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Improving Time to Surgery for Geriatric Hip Fracture Patients with Surgery

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Introduction

Hip fractures in the elderly population are associated with significant mortality rates of up to 22% within the first year¹ and functional decline, with only 40-60% of survivors regaining their pre-fracture level of mobility and independence². Timely hip fracture surgery within 48h has been associated with lower 12-month mortality rates and better post-operative outcomes³

Hip Fracture with Surgery was identified by MOH to adopt the Value Driven Care (VDC) program, to monitor outcomes for further improvement. Hip fracture surgery done within 48h from ED registration was identified as the main indicator for improvement.

Mission Statement

To increase the proportion of geriatric hip fracture patients with surgery done within 48 hours of Emergency Department (ED) registration from **35.3% to 60%** in 12 months.

Analysis of problem

A multidisciplinary team comprising of Orthopedic surgery, Anesthesiology, Geriatrics, Cardiology and Office of Value Based Healthcare was set up with the aim of improving time to surgery.

Process mapping was done to identify the steps from ED registration to surgery below (Figure 1) and the median duration for each step. Wait time for surgery listing and wait time for surgery after listing were identified as the main contributors to time to surgery. Wait time for bed assignment added to the delay in listing for surgery as patients could only be listed for surgery after an inpatient bed was assigned.

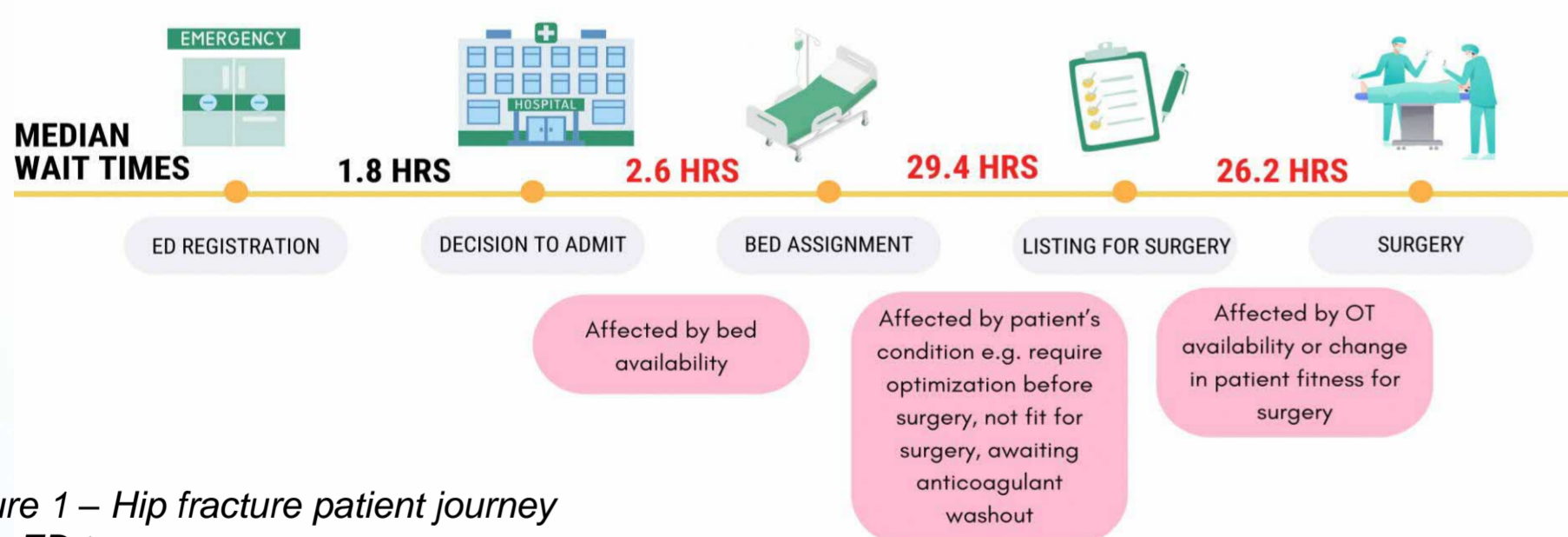


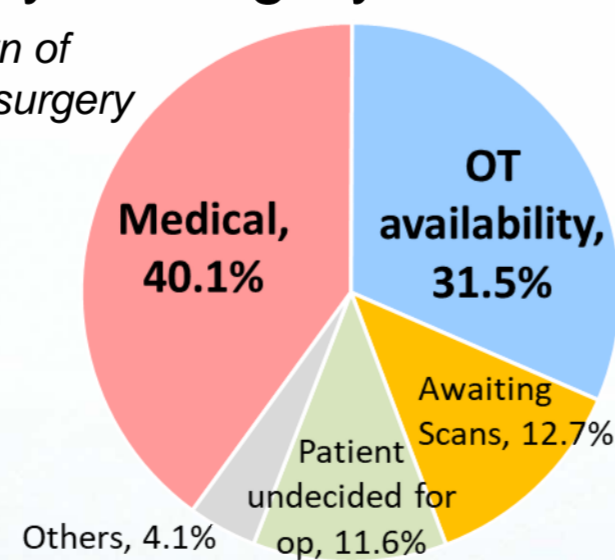
Figure 1 – Hip fracture patient journey from ED to surgery

Sample case review found medical issues and Operating Theatre (OT) availability as the main reasons for delayed surgery.

Medical-related delays were attributed to variations in pre-operative optimisation practices, such as referrals for cardiac evaluation and differing thresholds for surgery.

For hip fracture patients, trauma OT is the preferred choice, followed by emergency OT. OT availability was affected by several factors: overrunning surgeries during half-day trauma lists, unclear prioritisation of hip fractures on trauma lists, and the lack of trauma lists during weekends.

Figure 2 – Breakdown of reasons for delayed surgery (Jan 22 – Sep 23)



Interventions / Initiatives

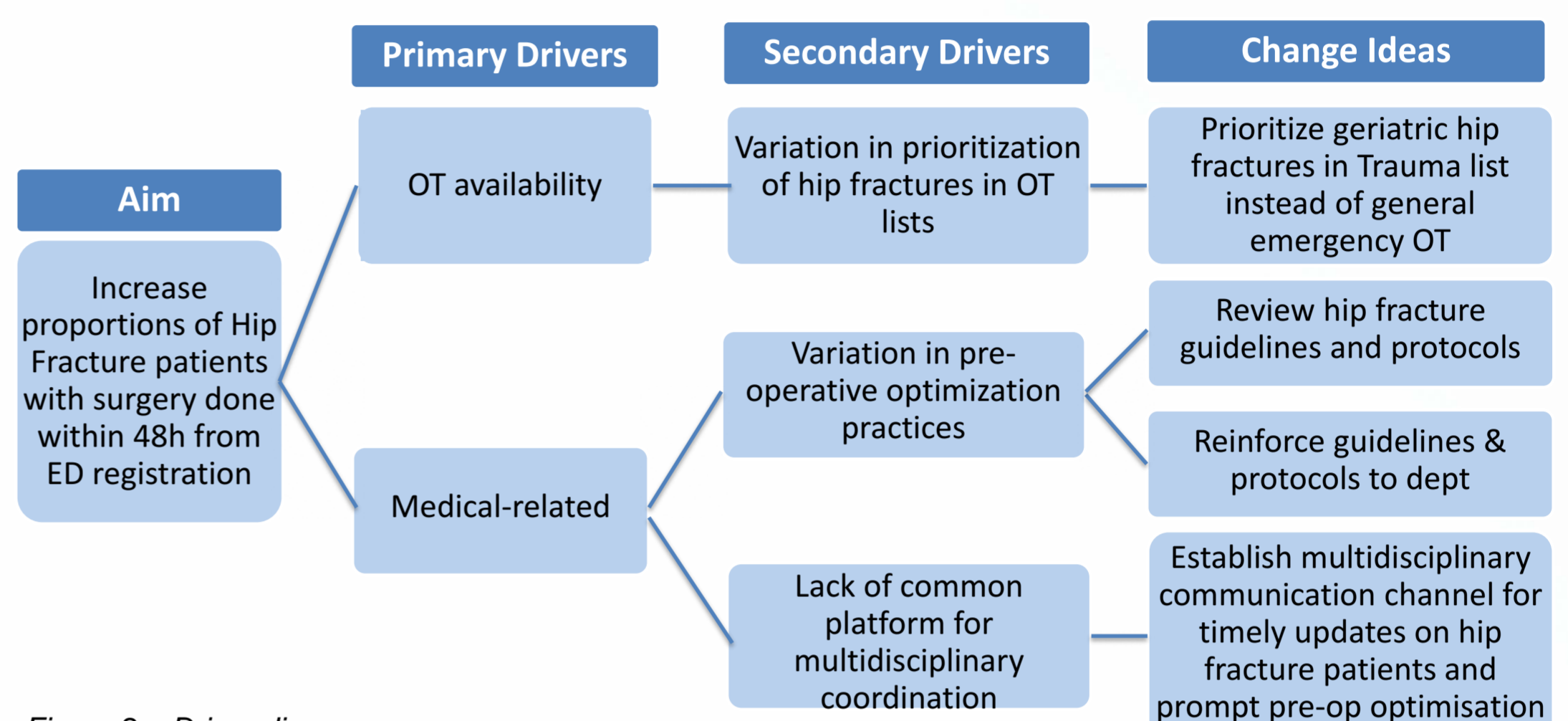


Figure 2 – Driver diagram

All 4 change ideas were implemented and regular audits of patients with delayed surgeries was conducted and highlighted to clinical representatives from the relevant departments for improvement.

Results

Patients receiving surgery within 48 hours increased from 35.3% in 2023 to 62.3% in 2024 (median).

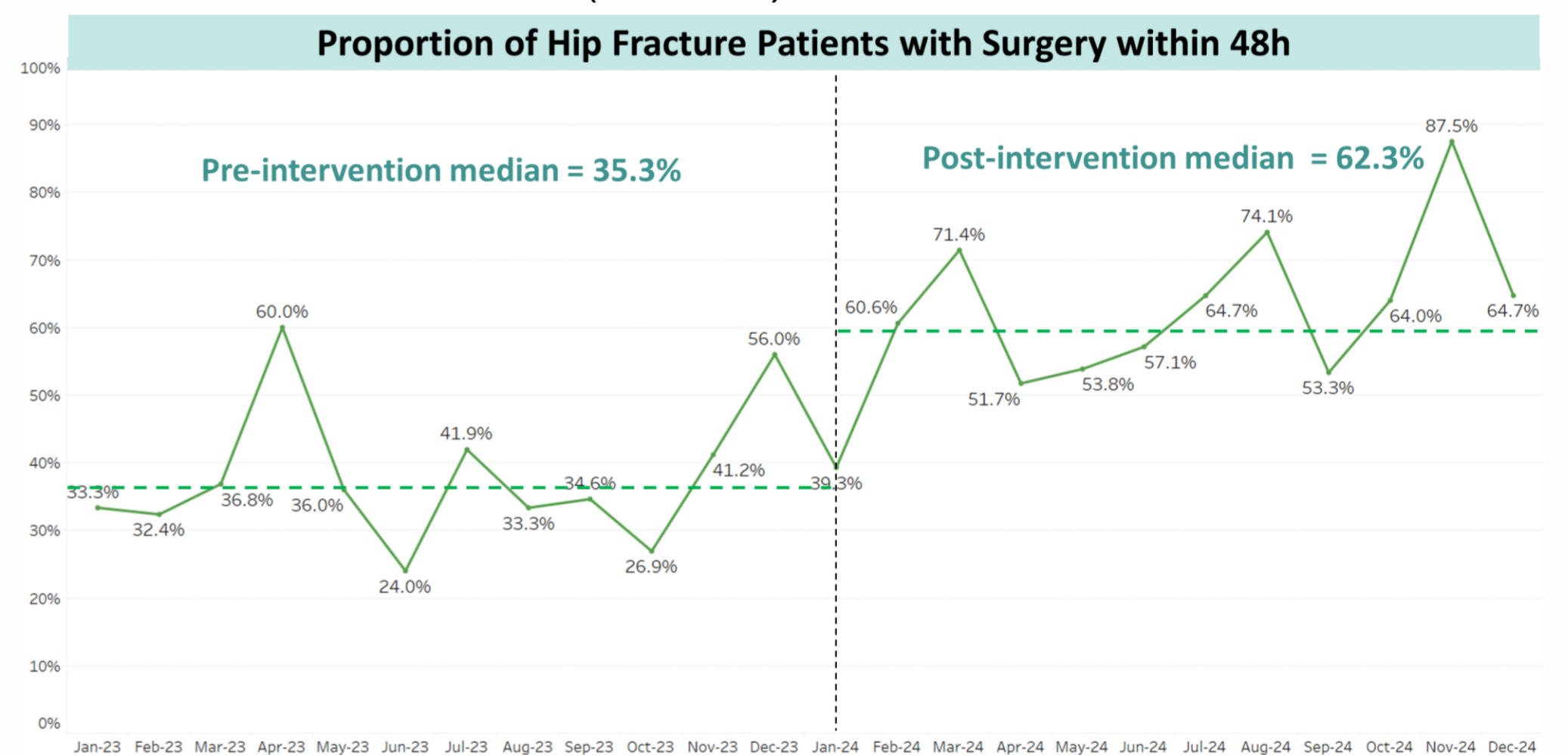


Figure 3 – Run chart of proportion of hip fracture patients with surgery done within 48h

Proportion of patients with total length of stay (LOS) ≤ 10 days increased from 40.3% in 2023 to 59.3% in 2024. This improvement was partially attributed to better time to surgery, as pre-intervention analysis showed that patients who received timely surgery had shorter post-op LOS. The average total LOS decreased from 15.2 days in 2023 to 11.7 days in 2024. Based on the patient volume in 2024 and estimated cost of \$1,200 per inpatient day (daily treatment fee and room charge) in FY23, 962.5 bed days were avoided, translating to cost avoidance of over \$1,100,000 in 1 year.

Conclusion

Implementing a standardised care pathway with multidisciplinary coordination successfully improved time to surgery for hip fracture patients. These improvements, coupled with LOS reductions led to substantial bed-days and cost avoided. Video teachings were disseminated in the multidisciplinary chat group and performance is monitored regularly facilitated by automated dashboards to ensure sustainability.

¹ Downey C, Kelly M, Quinlan JF. Changing trends in the mortality rate at 1-year post hip fracture - a systematic review. World J Orthop. 2019 Mar 18;10(3):166-175. doi: 10.5312/wjo.v10.i3.166. PMID: 30918799; PMCID: PMC6428998.
² S.M. Dyer, M. Crotty, N. Fairhall, J.S. Magaziner, L.A. Beaupre, I. Cameron, C. Sherrington, A CRITICAL REVIEW OF THE LONG-TERM DISABILITY OUTCOMES FOLLOWING HIP FRACTURE, Innovation in Aging, Volume 1, Issue suppl_1, July 2017, Page 736
³ Klestil T, Röder C, Stotter C, Winkler B, Nehrer S, Lutz M, Klerings I, Wagner G, Gartlehner G, Nussbaumer-Streit B. Impact of timing of surgery in elderly hip fracture patients: a systematic review and meta-analysis. Sci Rep. 2018 Sep 17;8(1):13933. doi: 10.1038/s41598-018-32098-7. PMID: 30224765; PMCID: PMC6141544.