Project Title

Decreasing Length of Stay in OrthoGeriatric Patients (EQUIP)

Project Lead and Members

Project lead: Dr Beatrix Wong

Project members: Wu Xueting, Fang Hai Ping, Chng Pei Pin Evelyn, Ong Siew Seang, Ho Ee Kian, Sally Chin, Joyce Yogeswari, Dr Marilou Ebreo Sevilla, Dr Judaline Alagon Robles

Organisation(s) Involved

National University Hospital, St Luke's Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Nursing, Allied Health, Ancillary Care, Healthcare Administration

Applicable Specialty or Discipline

Orthopaedics, Geriatric Medicine

Project Period

Start date: July 2023

Completed date: November 2023

Aims

To increase the monthly mean percentage of patients with hip fracture in NUH □ 65 length of stay (LOS) ⩽ 10 days from 59.5% (in 2021 and 2022) to 75% in 6 months.

Background

See poster attached/below

Methods

See poster attached/below

Results

See poster attached/below

Lessons Learnt

See poster attached/below

Conclusion

See poster attached/below

Project Category

Care Continuum

Inpatient Care

Care & Process Redesign

Access to Care, Turnaround Time

Keywords

Hip Fracture, Hospital Stay, Bed Availability, Discharge Planning, Rehabilitation, Patient Education, Caregiver Education

Name and Email of Project Contact Person(s)

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Incredible Care QIX Award (Process Excellence)

National University Hospital | INCREDIBLE Care @NUH It starts with me

Project Title 9 : Decreasing Length of Stay in OrthoGeriatric Patients **(EQUIP)**		
Department: Medicine/Orthopaedics	Period: July – November 2023	Facilitators/Author: Dr Francis Ho
Sponsors (HODs): Dr Diarmuid Murphy, A/Prof Reshma Merchant	Team Leader/s: Dr Beatrix Wong	
Team Members Wu Xueting, Fang Hai Ping, Chng Pei Pin Evelyn, Ong Siew Seang, Ho Ee Kian, Sally Chin, Joyce Yogeswari, St Luke's Hospital (Dr Marilou Ebreo Sevilla, Dr Judaline Alagon Robles)		

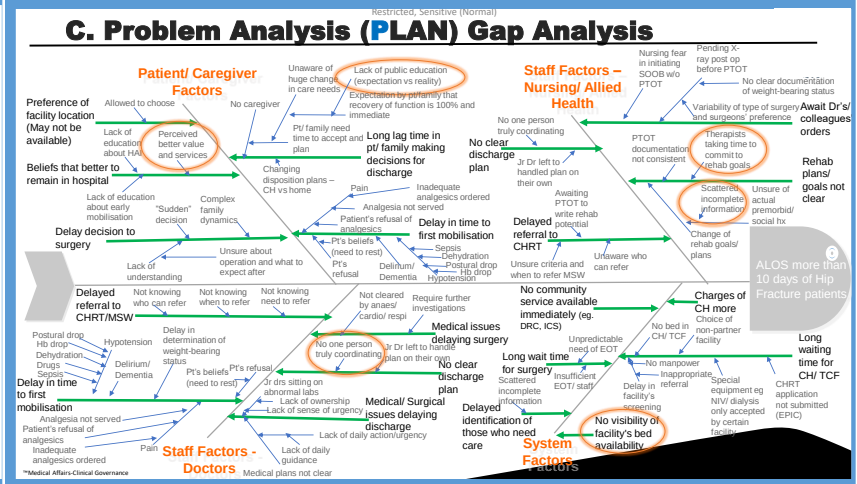
A. Define the Problem (PLAN)

- Worldwide incidence of hip fracture 1.26million in 1990 projected to reach 6.3 million by 2050[1,2]
- Prolonged hospital stay is associated with increased 30-day mortality and increased cost[3,4]
- Hip fractures are costly and often associated with poor outcomes among older adults[4]
- Prolonged length of stay has direct impact on healthcare cost as well as increased rate of hospital-acquired infections[5,6]
- The mean length of stay in Singapore ranges from 10 to 19 days (for both surgically and conservatively managed patients)[7,8,9,10]
  - The current mean length of stay in 2021 is **11.5 days**
  - The current mean length of stay in 2022 in NUH is **11.7 days**
  - The current average length of stay ≤10 days in NUH is **59.5%** over 2021 to 2022

B. Goal (PLAN) Set SMART goals | Specific, Measurable, Achievable, Relevant, Time-based |

- To increase the monthly mean percentage of patients with hip fracture in NUH ≥ 65 length of stay (LOS) ≤ 10 days from 59.5% (in 2021 and 2022) to 75% in 6 months.

C. Problem Analysis (PLAN) Gap Analysis



D. Interventions & Action Plan (DO)

Root Cause	Intervention	People responsible	Date of implementation
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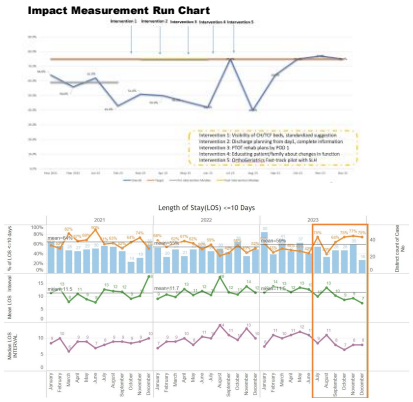
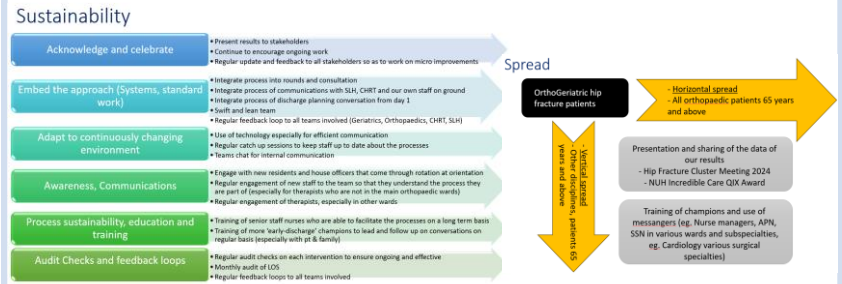
E. Benefits / Results (CHECK)



	2022	July – December 2023
Mean Length of Stay	11.7 days	9.6 days
Median Length of Stay	10 days	8 days
% of LOS ≤ 10 days	55%	68%

- Cost per general ward bed day for wards is estimated to be S$1,176 (Basic ward charge & daily treatment fee, not inclusive of other consults, surgical charge. This is also not daily average bill which is higher)
- Based on mean LOS in 2022 is 11.7 days and mean LOS in trial period is 9.6 days
- 338 patients in 2022, 2.1 days shorter mean LOS, we can save $834,725 per year
- If based on average daily hospital bill of ~$1887, we can save $1,339,393 per year

F. Strategy for Spreading/ Sustaining (ACT)



The 6 box QIX template is brought to you by Quality Improvement Department wef 1 April 2023

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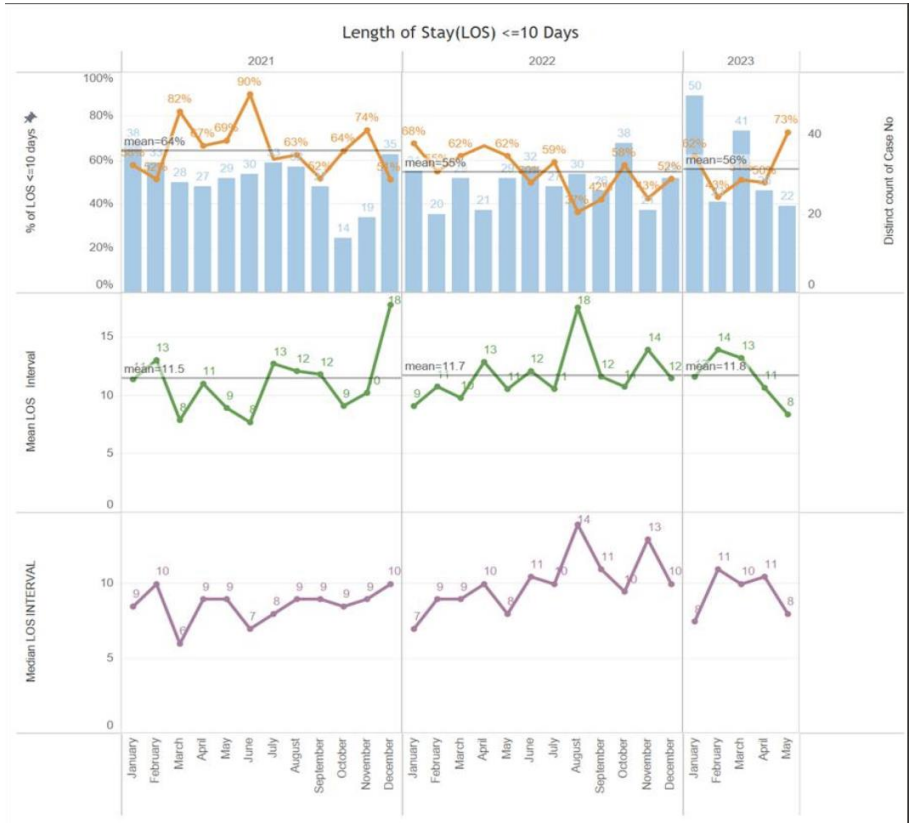

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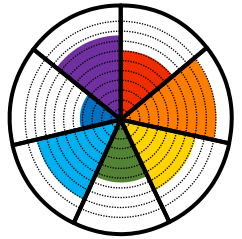

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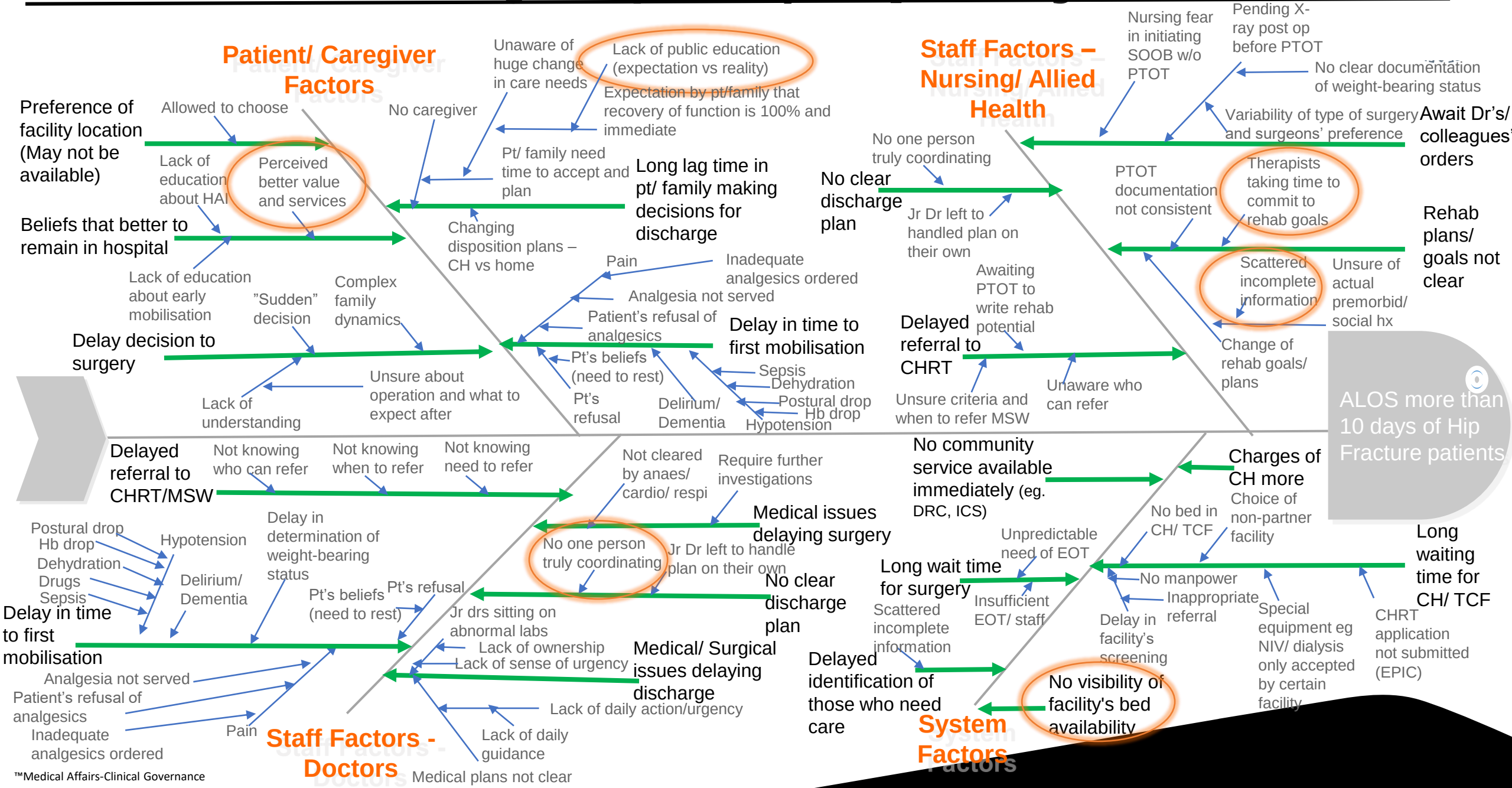
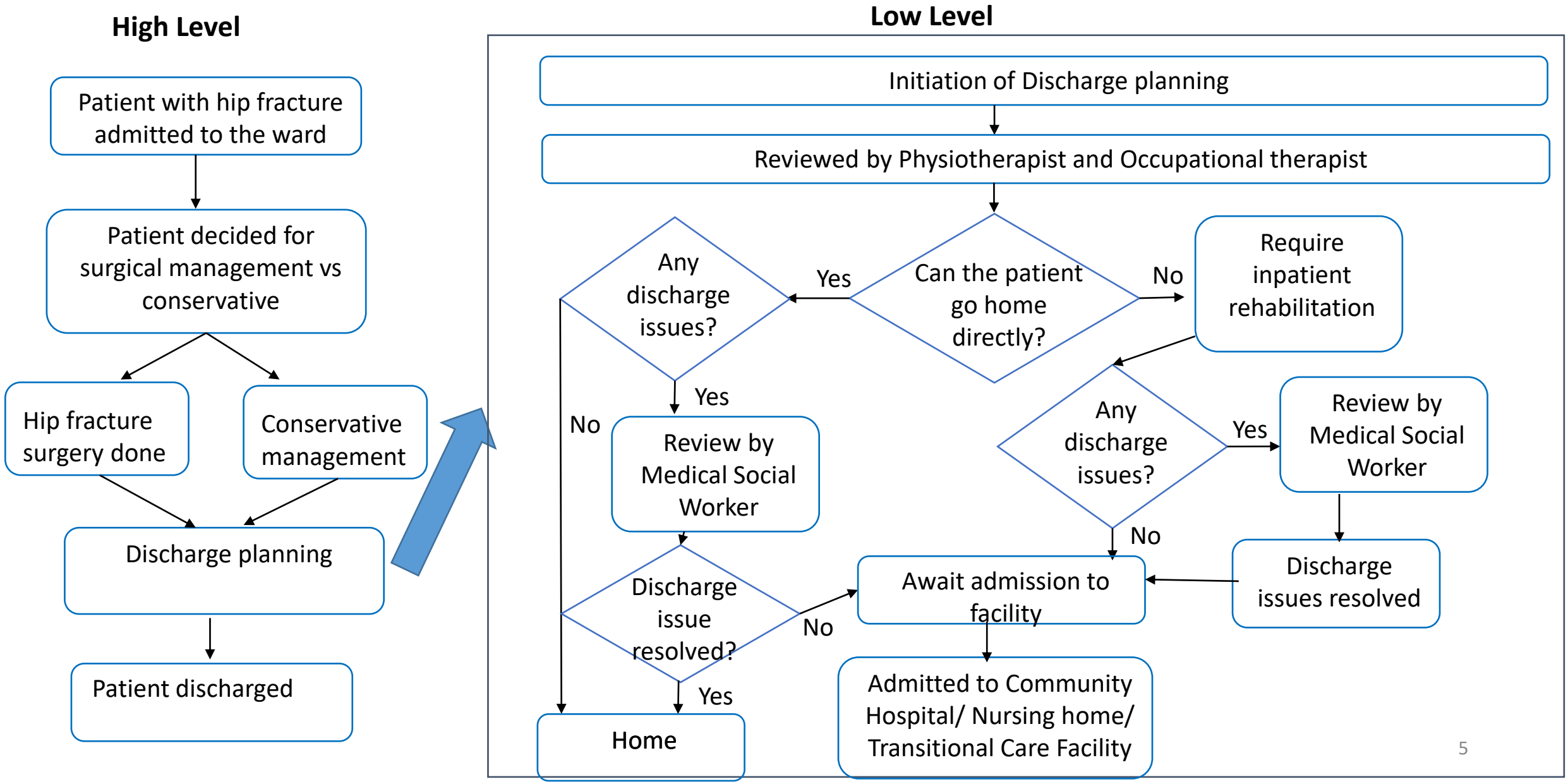
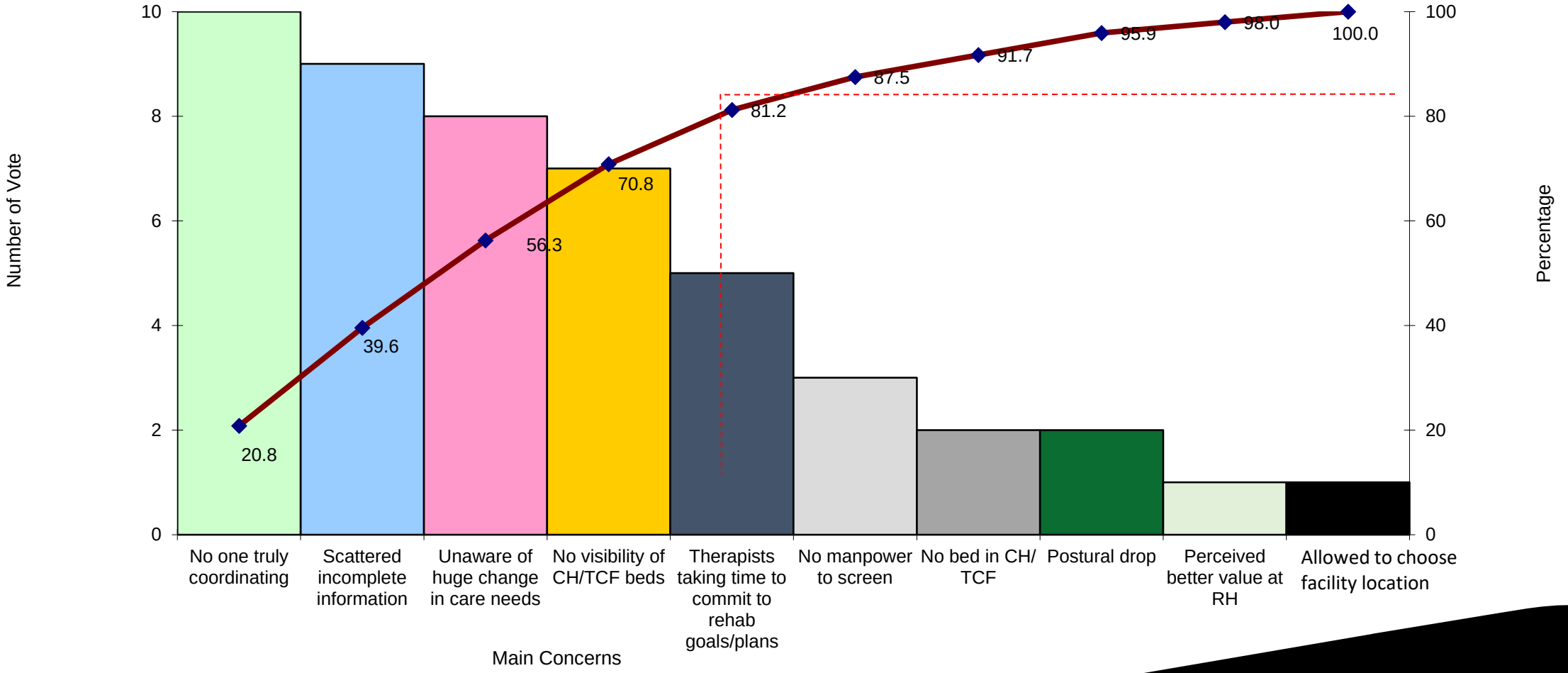


C. Problem Analysis (PLAN) Value Stream Map



Pareto Chart



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National University Hospital

FAST-TRACK REHABILITATION TO SLH POST-FRAGILITY FRACTURE

Eligibility of patients:
Adult aged 65years and above who sustained fragility hip fracture requiring inpatient rehabilitation

NUH Orthogeriatric Service

Patient is admitted via EMD under Division of Orthopedic Surgery

Primary Team/APN interview and conduct clinical review

On Admission

- Explore on discharge planning (Short term and long-term plans)
- Pre surgery education on hip fracture. Brochure on SLH-NUH given.
- Patient/NOK keen for Community Hospital, SH. Order CHRT in epic, indicate "Fast Track SLH" under remarks

POD 1

- POD1 bloods taken and reviewed
- PT/OT assessment >> deem necessary for inpatient rehabilitation
- Ensure CHRT referral in EPIC.
- Case Review by CHRT and flagged for fast track SLH for those who fulfill SLH criteria.

POD 2

- POD 2 bloods taken and reviewed.
- WI by Ortho Team
- Ensure patient fits SLH Criteria (see above).
- CHRT inform ward nurse on admission details by 3pm.
- Primary team preparation of D-1.
- Family/Patient informed on transfer to SLH cm

POD 3 (Day of Transfer)

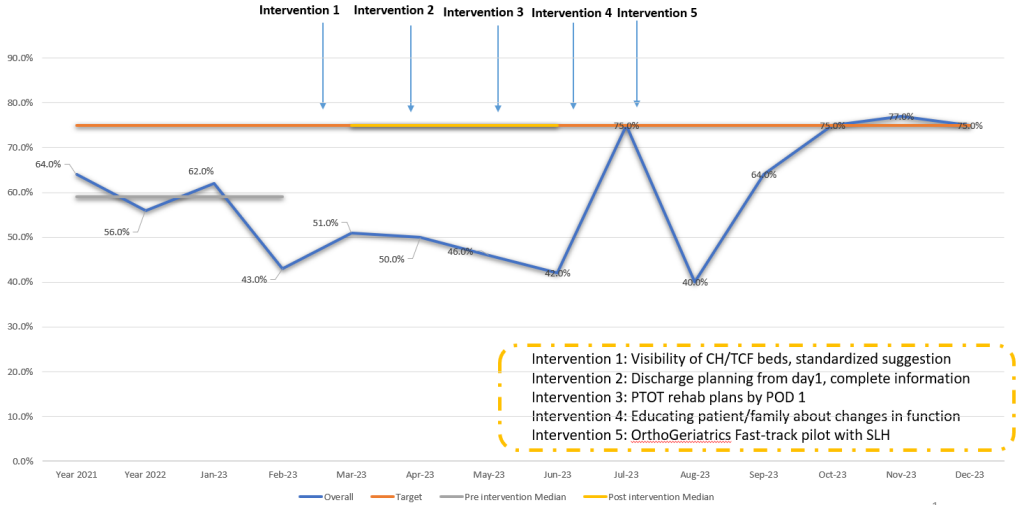
- Ensure parameters stable overnight.
- Transfer to SLH

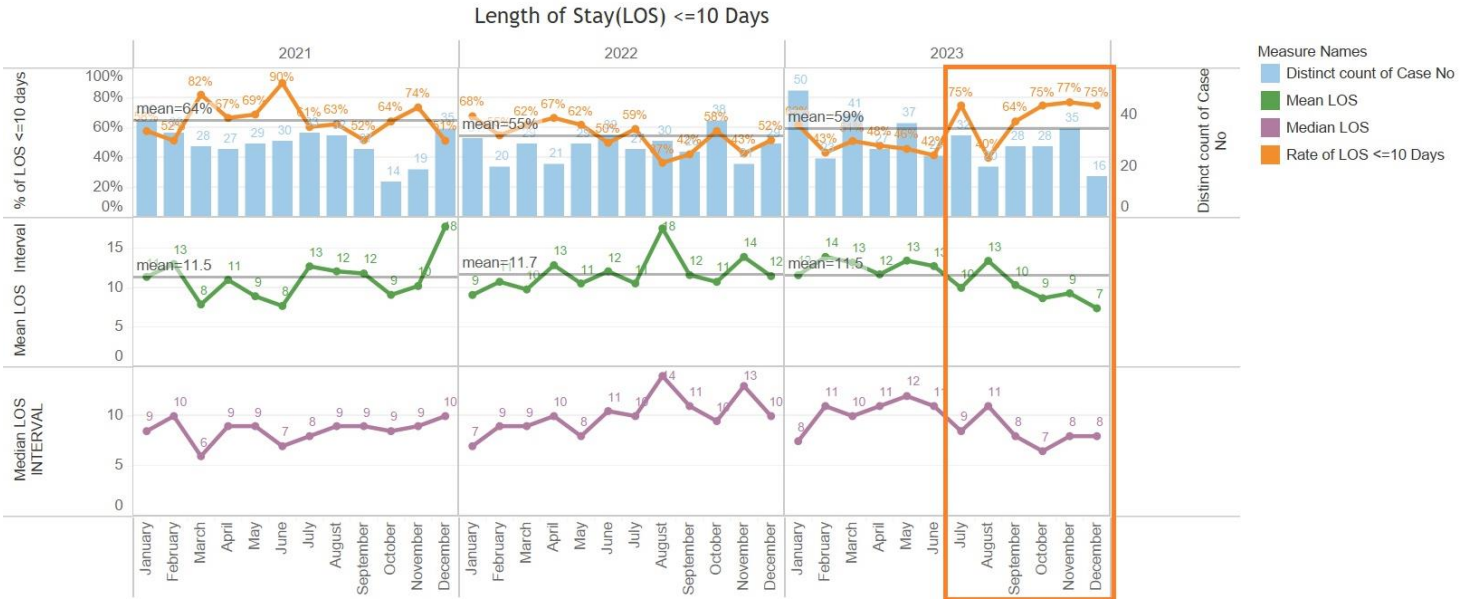
Follow up care

- Provide Outpatient Orthopaedic and Osteoporosis follow-up plans

E. Benefits / Results (CHECK)

Impact Measurement Run Chart





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OrthoGeri Fast-track pilot with SLH

- 3 July 2023 - 30 November 2023

- **127** hip fracture patients screened

- **49 patients (38.5%)** taken on fast-track pathway
  - Taken to SLH on **average POD 5.3**, mean **LOS 7.2 days**, median **LOS 7 days**

- Average age of patients taken on Fast Track: 81.7 years
- Average age of all patients July to Nov 2023: 81.3 years

- Includes patients with dementia, delirium

OrthoGeri Fast-track pilot with SLH

- **16 transferred on > POD 5 (32.7% of those taken by Fast Track)**
  - Initially wanted other CH (eg. JCH, SKCH etc), need time to change their mind
  - Initially verbalized some ?suicidal ideations, psych review
  - No bed available at SLH
  - Initially had raised inflammatory markers which required further imaging
  - Lack of long term caregiver
  - Has dementia/delirium, initially resisting therapy

- **3 patients readmitted (6.1% of those taken by Fast Track)**
  - 1 patient came back 8 days later for GI bleed secondary to duodenal ulcers (repeat Hb on day of discharge to SLH was stable)
  - 1 patient came back 3 days later for PE, no DVT found
  - 1 patient transferred to NTFGH 7 days later for acute decompensated heart failure precipitated by pneumonia

F. Strategy for Spreading/ Sustaining (ACT)

Sustainability

Acknowledge and celebrate	• Present results to stakeholders • Continue to encourage ongoing work • Regular update and feedback to all stakeholders so as to work on micro improvements
Embed the approach (Systems, standard work)	• Integrate process into rounds and consultation • Integrate process of communications with SLH, CHRT and our own staff on ground • Integrate process of discharge planning conversation from day 1 • Swift and lean team • Regular feedback loop to all teams involved (Geriatrics, Orthopaedics, CHRT, SLH)
Adapt to continuously changing environment	• Use of technology especially for efficient communication • Regular catch up sessions to keep staff up to date about the processes • Teams chat for internal communication
Awareness, Communications	• Engage with new residents and house officers that come through rotation at orientation • Regular engagement of new staff to the team so that they understand the process they are part of (especially for therapists who are not in the main orthopaedic wards) • Regular engagement of therapists, especially in other wards
Process sustainability, education and training	• Training of senior staff nurses who are able to facilitate the processes on a long term basis • Training of more 'early-discharge' champions to lead and follow up on conversations on regular basis (especially with pt & family)
Audit Checks and feedback loops	• Regular audit checks on each intervention to ensure ongoing and effective • Monthly audit of LOS • Regular feedback loops to all teams involved

Spread

OrthoGeriatric hip fracture patients

- Horizontal spread
- All orthopaedic patients 65 years and above

- Vertical spread
- Other disciplines, patients 65 years and above

Presentation and sharing of the data of our results
- Hip Fracture Cluster Meeting 2024
- NUH Incredible Care QIX Award

Training of champions and use of messangers (eg. Nurse managers, APN, SSN in various wards and subspecialties, eg. Cardiology various surgical specialties)

Appendix

Function (based on 2 weeks ago)	Independent(I)/Assisted (A)/Dependent (D)	
Dressing/Grooming	I	
Eating	I	
Ambulation	Home: I	Community: I
Toileting	I	
Transfers	I	
Hygiene	I	
Bladder continent: Yes/	Bowel continent: Yes	
Shopping	A - accompanied by helper	
Housekeeping	D no need to do	
Accounting	I	
Food preparation	Not cooking	
Telephone	Use mainline	
Taking meds	A- takes on her own, packed by helper	
Transport	Accompanied	

STML: **Yes**
If Yes, duration: __6 months _____ AMT score: ___9/10 (on 14/3/23)_____

Forgetful, repeat and ask the same questions over again
Usually Can read newspaper, online tablet, play with dog
Apraxia/Agnosia/Aphasia- nil
Executive dysfunction- still manages money
Behavioural issues: nil
Sleep-Wake reversal: nil
Visual/Auditory hallucinations: nil
No low mood

Noted acute confusion on 15/3/23
AMT 0/10 >> not orientated to time place and person

4AT scoring

Admission	POD 1	POD 2	POD 3	POD 4
0	4	4		

Mood (PHQ-2) Score: _____
Over the last 2 weeks, how often have you been bothered by the following problems?

1. Little interest or pleasure in doing things *(circle)*

Not at all	Several days	> half the days	Nearly every day
0	**1**	**2**	**3**

2. Feeling down, depressed or hopeless *(circle)*

Not at all	Several days	> half the days	Nearly every day
0	**1**	**2**	**3**

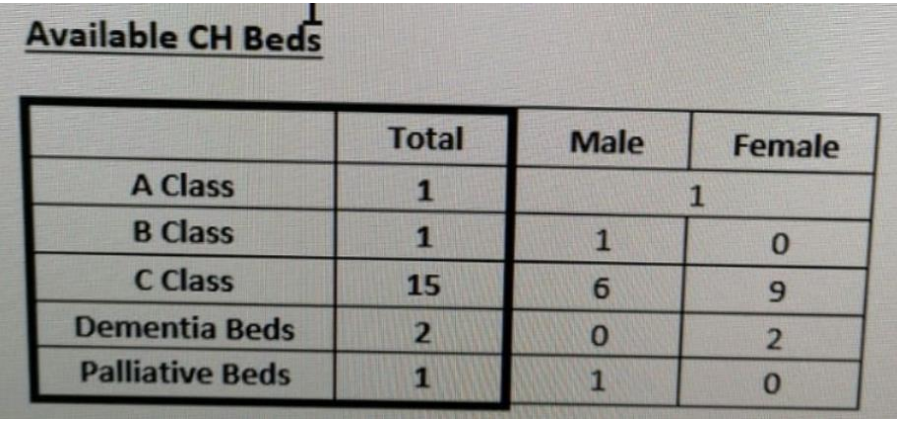
Clinical examination findings

Postural Bp-pending

Mental state	Confused
Nutritional state	2
Heart	s1s2 no murmur

Discharge Planning	
Discharge Destination:	Community Hospital/
Long term plans:	Home with helper
MSW referral:	NA
Caregiver Training Needed:	NA
Equipment needed prior to d/c	Walking frame Commode chair Need home modification

Appendix



Available CH Beds

	Total	Male	Female
A Class	1	1	
B Class	1	1	0
C Class	15	6	9
Dementia Beds	2	0	2
Palliative Beds	1	1	0

Iso		1
A		3
B1	Male	3
	Female	3
Sub	Male	0
	Female	0
MRSA	Male	8
	Female	4

EPIC SMART Phrase for Patient/ Family Counselling guide on Hip Fracture Management and Discharge Planning"

Why do I need surgery?
The goal of treatment for hip fracture is to regain as much function as possible. In order to do so a hip surgery would be necessary. Surgery helps to align the bones, so they heal properly.

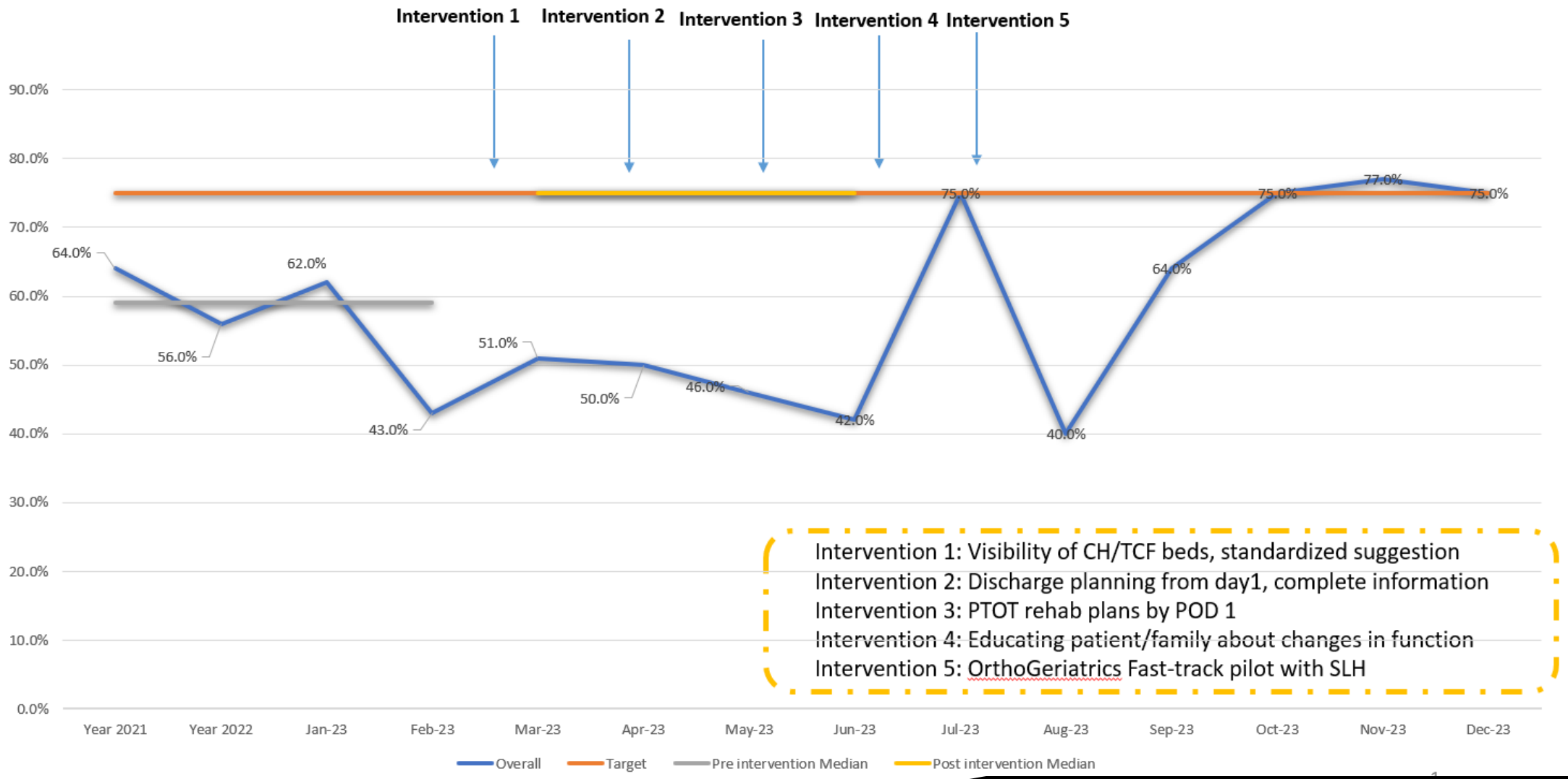
What happens after surgery?
Operation Day- X-ray to assess the implant alignment, resume diet however may have nausea/vomiting as it is a post anesthesia effect
POD 1- blood test, start SOOB and aim to start walking a few steps with walking frame
POD 2 onwards- continue with walking with walking frame
Estimated length of stay: 3-5 days

Pain Management
The goal of pain management is to reduce pain so that you/loved one can do physical therapy to achieve as much independence as possible. Pain medication will be served prior to therapy, and it will be served round the clock for at least the 1st week of surgery .

After Discharge
What happens when you leave the hospital?
You/Loved one can leave the hospital when your doctor determines that you are medically stable. Discharge destinations depend on therapist assessment, if the therapist deems necessary for further rehabilitation, you/loved ones will be transferred to a rehabilitation hospital such as St Luke's hospital.
If you /Loved one can move around well enough to return home, you may need someone to stay with you/loved one to help as you/loved one recover.

Your Long-term recovery:
With proper rehabilitation, some people are able to return to pre-injury levels of activity and independence while others require supervision/assistance in their basic care needs. Hip fractures usually take three to six months to heal, but it may take up to a year depending on each individual.

Appendix - Impact Measurement Run Chart



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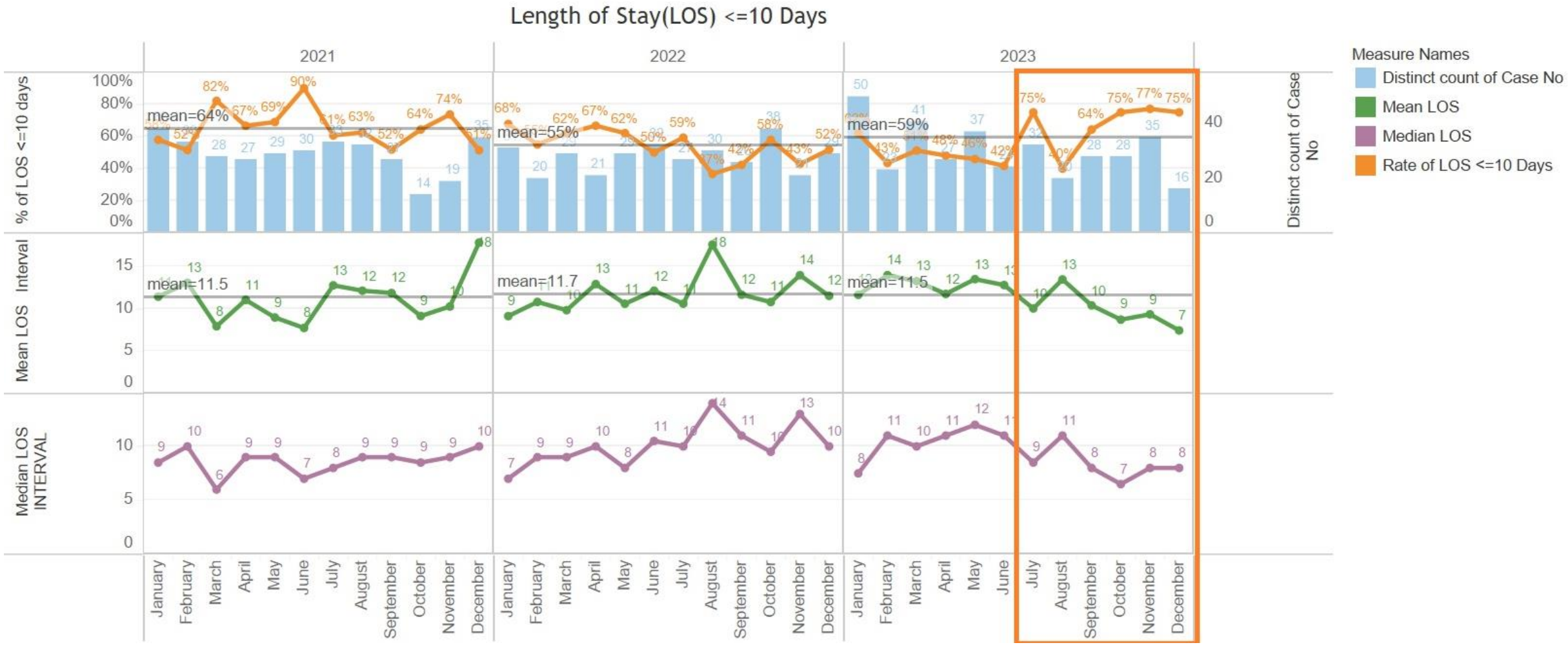
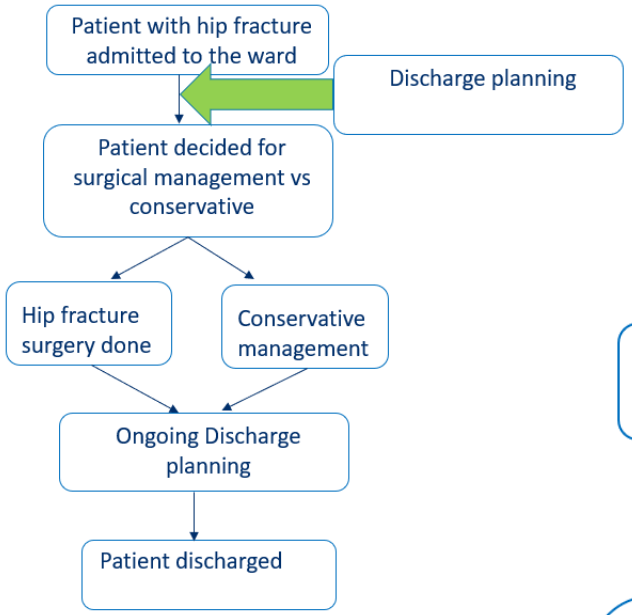

Length of Stay(LOS) <=10 Days
2021
2022
2023
% of LOS <=10 days
Mean LOS Interval
Median LOS INTERVAL
Distinct count of Case No
mean=64%
mean=55%
mean=59%
mean=11.5
mean=11.7
mean=11.5
Measure Names
Distinct count of Case No
Mean LOS
Median LOS
Rate of LOS <=10 Days
January
February
March
April
May
June
July
August
September
October
November
December

Appendix

Mapping of Improved Process **High Level**



Mapping of Improved Process **Low Level – Discharge planning**