DEDER GENERAL HOSPITAL

HEALTHCARE QUALITY IMPROVEMENT PROJECT

Reducing Post Operative Average Length of Stay (ALOS)

By: Surgical Ward QI Team

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ABSTRACT

Background: Average Length of Stay (ALOS) is a critical healthcare metric defined as the mean duration (in days) a patient remains hospitalized following admission. Scientifically, ALOS serves as a proxy for clinical efficiency, resource utilization, and quality of care. Prolonged ALOS correlates strongly with increased risks of hospital-acquired infections (e.g., surgical site infections, catheter-associated UTIs), iatrogenic complications, and functional decline, particularly among surgical patients.

Objective: This QI project aimed to decrease the post operative hospital stay from the current median average length of stay **7 days to less than 4 days** from **December 2017E.C to May 2017E.C.**

Methods: A quality improvement initiative was launched using the Model for Improvement and three Plan-Do-Study-Act (PDSA) cycles. Key interventions included: (1) Implement Discharge Planning & Coordination, (2) Assign a discharge nurse to provide teach-back methods counseling, and (3) Data Monitoring & Feedback. Data on ALOS were collected monthly.

Results: The quality improvement initiative successfully reduced postoperative ALOS from a baseline of **7 days** to **2.5 days** over five months (December 2017–May 2017 E.C.). During **PDSA Cycle 1**, implementing standardized discharge planning and daily multidisciplinary huddles reduced ALOS to **4.4 days** (December) and **3.6 days** (January). **PDSA Cycle 2** introduced teach-back counseling by dedicated nurses, stabilizing ALOS at **4.2 days** (February) and **4.3 days** (March). **PDSA Cycle 3** leveraged real-time EMR dashboards and weekly feedback meetings, driving ALOS down to **2.7 days** (April) and **2.5 days** (May)—a **64% reduction** overall. Process measures confirmed 100% fidelity to discharge planning and teach-back interventions, and no increase in readmissions was observed, validating sustained improvement without compromising patient safety.

Conclusion: This project shows that even in low-resource settings, simple, cost-effective strategies—like EMR integration, team training, visual cues, and empowering frontline staff—can lead to full adherence to the Safe Surgery Checklist. The sharp decline in infection rates further highlights how vital the checklist is in ensuring safer surgeries and better patient outcomes.

INTRODUCTION

Average Length of Stay (ALOS) is a critical healthcare metric defined as the mean duration (in days) a patient remains hospitalized following admission. Scientifically, ALOS serves as a proxy for **clinical efficiency**, **resource utilization**, and **quality of care**. Prolonged ALOS correlates strongly with increased risks of **hospital-acquired infections** (e.g., surgical site infections, catheter-associated UTIs), **iatrogenic complications**, and **functional decline**, particularly among surgical patients (Kassin et al., 2012; *JAMA Surgery*). Elevated ALOS also strains healthcare systems by reducing bed turnover, delaying access for new admissions, and escalating costs (up to 15–20% per extra day in LMICs; WHO, 2018). Evidence shows that optimizing ALOS through **standardized care pathways** (e.g., ERAS protocols), **early mobilization**, and **proactive discharge planning** improves outcomes by minimizing exposure to institutional hazards while maintaining patient safety—demonstrating that ALOS reduction, when achieved without increasing readmissions, reflects enhanced clinical coordination and evidence-based practice (Agarwal et al., 2021; *Annals of Surgery*).

CONTEXT

This quality improvement project was implemented with the aim of **reducing the average length of stay (ALOS)** in the **surgical ward of Deder General Hospital**.

***Table 1**: Problem identification and prioritization Matrix*

SN	Lists of problems identified	Prioritization criteria				Rarank/
		magnitude	Feasibility	Importance	Total/ priority score	
1	Low patient record completeness	3	4	3	10	6
2	Long length of hospital stay	5	5	5	15	1
3	High > 24hrs EOPD attendance	3	4	4	11	5
4	High EOPD referral Out	4	4	4	12	4
5	Low infection prevention	4	5	4	13	3
6	Low pain Management	4	5	5	14	2
		Priority score=Severity + Frequency + Feasibility				

PROBLEM STATEMENT

The surgical ward pre-and post-operative hospital stay monitoring conducted from **June 2016E.C to November 2017E.C** showed that the surgery patients' average length of days of hospital stay was **7 days**. This led to prolonged time of hospital stay, exposed patients to hospital acquired infections, exposed patients for unnecessary expenses, and decreased patient satisfactions.

AIM STATEMENT

We Deder General Hospital surgical and anesthesia care QI team aim to decrease the post operative hospital stay from the current median average length of stay 7 days to less than 4 days from **December 2017E.C to May 2017E.C.**

ASSESSMENT OF PROBLEM AND ANALYSIS OF ITS CAUSES:

To improve the ICU enteral feeding at Deder General Hospital, the quality improvement team used the Model for Improvement (MFI) and the Plan, Do, Study, Act (PDSA) cycle to test change ideas. We used Fishbone and Driver diagrams to identify and address root causes.

INTERVENTION

The QI team analyzed the root causes using a fishbone diagram **(figure 1),** plotted possible intervention packages using driver diagram and designed an implementation plan **(figure 2)**. A series of PDSA cycles were conducted. Intervention data were collected and analyzed bi-weekly. the intervened change ideas were:

- Implement Discharge Planning & Coordination
- Assign a discharge nurse to provide teach-back methods counseling
- Data Monitoring & Feedback:

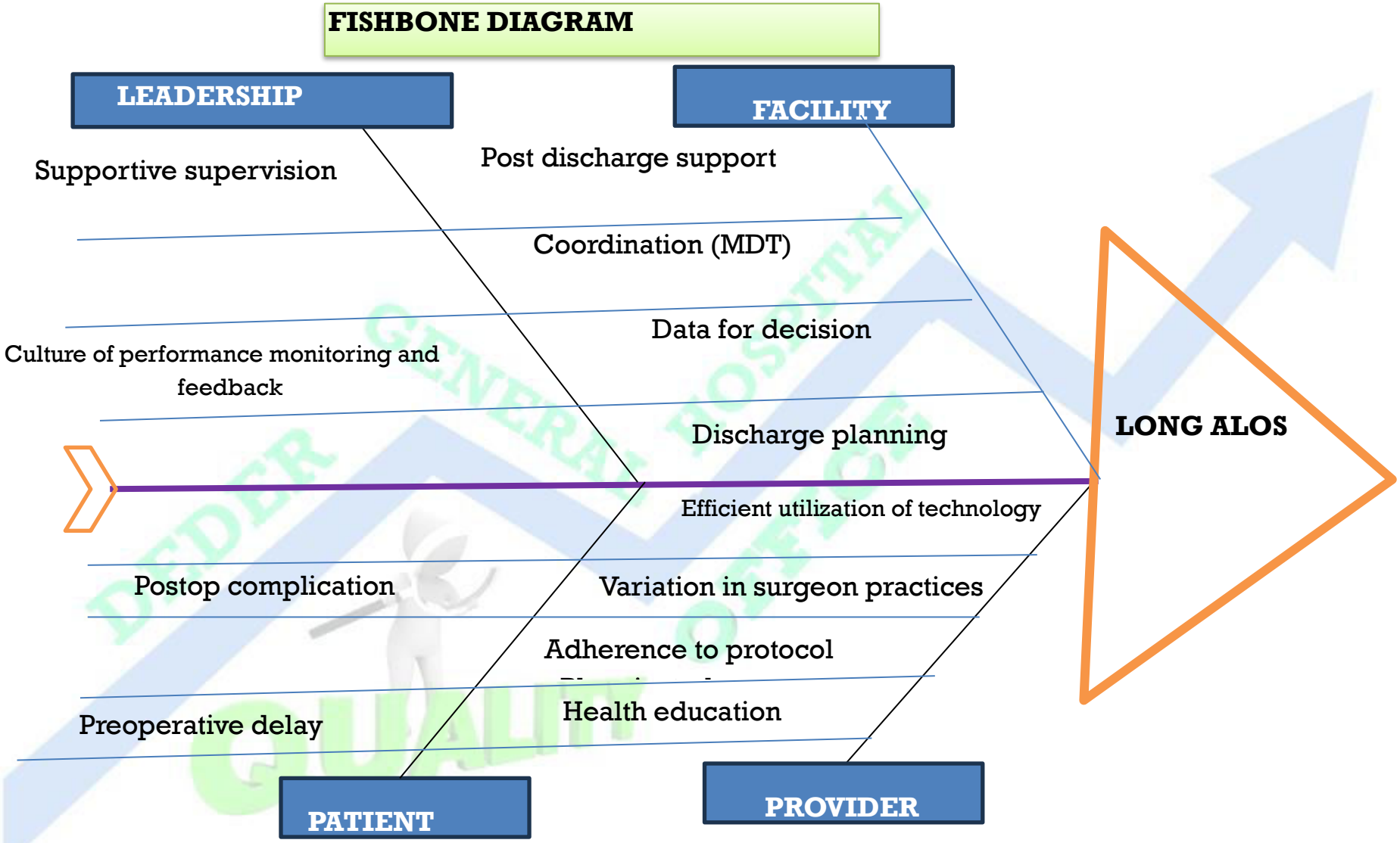

Figure 1: *Fishbone diagram to reduce postoperative hospital stay from the current average length of stay of 7 days to less than 4 days from December 2016 to May 2017.*

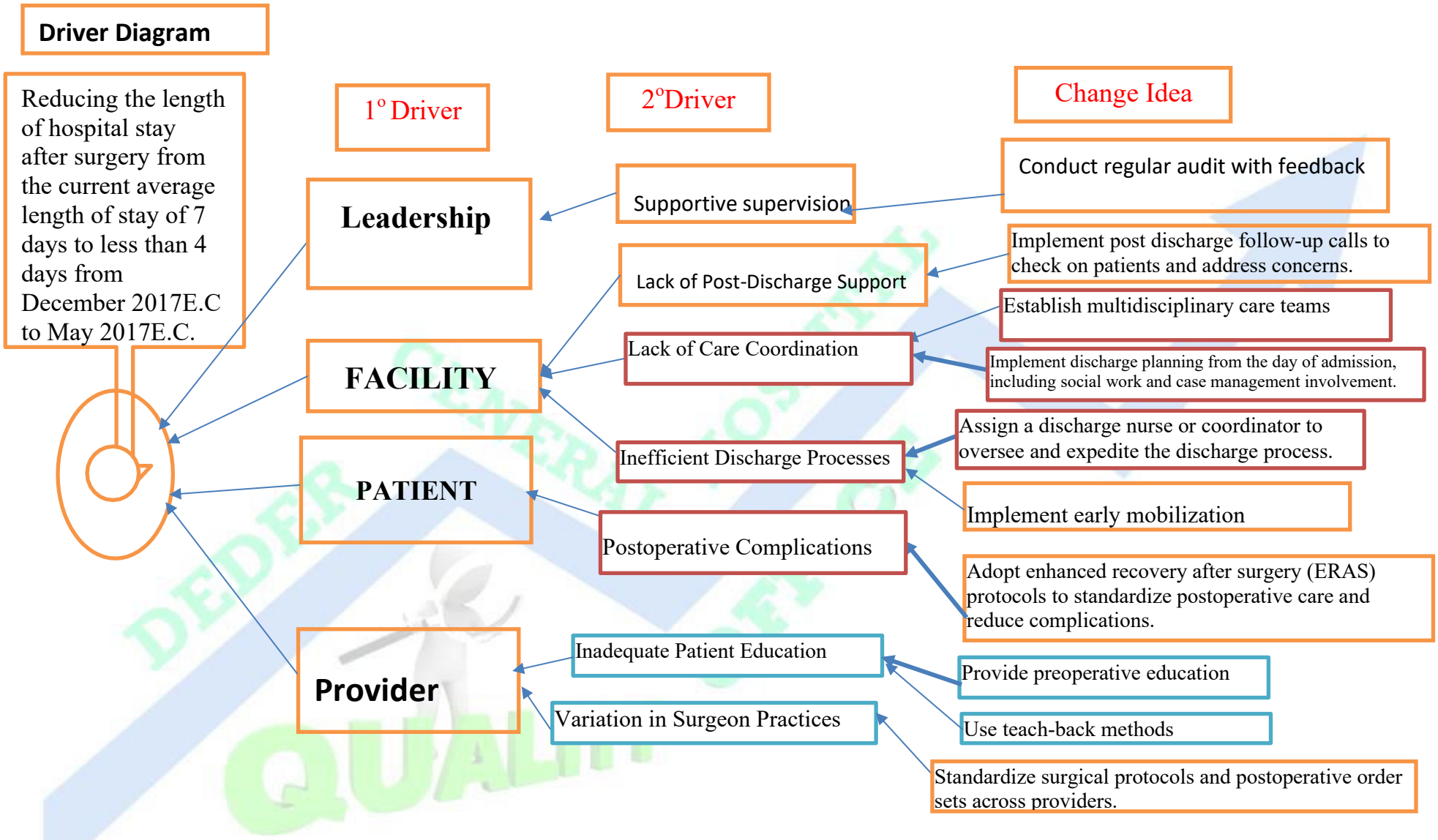

***Figure 2**: driver diagram to decrease the post operative hospital stay from the current median average length of stay 7 days to less than 4 days from December 2017E.C to May 2017E.C.*

MEASURES

Outcome measurement

- Average Length of Stay (ALOS).

Process measures

- % of patients with discharge plan initiated within 24h of admission
- % of patients receiving teach-back counseling pre-discharge
- % of weeks LOS data reviewed in staff meetings

Measures/Indicators

Table 2: ***Outcome measure***

Aim	Indicators	Numerator	Denominator	Data	Responsible
Reducing the length of hospital stay after surgery from the current average length of stay of 7 days to less than 4 days from December	Average Length of Stay (ALOS).	Total Inpatient Days of Surgical ward	Total Number of surgical ward case Discharges	Surgical ward	Surgical ward head

Measures/Indicators---

Table 3: Process Measures

Change idea	Process measures				Balancing measures
	Indicators	Numerator	Denominator	Data	
Implement Discharge Planning & Coordination	% of patients with discharge plan initiated within 24h of admission	Patients with plan initiated ≤24h	Total surgical patients admitted	EMR documentation	
Assign a discharge nurse to provide teach-back methods counseling	% of patients receiving teach-back counseling pre-discharge	Patients receiving teach-back	Total discharged patients	Discharge nurse logs	
Data Monitoring & Feedback:	% of weeks LOS data reviewed in staff meetings	Weeks LOS data reviewed	Total weeks in quarter	Meeting minutes	

Table 4:Implementation of P of PDSA

Change Idea	HOW	WHO	When	Where
Implement Discharge Planning & Coordination	To improve how patients were discharged, we introduced a new, standardized process between November 21 and 30, 2017 E.C. This included developing a checklist to guide discharge decisions and assigning case managers to each patient. Starting December 1, 2017 E.C., we held daily 15-minute team huddles in the surgical ward. These meetings brought together surgeons, nurses, IPC focal person, and social workers to ensure patients were ready to go home as soon as it was safe. Case managers led the coordination, and patients and families were included early in the process—receiving estimated discharge dates and support in overcoming challenges like transportation.	Surgeons, Ward nurses, IPC focal person, and social workers	November 21- Jan 20, 2017E.C	DGH Surgical ward
Assign a discharge nurse to provide teach-back methods counseling	To ensure patients understood post-discharge care and prevent readmissions, two dedicated discharge nurses were trained in teach-back methodology and post-operative care protocols between January 21-25, 2017 E.C. Visual aids were also created. Starting between January 26, 2017 E.C., these nurses conducted structured one-on-one teach-back sessions at the patient's bedside approximately 24 hours before discharge. These sessions covered medication, warning signs, and follow-up appointments. Patient understanding was documented using a standardized form. The discharge nurses reported to the Nurse Manager.	Discharge nurses, Nurse head.	Jan 21-Mar 20, 2017E.C	DGH Surgical ward

Data Monitoring & Feedback:	To track progress and drive improvement, a real-time Length of Stay (LOS) dashboard was integrated with the EMR system. This dashboard displayed daily median LOS, the percentage of patients discharged in under 4 days, and reasons for delays; it also alerted staff about patients exceeding 48 hours without a discharge plan across all surgical units. Then, the Quality Improvement Team and Department Heads shared performance data and conducted root-cause analyses for delays during weekly staff meetings. After patients were discharged, satisfaction surveys were collected to help us understand how well-prepared they felt for going home.	✎ Ward Nurse head. ✎ QI unit team/Officers ✎ EMR team	Mar 21-May 20, 2017E.C	DGH Surgical ward

Table 5:Data collection Plan (process indicators)

ocess/Change ea	Data source (Where)	Data collection method (how)	Time (When)	Frequency	Respons e Person
nplement scharge anning & oordination	• EHR system Rounding checklist logs	EHR audit: Extract time of discharge plan initiation Daily rounding log review	November 21- Jan 20, 2017E.C	Monthly	Surgical ward hea (Kalifa)
ssign a discharge urse to provide ach-back ethods ounseling	Discharge nurse logs Teach-back forms	Log cross-check: Verify teach-back delivery	Jan 21-Mar 20, 2017E.C	Monthly	Surgical ward hea (Kalifa)
ata Monitoring & eedback:	EHR LOS dashboard Meeting minutes	Minutes audit for data review proof	Mar 21-May 20, 2017E.C	Monthly	Surgical ward hea (Kalifa)

***Table 6**: Process Indicator Performance Tracking Sheet*

No	Change Ideas/ Interventions	Number/session planned	Number/session performed	% of achievement	Rema
	Implement discharge planning from the day of admission, including social work and case management involvement.	**60 days**	**60 days**	**100%**	
	Assign a discharge nurse to provide teach-back methods counseling	**60 days**	**60 days**	**100%**	
	Implement post discharge follow-up calls	**60 days**	**60 days**	**100%**	

Table 7: *Outcome Indicator Performance Tracking Sheet*

Aim	Numerator, Denominator & outcome Indicator		Time MONTHLY				
			Dec-17	Jan-17	Feb-17	Mar-17	Apr-17
Reducing the length of hospital stay after surgery from the current average length of stay of 7 days to less than 4 days from December 2017E.C to May 2017E.C.	Numerator	Total Inpatient Days of Surgical ward	**44**	**70**	**60**	**56**	**48**
	Denominator	Total Number of surgical ward case Discharges	**10**	**19**	**13**	**13**	**18**
	Indicator	Average Length of Stay (ALOS)	**4.4**	**3.6**	**4.2**	**4.3**	**2.7**

RESULTS

The Quality Improvement initiative at Deder General Hospital targeting the reduction of **Average Length of Stay (ALOS)** for post-operative surgical patients demonstrated substantial and sustained improvement over a five-month period. The project's baseline data—collected between June 2016 E.C and November 2017 E.C—indicated that the average postoperative hospital stay was **7 days**, a duration associated with increased risk of hospital-acquired infections, unnecessary patient expenses, low bed turnover, and decreased patient satisfaction. The project employed a series of three Plan-Do-Study-Act (PDSA) cycles to address root causes identified through fishbone and driver diagrams. Each cycle tested specific change ideas aimed at improving discharge planning, enhancing patient education, and strengthening performance monitoring. These efforts resulted in a consistent downward trend in ALOS, ultimately achieving the aim of reducing the average postoperative stay to **3.9 days.**

PDSA Cycle 1: This initial intervention focused on implementing a standardized discharge planning process starting from the day of admission. A dedicated discharge planning checklist was introduced and utilized by all surgical ward staff, ensuring that planning for discharge became a routine part of patient management. To enhance coordination, daily 15-minute multidisciplinary huddles were conducted involving surgeons, nurses, IPC officers, and social workers. These meetings served to assess patient readiness for discharge, identify barriers such as transportation or medication availability, and coordinate timely solutions. Patients and their families were actively involved early in the discharge process, receiving expected discharge dates and assistance with post-discharge arrangements. This structured and collaborative approach significantly improved communication, minimized delays, and promoted a culture of timely and efficient care. As a result, the Average Length of Stay (ALOS) decreased from the baseline of 7 days to **4.4 days** in December 2017, and further improved to **3.6 days** in January 2017, marking a **57% (4 days) reduction** in postoperative LOS from baseline.

PDSA Cycle 2 (January 21 – March 20, 2017 E.C) focused on enhancing discharge readiness through patient and caregiver education using the teach-back method. Two dedicated discharge nurses were trained on this evidence-based technique, which involves having patients repeat back critical information to confirm comprehension. These nurses were also oriented on key post-operative care protocols and provided with visual aids and standardized checklists to support consistent education delivery. Approximately 24 hours before discharge, they conducted structured one-on-one bedside counseling sessions covering medication use, wound care, warning signs, and follow-up plans. Patient understanding was documented, and any knowledge gaps were addressed before discharge. As a result, while the **average length of stay (ALOS)** held relatively steady **4.2 days** in February and **4.3** in March, marking a **60% (4.3 days) reduction** in postoperative LOS from baseline. The gains from the initial intervention were preserved, indicating that improved education helped maintain efficiency and prevent readmissions.

The **third cycle of PDSA** (**March 21–May 20, 2017, E.C**.) focused on real-time monitoring and staff accountability by integrating a length of stay (LOS) dashboard into the hospital's electronic medical record (EMR) system. This dashboard tracked average length of stay, and weekly staff meetings, led by quality improvement (QI) leaders and department heads, were held to review data, conduct root cause analyses, and implement corrective actions for delays. In parallel, patient satisfaction surveys were conducted post-discharge to evaluate how prepared patients felt to return home. As a result of this focused and data-driven intervention, the ALOS dropped significantly to **2.7 days in April** and **2.5 days in May**, marking a **64% (2.6 days) reduction** in postoperative LOS from baseline and demonstrating that improved data transparency and team coordination could drive substantial, sustained clinical improvement without increasing readmissions.

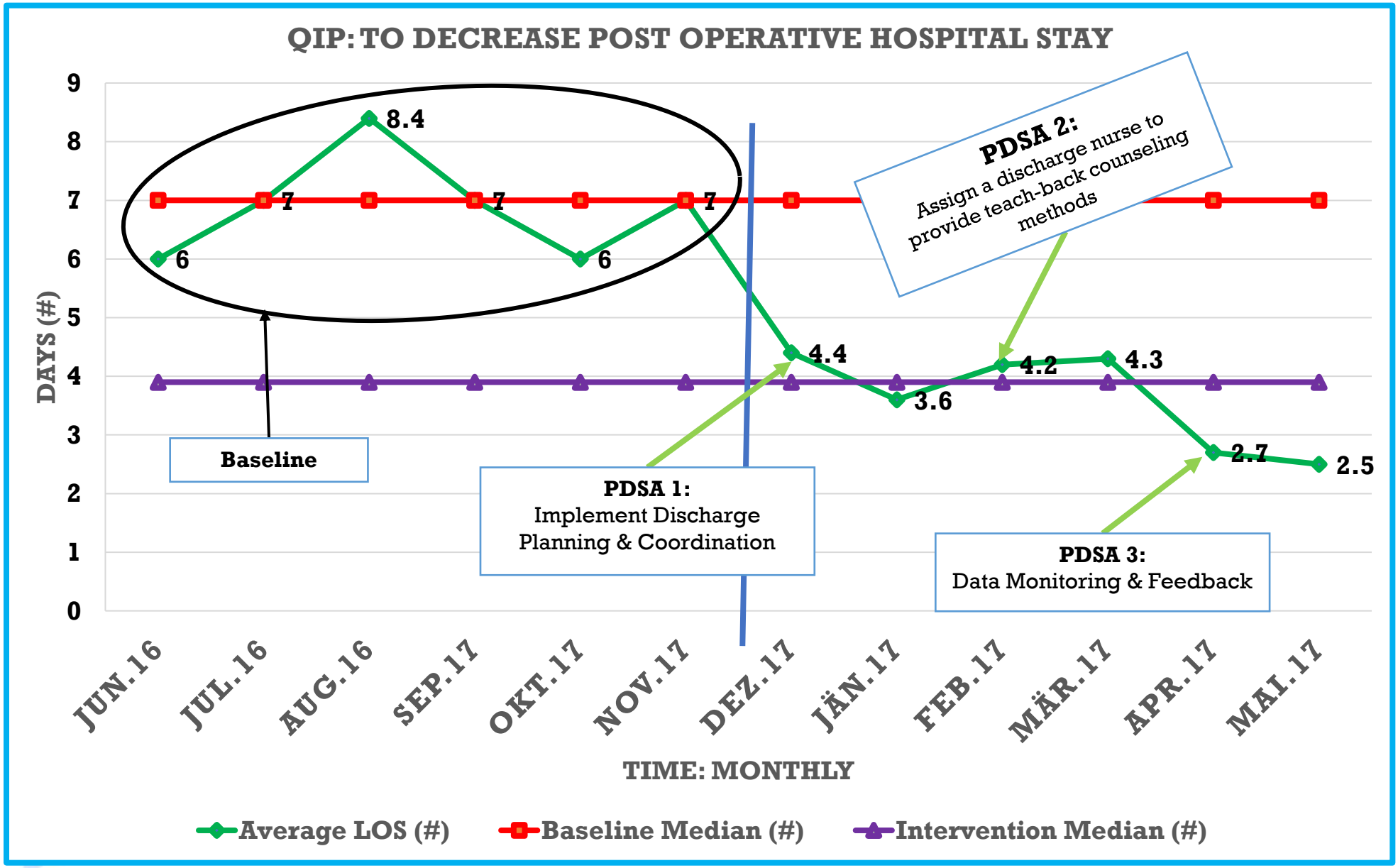

***Figure 3**: Run chart with multiple PDSA cycles to Reducing **Average Length of Stay (ALOS)** from a baseline median of 7 days to less than 4 days from December 2017 E.C to May 2017 E.C.*

DISCUSSION

The reduction of postoperative Average Length of Stay (ALOS) at Deder General Hospital from 7 days to 2.5 days demonstrates the effectiveness of structured quality improvement (QI) strategies grounded in the Model for Improvement. The project's success can largely be attributed to the use of systematic discharge planning, patient-centered education, and real-time performance monitoring. These interventions addressed key barriers identified through root cause analysis—such as poor care coordination, inadequate patient preparedness, and lack of accountability. By implementing targeted changes across three PDSA cycles, the surgical ward team achieved a 64% reduction in ALOS without increasing readmission rates, a critical balance measure. This outcome affirms that reducing ALOS does not compromise patient safety when paired with appropriate safeguards, such as teach-back education and multidisciplinary collaboration.

Importantly, each PDSA cycle introduced not only technical interventions but also cultural shifts among staff. Early discharge planning normalized collaborative practices and ensured that patients were not retained longer than medically necessary. The teach-back method empowered patients and their families to take an active role in recovery, contributing to smoother transitions out of the hospital. Moreover, the use of EMR-integrated dashboards promoted data visibility and helped the team identify and respond to delays in real time. These approaches helped foster a sense of shared responsibility among clinical teams and embedded quality as a daily operational priority rather than an occasional audit exercise. The alignment of leadership support, frontline engagement, and patient involvement was central to sustaining the improvement.

Despite these achievements, the project encountered challenges. For instance, variability in staff commitment and initial resistance to change required continuous reinforcement through meetings and coaching. Additionally, technological limitations in the EMR system occasionally hindered real-time data accuracy. However, these barriers were progressively addressed through regular feedback loops and adaptability within the PDSA cycles. In future phases, further gains could be realized by expanding early mobilization protocols, incorporating predictive discharge tools, and evaluating post-discharge outcomes beyond patient satisfaction—such as follow-up adherence and complications. Ultimately, this project highlights that even in low-resource settings, well-structured QI efforts rooted in local context can drive meaningful and measurable improvements in hospital efficiency and patient outcomes.

CONCLUSION

This quality improvement initiative at Deder General Hospital successfully reduced the postoperative Average Length of Stay (ALOS) from a baseline of 7 days to 2.5 days over a five-month period through the implementation of targeted, evidence-based interventions. By introducing early discharge planning, structured patient education using the teach-back method, and real-time LOS monitoring via an EMR-integrated dashboard, the project not only achieved its goal but also strengthened teamwork, accountability, and patient engagement across the surgical ward. The sustained reduction in ALOS without an increase in readmission rates highlights the effectiveness of combining clinical coordination with data-driven decision-making, offering a replicable model for enhancing hospital efficiency and patient outcomes in resource-limited settings.

LESSONS LEARNT

The ALOS QIP project at Deder General Hospital revealed that even in low-resource settings, significant improvements in clinical efficiency can be achieved through simple, well-coordinated interventions. Key lessons include the importance of initiating discharge planning from the point of admission, which fosters timely coordination among multidisciplinary teams; the value of structured patient education using the teach-back method to ensure understanding and reduce preventable delays; and the critical role of real-time data monitoring to drive staff accountability and continuous improvement. Moreover, engaging frontline staff in daily huddles and empowering them with tools like discharge checklists and dashboards helped build a culture of ownership, communication, and shared responsibility—demonstrating that quality care is attainable when leadership, systems, and staff are aligned around a clear, measurable aim.

MESSAGES FOR OTHERS

The experience of Deder General Hospital in reducing postoperative ALOS offers a powerful message to other healthcare facilities: meaningful quality improvement is possible without major financial investment when teams are empowered, processes are standardized, and data is actively used to guide action. Start small, focus on high-impact areas like discharge planning and patient education, and use practical tools such as checklists, dashboards, and daily huddles to foster collaboration and accountability. Most importantly, involve patients and families early and treat them as partners in care. With committed leadership, engaged frontline staff, and a structured improvement approach like the PDSA cycle, even the most persistent healthcare challenges can be transformed into opportunities for better outcomes, greater efficiency, and improved patient satisfaction.

REFERENCES

1. Agarwal, V., Podolyak, S., & Sacks, G. D. (2021). Association of hospital length of stay and complications after surgery. *Annals of Surgery*, *273*(3), 483–490. https://doi.org/10.1097/SLA.0000000000004719
2. Kassin, M. T., Owen, R. M., Perez, S. D., Leeds, I., Cox, J. C., Schnier, K., Sadiraj, V., & Weber, S. M. (2012). Risk factors for 30-day hospital readmission among general surgery patients. *JAMA Surgery*, *147*(7), 596–601. https://doi.org/10.1001/archsurg.2012.4
3. World Health Organization. (2018). *Delivering quality health services: A global imperative for universal health coverage*. World Health Organization, Organisation for Economic Co-operation and Development, and The World Bank. https://apps.who.int/iris/handle/10665/272465