Enhance Recovery After Surgery: ERAS

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Disclosures

- Speaker for Astellas
- Speaker for Axonics

Objectives

- Learn the benefits of ERAS in perioperative management of surgical patients.
- Understand why surgeons utilize ERAS and how to implement these changes at your institution.

Questions?

- Does ERAS decrease the risk of complications in surgery? True or False
- Glycemic control is **NOT** important for minimizing complications during the perioperative period for surgical patients? True or False

"Wait and see" approach

Team reacts to postoperative events

More active approach

Referred to as **ERAS** or "fast track" protocol

Impact of Surgery

Catabolic state

- Increased cardiac demands
- Increased insulin resistance
- Impaired coagulation
- Tissue hypoxia
- Distorted pulmonary and GI function

Can increase morbidity and prolong recovery

Goal of ERAS

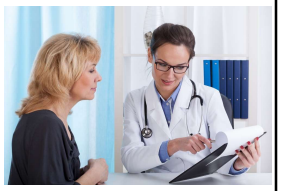
- Preoperative
- Intraoperative
- Postoperative

→

- Allow patients to resume activities sooner
- Cost savings

Phases of Care: PREoperative

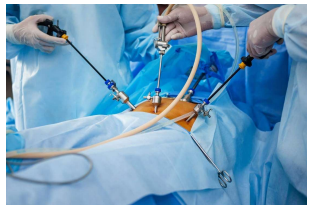
- Thorough counseling and education
- Optimization of co-morbid conditions
- No mechanical bowel preparation
- No overnight fasting
- Oral carbohydrate loading
- Avoidance of long-acting sedatives
- Acetaminophen, gabapentin, Celecoxib



Scheib et al, JMIG, 2019

Phases of Care: INTRAoperative

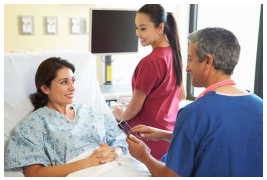
- Antimicrobial prophylaxis
- Thrombosis prophylaxis
- Routine antiemetics
- Epidural analgesia
- High O2 concentrations
- Preventing hypothermia
- Avoidance of pelvic drains
- Goal-directed IV fluids/euvolemia
- Wound infiltration with local anesthetic/nerve blocks



Scheib et al, JMIG, 2019

Phases of Care: POSToperative

- Avoidance of nasogastic tubes
- Avoidance of ileus
- Prevention of PONV
- Multimodal analgesia
- Early oral intake
- Nutritional supplements
- Early mobilization, physical therapy
- Thrombosis prophylaxis



Scheib et al, JMIG, 2019

ERAS Works!

- **Length of stay⇩**:
  - TAH pre-protocol 5 days → post-protocol 3 days
  - TLH pre-protocol same day discharge 9% → post-protocol 56%
- **Postop pain and narcotic use⇩**: 20.8% to 97.4% drop in narcotic use
- **Bowel function**: First defecation 24 hours sooner in ERAS group
- **Ambulation**: 75.6% ambulating within 3 hours of surgery
- **Complications or Readmissions**: No significant difference

Mukhopadhyay et al, BMJ, 2015; Keil et al, Anesth, Analg, 2018; Hansen et al, AJOG, 2007

ERAS Works!

- **Patient satisfaction**
  - Positive outcomes for abdominal, laparoscopic, and vaginal procedures
  - LaPasse et al evaluated patients at POD 7 and POD 30 → 97% reported satisfaction with their care
- **Economics cost analysis**
  - ERAS implementation has been shown to decrease average hospital costs by 18%-21% per patient

Developing your ERAS Protocol

Guidelines for pre- and intra-operative care in gynecologic/oncology surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations — Part I

Nelson G. [a,*], Altman A.D. [b], Nick A. [c], Meyer L.A. [c], Ramirez P.T. [c], Achtari C. [d], Antrobus J. [e], Huang J. [f], Scott M. [g,h], Wijk L. [i], Acheson N. [j], Ljungqvist O. [k], Dowdy S.C. [l]

Guidelines for postoperative care in gynecologic/oncology surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations — Part II

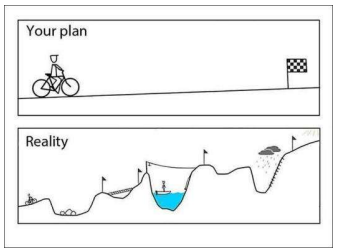
G. Nelson [a,*], A.D. Altman [b], A. Nick [c], L.A. Meyer [c], P.T. Ramirez [c], C. Achtari [d], J. Antrobus [e], J. Huang [f], M. Scott [g,h], L. Wijk [i], N. Acheson [j], O. Ljungqvist [k], S.C. Dowdy [l]

Enhanced Recovery after Surgery in Gynecology: A Review of the Literature

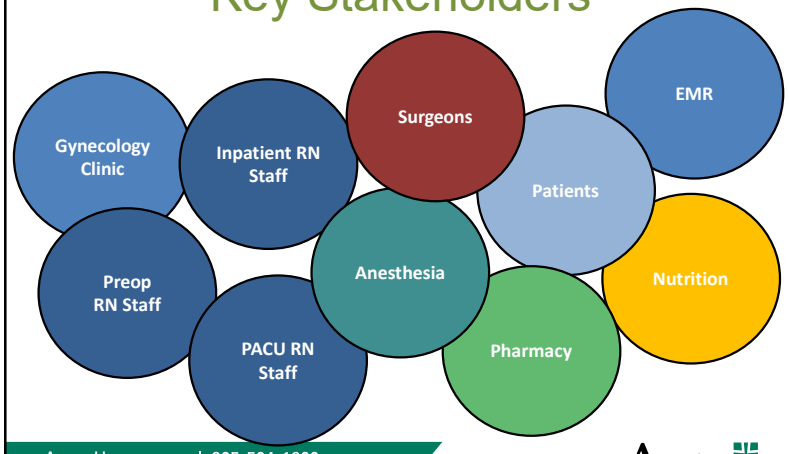
Stacey A. Scheib, MD, May Thomassee, MD, and Jamaan L. Kenner, MD

From the Department of Obstetrics and Gynecology, Louisiana State University Health Sciences Center, New Orleans, Louisiana (all authors).

Our Experience



Key Stakeholders



Identify a champion in each of these areas!!

Stakeholder Tasks

Department	Tasks
Urogynecology Clinic: Management Schedulers and RNs	-Changes to clinic template -Updates with surgical pre/postop process workflow -Nutrition survey
Preop RN Staff	-Medication administration
PACU RN staff	-Early mobilization, PO intake
Inpatient RN Staff	-Early mobilization, PO intake -Multimodal pain regimen
Anesthesia	-Identify multimodal pain regimen -Assist with CHO loading timing, fluid management

Stakeholder Tasks

Department	Tasks
Pharmacy	-Identify current narcotic use in Gyn surgery -Engage in changes with pre/postop Rxs
Nutrition	-Provide recommendations for malnutrition survey -Assist with CHO loading
EMR	-Edit preoperative and postoperative order sets
Patient Education	-Patient education videos

Protocol Implementation

- **Preoperative / Clinical**
- Preoperative Education and psychological preparation:
  - Provide optional tours of the facility
  - Booklet provided created with input from ALL stakeholders
  - Initiate discharge education and expectations

Tell them they're going home!

Avera Urogynecology ERAS packet

Getting Your Skin Ready for Surgery with Hibiclens®, Chlorhexidine gluconate (CHG) Soap-Adult

Incentive Spirometry
Improves Lung Function

Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) Prevention and Treatment

Smoking and Wound Healing

UROGYNECOLOGY ERAS PATIENT CHECK-LIST

Check Once Done	TOPIC	ACTION
		Before Surgery
		• Meet with your primary care provider (PCP) within 30 days prior to surgery. This is done to make sure you have a safe surgery. • Have lab work done, which will be ordered by your PCP. This must be done 14 days prior to surgery.
		The Week Before Surgery
		• We will call 3-5 days prior to surgery to go over pre-operative instructions (medications, restrictions, etc.) and review necessary surgery information. • Avoid shaving the surgical area. • Eat a healthy diet that is high in protein. We may recommend nutritional supplements (Ensure or Boost drinks) starting a few days before surgery. • The night before surgery, shower with Hibiclens® wash and follow the instructions in your folder. • The night before surgery eat a normal meal up until midnight. We recommend you drink 20 ounces of Ensure Pre-Surgery drink (two 10 oz. bottles) or 32 ounces Gatorade or apple juice without pulp the night prior to surgery. (Do NOT do this if you are a type 1 diabetic or have gastroparesis.) (Avoid "diet" juices). If you have Type II Diabetes, recommend you discuss preoperative carbohydrate drinks with you primary doctor or endocrinologist. • Try to empty your bowels before surgery. You can use your normal laxatives and bowel medications, but maintain adequate fluid intake. Avoid laxatives the day of surgery.

		The Morning of Surgery
		• Take medications as discussed at time of pre-op call. • The morning of surgery, use the Hibiclens® medicated wash, following instructions in your folder. • Drink 1 (10 oz.) bottle of Ensure Pre-Surgery drink or 20-40 ounces of Gatorade or apple juice without pulp 3 hours prior to your surgery time. Try and drink this within 5-10 minutes. (Do NOT do this if you are a type 1 diabetic or have gastroparesis). • It is okay to have clear liquids up until your arrival time. (NO milk products.) • If you have Type I Diabetes, we encourage increased water intake up to 3 hours prior to procedure time. • If you have Type 2 Diabetes, we recommend you discuss preoperative carbohydrate drinks with your primary doctor or endocrinologist. • If you have Type I or II Diabetes, avoid "diet" juices as these do not provide the right amounts of carbohydrates. • It is ok to have a light meal 6 hours prior to arrival time (non-fatty foods – dry toast & clear liquids). Do NOT eat 8 hours prior to scheduled arrival time (Fried/fatty foods, meat, or large meals). • Arrival time will be given to you during the preoperative call.
		In the Pre-Anesthesia Room
		• You will change into a hospital gown. • An IV will be placed and labs may be drawn. • You will be given medications before the surgery to help with post-operative pain and nausea. You are allowed to take these with sips of water.
		In the Post-Anesthesia Recovery Room
	Oxygen	• If needed, oxygen may be used while in in operating room.
	Pain Management	• Take prescribed medications to help with your post-op pain. If this does not alleviate your pain, tell a nurse. IV pain medications will also be used. • There may be some pressure in the vagina following surgery as a vaginal packing is often used to help decrease bleeding risks.
	Nausea Management	• Sometimes a scopolamine patch is placed the night before or AM of surgery and will stay on for a total of 72 hours. • You will be given medications to help with nausea in the hospital.
	Urinary Management	• You may have a Foley catheter in place after your surgery.

In the Hospital		
Mobility	• You will be helped out of bed after surgery. • You will walk a minimum of four times per day. • You will be up in the chair for all meals.	
Diet	• We will encourage afull diet and early initiation of drinking fluids. • Once you are adequately drinking fluids we will stop your IV. • Chewing gum may help your bowel function return to normal quicker.	
Pain Management	• Your pain should be well-controlled with oral medicines as soon as possible. • Ask your healthcare team questions about pain before you go home. • When you are in pain it is sometimes uncomfortable to take deep breaths. We encourage you to use Incentive Spirometry device to help your lung function.	
Nausea Management	• Sometimes a scopolamine patch is placed the night before or AM of surgery and will stay on for a total of 72 hours. • You will be given medications to help with nausea in the hospital.	
Urinating After Surgery	• You may go home with a Foley catheter or have what is called a voiding trial. A voiding trial helps us know if you need to go home with a Foley catheter.	
	• If vaginal packing was placed, it will be removed the following morning.	

Discharging From the Hospital		
Pain Management	• You will be discharged home with pain medications.	
Diet & Nausea	• Review the information on diet and nausea in your surgical folder. • We may prescribe medications for nausea if necessary for you to use at home.	
Discharge Planning	• You are ready to be discharged once you can walk, eat and drink, tolerate oral pain medication, and have the surgeon's approval. This may be the same day as your surgery OR the day after.	
Discharge Instructions	• Review discharge instructions with your nurse before you go home. • Do not push, pull, or lift more than 10 lbs. for 6 weeks. • You can walk and go up the stairs, but do not overexert yourself. • Avoid intercourse, hot tubs, swimming pools, and tub baths for 6 weeks.	
Catheter Management	• If you cannot urinate and have a Foley catheter at the time of discharge, the nurse will schedule an appointment for you to have a voiding trial. • The nurse will teach you how to care for your indwelling catheter, including how to plug it and connect the bag to it.	
Constipation	• We will give you MiraLAX/stool softeners to keep your bowels regular. • It is ok to resume your normal bowel medications, unless directed otherwise by your provider.	
Activity	• We encourage you to be active after surgery. Review the instructions in your folder and we will review any specific activities or answer any questions you have about specific activity before you are discharged.	
Follow-up	• The nurses will give you a follow-up appointment in our clinic. Follow-up in one week if you go home with a Foley catheter. Otherwise plan on following up in two weeks for a post-op check. • Dr. Barker will call you on the Friday following your surgery to check-in.	

Prehabilitation

- 1. Aerobic and resistance exercises
- 2. Targeted functional exercise
- 3. Dietary interventions
- 4. Psychological interventions to reduce stress

- Patients with impaired pre-operative function likely gain greatest clinical benefit

Protocol Implementation

- **Inpatient Procedures**
- Week prior: If positive nutrition screen → Nutrition consult
  - Use high-protein drinks the week before surgery
  - Phone call from Preop RNs
- Day prior:
  - Bowel prep only when necessary
  - Carbohydrate loading drink

Protocol Implementation

- **Day of Surgery**
  - May ingest fluids until **4 hours** prior to anesthesia
  - Alternate literature: Light meal **6 hours** prior to anesthesia, with clear liquids up to **2 hours** prior to anesthesia

Protocol Implementation

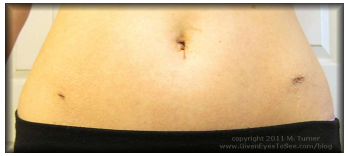
- **Day of Surgery**
- Preoperative medications

Celecoxib	400 mg PO once
Gabapentin	600 mg PO once
Acetaminophen	1000 mg PO once

- Glucose POC <200
- Urogynecology patients:
  - Ua Screen (+/-)

Surgical Site Infection Reduction

- Antimicrobial prophylaxis
- Skin preparation
- Avoiding hypothermia
- Avoiding surgical drains
- Reducing perioperative hyperglycemia



Protocol Implementation

- **Intraoperative Steps to Prevent PONV**
- Nausea & Vomiting
  - Risk factors= female gender, gynecologic surgery, MIS
  - Transdermal Scopolamine patch
  - Decadron 4mg IV
  - Ondansetron 4-8mg IV

Protocol Implementation

- **Intraoperative**
- Maintain Intraoperative Euvolemia:
- Decrease crystalloid administration
  - 0.9% Normal Saline, D5 ½ Normal Saline
- Increase colloid administration if needed
  - PRBCs, FFP, Albumin, Dextran, etc.

=

32-35 bags

Protocol Implementation

- **Postoperative**
- Limited foley placement
- Remove intraoperative if possible
  - Backfill bladder with 150cc prior to intraop removal
  - Discharged 1 hour sooner, $400 cost savings/patient
- If foley is left in place, perform **retrograde active voiding trial**
  - Faster time to decision for discharge and higher void rate

Retrograde Voiding Trial

- Backfill foley with 300 cc sterile water and clamp
- Discontinue foley catheter
- Patient has 15 minutes to void >150 cc
- If unable, replace foley for discha
- Return to office in 24-48 hours for removal
- NO BLADDER SCANNING

Protocol Implementation

- **Postoperative**
- Multimodal pain regimen

Oxycodone	**5-15 mg PO q 4 hours**
Ibuprofen	**600 mg PO q 6 hours**
Acetaminophen	**1000 mg PO q 8 hours**
Docusate Sodium	**100 mg PO q 12 hours**
Miralax	**17 g daily prn**

Protocol Implementation

- **Postoperative**
- Accelerated ambulation
  - POD 0: out of bed **>2 hours** (>/= 1 walk and sitting in chair)
  - POD 1: out of bed **>8 hours** (>/= 4 walks and sitting in chair)
  - Up in chair for ALL meals

Protocol Implementation

- **Postoperative Diet**
- No OG Tube
  - If used in OR, remove at extubation
- IVF 40cc/hr until 600 cc fluid consumed
- Low residual diet starting 4h post surgery
- POD 0: Oral intake by midnight 800-2000 ml
- POD 1: 1500-2000 ml of fluids
- Osmotic diuretics: senna and docusate sodium, magnesium oxide prn

Protocol Implementation

- **Postoperative**
- Postoperative patient education
  - Provided by PACU/floor nurses
  - Consistent with information provided in clinic
  - Discharge instructions provided by providers
- I call all my postoperative patients within first week
- Rxs provided preoperatively

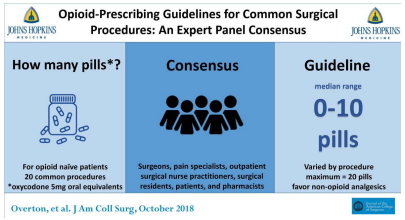
Predictive Calculator for Postop Opioid Use

1. Do you have a history of chronic pelvic pain?	No (0) Yes (10)					
2. Do you have a history of endometriosis?	No (0) Yes (10)					
3. Do you currently use any opioid pain medication regularly?	No (0) Yes (10)					
4. On an average day, how much pain do you experience on a scale of 0 to 10? (0= no pain, 10= worst pain imaginable)	0 1 2 3 4 5 6 7 8 9 10 No pain — Worst pain imaginable					
5. How much pain do you expect to experience after your surgery on a scale from 0 to 10? (0= no pain, 10= worst pain imaginable)	0 1 2 3 4 5 6 7 8 9 10 No pain — Worst pain imaginable					
6. What do you expect your pain medication requirements will be after surgery? (0= no pain medication needed, 10= highest possible amount of pain medication needed)	0 1 2 3 4 5 6 7 8 9 10 No pain medication needed — Highest possible amount of pain medication needed					
7. Over the past 2 weeks, how often have you been bothered by little interest or pleasure in doing things?	0 Not at all	2 Several days	4 More than half the days	6 Nearly every day		
8. Over the past two weeks, how often have you been bothered by worrying too much about different things?	0 Not at all	2 Several days	4 More than half the days	6 Nearly every day		
9. To what degree do you have these thoughts and feelings when you are experiencing pain: When I am in pain, it's awful and I feel that it overwhelms me	0 Not at all	2 To a slight degree	4 To a moderate degree	6 To a great degree	8 All the time	
Total _____						

If **score >/= 33**: Increased risk of using >15 tablets of oxycodone 5mg

If **score <12**: Likely to use </= 5 tablets of oxycodone 5mg

Wong M et al. AJOG 2019



- Open hysterectomy 0-20 tablets
- MIS hysterectomy 0-10 tablets
- Cesarean section 0-10 tablets
- Vaginal delivery 0 tablets

Overton et al J Am Coll Surg 2018

Patient Education Video

- https://avera-51.wistia.com/medias/39a5bkn18u

Successes and Struggles

Successes

- Shorter length of stay
- High patient satisfaction scores
- No change in complications or readmissions

Struggles

- Difficulties getting EMR to add nutrition screen, order sets
- Coordinating all key stakeholders to incorporate changes
- Gauging adequate postoperative narcotic tablets

Key Points

- Implementing ERAS can have a positive impact on shorter length of stay, quicker ambulation, quicker return to bowel function, cost savings, and patient satisfaction
- Incorporating key stake holders in ERAS implementation is pivotal in successful role out and implementation

Questions?

- Does ERAS decrease the risk of complications in surgery? True or False
- Glycemic control is **NOT** important for minimizing complications during the perioperative period for surgical patients? True or False