Evaluation of a patient engagement application for bariatric, colorectal, and gynecologic oncology surgery within a tertiary care centre to reduce healthcare utilization

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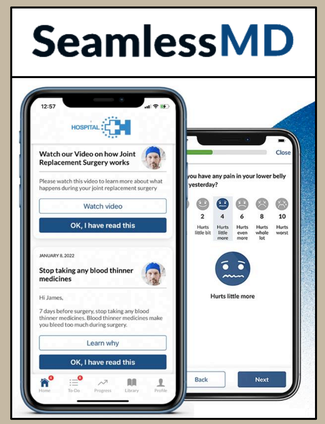
Questions?

Introduction



- Poor surgical readiness and limited post-op resources lead to more ED visits and longer hospital stays.
- Prehabilitation boosts surgical readiness, but gaps in patient education and monitoring remain.
- Digital interventions (e.g., mobile apps, telehealth) reduce complications and readmissions through continuous support.

- SeamlessMD is a digital patient engagement platform to provide patients with perioperative education, postoperative guidance, and to facilitate communication with surgical teams.
- It also enables collections of data in the form of patient-reported outcomes, survey data, and healthcare system metrics (length of stay, ED use)
- We performed a qualitative and quantitative evaluation of this patient engagement application in bariatric, colorectal, and gynecologic-oncology (GO) at a single center and evaluated its usage, patient and provider experience, as well as ability to reduce healthcare utilization (LOS, ED use).



Methods

- Select eligible patients undergoing bariatric, colorectal, and GO procedures were enrolled from a single tertiary care centre upon confirmation of surgery – 286 patients in all groups were used for final analysis
- SeamlessMD collected data on enrolment, activation, and engagement, as well as patient-reported outcomes data, and clinical data was collected via linked databases
- Retrospective cohort design was used to compare control groups to intervention (SeamlessMD) group for quantitative data (LOS, ED visits) while survey item scores and open-text survey responses were used to identify qualitative data about patients' and health care teams' experiences.

Results

Patient experience

Survey Items	Bariatric	Colorectal	Gynecology
Overall very satisfied with Seamless MD	91% (30/33)	88% (35/40)	85% (107/126)
Advice provided by SeamlessMD helped avoid calls to their surgical team*	87% (20/23)	89% (25/28)	83% (72/87)
Advice provided by SeamlessMD helped avoid a visit to an emergency room**	79% (11/14)	87% (20/23)	81% (56/69)
Used SeamlessMD before procedure or surgery	97% (32/33)	50% (20/40)	78% (98/126)
SeamlessMD helped them feel prepared before surgery	91% (29/32)	80% (16/20)	93% (91/98)
Used Seamless MD during their hospital stay	61% (20/33)	33% (13/40)	19% (24/126)
SeamlessMD helped them feel more confident about taking care themselves during their hospital stay	90% (18/20)	62% (8/13)	88% (21/24)
Used Seamless MD after leaving the hospital	88% (29/33)	63% (25/40)	71% (89/126)
In the last 30 days since leaving the hospital, SeamlessMD made them feel more confident about taking care of themselves at home	93% (27/29)	88% (22/25)	88% (78/89)
Would recommend the SeamlessMD program to their friends and family	79% (26/33)	83% (33/40)	90% (113/126)
Satisfied with how SeamlessMD allowed them to report concerns to their healthcare provider	58% (19/33)	50% (20/40)	73% (92/126)
SeamlessMD was easy to use on their device(s)	91% (30/33)	95% (38/40)	96% (121/126)
SeamlessMD delivered information in a way that was easy to understand	94% (31/33)	95% (38/40)	96% (121/126)
Satisfied with the quality of education provided by SeamlessMD	94% (31/33)	93% (37/40)	84% (106/126)
Satisfied with the quality of advice that SeamlessMD provided	76% (25/33)	80% (32/40)	81% (102/126)
Needed help using SeamlessMD	18% (6/33)	10% (4/40)	6% (7/126)

**Denominator changes reflect participants who skipped or deemed this item not applicable (no call to surgical team).*
***Denominator changes reflect participants who skipped or deemed this item not applicable (no ED visit).*

Patient reported satisfaction

"I felt part of the whole process, not just a 'patient' but a participant" – Gyne-Onc Patient

"Easy to use. The information is very helpful and easy to access. Definitely helped with pre-and post-op anxiety" – Colorectal Patient

"It's a great checklist and post care guide for those who need this type of level of post surgery care. I followed a nutritional NSH bowel post surgery guide which really helped me choose the right foods to assist the bowels in my recovery."
– Colorectal Patient

Healthcare utilization

Bariatric		Control, N = 53	SeamlessMD, N = 56	p-value
ED within 30 days		0 (0%)	7 (13%)	**0.013**
LOS (Days)	Median (IQR) Mean (SD)	2.00 (1.00, 2.00) 3.02 (8.88)	1.00 (1.00, 2.00) 1.43 (0.76)	**0.017**
Age	Mean (SD)	48 (11)	47 (9)	0.5
Sex		F: 47 (89%) M: 6 (11%)	F: 51 (91%) M: 5 (8.9%)	0.7

Colorectal		Control, N = 743	SeamlessMD, N = 72	p-value
ED within 30 days		199 (27%)	12 (17%)	0.061
LOS (Days)	Median (IQR) Mean (SD)	7 (4, 12) 12 (21)	3 (2, 6) 6 (9)	**<0.001**
Age	Mean (SD)	64 (14)	67 (11)	0.4
Sex		F: 357 (48%) M: 386 (52%)	F: 32 (44%) M: 40 (56%)	0.7

Gyne-Onc		Control, N = 516	SeamlessMD, N = 158	p-value
ED within 30 days		41 (7.9%)	8 (5.1%)	0.2
LOS (Days)	Median (IQR) Mean (SD)	2 (1, 3) 2.7 (3.1)	2 (1, 3) 2.7 (2.8)	0.4
Age	Mean (SD)	62 (13)	58 (13)	<0.001

Discussion

- **Positive Feedback:** Patients and providers reported high satisfaction, with patients feeling more confident, less anxious, and better equipped to avoid unnecessary surgeon contacts or ED visits.
- **Shorter Length of Stay (LOS):** SeamlessMD was linked to significantly reduced LOS in bariatric and colorectal groups, but not for GO patients—likely because their well-established ERAS program already achieves similar benefits.
- **ED Visits:** Colorectal patients showed a near-significant 10% reduction in 30-day ED visits, while the bariatric group unexpectedly increased—possibly due to small sample sizes or a need for more robust preoperative support