



Centralizing Reporting to Support System-Wide Expansion of a Pathway

Michael Langston PhD¹, RN, NE-BC, LSSMBB, Emily Hoke, PTA, BSPH, LSSBB, IASSC-CBB¹, Daniel Duncan MSN, RN, CPHON, LSSBB¹, George Guthrie BSBA, MHA¹, Caroline Ornelas BSN, RN, CRRN, SCRNI¹, Kelly Felten, MHA¹, Lyla Hance MPH², Ipsa Chaudhary, BA², Nathan Woody, BS, CSSBB³, Clark McCall MHA², Erin Burgess, BA, PMP¹, Kate McGinagle MD, MPH³, Peggy McNaull MD²
¹Performance Improvement and Patient Safety, University of North Carolina Hospitals
²Department of Anesthesiology, University of North Carolina School of Medicine
³Department of Surgery, University of North Carolina School of Medicine

BACKGROUND

Enhanced Recovery After Surgery (ERAS) is a multidisciplinary, peri-operative care model which improves patient outcomes through the adherence to clinical pathways. ERAS was first introduced to the University of North Carolina Medical Center (UNCMC) in 2014 and quickly expanded to fifteen active clinical pathways. UNC Health Care System named ERAS as an organizational quality initiative in 2018, with the intention of scaling the pathways to all ten affiliated hospitals.

During this period of growth substantial efforts have been made by the ERAS Leadership Team to standardize the existing pathway and reporting structures to allow for scalability. This process included:

- creating a clinician-friendly system of tracking process measures
- standardizing the dissemination of reports
- initiating sustainable QI projects

One major area of improvement involved focus on creating electronic outcome and process metrics. Historically at UNCMC, outcome measures were collected and reported via a combination of hand chart reviews and automated reporting, but process measures were more difficult to abstract; therefore, standard measures were not collected regularly. This limited the team's ability to assess compliance, set standards, and understand if the pathways are associated with positive outcomes. More recently, the ERAS Leadership Team partnered with the Performance Improvement and Patient Safety Department (PIPS) in creating a Metrics Dashboard designed to track compliance to sixteen universal process metrics identified by the ERAS Society. These metrics form a framework within which to set goals, assess compliance, prioritize and disseminate information to providers to help continually improve care¹.

MATERIALS AND METHODS

The creation of the dashboard was accomplished through an iterative process that involved quality leaders, data analysts and front-line staff (e.g. providers, anesthesia, nursing, etc.). The steps involved in the process included determining the most appropriate measures for each step in the pathway, the precise data in the EHR for automatic abstraction, validation of the data, determining goals for each metric and the appropriate method for visualization.

Our novel metrics dashboard collects case-level data on all ERAS pathways. Data for the dashboard is downloaded from the hospital's electronic health record and translated to a Tableau dashboard. The Dashboard focuses on reporting the sixteen universal items identified by the ERAS Society:

- Preadmission patient education regarding the protocol
- Preadmission screening and optimization as indicated for nutritional deficiency, frailty, anemia, HbA1c, tobacco cessation, and ethanol use
- Fasting and carbohydrate loading guidelines
- Preemptive analgesia (dose, route, timing)
- Anti-emetic prophylaxis (dose, route, timing)
- Intraoperative fluid management strategy
- Types, doses, and routes of anesthetics administered
- Patient warming strategy
- Management of postoperative fluids
- Postoperative analgesia and anti-emetic plans
- Plan for opioid minimization
- Drain and line management
- Early mobilization strategy
- Postoperative diet and bowel regimen management
- Criteria for discharge
- Tracking of post-discharge outcomes

Sample Dashboard: Aggregate Data

Eras Pathway Compliance – September 2019				
Notes	Metric	Metric Description	Target Completion %	Completion %
5 Day Exclusion Criteria Used	Foley	% of All Pts With Foley D/Ced Within 24Hrs	80%	72.7%
	NG Tube	% of All Pts With NG D/Ced Within 24Hrs	80%	99.5%
	JP	% of All Pts Without JP >24Hrs	80%	90.4%
10 Day Exclusion Criteria Used	Chest	% of All Pts Without Chest Tube >72Hrs*	80%	96.5%
	Extubation	% of All Pts Without ETT by Anesthesia End	100%	98.5%
Patients May Serve as Multiple "Ns"	Ambulation	% of Pts That Met POD 1 Goal: 1 (Avg Ambulation Count)	80%	64.7% (1.5)
		% of Pts That Met POD 2 Goal: 21 (Avg Ambulation Count)	80%	50.7% (1.8)
		% of Pts That Met POD 3 Goal: 31 (Avg Ambulation Count)	80%	32.3% (1.7)
Patients May Serve as Multiple "Ns"	Incentive Spirometry	% of Pts That Met Goal (2) POD 1 (Avg Flow Rate)	80%	12.4% (1134)
		% of Pts That Met Goal (2) POD 1 (Avg Flow Rate)	80%	15.0% (1175)
		% of Pts That Met Goal (2) POD 31 (Avg Flow Rate)	80%	10.2% (1163)
	ICU	% of All Pts That Went Directly to Non-ICU Unit	98%	90.9%
		For Pts That Went Directly to an ICU, Average Hrs in ICU	N/A	79
		% of Pts That Spent Time in ICU That Did Not Go Directly to ICU	N/A	3.0%
No Time Limit Exclusion Criteria Used	PO Solid	% of Pts That Had First Solid >24Hrs*	80%	66.8%
	PO Liquid	% of Pts That Had First Liquid <24Hrs*	80%	86.1%
	Non-NPO Order	% of Pts With Non-NPO Order by 4 Hrs After Anesthesia End	80%	69.4%

OUTCOMES AND IMPACT

The ERAS dashboard leveraged the hospital's EMR in order to disseminate information to clinicians and stakeholders on compliance to process measures and corresponding improvements in outcomes.

The metrics reported in the dashboard will supply front-line clinicians the ability to quickly identify areas of improvement and develop interventions to correct them.

The ERAS dashboard increased engagement with the clinical pathway among all types of clinicians by encouraging them to:

- Review and update pathway information
- Communicate with colleagues
- Identify areas for improvement
- Reference target metrics and goals

The ERAS dashboard tracks and serves as a reference to help improve compliance with pathway fidelity.

Since the dashboard has been implemented several projects have been implemented to increase documentation fidelity, ambulation and the use of incentive spirometry.

A survey of 6 clinicians who participated in a poll related to their experience as one of team members of the pilot pathways participating in development of the dashboard responded that:

- 100% agreed with the statements: "I believe the ERAS dashboard will help improve patient care," and "I believe the ERAS dashboard is a necessary component of ERAS pathways."
- 83% agreed with the statement: "I believe the ERAS dashboard will be utilized by multiple ERAS pathways."
- 67% agreed with the statement: "I believe the ERAS dashboard will be utilized by multiple UNC affiliate hospitals."
- Constructive criticism on the dashboard revealed that clinicians would like to see more individualization of metrics specific to their own pathway and would like the dashboard to be more easily accessed for review.

The reporting structure described has begun at UNC Hospitals and will be shared with other network hospitals as a collaborative effort to standardize, scale, and sustain ERAS pathways throughout the UNC Health Care system.

REFERENCES

Elias KM, Stone AB, McGinagle K, et al. The Reporting on ERAS Compliance, Outcomes, and Elements Research (RECOVER) Checklist: A Joint Statement by the ERAS[®] and ERAS[®] USA Societies. *World J Surg.* 2018;43(1):1-8.

Sample Dashboard: Individual Data

Notes	Metric	Metric Description	Target Completion %	Sep '19 Completion %	Metric N Value	Blanks	Excluded	Sep '18 - Aug '19 Completion %
5 Day Exclusion Criteria Used	Foley	% of All Pts w Foley D/Ced within 24hrs	80%	84.6%	26	3	0	94.0%
		For Pts with Post-op Foley Doc, % of Pts w Foley D/Ced within 24hours (Avg Hrs)	80%	82.6% (23.2)	23			93.1% (18.0)
	NG Tube	% of All Pts w NG D/Ced w/in 24hrs	80%	100.0%	26	26	0	100.0%
		For Pts with Post-op NG Doc, % of Pts w NG D/Ced w/in 24hr (Avg Hrs)	80%		0			
	JP	% of All Pts w/out JP >24hours	80%	100.0%	26	26	0	98.9%
		For Pts with Post-op JP, % of Pts w/out JP >24hrs (Avg Hrs)	80%		0			0% (72.4)
10 Day Exclusion Criteria Used	Extubation	% of All Pts without ETT by Anesthesia End	100%	100.0%	26	0	0	99.7%
		For Pts with Post-op ETT, % of All Pts without ETT by Anesthesia End (Average Hrs)	100%	100.0% (-0.2)	26			99.7% (-0.2)
Patients may serve as multiple "Ns"	Ambulation	% of Pts that met POD 1 Goal: 1 (Avg Ambulation Count)	80%	80.8% (1.6)	26			64.4% (1.2)
		% of Pts that met POD 2 Goal: 2 (Avg Ambulation Count)	80%	55.6% (1.8)	9			48.1% (1.8)
		% of Pts that met POD 3 Goal: 3 (Avg Ambulation Count)	80%	33.3% (1.2)	6			25.0% (1.7)
	ICU	% of All Pts who went directly to non-ICU unit	98%	100.0%	23	3		98.9%
		For Pts who went directly to an ICU, Average Hrs in ICU	NA		0	3	23	48
		% of pts that spent time in ICU who did not go directly to ICU	NA	0.0%	23	3	0	0.6%
No Time Limit Exclusion Criteria Used	PO Solid	% of Pts who had first solid <24 hours*	80%	84.6%	26	12		88.6%
		Average of % of first meal eaten	NA	69.6%	14			78.4%
	PO Liquid	% of Pts who had first liquid <24 hours*	80%	96.2%	26	4		91.2%
		Average of First Liquid (ml)	NA	120 ml	22			153 ml
	Non-NPO Order	% of Pts with non-NPO order by 4hrs after anesthesia end	80%	100.0%	26	0		92.7%