for that patient population with that surgical procedure performed.
Level III Non-experimental study · Systematic review of a combination of RCTs, quasi-experimental, and non-experimental studies, or non-experimental studies only, with or without meta-analysis · Qualitative study or systematic review of qualitative studies with or without meta-synthesis	3	(Malik et al., 2021) Good (B): Consistent results. Study methods and data collection well-defined. Recommendations are clear. Non-randomized. Inclusion and exclusion criteria explained. Although similar baseline characteristics among three cohorts, sample size varied such as group A had 66 patients, group B had 225 patients, and group C had 103 patients. (McGinigle et al., 2019) Good (B): Well defined inclusion and exclusion criteria in a table. Use of two independent researchers and the PRISMA guidelines followed to reduce bias. Various study designs with four RCTS and fifteen observational studies included. The lack of control groups in nine observational studies poses a risk of bias. Random-effects meta-	The adoption of the perioperative protocol in AAA open repair is feasible, and reveals improved clinical outcomes with early discharge, without readmissions within 30 days of discharge. The median discharge time with this clinical protocol is on post-op day 3. Although perioperative pathways are individualized to each specialty, the core concepts remain the same for all surgical procedures. The usage of ERAS pathways in the care of vascular surgical patients showed shorter length of stay and improvement in postoperative outcomes with sooner diet intake and ambulation when compared to the standard care.

		analysis used for five studies meta-analysis. The internal validity of all included studies was performed as per the LEGEND evidence evaluation tools. (Tariq et al., 2024) Good (B): Heterogeneity among the groups. Small sample size. No power analysis. Consistent results in a single setting limits generalizability. No randomization. Clear definition of inclusion, exclusion, and measures. Conclusion is also clear.	The ERP care measures after the vascular surgery is associated with reduced total LOS, post-operative LOS, lower postoperative opioid use for pain, with increased rates of direct discharges to home.
Level IV Opinion of respected authorities and/or reports of nationally recognized expert committees/consensus panels based on scientific evidence	0		
Level V Evidence obtained from literature reviews, quality improvement, program evaluation, financial evaluation, or case reports · Opinion of nationally recognized expert(s) based on experiential evidence	0		
Overall Quality Rating w/rational and Recommendation: B			
Recommendations based on available evidence synthesis, graded level I-III, quality A-B, there is a good and consistent evidence that the use of care pathways developed by the interdisciplinary teams following the enhanced recovery after surgery guidelines improve the length of stay, patient discharge, collaboration, communication of daily care goals for patients. Therefore, care pathways are imperative for quicker recovery in perioperative care of vascular patients.			

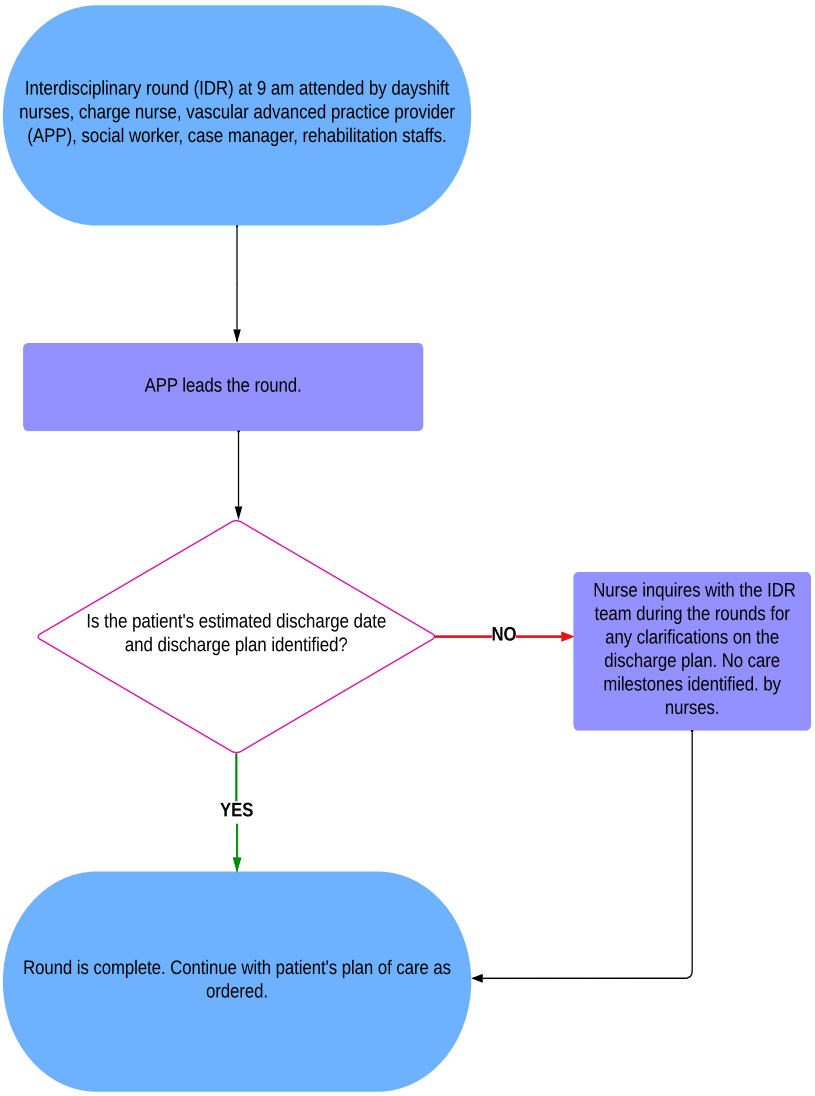
Appendix E

The Promoting Action on Research Implementation in Health Services (PARIHS) Framework



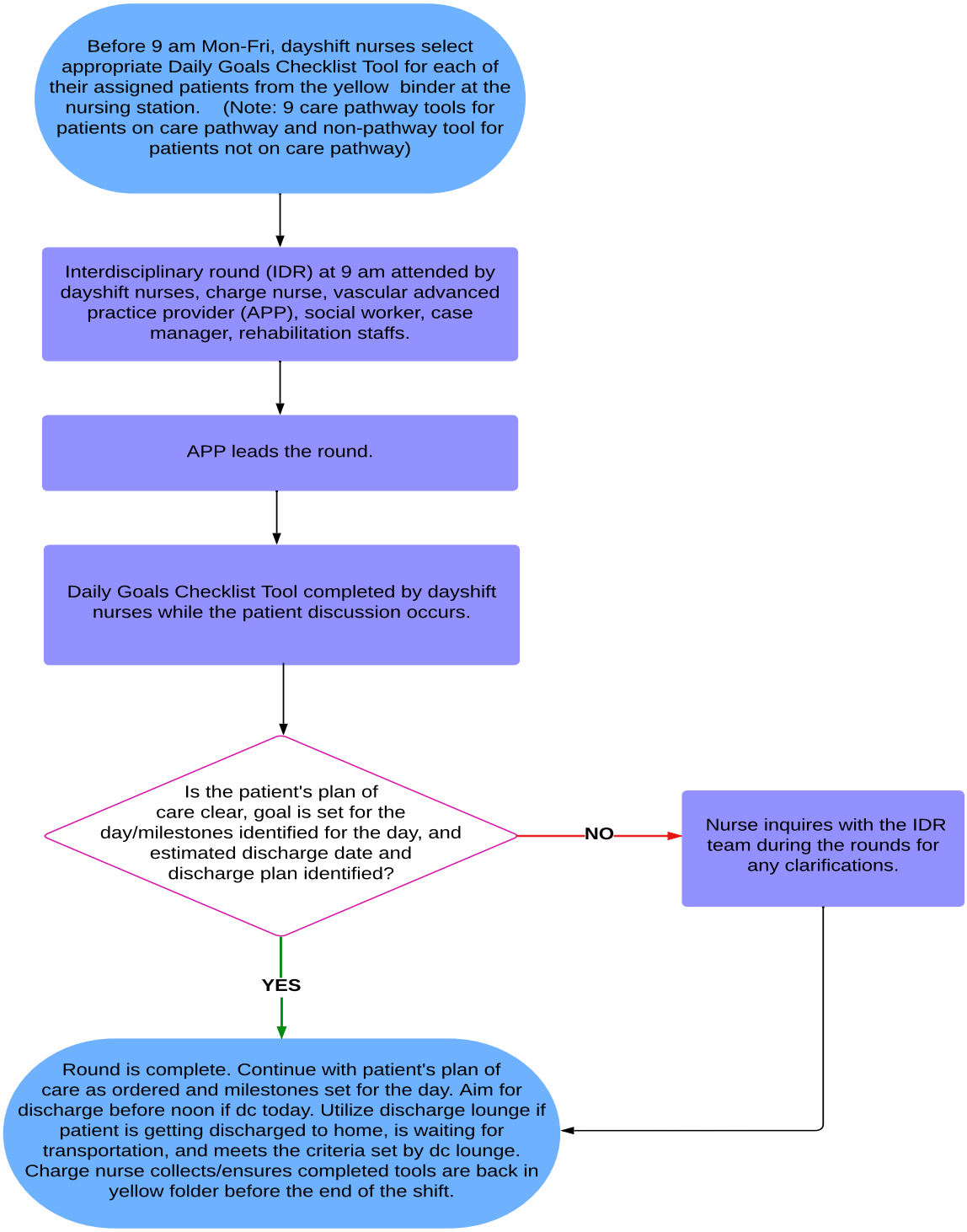
Appendix F

Current Process Map for Interdisciplinary Rounds



Appendix G

Proposed Process Map for Interdisciplinary Rounds



Appendix H

Unit Adapted Daily Goals Checklist for Thoracic Outlet Syndrome Pathway

Daily Goals Checklist for Thoracic Outlet Syndrome (TOS) Pathway

Room # _____ **Date:**	**POD O Milestone** Date: Arrival Time to VSPCU:	**POD 1 Milestone** Date: Start Time:	**IDR Discussion Points/ Goals for Today**
Level of Care	Med-Surg	Med-Surg	
Assessment	Q4H & PRN -NV Checks -Vital Signs Q8H & PRN -RN Assessment -Wounds/Drains/Airways -IV Assessment Strict I & O Initial Pain Assess & Ongoing Reassess	Q4H & PRN -NV Checks -Vital Signs Q8H & PRN -RN Assessment -Wounds/Drains/Airways -IV Assessment Strict I & O Initial Pain Assess & Ongoing Reassess	Events Last 24 hours? Any home O2 needs? Any concerns with volume status?
Cardiac Monitoring	No		
Swallow Screen	2 hours post extubation by RN with sips of water		
Diet/Nutrition	If no coughing with sips of water, then progress to Regular Diet	Regular Diet as tolerated. Diabetic: Consistent CHO	
IV	PIV ≥ #20gx1 must	**Remove PIV before discharge**	Is pt going home on iv antibiotics? Is midline/PICC needed?
Labs	No post op labs	No post op labs	
Tests	CXR		
Treatments	-IS or Acapella -Remove Foley per Urinary Catheter Management Policy once extubated. -Maintain OR dressings x 24 hours. -Empty and measure JP bulb drainage q4h and prn.	-IS or Acapella -Provider to remove OR dressing after 24 hrs & replace with dry dressing as needed. **-Provider to remove JP drain.**	Need wound consult? Need home RN for dressing changes? Any Tx. Milestones not met?
Activities	Mobility Screen Progress activity as tolerated per Mobility Level. OOB at lib.	**Ambulate x 3 - 4/ day** **OOB for meals** **ROM exercises x 3 - 5 /day** **CHG Bath**	**Has PT/OT assessed?**
Medications	**Home medicines:** RN perform home medication review. Provider reconciles. **Anticoagulation:** VTE Therapy **Pain Management** **Begin Bowel Regimen** PRN Electrolyte Repletion Order. Complete Antibiotics as Ordered.	**Finalize meds for discharge and complete/fill prescriptions (Meds to Beds).**	Pain Goal ___/10 w/ _____ Can any meds be discontinued, converted to "by mouth" or "oral, adjusted"? _____

Discharge Planning		**CM talks to pt and family about home health if indicated.** **SW mobilize family support, if needed** **Daily IDR**	Estimated Date of Discharge: DME Needs:
Pt & Family Education	Pt/Family orientation to the unit. Begin Care Plan & Pt/Family Education (e.g. med education, ROM activities, home pump removal)	Reinforce post op teaching. **Provide ROM activity exercises AM POD1** Confirm pt & family knowledge of discharge teaching with teach-back method.	
Nursing Care Plan	**NEUROLOGICAL CARE PLAN:** **PAIN CARE PLAN:** **RESPIRATORY CARE PLAN:** **GI/NUTRITION CARE PLAN:** **GU CARE PLAN:** **ACTIVITY/MUSCULOSKELETAL/NV CARE PLAN**	**Continue prior goals.**	

Appendix I

Unit Adapted Daily Goals Checklist for Non-Pathway Patients

Daily Goals Checklist for Non-Pathway Patients

Room #_____ **Date: _____**	**Diagnosis/Vascular Procedure:** **POD:**	**Goals for Today/IDR Discussion Points**
Level of Care	IMC Telemetry Med Surg	
Assessment	Vitals/NV Checks: Q2H Q4H & PRN RN Assessment: Q4H Q8H & PRN Wounds/Drains/Airways/IV Assessment: Q4H Q8H &PRN Strict I & O Initial Pain Assess & Ongoing Reassess	Events Last 24 hours? Any home 02 needs? Concerns with volume status?
Cardiac Monitoring	Cardiac monitor Telemetry Box None	
Swallow Screen/ Diet/Nutrition	2 hrs. post extubation, RN swallow screen: Y/N/ N/A NPO except meds/hard candies: Y/N/ N/A Regular Diet (if bowel function): Y/N/ N/A CHO Diet (if diabetic): Y/N N/A	If failed swallow screen, consult SLP.
IV	Maintain PIV x 1 least	Remove PIV before dc. Is pt going home on iv abx? Is midline/PICC needed?
Labs	CBC BMP Coags CYP2C19 (if DAPT) Other None	Any pending labs?
Tests/Procedures Today		N/A Tests Completed: _____
Treatments	IS/Acapella CPT Bair Hugger if ≤34°Celsius Foley/Invasive Monitoring/Lines NG/OGT to LIS Did provider remove OR dressing >24 hr/JP drain? Y/N Maintain NPWT or sterile post op dressings: Y/N	Can catheter or tubes be removed? Can NGT be removed if passing gas? Need wound consult? Need home RN for dressing changes?
Activities	Mobility Screen? Y/N Mobility Score? ____ OOB daily PT/OT Assess? Ambulate: x1 x 3-4 Walker/Cane/WC/Boot/Crutches CHG Bath: Y/N	**Has PT/OT assessed if mobility score below 4?** Is crutch teaching done?
Medicines	Home Medication Reviewed? Y/N Provider Reconciles. Daily Aspirin: Y/N VTE Therapy: Y/N Anticoagulant: Y/N Pain Management: PO IV PCA Bowel Regimen: Oral Laxatives Suppository Hyperglycemia Management? Electrolyte Repletion PRN: Y/N Complete Antibiotics as ordered: PO IV Meds to Beds for Discharge: Y/N	Pain Goal____/10 w/_____ Can any meds be discontinued, converted to "by mouth" or "oral, adjusted"? Diabetes education needed?
Patient/Family Education	Post op Teaching Care Plans Updated	
Discharge Planning	Estimated Discharge Date: Disposition: Home with Homecare Rehab Transportation Needs: DME/Medicine coverage needed:	Is pt/family aware of dc plan? ***Utilize dc lounge if dc today to home & meets criteria***

Appendix J

GANTT Chart

DNP Project Title: Implementation of a Daily Goals Checklist Utilizing Care Pathways into Interdisciplinary Rounds

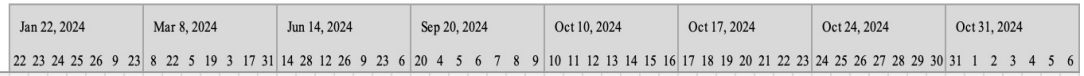
Student: Shrijana Dhakal

Project Site: Vascular Surgery Progressive Care

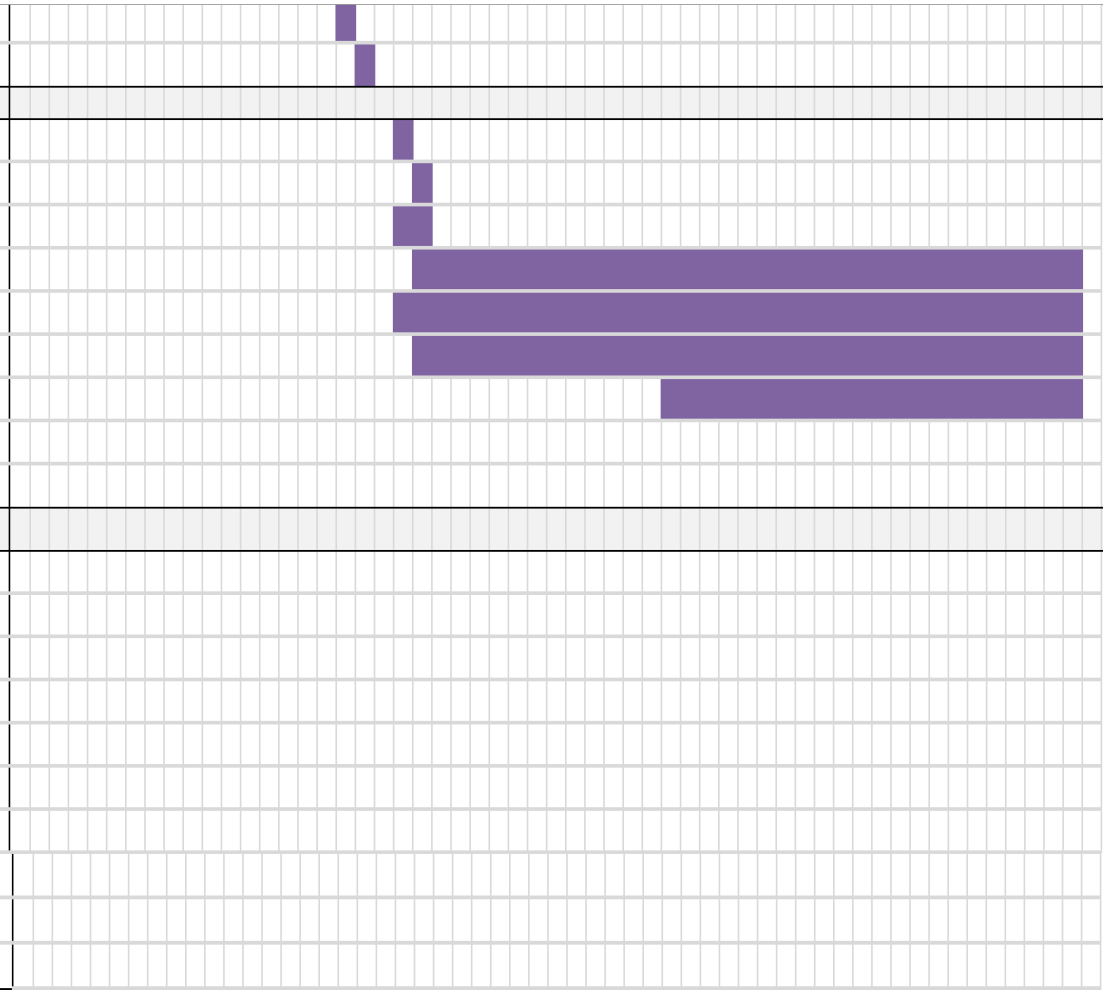
Project Start: Mon, 1/22/2024

Display Week: 1

Project Identification (NDNP810)	Responsible	START	END
Start of Spring Term	Shrijana	1/22/24	1/22/24
CITI (enter renewal date as end)	Shrijana	8/25/23	8/25/26
HIPAA (enter renewal date as end)	Shrijana	1/31/24	1/31/26
Identify stakeholders/team	Shrijana, Barbara	1/31/24	5/18/24
Identify roles/responsibilities	Shrijana, Barbara	1/31/24	5/18/24
Identify practice problem/root cause	Shrijana, Barbara	3/9/24	3/11/24
Context Assessment	Shrijana, Barbara	3/5/24	3/15/24
Identify scope/goals	Shrijana, Barbara	3/11/24	3/16/24
Synthesize Evidence	Shrijana	3/5/24	3/10/24
Development project plans	Shrijana	3/12/24	3/16/24
MILESTONE: Submit project proposal	Shrijana	3/17/24	4/1/24
Site IRB Inquiry	Shrijana	4/2/24	4/22/24
REDcap	Shrijana	1/31/24	5/18/26
End of Spring Term	Shrijana	5/18/24	5/18/24
Project Development (NDNP811)			
Start of Summer Term		6/3/24	6/3/24
Develop implemenation plans	Shrijana, Barbara	6/3/24	7/12/24
Develop teaching plan	Shrijana	6/3/24	7/12/24
MILESTONE: Site Presentation and Approval	Shrijana, Barbara	7/15/24	7/15/24



MILESTONE: IRB Determination		7/19/24	7/19/24
End of Summer Term		7/26/24	7/26/24
Project Implementation (NDNP812)			
Start of Fall Term		8/26/24	8/26/24
MILESTONE: Project go-live (implement)	Shrijana	9/9/24	9/9/24
Educaton/Training	Shrijana	9/3/24	9/6/24
Monitor tactics and progress	Shrijana, Barbara	9/9/24	12/20/24
Communicate with stakeholders	Shrijana, Barbara	8/26/24	12/20/24
Data Collection	Shrijana	9/9/24	12/20/24
Dissemination Plan	Shrijana	10/15/24	12/18/24
MILESTONE: Manuscript	Shrijana	11/30/24	11/30/24
End of Fall Term		12/20/24	12/20/24
Project Evaluation and Dissemination (NDNP813)			
Start of Spring Term		1/27/25	1/27/25
Analyze, synthesize & evaluate results	Shrijana	1/27/25	2/15/25
Sustainability Plan	Shrijana	2/15/25	2/22/25
MILESTONE: Develop Poster	Shrijana,Barbara	3/24/25	3/24/25
MILESTONE: Site Presentation	Shrijana,Barbara	3/20/25	3/20/25
MILESTONE: Extrernal Dissemination	Shrijana	4/25/25	4/25/25
MILESTONE: Final Manuscript	Shrijana,Barbara	5/11/25	5/11/25
MILESTONE: UMSON Poster Day	Shrijana	5/5/25	5/5/25
Project Closure w/site	Shrijana	5/16/25	5/16/25
End of Spring Term		5/16/25	5/16/25



Appendix K

The Daily Goals Checklist Audit Tool

Daily Goals Checklist Audit Tool

1)	Date of audit	_____
2)	Room Number	◯ Room C550 ◯ Room C552 ◯ Room C554 ◯ Room C556 ◯ Room C558 ◯ Room C560 ◯ Room C562 ◯ Room C564 ◯ Room C566A ◯ Room C566B ◯ Room C568A ◯ Room C568B
3)	Is the nurse present for IDR?	◯ Yes ◯ No
4)	Is the Daily Goals Checklist used during the interdisciplinary round?	◯ Yes ◯ No
5)	What is the total number of patient census in the unit today?	_____

Appendix L

Discharge Time Audit Tool

Discharge Speed Audit Tool

1)	Today's Date	_____
2)	Time of Written Discharge Order	_____
3)	Actual Time of Patient Discharged From the Unit	_____
4)	Discharge Speed (in minutes)	_____
5)	Is the patient discharged by noon?	◯ True ◯ False

Appendix M

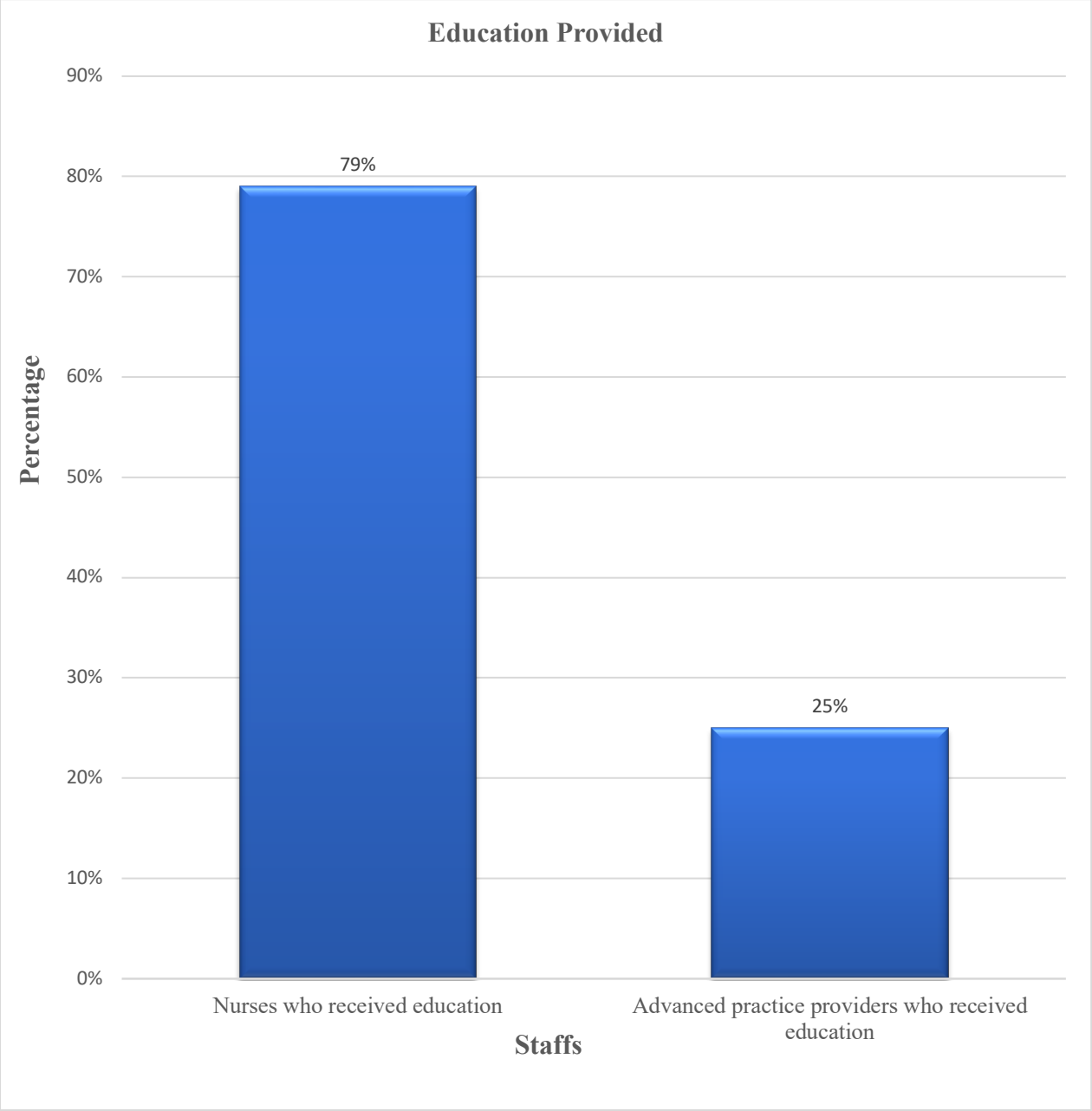
Length of Stay Audit Tool

Length of Stay Audit

1)	What is today's date?	_____
2)	Date and Time of Admission	_____
3)	Date and Time of Discharge	_____
4)	Length of Stay (in days)	_____

Appendix N

Percentage of Education Provided



Appendix O

Daily Goals Checklist Tool Adherence Rate Run Chart