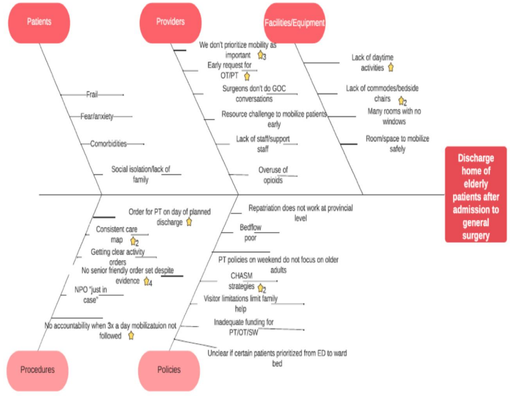
Implementation of Patient and Family Driven Exercise Regimen for Post Operative Acute Care General Surgery Patients: a Quality Improvement Effort

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INTRODUCTION

Patients admitted to the acute care surgery (ACS) service often present with complex medical conditions and advanced age. As a result, patients undergoing emergency surgery frequently experience significant deconditioning in the postoperative setting. Many patients require additional support to facilitate their recovery from surgery including rehabilitation or transitional care. The importance of timely and regular physiotherapy interventions in this context is well described. However, the aftermath of the COVID-19 pandemic has led to overworked physiotherapists often hindering them from adequately treating these patients. Consequently, we conducted a "root cause analysis" (Figure 1) and identified a possible solution, involving a patient- and family-directed exercise program tailored specifically to this patient population adjusting for ECOG status (example in Fig 6). We have initiated a pilot project specifically targeting patients >65 who have undergone an emergency general surgery operation at our institution. Our goal is to reduce the percentage of patients that may require additional support from rehabilitation institutions following their surgery conducted under ACS service.

Figure 1. Ishikawa Diagram and Root Cause Analysis



MEHODS AND PROCEDURES:

Our quality improvement team began by creating a "process map" to visually pinpoint areas amenable to enhancement in postoperative patient care. We then conducted a root cause analysis by way of an Ishikawa diagram and a cause-idea map (Figure 2) to identify our "change idea". We then educated our multidisciplinary team and implemented the pilot project at our institution, continually refining its execution through multiple plan-do-study-act (PDSA) cycles (Figure 3).

Figure 2. Cause-Idea Map From Root Causes Identified in Ishikawa Diagram

Root cause identified	Actionable? Yes/No	If actionable, corresponding change ideas	Impact? Hi or Lo	Effort? Hi or Lo	Priority? Hi Me Lo
Patients have fear/anxiety of going home	Yes	Reassurance	Lo	Hi	Lo
Patients are too comorbid and have prolonged hospital stays as a result of post operative complications	No	-	-	-	-
Patients have lack of family at home/social isolation	Yes	Personal support workers, home alterations	Hi	Hi	Lo
Providers don't prioritize mobility as important	Yes	Education	Hi	Lo	Lo
Provider: Early request for PT	Yes	Earlier identification of high priorty patients	Hi	Lo	Hi
Provider: Lack of staff (PT/OT/Social work)	Yes	Hire more members of MDT	Hi	Hi	Hi
Providers overuse opioids	Yes	Education around opioid reduction	Hi	Hi	Hi
Facilities/equipement: Lack of daytime activities	Yes	Patient lead exercises	Hi	Hi	Hi
Facilities/equipement: Lack of bedside chairs	Yes	Obtain more equipement	Lo	Hi	Lo
Facilities/equipement: many rooms with no windows lead to delirium	Yes	More windows in patient rooms	Hi	Hi	Lo
Facilities/equipement: no room/space for patients to mobilize safely	Yes	Dedicated mobility area for patients	Lo	Hi	Lo
Procedures/providers: Order PT to clear patient for home on the planned day of d/c	Yes	Order PT earlier	Hi	Lo	Lo
Procedures: patients do no receive clear activity orders	Yes	Clearly tell patients their activity status/restrictions	Hi	Lo	Hi
Procedure: No senior friendly admission order set	Yes	Creat senior friendly order set	Hi	Hi	Hi
Procedure: Patient kept NPO just in case of procedure	No	-	-	-	-
Procedure: No accountability for lack of mobilization	Yes	Incentivize patient mobilization	Hi	Lo/Hi	Hi
Policies: Issues with Bedflow (waiting for rehab bed)	Yes	Create more rehab beds	Hi	Hi	Lo
Policies: Poor adoption of CHASM strategies	Yes	Creat policy to adopt CHASM strategeties into practice	Hi	Hi	Hi
Policies: Visitor limitations limit family help	Yes	Extend visitation hours	Lo	Lo	Lo
Policies: inadequeate funding for additional PT/OT/SWs	Yes	Allocate more funding	Hi	Hi	Lo

Figure 3. Plan-Do-Study-Act (PDSA) Cycles Summarized

PDSA Cycle	New Patients Enrolled	Planned test of change	Result (study)
1	1	FIRST PDSA PILOT	Patients engaged/good compliance, however occasionally forgetful of project, misplaced project information pamphlet on POD3 Bracelet fell off during transfer in OR
2	2	Apply bracelet on POD1	Bracelet stayed on Similar results to PDSA 1 otherwise In addition, poor participation if patient was alone Half of patients misplaced project information pamphlet during post operative stay
3	5	Residents reorient patient to the project on POD1 and posted pilot project information on an easy to see location	0/5 patients misplaced the information 3/5 patients stated they performed exercises, despite being unobserved
4	5	To address lack of observations by nurses and poor enrolment, patient must do FIRST set of exercises witnessed by nurse Then either family members/nurses/PSW for duration of exercises, patient can do exercises independently but cannot remove tab on their own Nurse/PSW/family member allowed to remove tab ONLY	Decreased "time wasted" by nurses as observed action was by PSW's/family members Concerns of bracelet color was similar to falls risk color
5	5	Repeat Cycle	Similar to Cycle #3
6	5	Change falls risk bracelet color	Successful. Bands accidentally shredded with hospital band cant collect data Unsure whose band belongs to who when removed
7	5	When band is placed, attach MRN sticker to band Resident rounding removes band on EDD	More work for residents, but ensures accurate data will be collected for each patient
8	5	Plan to implement on additional acute care surgery ward	Poor patient compliance and participation possible due to less time spent educating house staff. Project enthusiasm on this ward was poor

RESULTS

A total of 33 patients were enrolled in the pilot project. Following the completion of several PDSA cycles and associated data collection, we analyzed our process, balancing and outcome measures respectively. With regards to process measures, we were able to increase patient participation from 50 to 75% (see Figure 4). Out of the patients that participated, we increased the average number of exercises conducted per day from 50 to 90% (Figure 5). We did observe falls related to the pilot project in 6% of patients (2/33 or ~10 per 1000 inpatient days extrapolated) over this 8-week period.

Figure 4. Run Chart to Assess Number of Exercises (Sets) Performed Daily

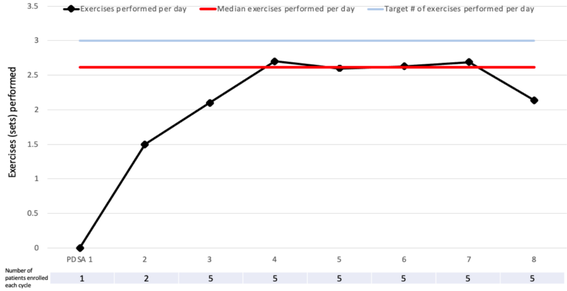
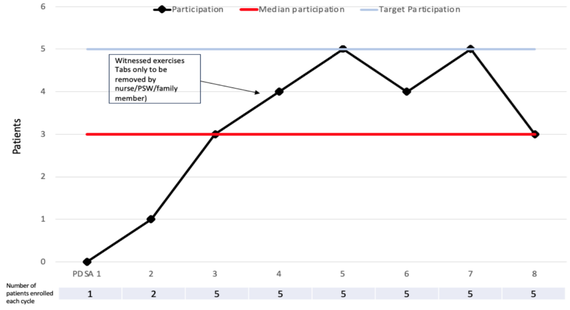


Figure 5. Run Chart to Assess Patient Enrollment and Participation



CONCLUSION

While our process measures show promising results, we look forward to reviewing our outcome measures in early 2025. We hypothesize that the expedited return of patients to their homes instead of requiring additional care facilities, if embraced by numerous institutions across Canada, could potentially mitigate a multitude of the adverse consequences caused by the aftermath of the COVID-19 pandemic.

Figure 6. Bed-Based Exercised Regimen



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ACKNOWLEDGEMENTS

- Multidiciplinary team at both Sunnybrook Health Sciences Center and Michael Garron Hospital
- Dr. Ashlie Nalder
- Dr. Rachel Khadaroo
- Alyssa McComb