

IMPROVING INPATIENT COLONOSCOPY BOWEL PREPARATION

INNOVATION AND PRODUCTIVITY

GREEN & SUSTAINABILITY

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Define Problem, Set Aim

Problem Statement

Current percentage of adequate inpatient bowel preparation is 69.1% which is well below international target of 90%.

- Poor bowel preparation affects quality, difficulty, speed, and completeness of colonoscopy.
- Audit from 1 September 2023 to 30 November 2023 found that poor bowel prep resulted in >\$30,000 increase in costs to patients for repeat endoscopy, manpower/resource costs notwithstanding.

Aim Statement

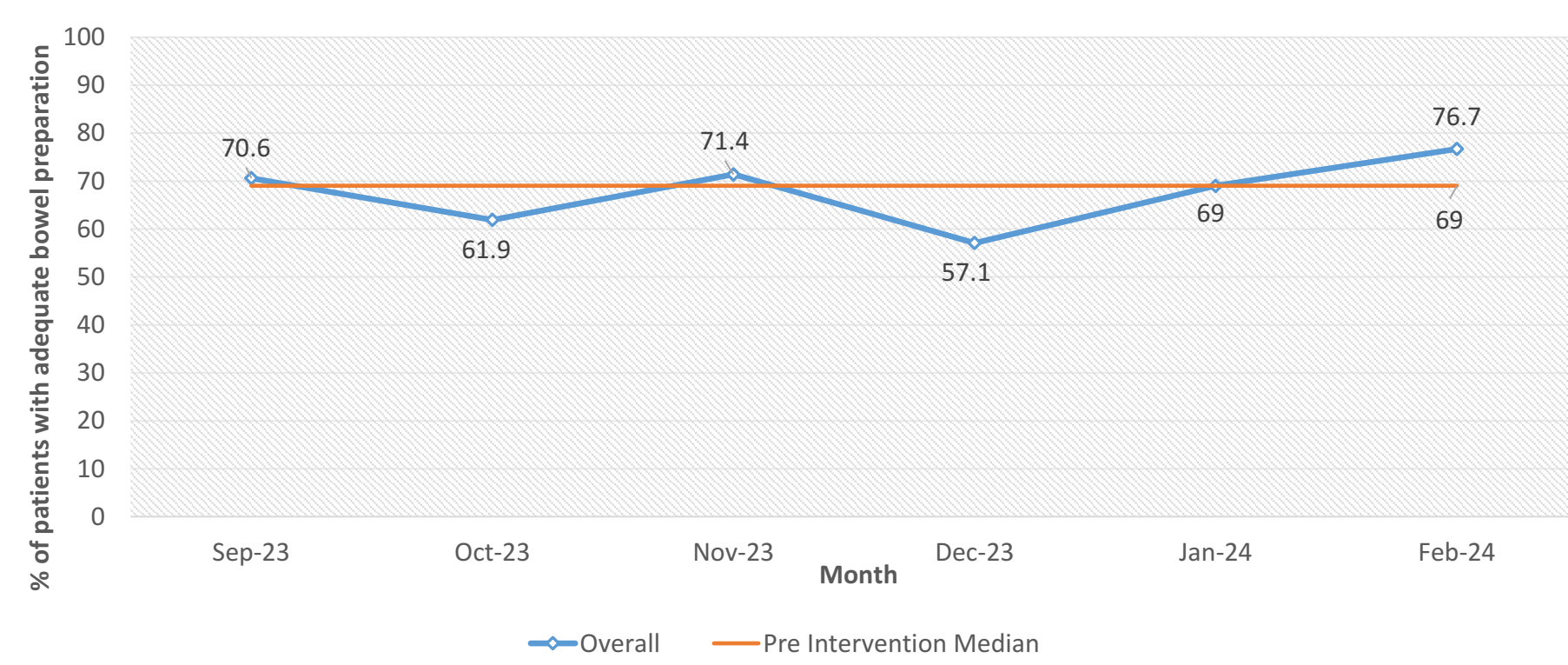
To improve percentage of adequate gastroenterology inpatient colonoscopy bowel preparation from 69.1% to 90% by September 2024

Establish Measures

Baseline Data:

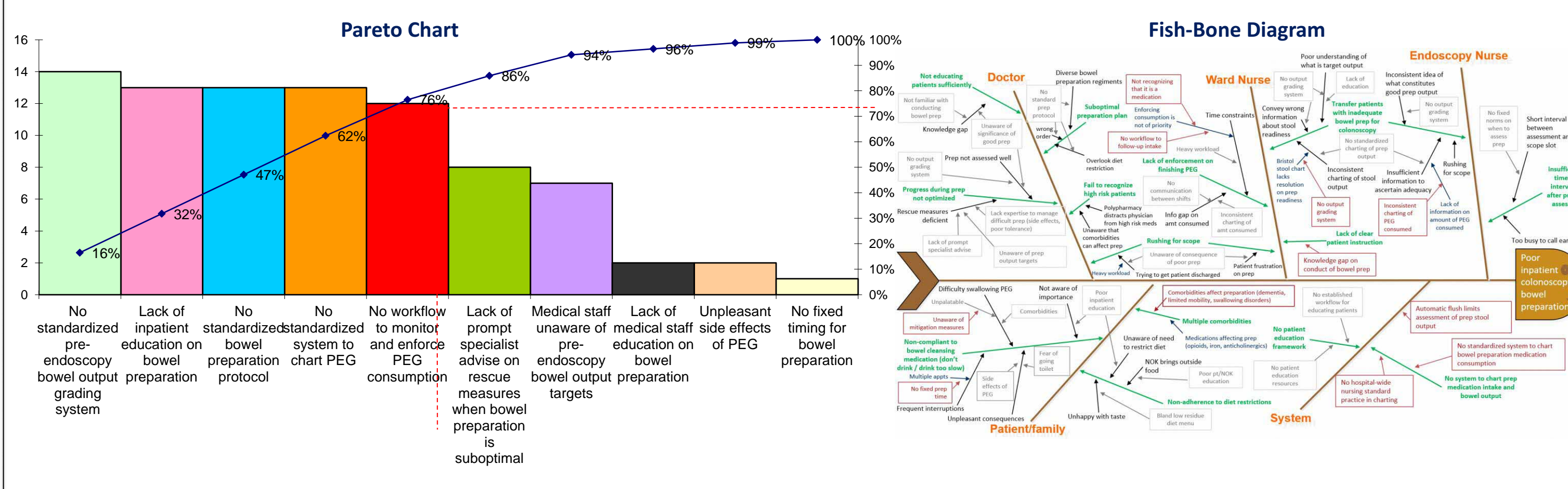
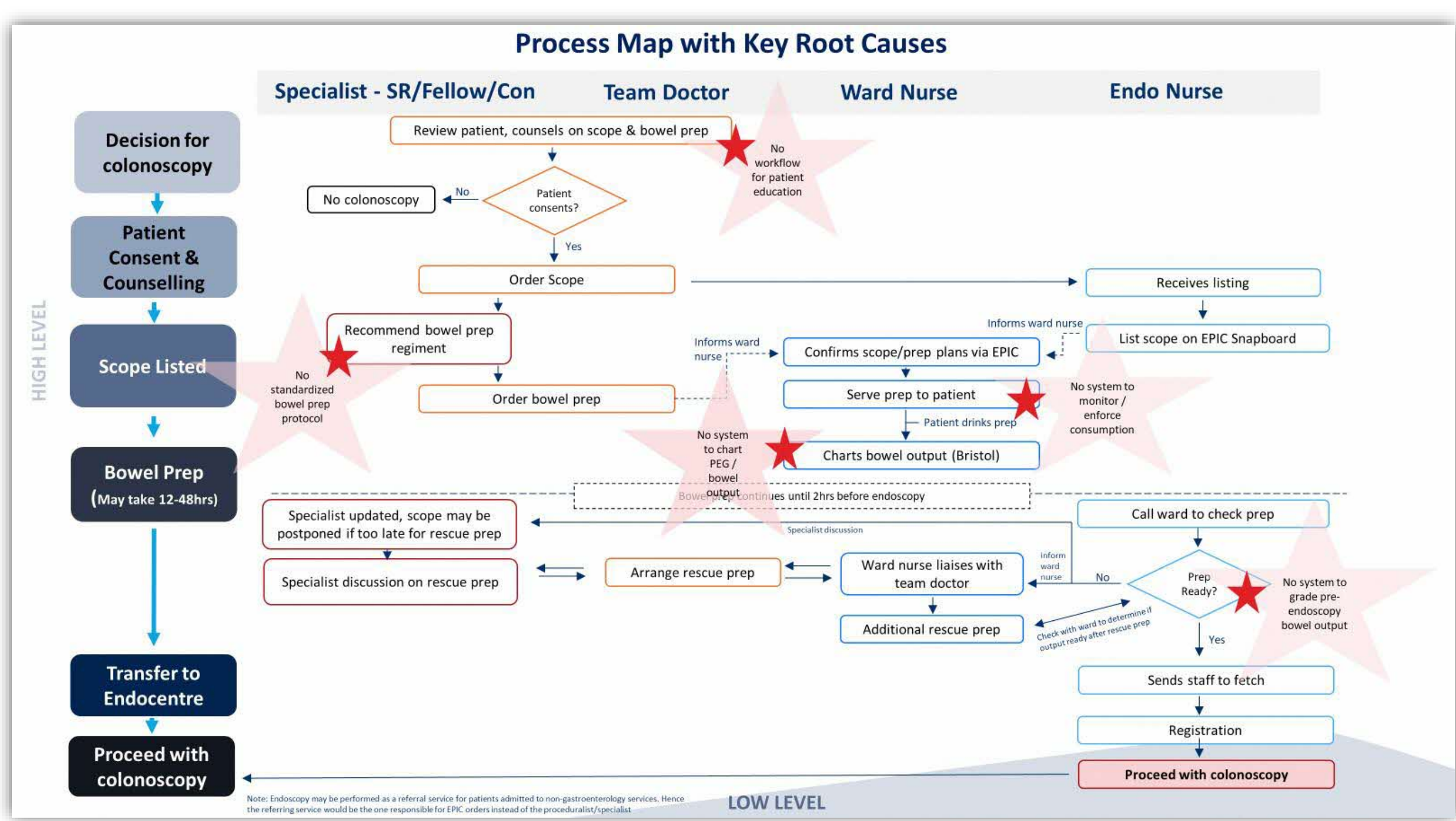
$$\text{Numerator} = \frac{\text{Inpatient non-emergent Gastroenterology colonoscopies with adequate bowel preparation}}{\text{Denominator} = \text{Total non-emergent inpatient colonoscopies performed by Gastroenterology}}$$

Percentage of Inpatient Gastroenterology colonoscopies with adequate bowel preparation

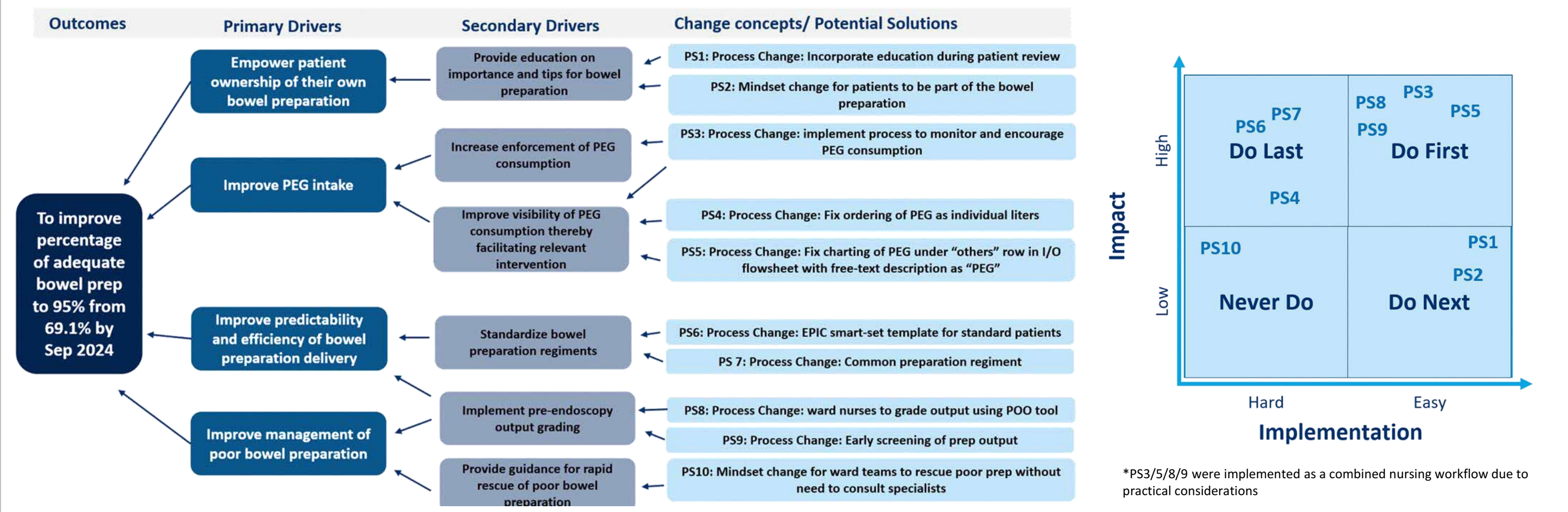


	Description	Operation Definition	Data Collection
Outcome Measure	% of adequate bowel prep for non-emergent inpatient colonoscopies by Gastroenterology	Non-emergent inpatient colonoscopies with adequate bowel prep Total non-emergent inpatient colonoscopies by Gastroenterology	Monthly EPAS report
Process Measures	% of patients with appropriate POO Grading	Patients with POO grading performed and charted correctly Total inpatients with non-emergent colonoscopy performed by Gastro	Monthly EPIC review
	% of patients with appropriate PEG Charting	Patients with PEG intake charted correctly Total inpatients with non-emergent colonoscopy performed by Gastro	Monthly EPIC review
	% of patients screened appropriately by endocentre	Patients with pre-colonoscopy screening performed correctly by endocentre Total inpatients with non-emergent colonoscopy performed by Gastro	Monthly EPIC review
Balancing Measure	Negative patient experience during bowel prep	Patient feedback score assessed using survey prep	Patient survey post endoscopy

Analyze Problem

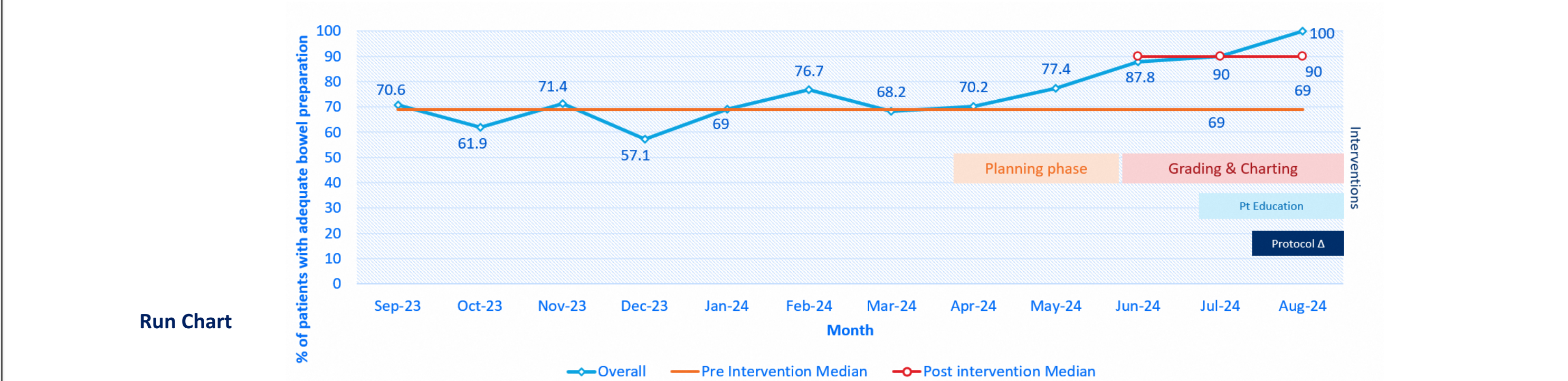


Select Changes



Test & Implement Changes

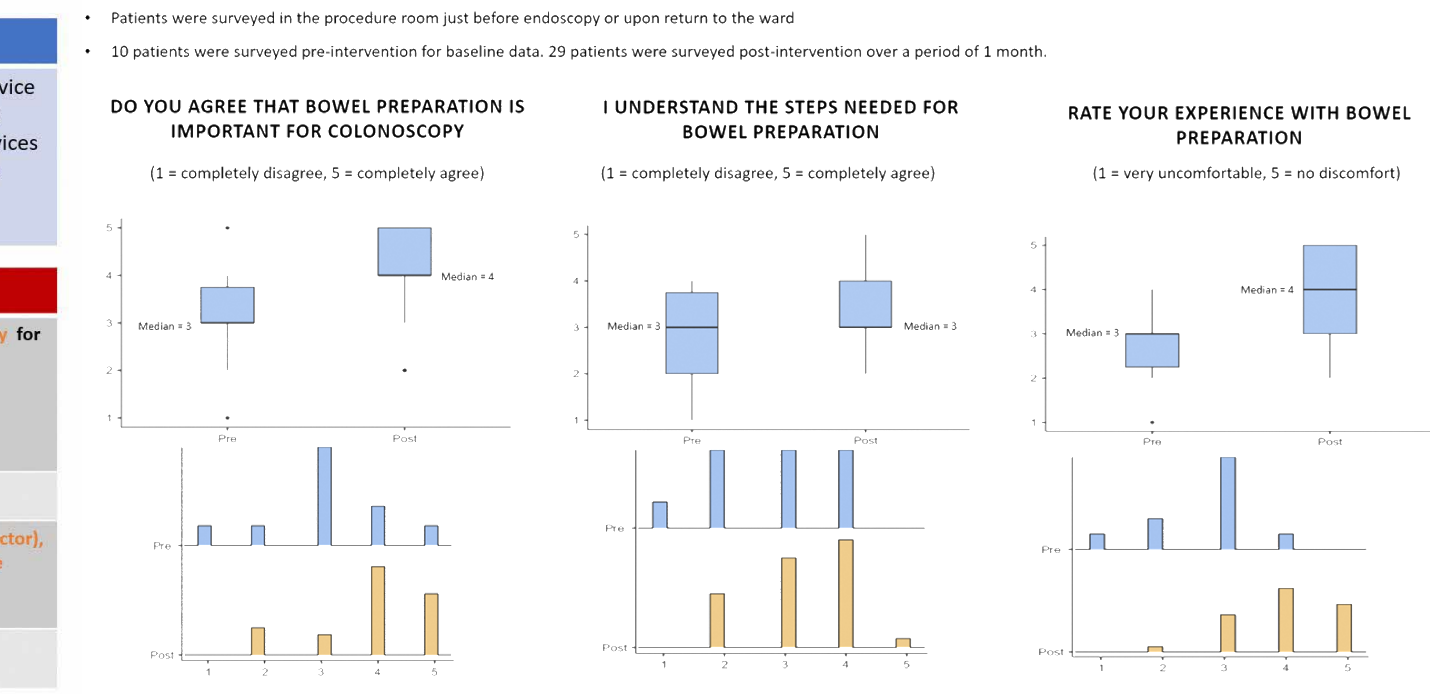
CYCLE	PLAN	DO	STUDY	ACT
1	Streamline nursing processes of PEG charting and output grading into an optimized workflow	Pilot workflow implemented on 10 June 24 for A) Ward 155 & 85 standardized PEG charting, PEG enforcement and POO Grading B) Endocentre screening of all patients using POO Grade	A) Pilot wards able to successfully enforce PEG intake, charted PEG and POO Grade B) Endocentre able to screen cases early and efficiently >97.5% of the time	Optimized nursing workflow increases efficiency during bowel preparation, facilitates endocentre screening and expedites rapid response to poor output Planned for hospital-wide expansion
2	Develop patient education resources and incorporate them into a patient education program	Resource developed in English and Mandarin. • Targeted short 60-90sec educational videos • Concise 1 page education pamphlets Patient education program implemented on 8 Jul 24	Resources endorsed at Gastroenterology division meeting 16 Apr 24. Educational videos cleared by corp coms and uploaded on NTFGH website. Nursing and patient feedback obtained	Resources amended based on respondent feedback Efforts underway to develop Malay and Tamil versions
3	Develop and implement a standardized bowel preparation protocol	Protocol endorsed by Gastroenterology division in May 24. Pilot for Gastroenterology colonoscopies started on 1 Aug 24	Utilization of protocol, as well as feedback from specialists obtained	Subsequent plan to expand laterally to involve surgical colleagues



Cost savings from improved bowel preparation

Ward	Endoscopy Centre	Doctors	Others
Colonoscopy resource costs (per scope)	• 30 minutes - Average nursing time spent on preparing 1 patient • Pre-procedure: 30min x 3 nurses • Intra-procedure: 45 min x 3 nurses • Post-procedure: 30min x 3 nurses • Scope washing: 45min x 1 nurse • 45 minutes procedural room time • 60 minutes waiting/recovery bay time	• 20 minutes pre-procedure review/consent (MO/SA) • 45 minutes procedure time (Consultant) • 20 minutes post-procedure review per scope (HO/MO)	Portering service - 20 minutes Cleaning services - 20 minutes

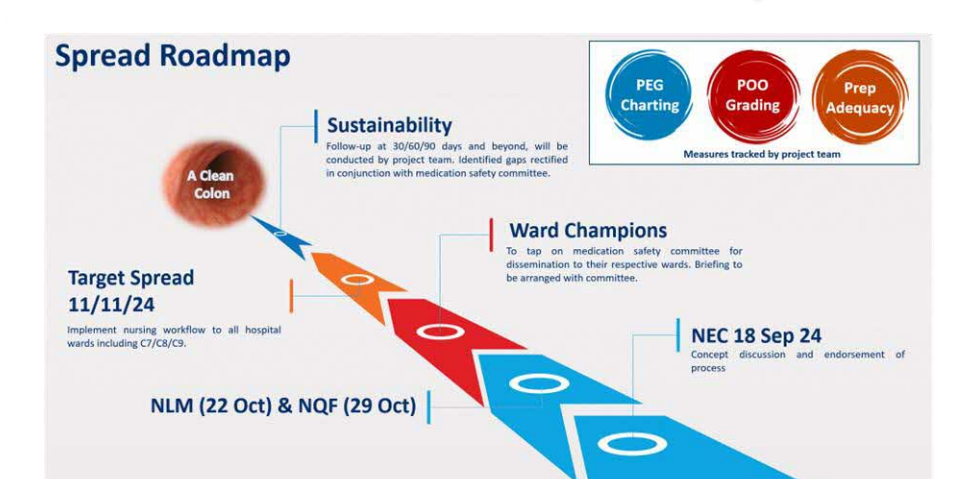
Feedback on Patient Education Program



Spread Changes, Learning Points

What are/were the strategies to spread change after implementation?

Efforts are underway to expand measures hospital-wide – rest of inpatient wards, Surgical patients. Spread leaders have been identified (ward nursing, endocentre nursing, Division of Surgery). Plans are underway to identify ward champions and consolidate a spread team



What are the key learnings from this project?

- Streamlining and standardization of diverse, superposed processes into NTFGH's inaugural inpatient bowel preparation protocol has improved efficiency of bowel preparation and percentage of adequate inpatient bowel preparation. Benefits include considerable savings in healthcare cost and manpower/resource utilization.
- Future considerations include AI guided bowel preparation and enhanced rescue measures.

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