

Nurse-Led Anaesthetic Discharge in Post Anaesthesia Care Unit in Perioperative Settings

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Mission Statement

The **Nurse-Led Anesthetic Discharge (NLAD)** initiative aims to **enhance quality and care experience to our surgical patients** by transforming care via training & empowering nurses to discharge post-surgery patients from Post Anaesthesia Care Unit (PACU).

Team Members

	Name	Designation	Department
Team Leader	Lye Soh Teng	Senior Consultant	Anaesthesia
	Lai Foon Wan	Senior Nurse Manager	Periops
Team Members	Geraldine Cheong	Senior Consultant	Anaesthesia
	Cheryl Law	Asst Nurse Clinician	DSC
	Jhoanna Castillo	Asst Nurse Clinician	DSC
	Shao Mei	Senior Staff Nurse	DSC
Facilitator	Alice Leong	Deputy Director	Nursing
Facilitator	Bin Wern Hsien	Head and Senior Consultant	Anaesthesia

Evidence for a Problem Worth Solving

Below table shows the assessment of gaps and evidence worth solving: Affects Turnaround Time, High Anaesthesia Demand, Untrained Nurses.

As-Is	Assessment of the gap	To-Be
Surgical patients are discharged by Anaesthetists who may be in the Operating Theatre with other patients	Affects turnaround time and discharge time	Nurse-led Discharge of Post Anaesthesia Care Unit patients in Day Surgery Centre , for surgical patients to receive hassle-free and safe discharge. Discharge based on existing criteria
As-Is	Assessment of the gap	To-Be
Anaesthetist does not need to physically attend to patient in discharge process while caring for the patients in the Operating Room	High anaesthetist demand	Nurse-led Discharge of Post Anaesthesia Care . Anaesthesia nurse are trained, and accredited to perform the discharge under protocol guidance and primary Anaesthetist supervision.
As-Is	Assessment of the gap	To-Be
Anaesthetist are trained to perform post-surgery discharge	Nurses are not trained	Nurse-led Discharge of Post Anaesthesia Care Unit patients . Anaesthesia nurse are trained, and accredited to perform it under protocol guidance and primary Anaesthetist supervision.

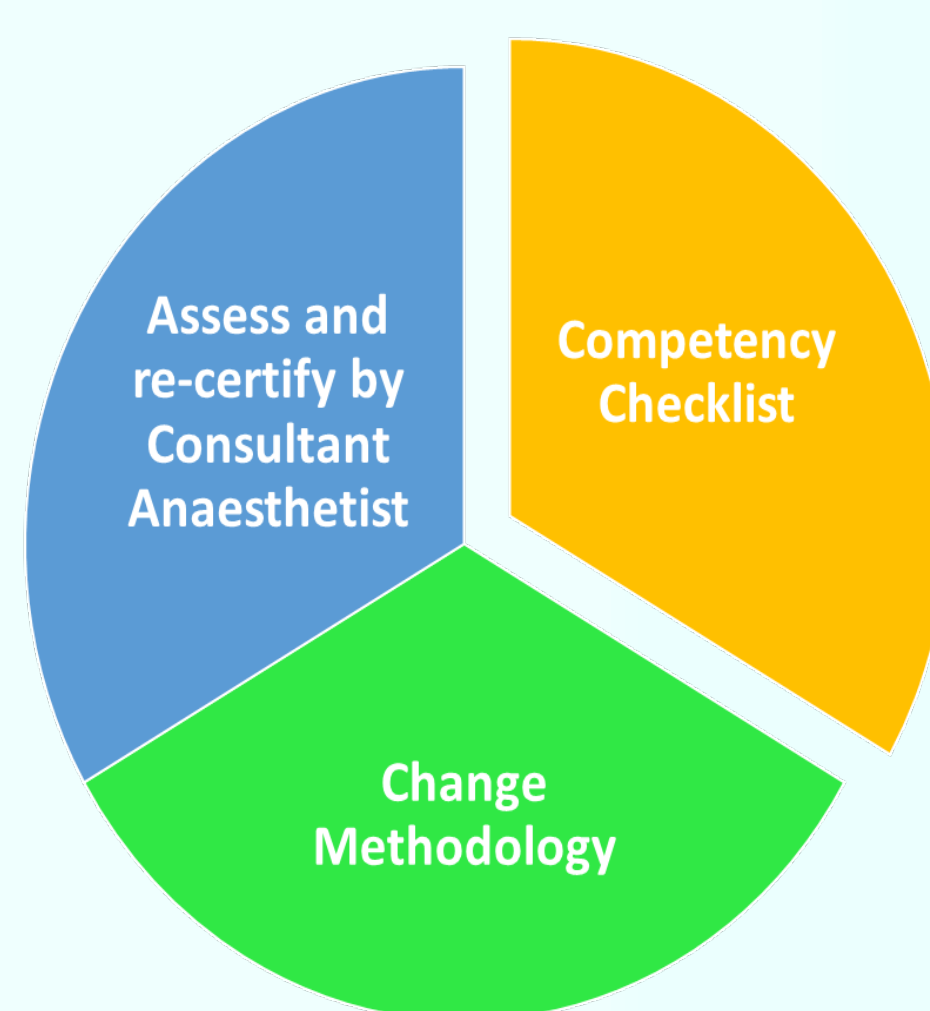
Performance of As-was Process



As-was workflow showed a lot of coordination, communication and multiple hand-overs of cases between Anaesthetist and the anaesthesia nurse assigned to recovery.

Methodology

More than 8000 NLAD cases has been successfully carried out with 9 trained staff. No PACU events were recorded. To sustain this change, the team applied a combined **total organisational approach using the Lean 6-sigma methodology with Lewin's Change Methodology**. Nursing literatures concerning similar practice and methodology are reviewed and benchmarked. Below shows a summary of the methodologies.



Unfreeze (Readiness to Change)	Change (Implementation)	Refreeze (Integrate & Sustain)
<ul style="list-style-type: none"> Educate & Inform all stakeholders Plan objectives, resources, time scales budget Organize work plans Appoint team leads and members 	<ul style="list-style-type: none"> Praise & Encourage Recognition and Empathy Coach & Train Lead & Manage Regular Feedback Provide Resources 	<ul style="list-style-type: none"> Set performance indicators Monitor & Evaluate performance Establish systems & control Reward for new behavior Consolidate & Sustain

Lean 6-sigma DMAIC approach methodology

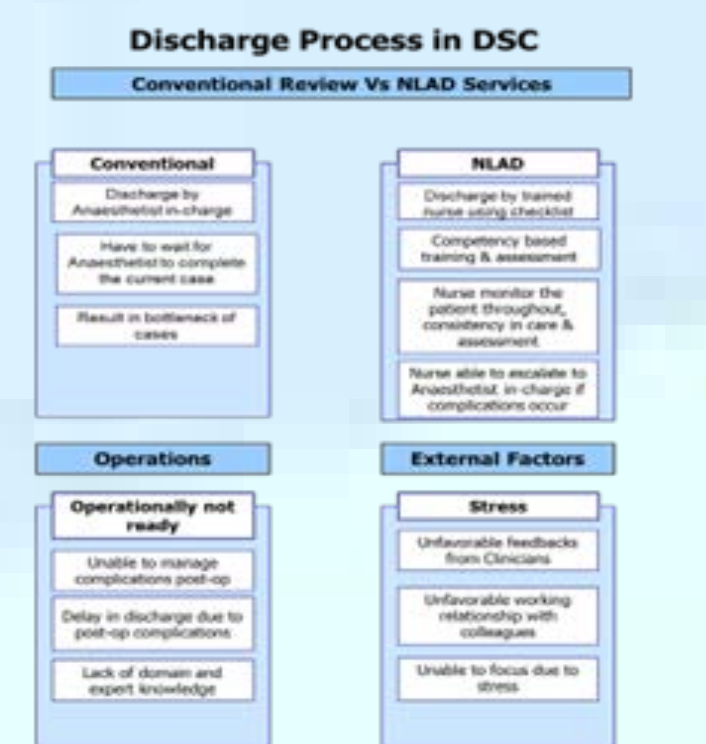
- Define** - stakeholder's meeting, collaborative leadership and influencing strategies to consolidate points for decision making. Two main phases include:
 - Pre-Operative Assessment and Ordering of Nurse-led services** by Anaesthetist
 - Nurse-led Discharge of Post Anaesthesia Care Unit patients** in Day Surgery Centre
- Measure** the ground problems by quantifying the workload, turnaround time (TAT) and costs involved. The team also gathered baseline data for further monitoring.
- Analyse** the gaps in the workflow transforming post-operative care using evidence-based, expert-endorsed inclusion & exclusion criteria. Tools used include Failure Modes & Effects Analysis (FMEA) and Affinity Diagram.

Lean 6-sigma DMAIC approach methodology cont

3. Analyse (Cont.),

- Improve** with new processes through: Pre-Operative Assessment by Anaesthetist & Nurse-led Discharge of Post-Anaesthesia Care Unit
- Control** plan for sustainability through, 1) **Process Standardization** 2) **Cross Functional and Deployment flow charting** 3) **Staff Orientation and Refresher Training** 4) **Mistake proofing the process** e.g. standardised screening protocols

Process	Potential failure mode	Potential failure effects	Severity	Potential causes	Occurrence	Current control	Detection	RPN
Pre-op Assessment and ordering of NLAD services by the doctor	Wrong ordering of NLAD services	Patient has pain, complications	9	Junior doctor not complied with NLAD criteria	3	NLAD criteria followed by all doctors through clinical readings. All cases reviewed by senior doctors	2	54
Financial counselling by listing costs	NLAD cases sent to AC instead of PACU	Extra visit to AC and additional cost of tests	4		2	NLAD cases are seen at PACU clinic	1	8
Monitoring of patients by NLAD trained nurses	Patient developing anaesthetic complications, become unfit for NLAD services	Patient has pain, operative complications	9	NLAD nurse with lower competency	2	Stringent accreditation, re-accreditation and continuous workplace-based learning	1	18
Recovery after surgery at Day PACU	Patient developing anaesthetic complications, become unfit for NLAD services	Compromise of patient safety	9	Change/deterioration of patient's health	2	Senior anaesthetist in-charge of Day PACU review case in PACU	1	18



Implementation

To be (Existing sustained workflow) NLAD utilised a trained nurse, to discharge patient under protocol guidance and supervision of the Anaesthetist. Discharge criteria remain unchanged. In the event of undesirable event, the trained nurse will notify the Anaesthetist immediately for intervention and treatment. Requirements of a NLAD nurse prior to training remained unchanged.



Results

Time Savings: Anaesthetist Time- Time saved for Anaesthetist to discharge 1 patient: 15 mins, Total time savings for 7956 patients: 119,340 mins = **83 days**. Patients Time in Recovery stated as below:

Category	GA	MAC
Non-NID	167.31	41.86
NID	126.36	30.94
Average time savings (per Case)	30.95	10.92

For GA cases, average time saved by using NLAD services is **30mins**. For MAC cases, average time saved by using NLAD services is **10mins**.

Productivity Savings:

Initiatives / Measurement and Impact	Hospital savings	Patient savings and care	Productivity
Nurse-led Discharge of Post Anaesthesia Care Patients in Day Surgery Centre	Time-Savings: Time needed to review patient is negated. GA Time Savings: 40 Mins MAC Time savings: 10mins	Care process is streamlined. Patient Savings Patients do not need to stay longer in recovery unit resulting in faster discharges. Cost avoidance of additional charges to prolonged stay in recovery	Productivity savings Anaesthetist do not need to come out from OT to review the case in PACU. Total time savings for 7956 patients: 119,340 mins = 83 days

Analysis of Change

There was no significant difference with the decrease (as p-value is less than 0.05). Downward trend evident. During pilot stage (start of the project), **120** NLAD cases were executed. Since implementation, **more than 8000** NLAD cases have been completed achieving significant efficiency for the discharge process. Patient's length of stay in the PACU is effectively reduced with and bottleneck at PACU stay is prevented.



Strategies to Sustain

Control and sustainability plan is via **Lean Six-Sigma** and **Lewin's Change Methodology** to continue monitor and evaluate this process.

Process Standardization	<ul style="list-style-type: none"> Standardized Training Structure Standardized workflow
Focused Improvement	<ul style="list-style-type: none"> Team members empowered to identify & resolve problem(s) themselves. Problem-solving can be shared retrospectively for case-learning.
Mistake Proofing the Process	<ul style="list-style-type: none"> Standardised Operating Procedures Standardised Training Methodology Simulation Exercises
Monitoring	<ul style="list-style-type: none"> Control Charts to monitor progress

This project involves the integration and coordination to become a standardised care path, communication is done among team members founded on **mutual respect and professionalism, collaborative approach and collective leadership, value-add, patient-centric, coordinated care**.

NLAD success is accredited to 4 main supports namely, **leadership support, robust training and accreditation system, standardized workflow** and **acceptance of change**. NLAD has consistently achieved optimal operational efficiency, manpower productivity and enhanced nurses' professional standing.