

Optimizing the Surgical Journey

New Directions in ERAS and Implementation

Pedro T. Ramirez, MD

ERAS in Gynecologic Surgery
2026 Updates

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MOQC
MICHIGAN ONCOLOGY QUALITY CONSORTIUM

FALL 2026 GYNECOLOGIC ONCOLOGY BIANNUAL MEETING



HOUSTON Methodist
LEADING MEDICINE

Objectives



PRINCIPLE OF ENHANCED RECOVERY AFTER SURGERY (ERAS)



KEY ELEMENTS OF ERAS



PROGRAM IMPLEMENTATION



IMPORTANCE OF COMPLIANCE



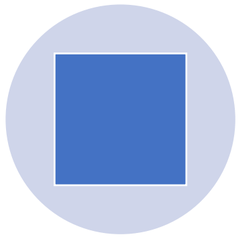
IMPACT ON PATIENT CARE



ROLE IN MINIMALLY INVASIVE SURGERY



COST OUTCOMES



2026 GUIDELINES UPDATE

August 19, 1899.

Jour. A. M. A.

SOME RADICAL CHANGES IN THE AFTER-TREATMENT OF CELIOTOMY CASES.*

BY EMIL RIES, M.D.

PROFESSOR OF GYNECOLOGY, POST-GRADUATE MEDICAL SCHOOL, CHICAGO.



Hospital Number

THE JOURNAL

OF THE

American Medical Association

VOLUME 94, No. 13 — 535 North Dearborn Street, CHICAGO, ILL. — MARCH 26, 1930

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A truly great work

GRAHAM'S NEW "SURGICAL DIAGNOSIS"

NOT only new in publication date—*it is just ready*—but new and fresh and modern in its content, in the practical everyday help it offers the medical profession. It is the finest work on the subject in many years.

43 great authorities have written this work for you, under the author-editorship of Dr. Evarts A. Graham. Every disease is presented by that one authority who, in the judgment of Dr. Graham, is eminently fitted to give real help and guidance to others.

Graham's "Surgical Diagnosis" is *diagnosis in detail*. By a painstaking discussion of differential diagnosis confusing signs and symptoms are explained and the many varieties of clinical presentations of a disease are set out in sharp outline. Indeed, this clinical view is immediately perceived upon opening the book and springs most naturally from the full practical experience of the authors. Bedside and laboratory methods are described, the guiding idea throughout being to help you make your diagnoses more accurate, less presumptive.

Three octavo volumes, totaling 2750 pages, with 1351 illustrations and a separate Desk Index Volume. By 43 American Authors. Edited by Evarts A. Graham, M.D., Head Professor of Surgery, Washington University, St. Louis. For sale by all dealers.

SEE PAGES 3, 4 AND 5 FOR OTHER SAUNDERS BOOKS OF INTEREST TO HOSPITAL STAFFS AND SCHOOLS OF NURSING

“FAST TRACK” Surgery



Clinical Trial > Lancet. 1995 Mar 25;345(8952):763-4. doi: 10.1016/s0140-6736(95)90643-6.

Recovery after laparoscopic colonic surgery with epidural analgesia, and early oral nutrition and mobilisation

L Bardram [1], P Funch-Jensen, P Jensen, M E Crawford, H Kehlet

2000's

Group of European surgeons start to question evidence behind historical practices such as "NPO after midnight"

- *Non-profit Multi-professional Multi-disciplinary Medical Society*
- **Mission statement: Enhancing Recovery After/Around Surgery**
- Mission of the Society-**develop** perioperative care and **improve** recovery through:
  - **education,**
  - **research,**
  - **audit and**
  - **implementation of evidence-based practice**



Prof Olle Ljungqvist

The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG COMMITTEE OPINION

Number 750

Committee on Gynecologic Practice

This document is endorsed by the American Urogynecologic Society. This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice in collaboration with committee member Amanda N. Kallen, MD.

Perioperative Pathways: Enhanced Recovery After Surgery

VOL. 132, NO. 3, SEPTEMBER 2018 OBSTETRICS & GYNECOLOGY

The use of ERAS pathways should be strongly encouraged within institutions.

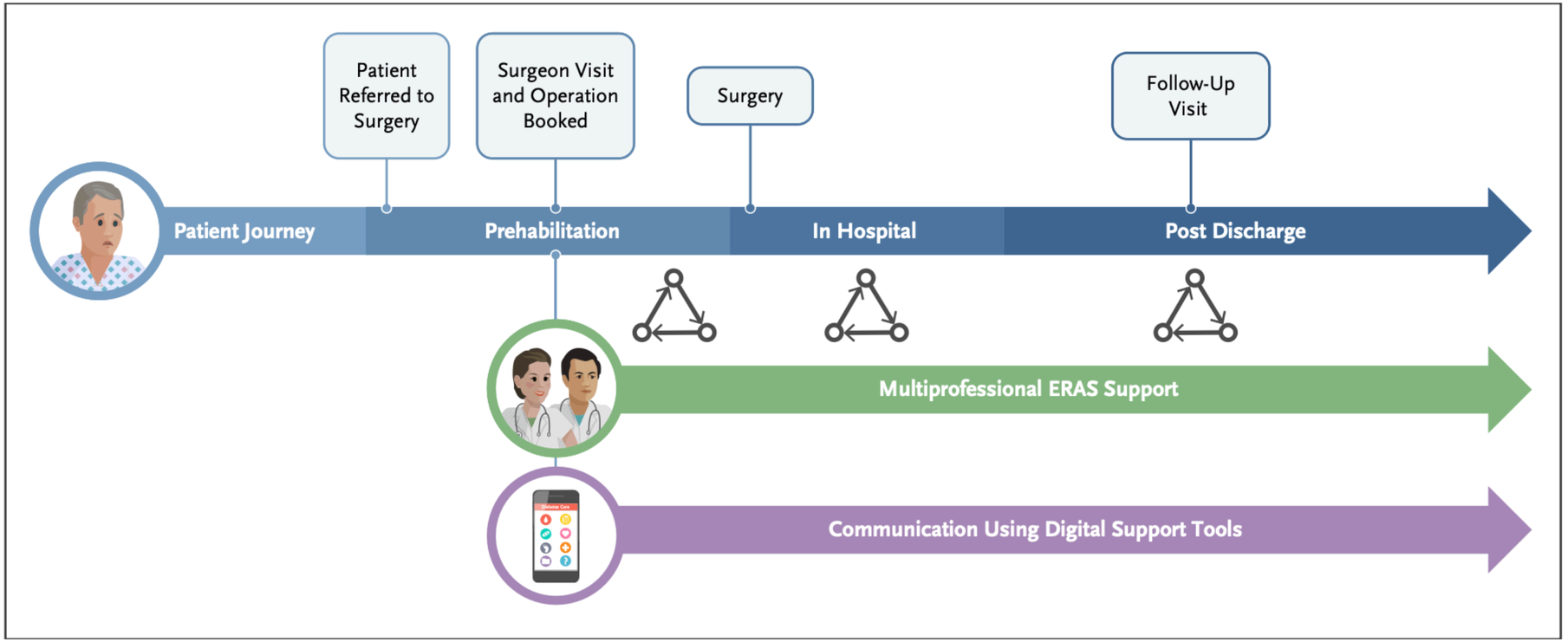
NEJM Evidence

Published February 25, 2025
NEJM Evid 2025;4(3)
DOI: 10.1056/EVIDra2400012

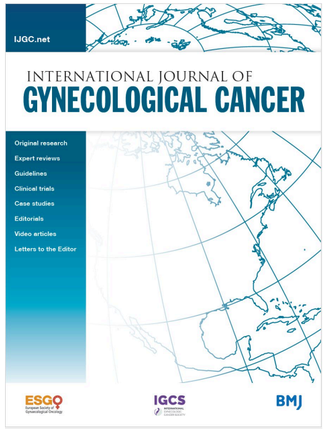
REVIEW ARTICLE

Enhanced Recovery After Surgery — Evidence and Practice

Kevin M. Elias, M.D.,[1] Mary E. Brindle, M.D., M.P.H.,[2,3] and Gregg Nelson, M.D., Ph.D.[2,4]



INTERNATIONAL JOURNAL OF
GYNECOLOGICAL CANCER



Guidelines for perioperative care in gynecologic/oncology: Enhanced Recovery After Surgery (ERAS) Society recommendations—2019 update



Gregg Nelson,[1] Jamie Bakkum-Gamez,[2] Eleftheria Kalogera,[3] Gretchen Glaser,[4] Alon Altman,[5] Larissa A Meyer,[6] Jolyn S Taylor,[7] Maria Iniesta,[6] Javier Lasala,[8] Gabriel Mena,[8] Michael Scott,[9] Chelsia Gillis,[10] Kevin Elias,[11] Lena Wijk,[12] Jeffrey Huang,[13] Jonas Nygren,[14] Olle Ljungqvist,[15] Pedro T Ramirez,[16] Sean C Dowdy[17]

Citations 934

Previous Practice vs. ERAS

Pre-op	Previous Practice	ERAS-GYN
Diet	NPO @ MN until surgery	Nutritional counseling No solids after midnight Clear liquids- 2 hours prior to surgery Carbohydrate Loading
Bowel preps	Physician discretion	None Mechanical Neomycin PO* Metronidazole PO*
Pre-meds	Anesthesia discretion	Tramadol (Ultram) Pregabalin (Lyrica) Celecoxib (Celebrex) Heparin SQ
IVF therapy	Fluids after IV placed	Saline lock IV

Previous Practice vs. ERAS

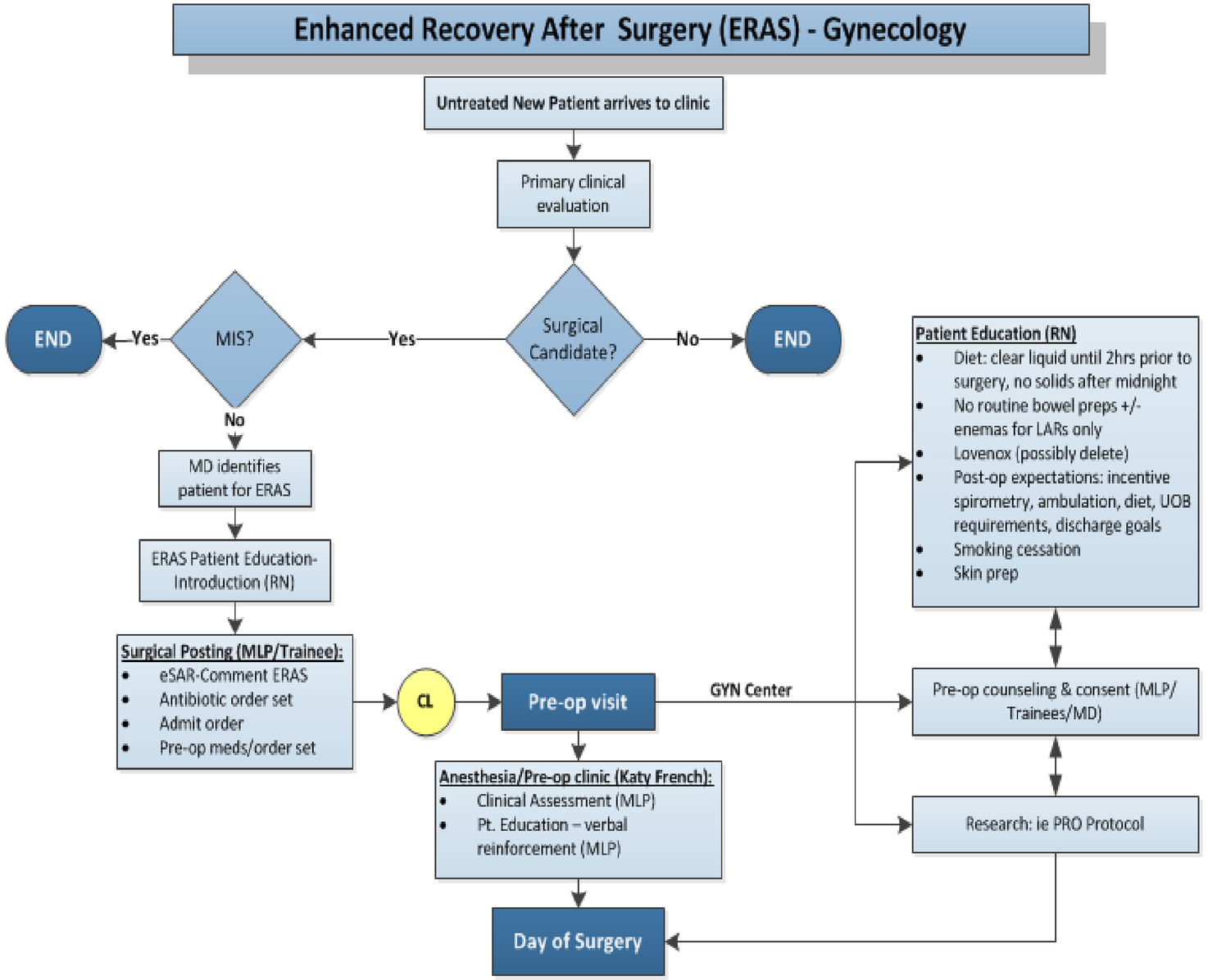
Intra-op	Previous Practice	ERAS-GYN
Antibiotics	Prophylaxis per ACOG guidelines	Cefazolin 3 gm IV Metronidazole 500 mg
Anesthesia	Anesthesia discretion	TIVA** Epidural Local wound infiltration (Bupivacaine)
IVF therapy	Anesthesia discretion	Goal-directed (non-invasive cardiac monitoring)
NGT/drain placement	Surgeon discretion	None
Foley catheter	Physician discretion	Remove POD1

**Total Intravenous Anesthesia

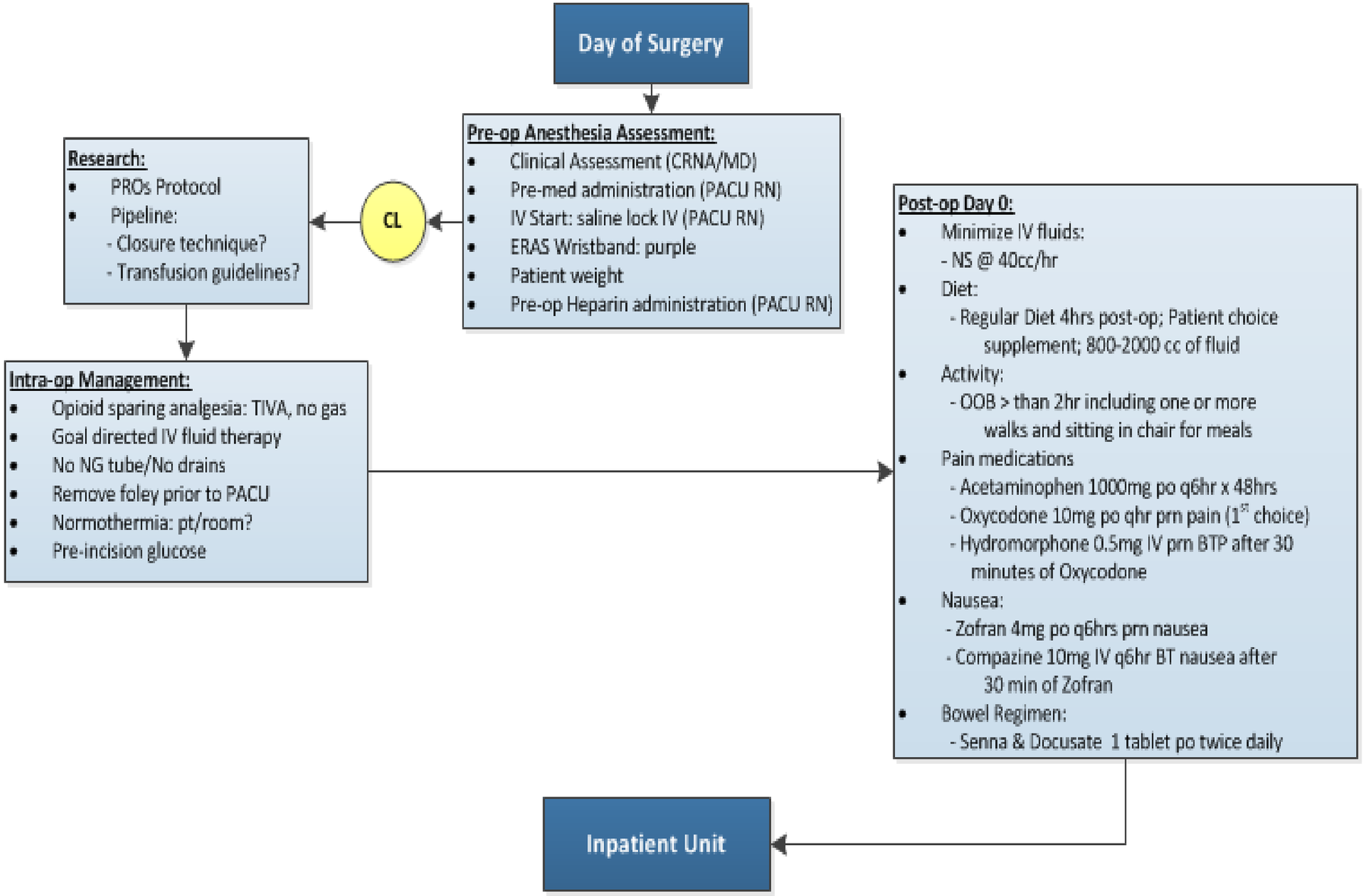
Previous Practice vs. ERAS

Post-op	Previous Practice	ERAS-GYN
IVF therapy	IVFs 100cc/h KVO when tolerating oral	IVFs 40cc/h Saline lock when tolerating 500cc oral
Analgesia	PCA vs. Epidural	Acetaminophen Ibuprofen Pregabalin Oxycodone Hydromorphone IV
Diet	Gradual advancement @ physician discretion	Dietitian Counseling Regular diet POD 0 Oral hydration
Ambulation	Patient & physician discretion	Ambulate 8x/day All meals in chairs Out of bed 8h/daily
Transfusions	Physician discretion	Restrictive Transfuse for Hb $\leq$ 7

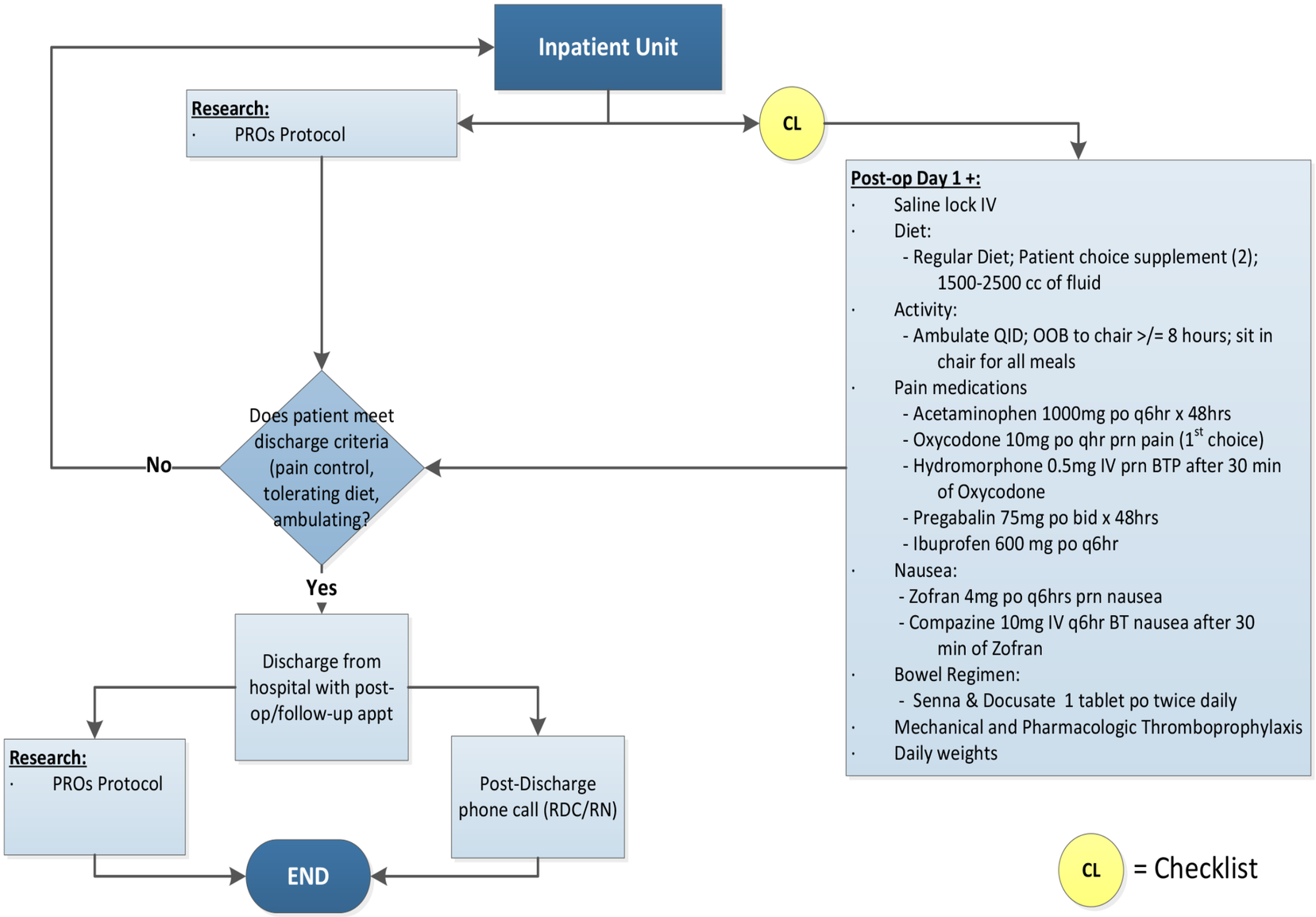
ERAS-GYN Process Map



ERAS-GYN Process Map



ERAS-GYN Process Map



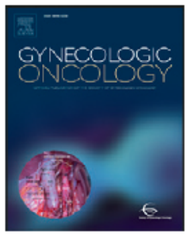
Key Steps for ERAS Implementation

How to Implement an ERAS Protocol

Contents lists available at ScienceDirect

Gynecologic Oncology

journal homepage: www.elsevier.com/locate/ygyno



Enhanced recovery after surgery (ERAS®) in gynecologic oncology – Practical considerations for program development

G. Nelson [a,*], S.C. Dowdy [b], J. Lasala [c], G. Mena [c], J. Bakkum-Gamez [b], L.A. Meyer [d], M.D. Iniesta [d], P.T. Ramirez [d]

"We read the Guidelines, what do we do now?"

Formation of the ERAS Clinical Team



Key Team Members:

Gynecologic Oncologist
Anesthesiologist
Nurse
Dietitian
Pharmacist
Physiotherapist
Perioperative Educators

<u>Choose people who are passionate about quality improvement</u>



Putting it all together

"The ERAS Way"



ERAS team **<u>meets regularly</u>** to review protocol compliance and clinical outcomes

Low compliance → High compliance

What do you do with audit data?
(how to achieve change?)

Introduction of ERAS Protocol



Physicians met with the nurses on several occasions to **discuss goals and benefits** of Enhanced Recovery, as well as, how it affects nursing practice



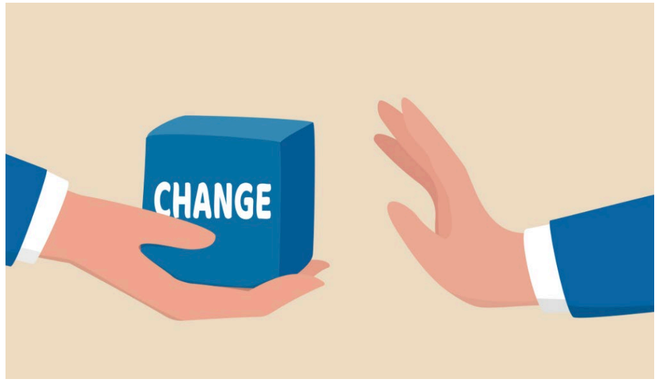
Collaboration with multidisciplinary staff allowed questions from every stakeholder to be addressed



A process chart was developed to assist nurses with **understanding what should take place each day**

Inpatient Nursing Role

- Every nurse receive **education** regarding the protocol
- Nurses provide **updates** on the patient's pain, mobility, nutrition and voiding
- Encourage patients to **meet their milestones** for discharge readiness
- Provide **education** on a daily basis in preparation for a successful **discharge**
- **Advocating** for patients by discussing pros and cons of protocol
- Ensured nursing care across the continuum between outpatient and inpatient services



Concerns Regarding:

- Effective pain management
- Promote early ambulation
- Advanced diet so quickly after surgery
- Anticipated discharge day criteria
- Compliance issues with staff with following the guidelines

Nursing Checklist

Admission-POD#0	☐ Placement of the laminated Educational Overview form on the patient's chart ☐ Review your orders with patient; update boards ☐ Out of bed for 2hours; 1 or more walks ☐ Regular diet 4 hours post procedure; boost, ensure clear and Glucerna (diabetic) BID ☐ Incentive spirometer for use; 10 breaths/hour while awake ☐ Strict intake and output ☐ Prepare for discharge
Post-Op 1	☐ Review orders and educational overview; update boards ☐ Discontinue urinary catheter at 0600 ☐ Saline lock IV if drinking >500ml ☐ Boost, ensure clear and Glucerna (diabetic) BID ☐ Incentive spirometer; 10 breaths/hour while awake ☐ Daily Weights & record Strict intake and output ☐ Out of bed 8 hr/day/all meals, ambulating ☐ Prepare for discharge
Post-Op 2-5	☐ Review orders and educational overview; update boards ☐ Daily Weights & record Strict intake and output ☐ Incentive spirometer;10 breaths/hour while awake ☐ Boost, ensure clear and Glucerna (diabetic)BID ☐ Out of bed 8hr/day/all meals, ambulating ☐ Prepare for discharge

POD:___

TODAY'S DATE: __/___/___

DISCHARGE READINESS

PATIENT NAME: _____

Place Patients Sticker Here

Instructions: Please compete the questions with the ESRP patients. Questions will be pertaining to the milestone patients achieved from the day before. Example: If today is Saturday then, the questions will refer to Friday.

Milestones		
Did the patient ambulate 4 times yesterday ?	YES	NO
Did the patient eat all meals sitting up in a chair yesterday ?	YES	NO
Did the patient tolerate 3 regular meals yesterday ?	YES	NO
Did the patient void independently yesterday ?	YES	NO
Was the patient's pain controlled with oral medication yesterday ?	YES	NO

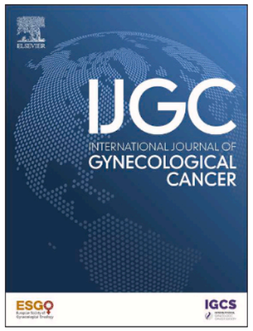
Notes:

Signature of interviewer: _____

REVIEW

Enhanced recovery in gynecologic surgery: institutional challenges and implementation framework





Paula Mateo-Kubach[a,b,*], M Clara Santía[a,c], Tommaso Meschini[d], Heng-Cheng Hsu[a,e], Kyrstin Christensen[f], Jessica Floyd[a], Emily Rutledge[f], Pedro T. Ramírez[a]

Received 20 October 2025, Accepted 23 November 2025; Available online 1 December 2025

Houston Methodist OB/GYN ERAS Database

2024 (5)						
ERAS GynOnc MIS (Nov 2023- Dec 2024)	784	306	585	9 forms	■	☑
ERAS UroGyn MIS (Jan 2024- Dec 2024)	789	262	433	8 forms	■	☑
ERAS GynOnc Open (Nov 2023- Dec 2024)	793	133	611	10 forms	■	☑
ERAS GeneralGyn MIS (Jun 2024- Dec 2024)	910	207	510	6 forms	■	☑
ERAS GeneralGyn Open (Jun 2024- Dec 2024)	911	33	552	7 forms	■	☑
GynOnc (2)						
ERAS GynOnc MIS- 2025	1016	598	598	9 forms	■	☑
ERAS GynOnc Open-2025	1017	219	627	10 forms	■	☑
BenignGyn (2)						
ERAS Gyn MIS-2025	1019	503	498	6 forms	■	☑
ERAS Gyn Open- 2025	1020	57	551	7 forms	■	☑
OB (1)						
ERAS OB (2025)	895	290	422	6 forms	■	☑
UroGyn (2)						
ERAS UroGyn MIS-2025	1018	271	438	8 forms	■	☑

Nov 2023 – Dec 2025
Total: 941 patients

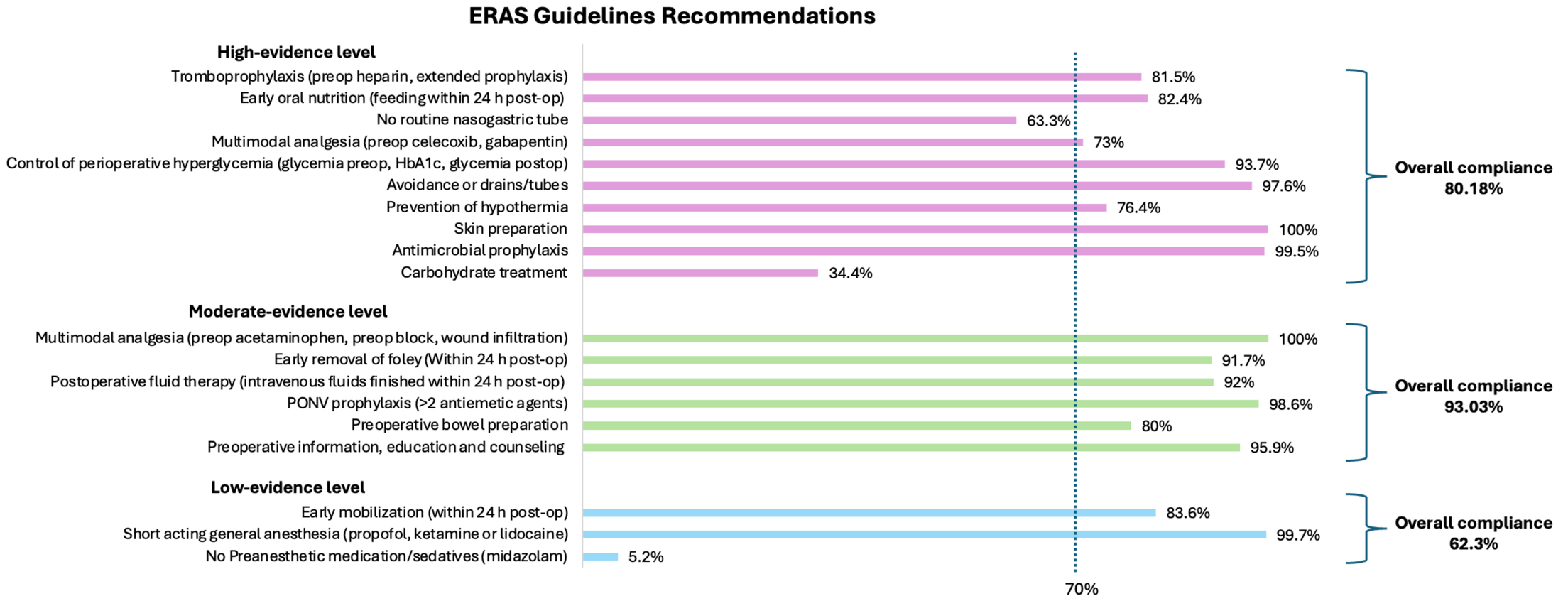
Jan 2025 – Oct 2026
GynOnc + Benign Gyn + UroGyn
= **1648 patients**

OB C-sections = **290 patients**

Total of patients: 2879

HOUSTON Methodist LEADING MEDICINE

ERAS Compliance
Houston Methodist Hospital OBGYN



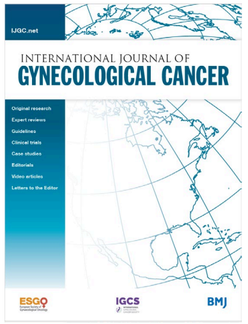
INTERNATIONAL JOURNAL OF GYNECOLOGICAL CANCER

Impact of compliance with an enhanced recovery after surgery pathway on patient outcomes in open gynecologic surgery

Maria D Iniesta,[1] Javier Lasala,[2] Gabriel Mena,[2] Andrea Rodriguez-Restrepo,[3] Gloria Salvo ,[1] Brandelyn Pitcher,[4] Lakisha D Washington,[1] Melinda Harris,[1] Larissa A Meyer ,[1] Pedro T Ramirez[1]

HIGHLIGHTS

- This investigation was performed to further characterize the impact of compliance with ERAS elements on postoperative outcomes in patients undergoing open gynecologic surgery.
- This study also characterizes how all the ERAS elements were implemented over time.
- Compliance levels exceeding 80% were associated with significantly less complications ($p<0.001$) and shorter length of stay ($p<0.001$). Reoperation and readmission rates were not impacted by compliance.

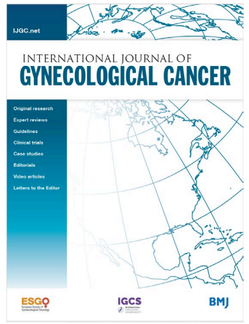


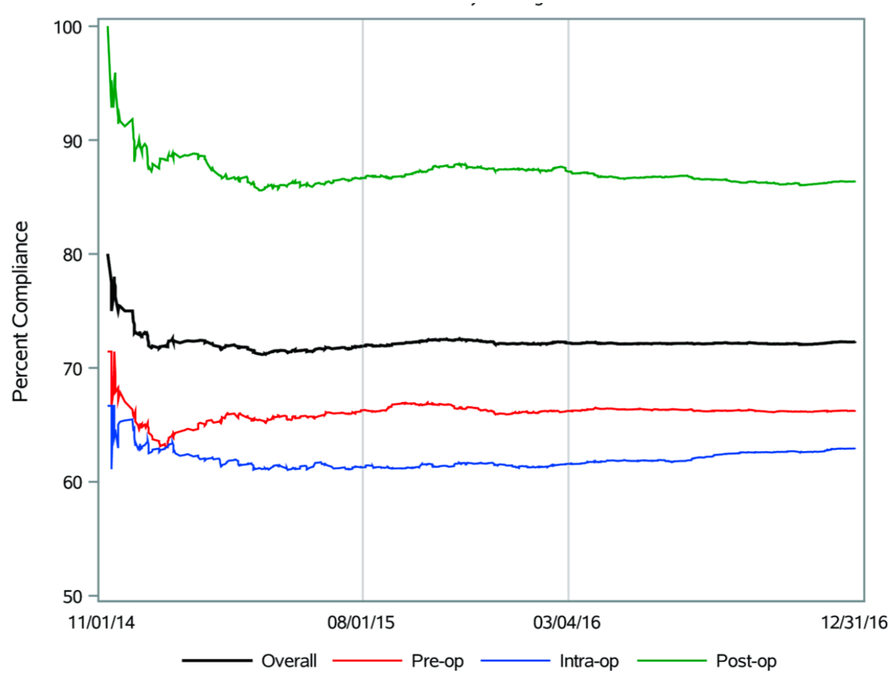
Original Article

INTERNATIONAL JOURNAL OF GYNECOLOGICAL CANCER

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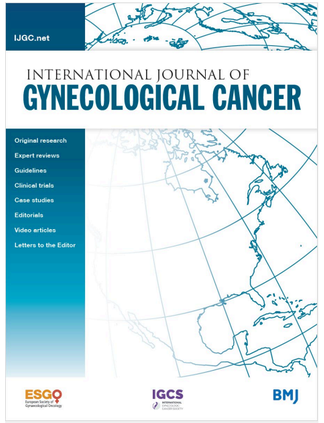


I Cumulative compliance with the enhanced recovery after surgery (ERAS) pathway in subsequent patients.

Table 4 Association of having a post-operative complication within 30 day and compliance with each enhanced recovery after surgery (ERAS) component

ERAS component	OR	95% CI	P value
Pre-operative counseling	1.12	0.81 to 1.56	0.557
Pre-operative optimization	1.18	0.26 to 5.29	0.999
No prolonged fasting	---	---	0.468
No bowel preparation	---	---	0.468
Pre-operative antibiotics	0.76	0.12 to 4.57	0.999
Pre-operative heparin	0.99	0.48 to 2.08	0.999
No pre-operative midazolam	1.15	0.79 to 1.66	0.511
Short acting anesthetics	1.04	0.73 to 1.47	0.858
Surgical approach	---	---	---
No drainage	0.64	0.39 to 1.03	0.075
Goal directed therapy	1.10	0.79 to 1.53	0.609
Maintenance of normothermia	---	---	0.999
Peri-operative PONV prophylaxis	0.38	0.04 to 3.65	0.627
No routine nasogastric tube	0.28	0.03 to 2.54	0.378
Post-operative glucose control	1.14	0.16 to 8.15	0.999
Avoid salt–water overload	0.41	0.28 to 0.59	<0.001
Multimodal analgesia	0.42	0.11 to 1.60	0.233
Early mobilization	0.33	0.19 to 0.59	<0.001
Early oral nutrition	0.37	0.26 to 0.53	<0.001
Early removal of Foley	0.36	0.21 to 0.60	<0.001

PONV, Postoperative nausea and vomiting.





Gynecologic Oncology 161 (2021) 46–55

Contents lists available at ScienceDirect

Gynecologic Oncology

journal homepage: www.elsevier.com/locate/ygyno

Review Article

Outcomes of enhanced recovery after surgery (ERAS) in gynecologic oncology – A systematic review and meta-analysis.

S.P. Bisch [a,*], C.A. Jago [b], E. Kalogera [c], H. Ganshorn [d], L.A. Meyer [e], P.T. Ramirez [e], S.C. Dowdy [c], G. Nelson [a]

[a] Division of Gynecologic Oncology, Tom Baker Cancer Centre, Calgary, Alberta, Canada
[b] Department of Obstetrics, Gynecology, and Newborn Care, The Ottawa Hospital, Ottawa, Ontario, Canada
[c] Division of Gynecologic Oncology, Mayo Clinic College of Medicine, Rochester, MN, USA
[d] Libraries and Cultural Resources, University of Calgary, Calgary, Alberta, Canada
[e] Department of Gynecologic Oncology and Reproductive Medicine, The University of Texas MD Anderson Cancer Center, Houston, TX, USA

N=6,703

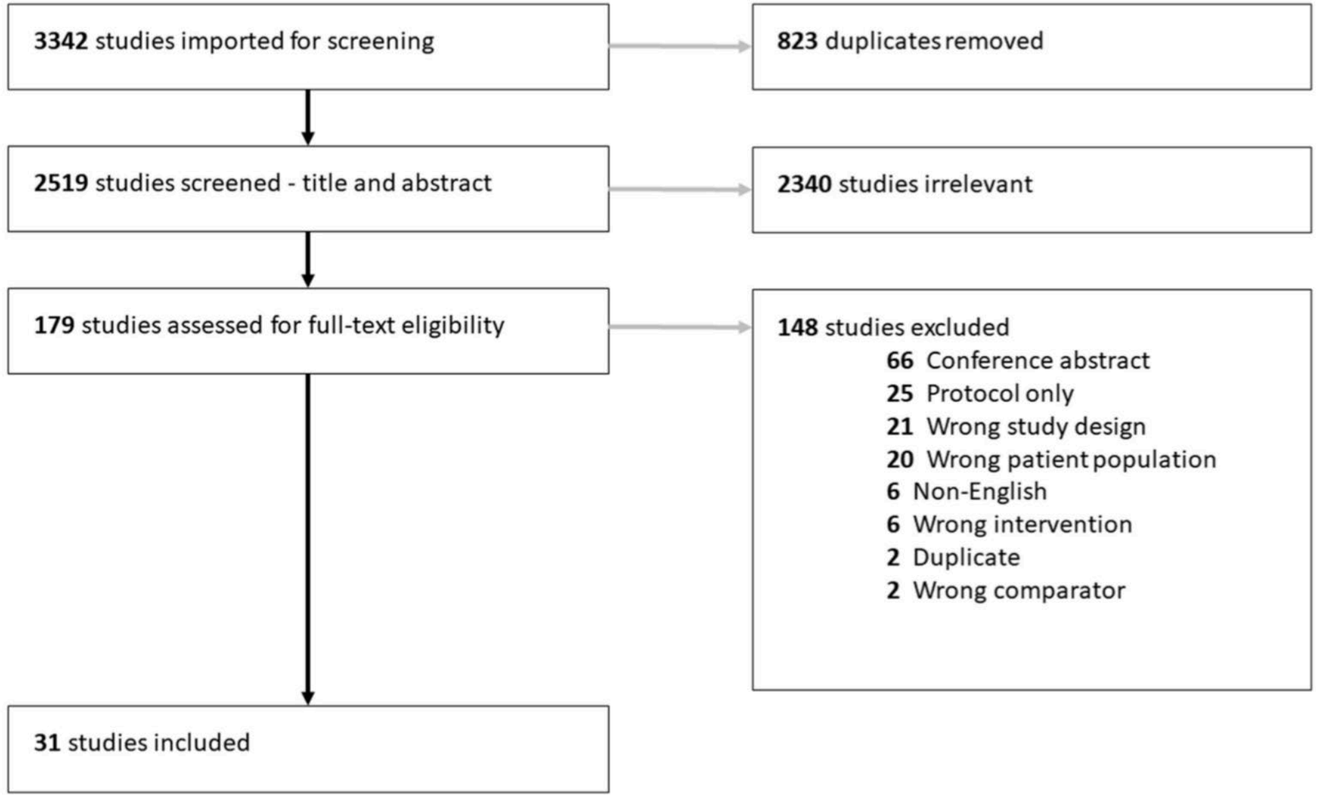


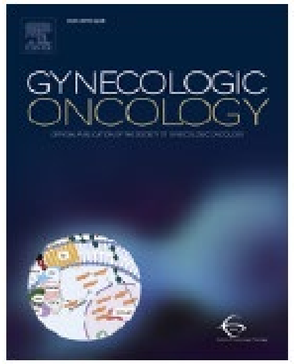
Fig. 1. PRISMA flow diagram.

Review Article

Outcomes of enhanced recovery after surgery (ERAS) in gynecologic oncology – A systematic review and meta-analysis.

S.P. Bisch [a,*], C.A. Jago [b], E. Kalogera [c], H. Ganshorn [d], L.A. Meyer [e], P.T. Ramirez [e], S.C. Dowdy [c], G. Nelson [a]

- Meta analysis of 31 studies (6703 patients): 5 RCTs, 26 cohort studies
- Decrease in LOS of 1.6 days
- 32% reduction in complications
- 20% reduction in readmission
- No difference in 30-day postoperative mortality
- Mean cost savings for ERAS patients was $2,129 USD



2021

UNIVERSITY OF CALGARY

MD Anderson Cancer Center

MAYO CLINIC

Gynecologic Surgery: *Original Research*

Effect of an Enhanced Recovery After Surgery Program on Opioid Use and Patient-Reported Outcomes

Larissa A. Meyer, MD, MPH, Javier Lasala, MD, Maria D. Iniesta, MD, PhD, Alpa M. Nick, MD, Mark F. Munsell, MS, Qiuling Shi, PhD, Xin Shelley Wang, MD, Katherine E. Cain, PharmD, Karen H. Lu, MD, and Pedro T. Ramirez, MD

(Obstet Gynecol 2018;0:1–10)





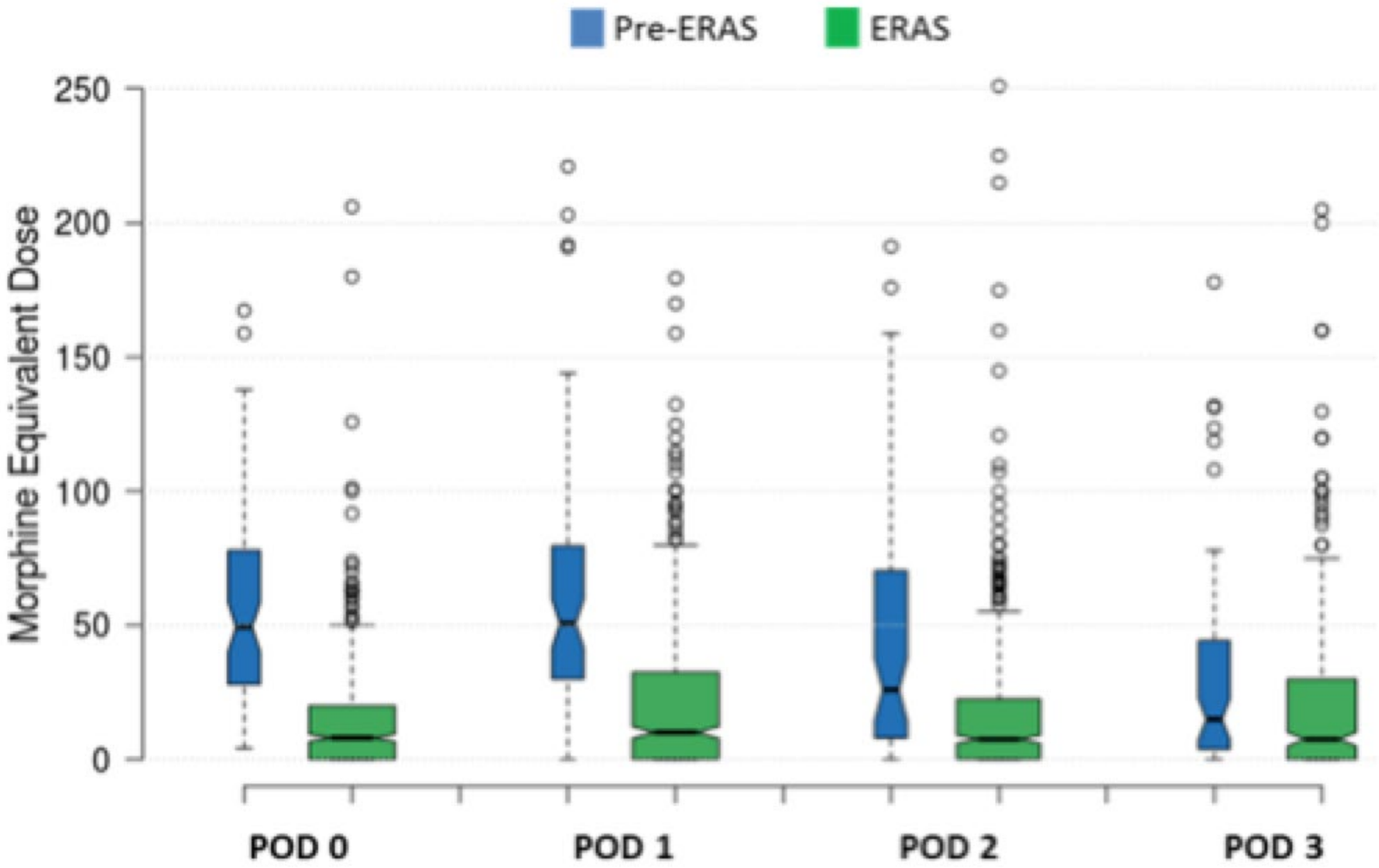
Gynecologic Surgery: *Original Research*

Effect of an Enhanced Recovery After Surgery Program on Opioid Use and Patient-Reported Outcomes

Larissa A. Meyer, MD, MPH, Javier Lasala, MD, Maria D. Iniesta, MD, PhD, Alpa M. Nick, MD, Mark F. Munsell, MS, Qiuling Shi, PhD, Xin Shelley Wang, MD, Katherine E. Cain, PharmD, Karen H. Lu, MD, and Pedro T. Ramirez, MD

Postoperative Opioid Use

	Pre-ERAS Median (range)	ERAS Median (range)	% Reduction	P-value
POD0	49.3 (4-637.5)	10 (0-362.3)	79.7%	**<0.001**
POD1	51.2 (2.5-843.0)	7.5 (0-529.1)	85.4%	**<0.001**
POD2	36.5 (1-752.6)	7.5 (0-250.9)	79.5%	**<0.001**
POD3	26.3 (3.8-481.0)	7.5 (0-209.0)	71.4%	**<0.001**


Pre-ERAS
ERAS
Morphine Equivalent Dose
250
200
150
100
50
0
POD 0
POD 1
POD 2
POD 3

Patient Reported Outcomes (PROs)

Confidential

MDASI-GYN

M. D. Anderson Symptom Inventory (MDASI-GYN) Core Items Part I. How severe are your symptoms?

People with cancer frequently have symptoms that are caused by their disease or by their treatment. We ask you to rate how severe the following symptoms have been in the last 24 hours.

Please select the number below below from 0 (symptom has not been present) to 10 (symptom was as bad as you can imagine it could be) for each item.

	0	1	2	3	4	5	6	7	8	9	10
1. Your pain at its WORST?	○	○	○	○	○	○	○	○	○	○	○
2. Your fatigue (tiredness) at its WORST?	○	○	○	○	○	○	○	○	○	○	○
3. Your nausea at its WORST?	○	○	○	○	○	○	○	○	○	○	○
4. Your disturbed sleep at its WORST?	○	○	○	○	○	○	○	○	○	○	○
5. Your feelings of being distressed (upset) at its WORST?	○	○	○	○	○	○	○	○	○	○	○
6. Your shortness of breath at its WORST?	○	○	○	○	○	○	○	○	○	○	○
7. Your problem with remembering things at its WORST?	○	○	○	○	○	○	○	○	○	○	○
8. Your problem with lack of appetite at its WORST?	○	○	○	○	○	○	○	○	○	○	○
9. Your feeling drowsy (sleepy) at its WORST?	○	○	○	○	○	○	○	○	○	○	○
10. Your having a dry mouth at its WORST?	○	○	○	○	○	○	○	○	○	○	○
11. Your feeling sad at its WORST?	○	○	○	○	○	○	○	○	○	○	○
12. Your vomiting at its WORST?	○	○	○	○	○	○	○	○	○	○	○
13. Your numbness or tingling at its WORST?	○	○	○	○	○	○	○	○	○	○	○
14. Your pain in the abdomen at its WORST?	○	○	○	○	○	○	○	○	○	○	○

15. Your feeling bloated at its WORST?	○	○	○	○	○	○	○	○	○	○	○
16. Your constipation at its WORST?	○	○	○	○	○	○	○	○	○	○	○
17. Your problem with paying attention (concentrating) at its WORST?	○	○	○	○	○	○	○	○	○	○	○
18. Your urinary urgency at its WORST?	○	○	○	○	○	○	○	○	○	○	○
19. Your pain or burning with urination at its WORST?	○	○	○	○	○	○	○	○	○	○	○
20. Your back pain at its WORST?	○	○	○	○	○	○	○	○	○	○	○
21. Your leg cramps or leg muscle pain at their WORST?	○	○	○	○	○	○	○	○	○	○	○
22. Your diarrhea at its WORST?	○	○	○	○	○	○	○	○	○	○	○
23. Your indigestion (heartburn) at its WORST?	○	○	○	○	○	○	○	○	○	○	○

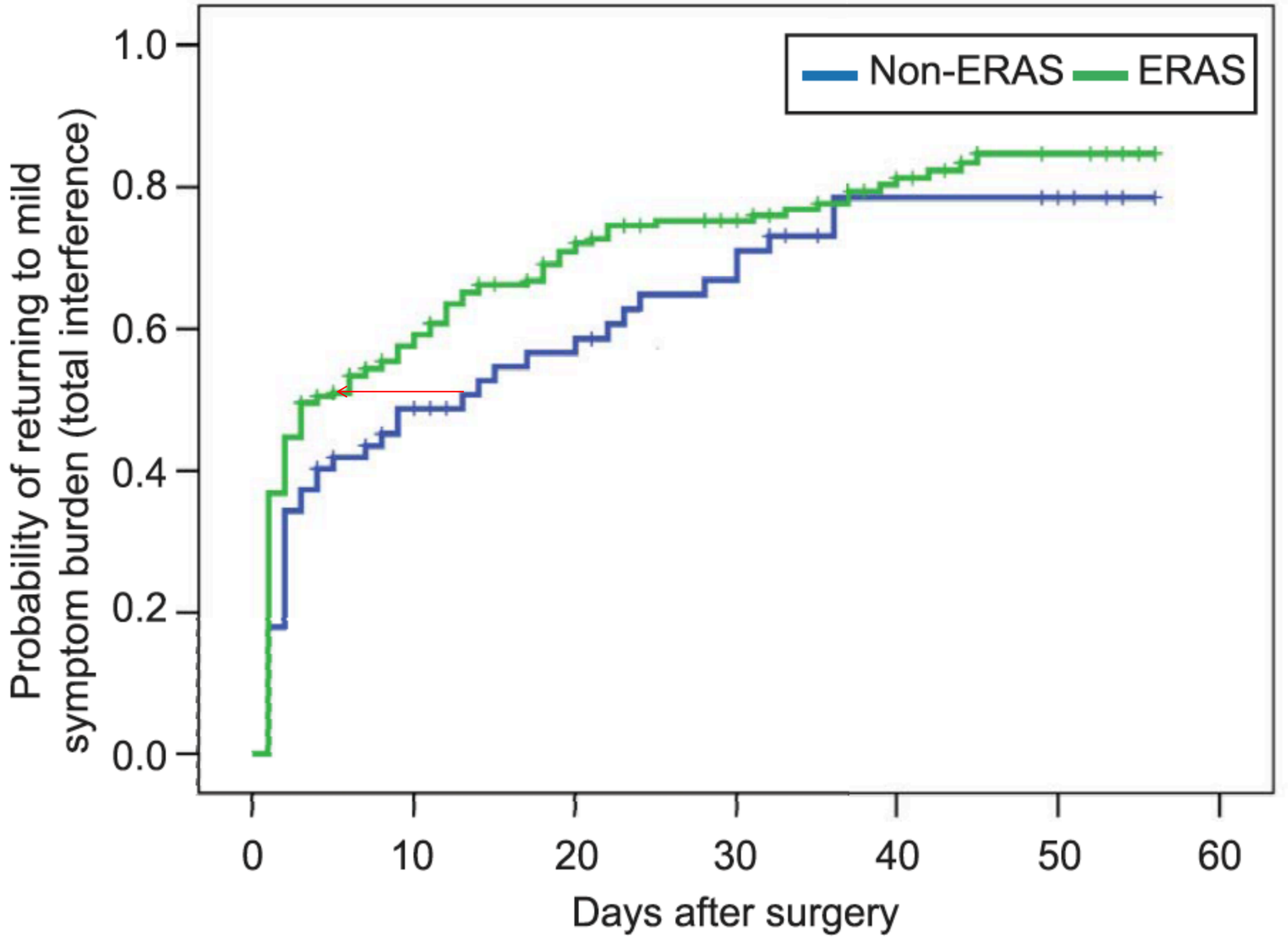
Part II. How have your symptoms interfered with your life?

Symptoms frequently interfere with how we feel and function. How much have your symptoms interfered with the following items in the last 24 hours:

Please select the number below from 0 (did not interfere) to 10 (interfered completely) for each item.

	0	1	2	3	4	5	6	7	8	9	10
24. General activity?	○	○	○	○	○	○	○	○	○	○	○
25. Mood?	○	○	○	○	○	○	○	○	○	○	○
26. Work (including work around the house)?	○	○	○	○	○	○	○	○	○	○	○
27. Relations with other people?	○	○	○	○	○	○	○	○	○	○	○
28. Walking?	○	○	○	○	○	○	○	○	○	○	○
29. Enjoyment of life?	○	○	○	○	○	○	○	○	○	○	○

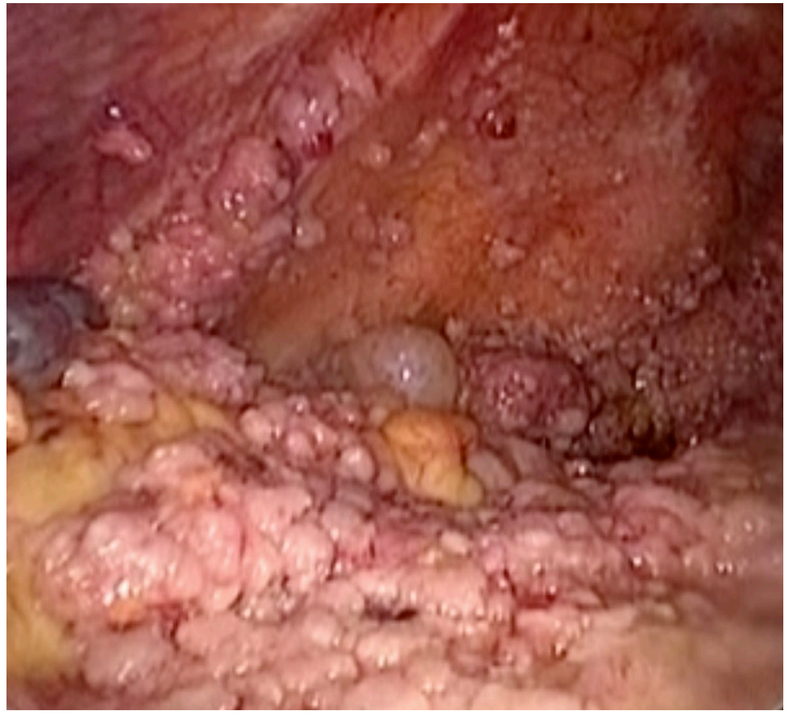
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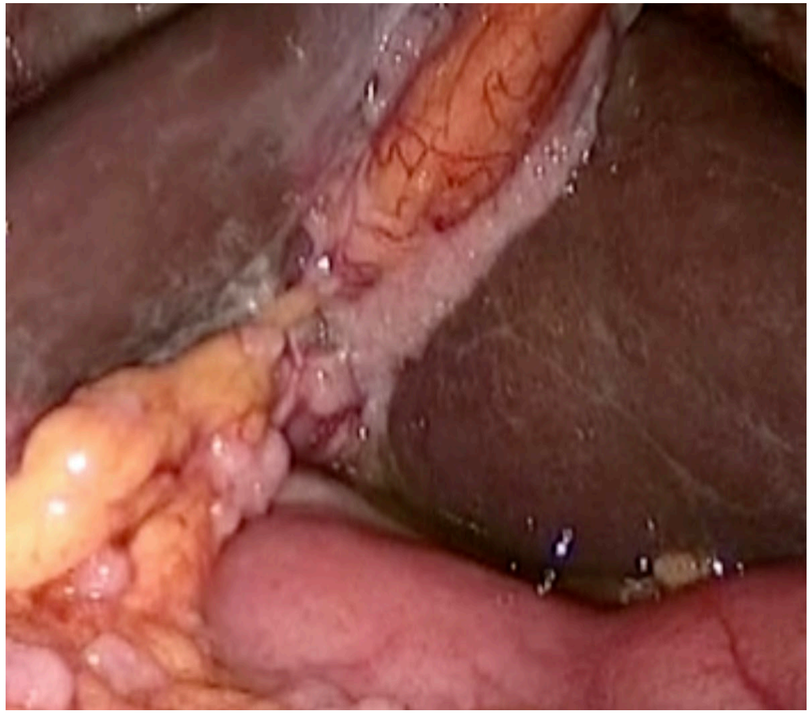


ERAS	226	78	48	33	20	8
Non-ERAS	67	29	22	16	8	6

C

ERAS in Ovarian Cancer







Evidence for ERAS in Ovarian Cancer

Enhanced Recovery in Gynecologic Surgery

OBSTETRICS & GYNECOLOGY

Eleftheria Kalogera, MD, Jamie N. Bakkum-Gamez, MD, Christopher J. Jankowski, MD, Emanuel Trabuco, MD, Jenna K. Lovely, DrPH, Sarah Dhanorker, Pamela L. Grubbs, RN, CNS, Amy L. Weaver, Lindsey R. Haas, Bijan J. Borah, PhD, April A. Bursiek, RN, Michael T. Walsh, MD, William A. Cliby, MD, and Sean C. Dowdy, MD

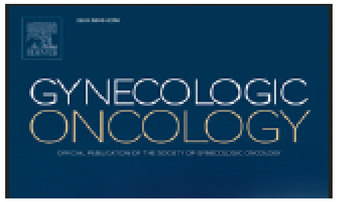
	Complex Cytoreductive Cohorts		
	Enhanced Recovery (n=81)	**Historic Controls (n=78)**	***P***
Postoperative hypotension	49 (60.5)	59 (75.6)	.041
Nasogastric tube insertion	9 (11.1)	13 (16.7)	.31
Urinary catheter reinsertion	14 (17.5)	13 (16.7)	.89
Postoperative day of return of bowel function	3 (2–3)	4 (3–5)	<.001
Postoperative day of general diet	0 (0–1)	5 (3–7)	<.01
Length of stay (d)	6.5±3.5	10.7±11.4	<.001
	5 (4–7)	8 (6–11)	

Comparison of 30-Day Costs Between Enhanced Recovery Cases and Controls

	Enhanced Recovery	**Historic Controls**	***P***
Complex cytoreductive	(n=81)	(n=78)	.006
Mean	$33,106.24	$40,748.57	
Median	$27,129.20	$33,762.51	
Interquartile range	(22,950.24–39,188.39)	(26,845.57–42,257.90)	

Evidence for ERAS in Ovarian Cancer

Enhanced Recovery After Surgery (ERAS) in gynecologic oncology: System-wide implementation and audit leads to improved value and patient outcomes



S.P. Bisch [a,*], T. Wells [b], L. Gramlich [c], P. Faris [d], X. Wang [d], D.T. Tran [e], N.X. Thanh [e], S. Glaze [a], P. Chu [a], P. Ghatage [a], J. Nation [a], V. Capstick [b], H. Steed [b], J. Sabourin [b], G. Nelson [a]

Outcome	Pre-ERAS (n = 152)	Post-ERAS (n = 367)	p Value[c]
Acute length of stay			
All surgery			<0.0001
Median (IQR)	4.0 (2.0–6.0)	3.0 (2.0–4.0)	
Mean (SD)	5.5 (5.9)	3.7 (3.8)	
Low complexity surgery			0.0002
Median (IQR)	3.0 (2.0–5.0)	2.0 (2.0–3.0)	
High complexity surgery			0.0005
Median (IQR)	5.0 (4.0–8.0)	3.0 (3.0–5.0)	

Archives of Gynecology and Obstetrics (2022) 306:199–207
https://doi.org/10.1007/s00404-021-06339-6

GYNECOLOGIC ONCOLOGY

The impact of Enhanced Recovery after Surgery (ERAS) pathways with regard to perioperative outcome in patients with ovarian cancer

Susanne Reuter[1] · Linn Woelber[1] · Constantin C. Trepte[2] · Daniel Perez[3] · Antonia Zapf[4] · Sinan Cevirme[4] · Volkmar Mueller[1] · Barbara Schmalfeldt[1] · Anna Jaeger[1]

Received: 10 August 2021 / Accepted: 15 November 2021 / Published online: 27 December 2021
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cancers

MDPI

Systematic Review

Enhanced Recovery after Surgery (ERAS) Program for Patients with Peritoneal Surface Malignancies Undergoing Cytoreductive Surgery with or without HIPEC: A Systematic Review and a Meta-Analysis

Manuela Robella [1,*], Marco Tonello [2], Paola Berchialla [3], Veronica Sciannameo [3], Alba Maria Ilari Civit [1], Antonio Sommariva [2], Cinzia Sassaroli [4], Andrea Di Giorgio [5], Roberta Gelmini [6], Valentina Ghirardi [7], Franco Roviello [8], Fabio Carboni [9], Piero Vincenzo Lippolis [10], Shigeki Kusamura [11] and Marco Vaira [1]

ERAS and Prehabilitation in Ovarian Cancer

Clinical trial



A multimodal prehabilitation program for the reduction of post-operative complications after surgery in advanced ovarian cancer under an ERAS pathway: a randomized multicenter trial (SOPHIE)

Berta Díaz-Feijoo ,[1,2,3] Nuria Agusti ,[1,3] Raquel Sebio,[1,4] Marina Sisó,[1,5] Núria Carreras-Dieguez,[1,3] Santiago Domingo ,[6] Oscar Díaz-Cambronero,[7] Aureli Torne ,[1,2,3] Graciela Martinez-Palli,[1,8] Ma José Arguís[1,8]

Clinical trial



The KORE-INNOVATION trial, a prospective controlled multi-site clinical study to implement and assess the effects of an innovative peri-operative care pathway for patients with ovarian cancer: rationale, methods and trial design

Melisa Guelhan Inci ,[1] Jalid Sehouli ,[1] Eva Schnura,[2] Marlene Lee,[1] Stephanie Roll,[3] Thomas Reinhold,[3] Julia Klews,[4] Lutz Kaufner,[5] Phil Niggemann,[5] Harald Groeben,[6] Julia Toelkes,[6] Anett Reisshauer,[7] Max Liebl,[7] Enrico Daehnert,[4] Manuela Zimmermann,[4,8] Barbora Knappe-Drzikova,[9] Susanne Rolker,[10] Björn Nunier,[11] Engi Algharably,[12] Adak Pirmorady Sehouli,[13] Lena Zwantleitner,[14] Andrea Krull,[15] Florian Heitz,[2] Beyhan Ataseven,[2,16] Radoslav Chekerov,[1] Philipp Harter ,[2] Stephanie Schneider[2]

Review Article

INTERNATIONAL JOURNAL OF GYNECOLOGICAL CANCER

Role and impact of multimodal prehabilitation for gynecologic oncology patients in an Enhanced Recovery After Surgery (ERAS) program

Hospital del Mar | Parc de Salut MAR Barcelona

Ester Miralpeix,[1] Gemma Mancebo,[1] Sonia Gayete,[1] Marta Corcoy,[2] Josep-Maria Solé-Sedeño[1]









Enhanced recovery after surgery protocols improve time to return to intended oncology treatment following interval cytoreductive surgery for advanced gynecologic cancers

Joan Isabelle Tankou ,[1] Olivia Foley,[2,3] Michele Falzone,[2] Rajeshwari Kalyanaraman,[4] Kevin M Elias[2,3,5]

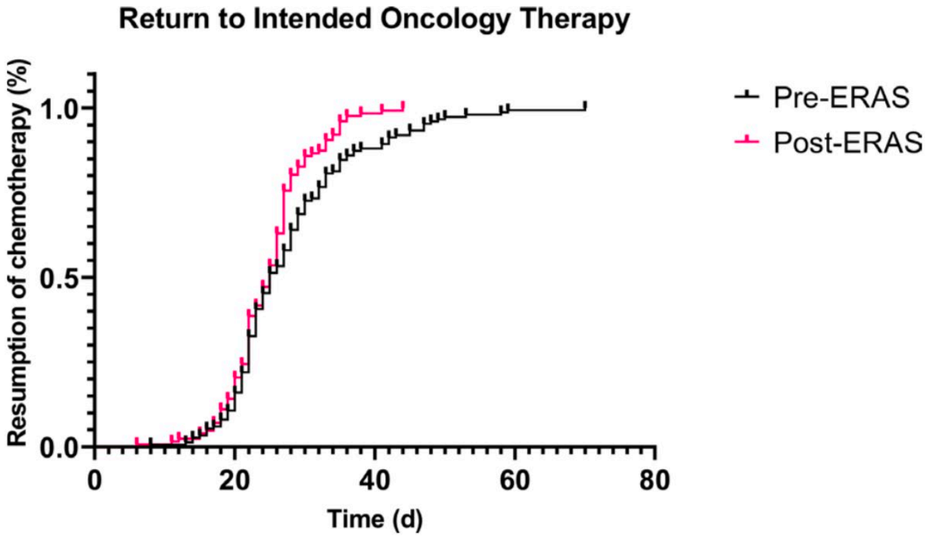


Figure 2 Kaplan–Meir plot of return to intended oncologic therapy at 28 days after surgery. ERAS, enhanced recovery after surgery.

HIGHLIGHTS

- An enhanced recovery after surgery (ERAS) protocol was associated with fewer postoperative complications and shorter lengths of hospital stay.
- Intraoperative ERAS compliance was most closely associated with timely return to intended oncology treatment.
- The strongest single predictor for timely return to intended oncology treatment in multivariate analysis was being on the ERAS pathway.

ERAS and MIS?







Enhanced recovery after minimally invasive gynecologic oncology surgery to improve same day discharge: a quality improvement project

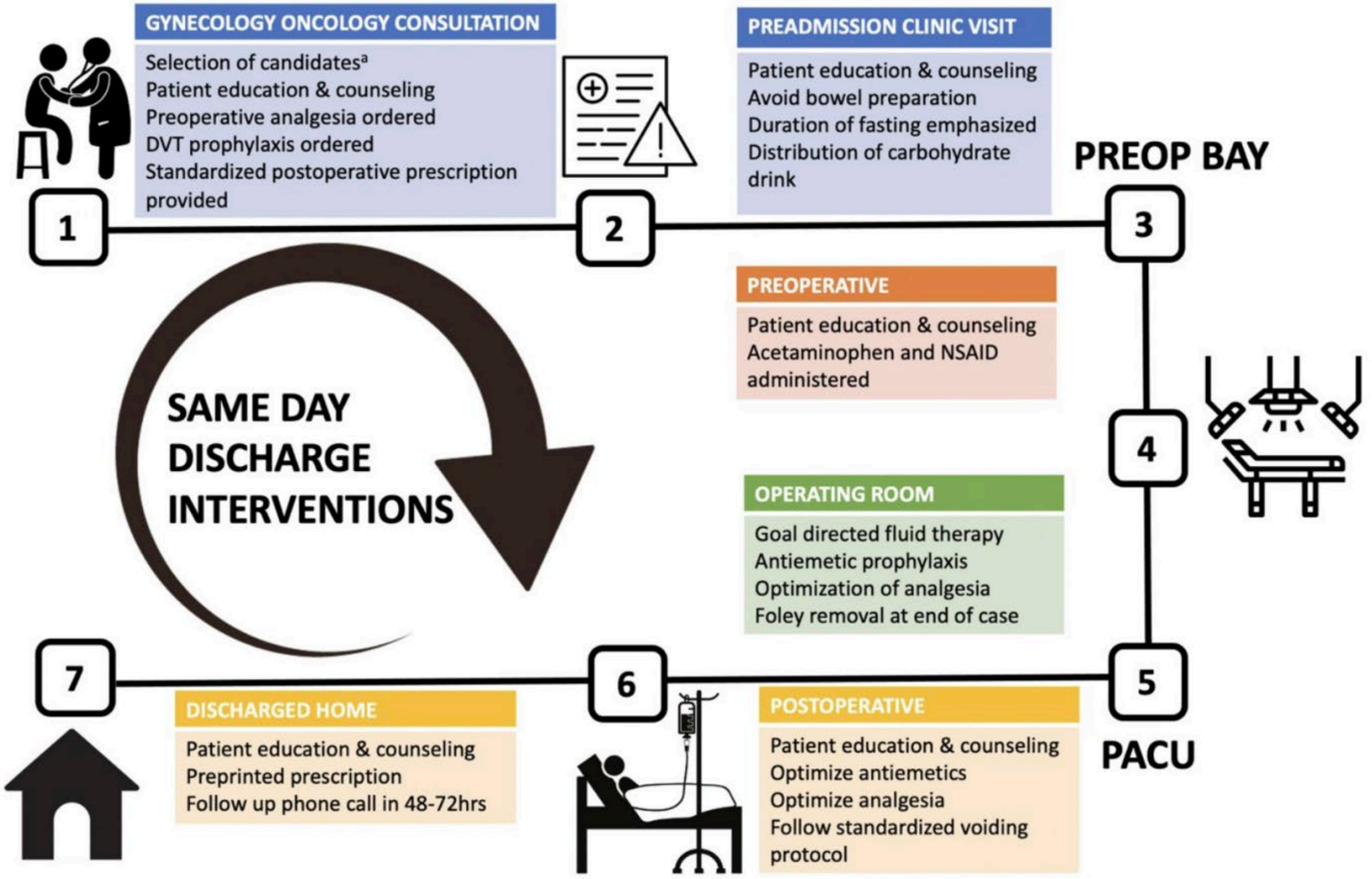
✓ Editor's Choice

Soyoun Rachel Kim ,[1,2] Stephane Laframboise,[1,2] Gregg Nelson,[3] Stuart A McCluskey,[4] Lisa Avery,[5] Nastasia Kujbid,[1] Aysha Zia,[1] Elisabeth Spenard ,[1,2] Marcus Q Bernardini,[1,2] Sarah Elizabeth Ferguson,[1,2] Taymaa May,[1,2] Liat Hogen,[1,2] Paulina Cybulska,[1,2] Edyta Marcon,[6] Geneviève Bouchard-Fortier[1,2]

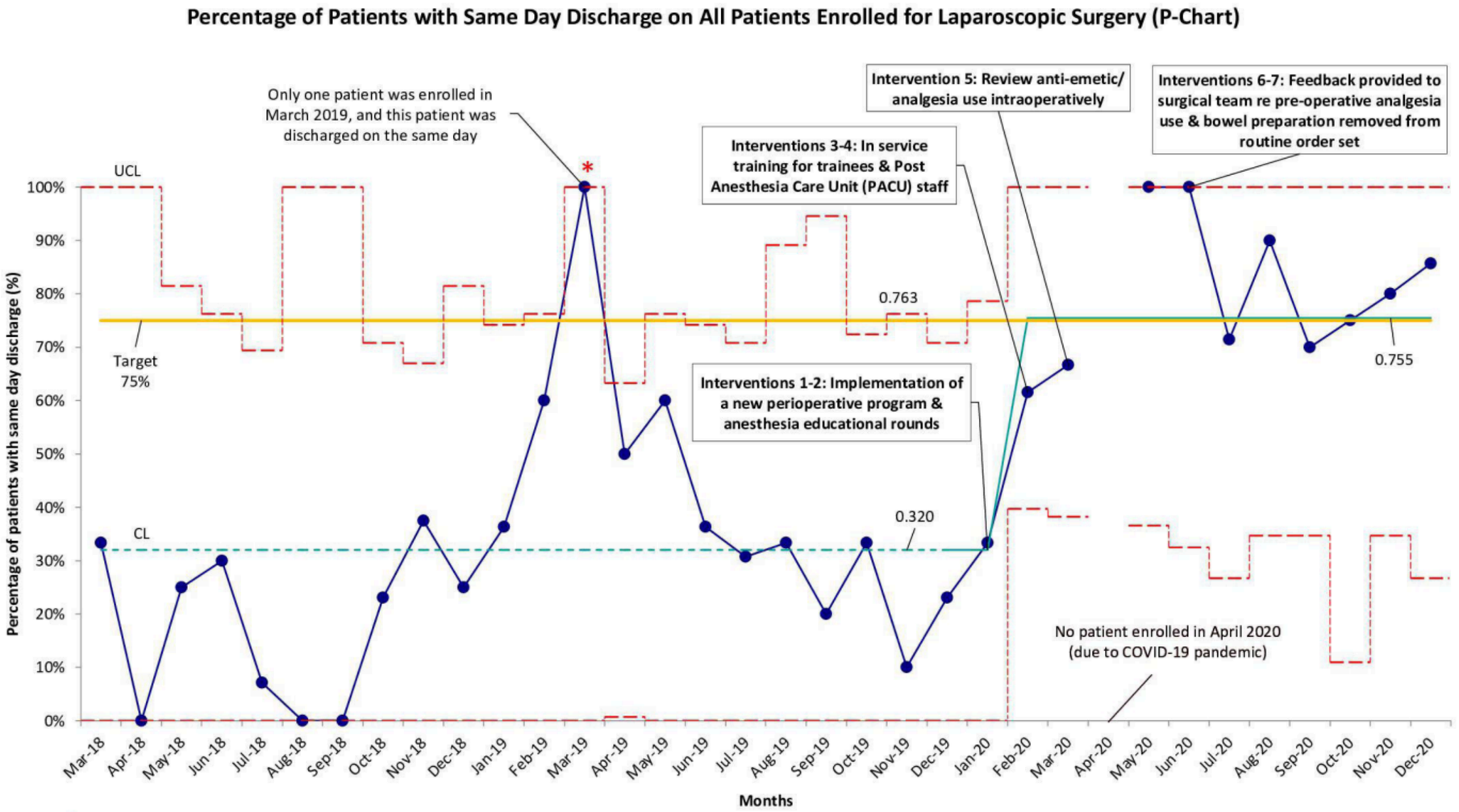
Obstetrics & Gynaecology
UNIVERSITY OF TORONTO

- Designed and implemented a quality improvement perioperative program based on ERAS principles to improve the rate of **Same Day Discharge** after minimally invasive gynecologic oncology surgery over a 12-month period

- 102 intervention patients compared to 100 historical controls



Kim et al, 2022



- **Same day discharge rate increased from 29% to 75%** after implementation ($p<0.001$)
- No difference in 30-day complications, readmissions, reoperations, ED visits, or mortality
- **Narcotic use on the ward significantly associated with overnight admission**
- 16% of admissions secondary to nausea and vomiting
- 89% of patients rated experience ‘very good’ or ‘excellent’

GYNECOLOGY

Impact of implementation of an enhanced recovery program in gynecologic surgery on healthcare costs

Check for updates

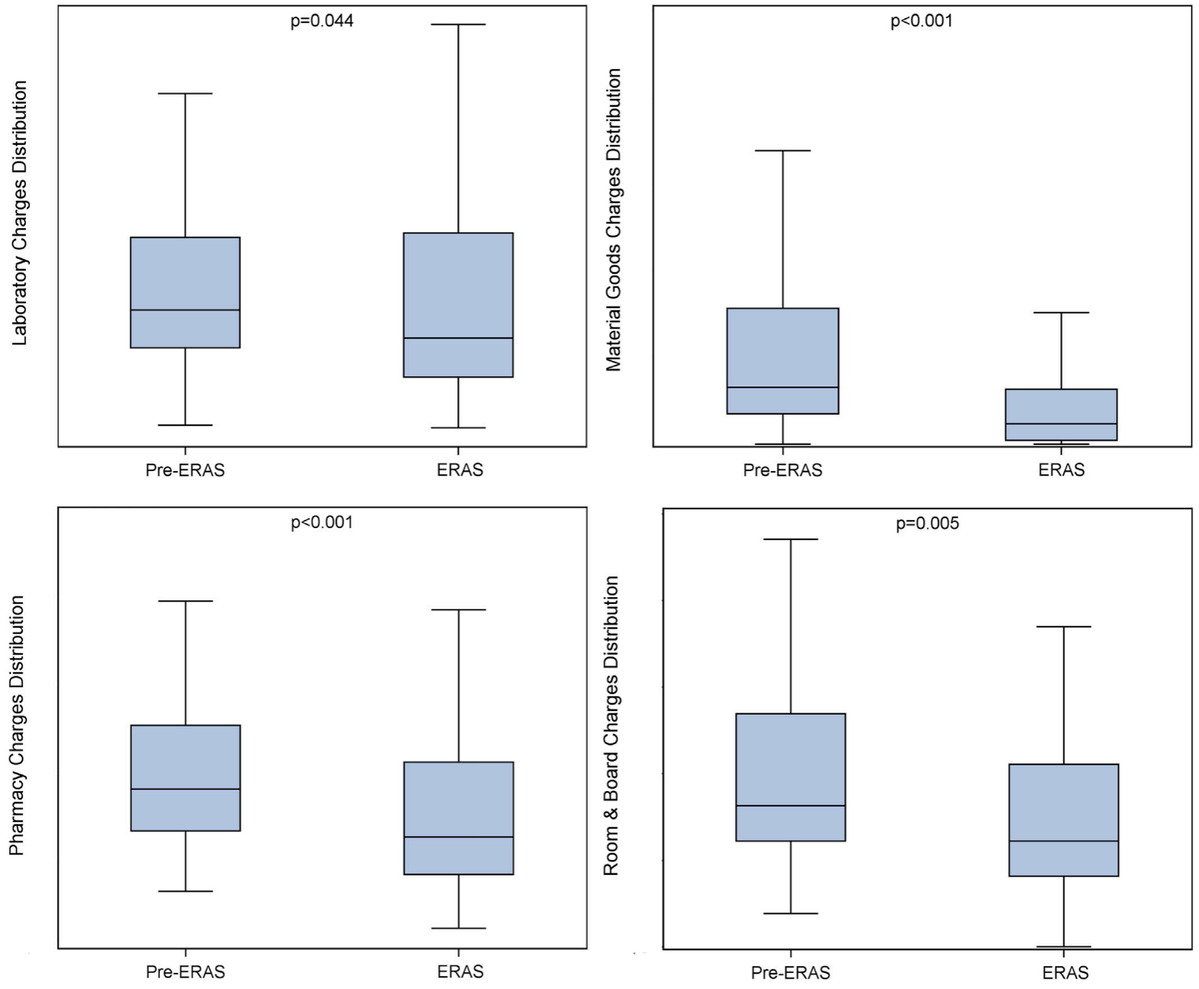
Ross F. Harrison, MD; Yao Li, MS; Alexis Guzman, MBA; Brandelyn Pitcher, MS; Andrea Rodriguez-Restrepo, MD; Katherine E. Cain, PharmD; Maria D. Iniesta, MD, PhD; Javier D. Lasala, MD; Pedro T. Ramirez, MD; Larissa A. Meyer, MD, MPH

RESULTS: A total of 271 patients were included in the analysis (58 patients in the pre—enhanced recovery after surgery and 213 patients in the enhanced recovery after surgery cohort). A total of 70,177 technical charges and 6775 professional charges were identified and classified. The median hospital charge for a patient decreased 15.6% in the enhanced recovery after surgery group compared with the pre—enhanced recovery after surgery group (95% confidence interval, 5—24.5%; $P=.008$). Patients in the enhanced recovery after surgery group also had lower charges for laboratory services (20% lower; 95% confidence interval, 0–39%; $P=.04$), pharmacy services (30% lower; 95% confidence interval, 14–41%; $P<.001$), room and board (25% lower; 95% confidence interval, 20–47%; $P=.005$), and material goods (64% lower; 95% confidence interval, 44–81%; $P<.001$). No differences in charges were observed for perioperative services, diagnostic procedures, emergency department care, transfusion-related services, interventional radiology procedures, physical/occupational therapy, outpatient care, or other services.





FIGURE 2
Distribution of hospital charges in pre–enhanced recovery after surgery and enhanced recovery after surgery cohorts in selected clinical service categories





GYNECOLOGY

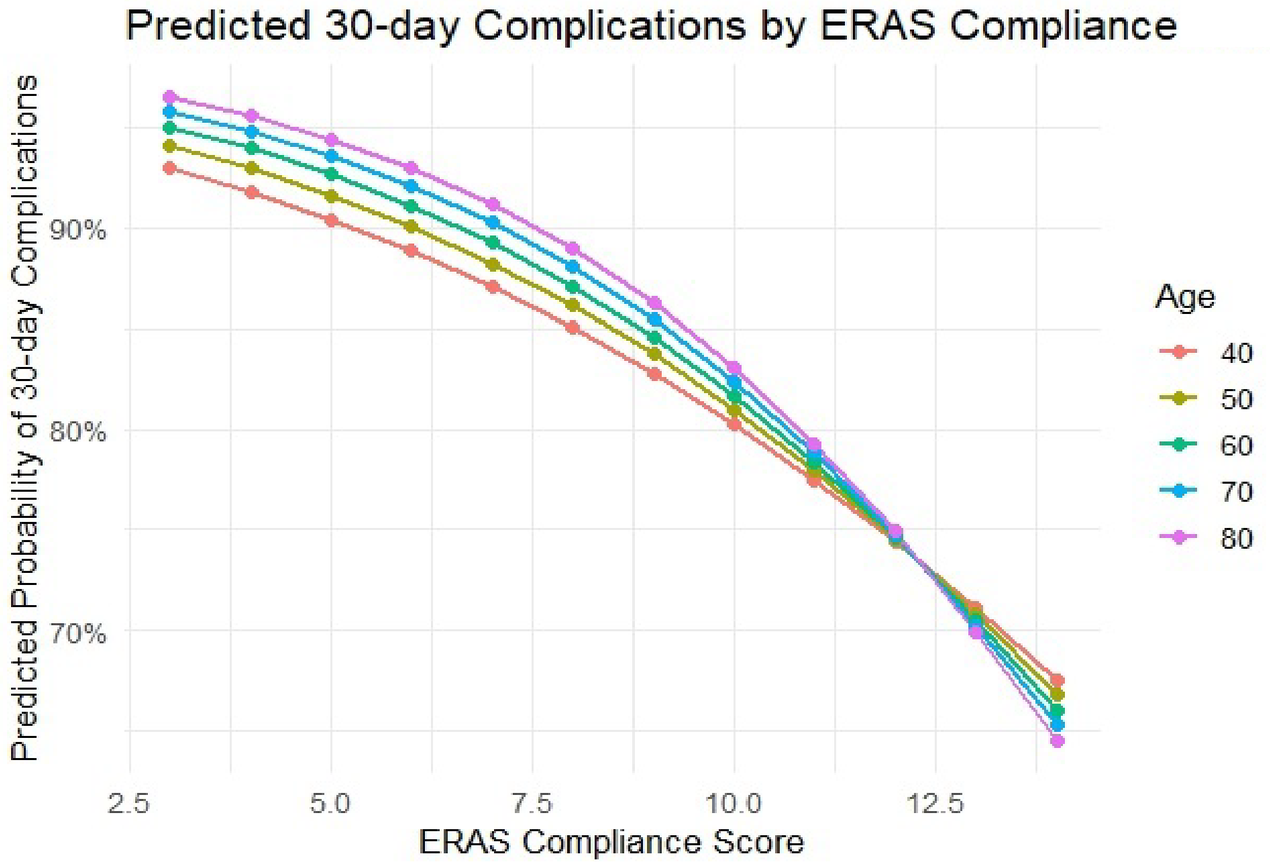
Impact of implementation of an enhanced recovery program in gynecologic surgery on healthcare costs

Check for updates

Ross F. Harrison, MD; Yao Li, MS; Alexis Guzman, MBA; Brandelyn Pitcher, MS; Andrea Rodriguez-Restrepo, MD; Katherine E. Cain, PharmD; Maria D. Iniesta, MD, PhD; Javier D. Lasala, MD; Pedro T. Ramirez, MD; Larissa A. Meyer, MD, MPH

Is my patient too old or frail for ERAS?





- Multicentre retrospective cohort 10,673 patients
- ERAS-guided surgery
- 9 Alberta hospitals

- No difference in LOS across age and frailty
- No difference in complications across frailty

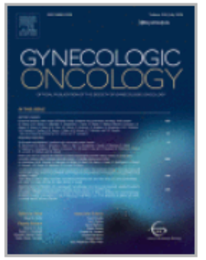
ERAS: the older you are, the more it protects you!!

For every 1 unit increase in ERAS compliance score, there is:
- 15% decrease in the odds of 30-day complications in patients who are 40 years of age.
- 17% decrease in the odds of 30-day complications in patients who are 50 years of age.
- 19% decrease in the odds 30-day complications in patients who are 60 years of age.
- 20% decrease in the odds 30-day complications in patients who are 70 years of age.
- 22% decrease in the odds of 30-day complications in patients who are 80 years of age.

JAMA Surgery

(In Preparation)

Gynecologic Oncology
Volume 210, July 2026, Pages 153-173



Enhanced recovery after surgery (ERAS®) society guidelines for gynecologic oncology: 2026 update ☆

Gregg Nelson [a b], Alon D. Altman [c], Amy Metcalfe [d], Christina Fotopoulou [e], Jolyn Taylor [f], Gretchen Glaser [g], Jamie Bakkum-Gamez [g], Amanika Kumar [g], Larissa A. Meyer [f], Rebecca Stone [h], Gabriel Mena [i], Kevin M. Elias [j], Steven P. Bisch [a], Oliver Zivanovic [k], Ester Miralpeix [l], Geetu Bhandoria [m], Ane Gerda Zahl Eriksson [n], Shannon M. Ruzycki [o], Pervez Sultan [p], Khara M. Sauro [q], Lindsay Blake [r], Mary E. Brindle [b s], Pedro T. Ramirez [t †], Sean C. Dowdy [g †]

ERAS 2026 Update

Highlights Fasting, Carb loading, GLP-1 agonists

• **Permit clear fluids until 2 hours before anesthesia and abstain from solids for 6 hours before induction** (high evidence, strong recommendation)



• **Use routine preoperative oral complex carbohydrate loading 2-3 hours before surgery** to **shorten time to return of bowel function** and **improve patient comfort** (moderate evidence, stro recommendation)

• **Prefer complex carbohydrate solutions (maltodextrin-based) up to 400 mL within 2 hours of surgery over simple sugars**; the **single morning dose** is the key dose (moderate evidence, strong recommendation)

• **Consider carbohydrate loading in well-controlled type 2 diabetes**, as available data show **no major differences in gastric emptying, glycemic variability, or aspiration risk** vs nondiabetics (low evidence, weak recommendation)

• **Hold GLP-1 receptor agonists on the day of surgery (daily dosing) or for 1 week pre-op (weekly dosing), and resume on postoperative day 1** (moderate evidence, strong recommendation)

ERAS 2026 Update

Highlights Preoperative Bowel Prep

• Recommend **routine use of combined oral antibiotic bowel preparation (OABP) plus mechanical bowel preparation (MBP)** when colorectal resection is anticipated in gynecologic oncology surgery (moderate evidence, strong recommendation), with clear evidence of reduced SSI, anastomotic leak, and other postoperative complications.

• Clarify that **OABP alone is an acceptable but less strongly supported alternative** to OABP + MBP when colorectal resection is anticipated (low evidence, weak recommendation), and that MBP alone should **no longer be used** in this setting (high evidence, strong recommendation).

• Introduce **modified MBP (oral laxatives) plus OABP as an alternative** to conventional osmotic MBP plus OABP for anticipated colorectal resection (moderate evidence, weak recommendation), reflecting improved tolerability without loss of efficacy.

• Explicitly **abandon bowel preparation in benign gynecologic surgery without planned colorectal resection** (high evidence, strong recommendation) and emphasize that any OABP regimen used should include **anaerobic coverage** (moderate evidence, strong recommendation).

ERAS
2026 Update

Highlights VTE prophylaxis

• **Initiate VTE prophylaxis preoperatively with anticoagulants (within 2 hours of skin incision) plus mechanical methods** to address the high baseline VTE risk in gynecologic oncology surgery (moderate evidence, strong recommendation)

• **Continue extended VTE prophylaxis for 28 days after open gynecologic oncology laparotomy with LMWH or a DOAC**, as trials show reduced postoperative VTE; DOACs provide similar efficacy and bleeding risk with better patient satisfaction and cost-effectiveness (LMWH: high evidence, strong recommendation; DOACs: high evidence, strong recommendation)

• **Prefer mechanical prophylaxis alone for most minimally invasive surgery (MIS) cases** and **limit or omit 28-day pharmacologic prophylaxis**, since VTE rates are low; reserve medical prophylaxis for high-risk MIS patients (e.g., high Caprini score) (moderate evidence, strong recommendation)

• **Consider VTE prophylaxis during neoadjuvant chemotherapy in high-risk patients**, given ~10% VTE rates reported in the NAC population (low evidence, weak recommendation)

ERAS
2026 Update

Highlights SSI Reduction Bundles

• **Use preoperative IV cephalosporin plus metronidazole for clean/contaminated cases**, reserving alternative regimens (e.g., ciprofloxacin or clindamycin with metronidazole or gentamicin) only for patients with proven severe beta-lactam allergy, to avoid higher SSI risk from suboptimal alternatives (high evidence, strong recommendation)

• **Optimize skin and vaginal preparation**: preoperative **chlorhexidine bathing** for laparotomy; **vaginal prep with iodine or chlorhexidine solutions** as part of the SSI bundle (moderate-high evidence, strong recommendation)

• **Prevent intraoperative hypothermia** by **continuous core temperature monitoring**, **prewarming with forced-air warming for ≥45 minutes**, **considering warmed IV fluids**, and **maintaining OR temperature >21.1°C**, to lower SSI and complications (monitoring/forced air: high-moderate evidence, strong recommendation; warmed IV fluids/ambient temperature: low evidence, strong recommendation)

ERAS
2026 Update

Highlights SSI Reduction Bundles

• **Avoid routine subcutaneous closure, subcutaneous drains, and prophylactic negative-pressure dressings** in gynecologic laparotomy, as they DO NOT reduce SSI; **consider antiseptic wound irrigation (povidone-iodine)** as part of the closure bundle (subcut closure: low evidence, strong recommendation; drains: moderate evidence, strong recommendation; negative pressure: high evidence, strong recommendation; irrigation: moderate evidence, strong recommendation)

• **Screen for and treat perioperative hyperglycemia as part of SSI prevention**: measure **HbA1C per national screening guidelines**, consider additional screening in high-risk patients, and **treat glucose >180 mg/dL with weight-based correction insulin** in people **with and without diabetes** to reduce SSI, readmission, and mortality
(HbA1C per guidelines: high evidence, strong recommendation; extended screening: low evidence, weak recommendation; treatment of hyperglycemia: moderate evidence, strong recommendation)

Highlights Opioid-Sparing Postop Analgesia

ERAS
2026 Update

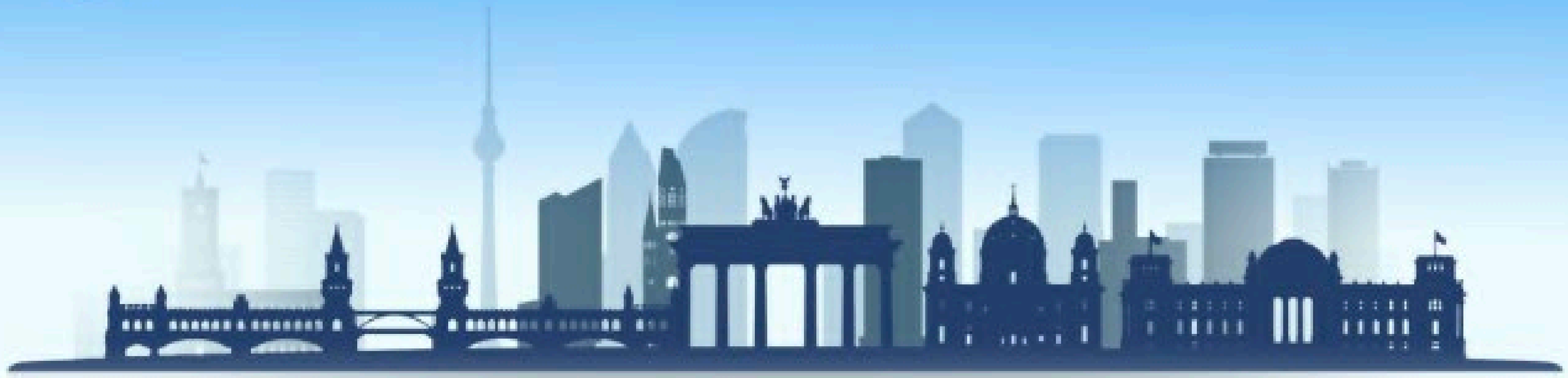
• **Use multimodal, opioid-sparing analgesia (acetaminophen, NSAIDs, local/regionals) as the backbone of ERAS pain control** after open and minimally invasive gynecologic surgery, as it reliably reduces opioid requirements
(use of multimodal analgesia: high evidence, strong recommendation; acetaminophen + NSAIDs: high evidence, strong recommendation)

• **Adopt restrictive or no-opioid discharge prescribing (e.g., 0-5 tablets of 5-mg oxycodone) for most patients**, as this is safe, feasible, and does not increase pain, calls, or refills, while reducing overprescribing (high evidence, strong recommendation)

Conclusions

- Team development
- Patient & Surgeon acceptance
- Data capture and analysis
- Maintenance of compliance >70-80%
- Auditing and Modification
- Documentation of outcomes

ERAS® Society



13th ERAS® World Congress

2– 4 June 2027 | Berlin, Germany | Hotel MOA Berlin