Atrium Health

Atrium Health Optimizes Enhanced Recovery After Surgery Program with Digital Care Journeys Resulting in Lower Length of Stay, Readmissions, Mortality and ED Visits

Key Results:

Colorectal Surgery
↓ 1.0 day Length of Stay
↓ 60% 30-day Readmissions
↓ 31% ED Visits

Hepatobiliary (Pancreas & Liver) Surgery
↓ 56% 30-day Mortality
↓ 21% 30-day Readmissions
↓ 86% 30-day Mortality (Pancreas Only)

Patient Experience
✔ 93% of patients would recommend SeamlessMD

Four Care Plans deployed:
Colorectal, Bariatric, Liver, Pancreas

EHR Integration:
Epic (SMART on FHIR, HL7v2)

> "With SeamlessMD we can control the educational content that our patients consume and empower patients to better adhere to our ERAS pathways. The ability to digitally collect PROs which are reflective of the patient's experience allows us to intervene sooner if needed to improve the quality of care. Through the deployment of a digital application like SeamlessMD we were able to reduce cumulative length of stay, and readmissions and improve resource utilization for all patients."

Dr. Dionisios Vrochides
Past President, ERAS® USA
Vice Chair of Quality and Outcomes for Department of Surgery, Atrium Health

Atrium Health, part of Advocate Health, the fifth-largest non-profit health system in the United States, is a nationally recognized leader in shaping health outcomes through innovative research, education, and compassionate patient care.

Based in Charlotte, North Carolina, Atrium Health is an integrated, non-profit health system with more than 70,000 teammates serving patients at 40 hospitals and more than 1,400 care locations. A leading-edge innovator in virtual care and mobile medicine, Atrium Health provides care close to home and in the home.

For years, Atrium Health has been a leader in Enhanced Recovery After Surgery (ERAS), including being the first ERAS® Society Center of Excellence in the United States. Dr. Vrochides, Vice Chair of Quality and Outcomes for the Department of Surgery and Past President for ERAS® USA was looking for innovative ways to increase patient engagement with their ERAS pathway and collect Patient-Reported Outcomes (PROs) to deliver a more complete surgical quality strategy.

Digital Care Journeys Automate the Collection of Patient Reported Outcomes and Improve Compliance with ERAS Pathways

In 2018, Atrium Health initially deployed the SeamlessMD Digital Care Journey platform for Hepatobiliary surgery to complement its existing ERAS pathway with digital education, remote monitoring and automating the collection of Patient Reported Outcomes (PROs).

With SeamlessMD, Atrium Health ensures patients adhere to their enhanced recovery protocols. Through automated workflows and step-by-step reminders, to-do lists and evidence-based education, patients are guided pre-op, in-hospital post-op and after discharge, resulting in clear expectations, less anxiety and better outcomes.

As the digital platform keeps patients on track throughout their episode of care, it is easier and faster to keep ERAS protocols up-to-date and always available to patients, to support and maintain ERAS pathways, and to view patients' ERAS compliance directly in the Epic EHR.

Using the remote patient monitoring capabilities, Atrium Health also digitally collects self-reported survey data from patients after discharge to track temperature, pain levels, surgical incision photos, opioid consumption and more. This allows clinical and surgical teams to identify patients who are at risk and intervene sooner.

Due to the success seen in Hepatobiliary (pancreas and liver) care pathways, Atrium Health soon expanded its use of SeamlessMD for Colorectal and Bariatric surgery.

Saving Time and Money with EHR Integration

Through the integration of SeamlessMD and Epic, using SMART on FHIR and HL7v2 feeds, providers can easily enroll patients into SeamlessMD and remotely monitor patients from right within the Epic patient chart.

When time is of the essence in clinical settings, streamlining processes and access to patient information is critical. Auto-populating key pieces of patient information from Epic into SeamlessMD and enabling SeamlessMD's dashboards to be viewable right within the Epic patient chart saves significant time for Atrium Health's clinical staff.

Collaborating with SeamlessMD to Customize Pre-Built Digital Care Journeys

When implementing evidence-based care plans across multiple service lines, SeamlessMD worked closely with the Atrium Health team to customize protocols and content on the platform, which enabled the care team to:

✔ Engage patients with a mobile and web-enabled, virtual companion – guiding them from pre-admission preparation through post-discharge recovery

✔ Deliver evidence-based pathways in the form of multimedia education, reminders, and tasks

✔ Track patient ERAS compliance (e.g. pre-op carb loading, post-op mobilization)

✔ Remotely monitor post-discharge symptoms and recovery progress (e.g., tracking temperature, nausea, pain levels, surgical incision photos, opioid consumption, etc.)

✔ Digitally collect Patient-Reported Outcomes (PROs) such as ERAS pathway compliance and validated PROMs (e.g. PROMIS, QoR-15)

✔ Automate patient self-care guidance via smart algorithms and workflows (e.g., education for how to manage low-risk issues or when to escalate to a provider); and

✔ Receive alerts and monitor dashboards to identify when a patient's health status changes, enabling the care team to intervene sooner.
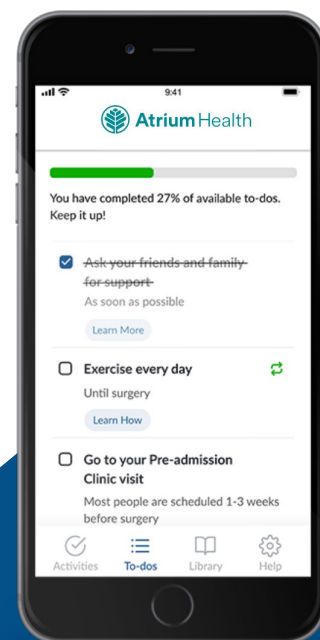
Example Patient "To Do"
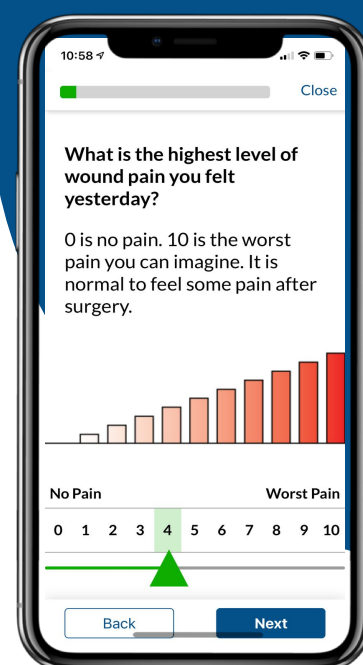
Example Patient Post-op Health Check

SeamlessMD

www.seamless.md   info@seamless.md

Improving Patient Engagement & Satisfaction

SeamlessMD provides patients with the tools to be able to effectively self-manage from home and be more proactive in their own healthcare. Patients actively engaged on SeamlessMD feel less anxious and more connected to their care team throughout their care journey

Here's what patients like most about the program:

- *This program gave me more of an incentive to do the things I needed to do for a healthy and speedy recovery.*

- *I felt I was in touch with my healthcare team daily, which was comforting to me.*

- *I love that through this program I can record my progress of healing... It makes me feel more connected to the office staff and not as alone dealing with the recovery and questions I have.*

Clinical Outcomes

1. Colorectal Surgery Outcomes Analysis

	Control	SeamlessMD	Change	P-Value
Sample Size	95	95	-	-
Median Length of Stay	4 (1-37)	3 (2-22)	↓1.0 Day	0.021
30-day Readmissions	21.1%	8.4%	↓60%	0.041
ED Visits	24.2%	14.7%	↓31%	0.099
Overall Mortality	5.3%	0%	↓100%	0.023

Patient data were matched for Age, Sex, BMI, and surgery type over a similar time frame.

Regression analysis also showed:

✔ LOS for the SeamlessMD group was 86.1% shorter than for the control group (p=0.003)

✔ Odds for 30-day readmissions for the SeamlessMD group were 65.5% lower than for the control group (p=0.017)

SeamlessMD   www.seamless.md   info@seamless.md

Clinical Outcomes (continued)

2. Hepatobiliary (Pancreas & Liver) Surgery Outcomes Analysis

Pancreas & liver surgery patients combined

	Control	SeamlessMD	Change	P-Value
Sample Size	415	415	-	-
30-day Mortality	3.4%	1.5%	↓56%	0.070
30-day Readmissions	23.1%	18.3%	↓21%	0.087

Patient data were matched for Age, Sex, BMI, and surgery type over a similar time frame.

Regression analysis also showed:

✔ LOS for the SeamlessMD group was 24.1% shorter than for the control group (p=0.001)

✔ Odds for 30-day mortality for the SeamlessMD group were 60.9% lower than for the control group (p=0.059)

Pancreas surgery patients only

	Control	SeamlessMD	Change	P-Value
Sample Size	236	236	-	-
30-day Mortality	3.8%	0.4%	↓86%	0.011
30-day Readmissions	28.8%	22.0%	↓21%	0.091
Cost Observed/Expected	1.19 (0.42 – 7.65)	1.14 (0.33 – 5.81)	↓0.05%	0.060

Patient data were matched for Age, Sex, BMI, and surgery type over a similar time frame.

Clinical Outcomes (continued)

3. Improved Patient Engagement and Satisfaction

Metric	Colorectal	Pancreas	Liver
% Patients who recommend SeamlessMD	93%	86%	88%
% Patients who said SeamlessMD helped them feel less worried pre-procedure	82%	77%	77%
% Patients who said SeamlessMD helped them feel more confident post-procedure	85%	69%	79%
% Patients who reported that SeamlessMD prevented 1 or more calls to the hospital	37%	31%	23%
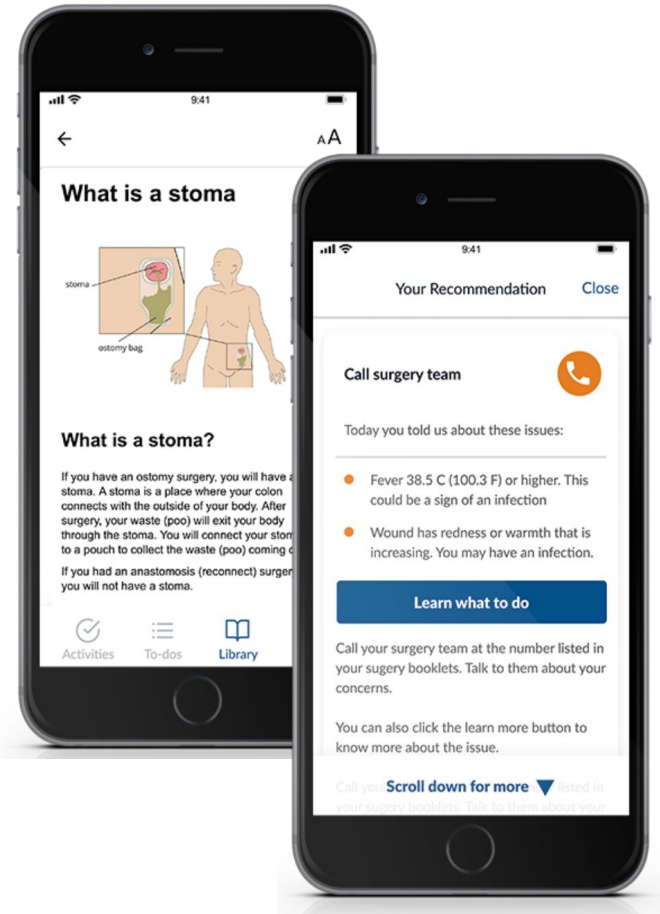
"SeamlessMD has been a key partner in our system's quality and patient safety strategy by enhancing communication between patients and care teams through a digital care solution. The use of digital education, remote patient monitoring and alerts to consistently engage with patients beyond the hospital setting to address any post-surgical complications were a significant factor in reducing readmissions and ED visits while increasing ERAS compliance."

Dr. Brent Matthews,
Surgeon-in-Chief, Atrium Health

Dr. Vrochides and Dr. Matthews have no financial interests or relationships with SeamlessMD to disclose.