



Enhanced Recovery After Surgery



**THE QUEEN'S  
MEDICAL CENTER**




COLORECTAL  
GUIDE TO GETTING BETTER

HAWAII'S HEALTH CARE LEADER

[www.queensmedicalcenter.org](http://www.queensmedicalcenter.org)

Pre Surgical Optimization and the  
Nurse Navigator Role  
Maria Zucker, Hang Saito  
9/26/2016



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## Pre Surgery Center and Optimization

Our goal is to evaluate elective surgical patients with multiple co-morbidities and identify those who may be at high risk for poor surgical outcomes.

We assess their anesthesia, medical, and social risks, and with assistance from our multidisciplinary consultative team, we optimize the patients as best as possible prior to surgery.

Consultative Services may include:

- Cardiology
- Diabetes
- Pulmonology
- Dental
- Case Management/TCMP/Social Work
- Geriatrics
- Pain Management
- Advanced Care Planning

## Pre Surgery Center Optimization

Basic testing (labs, ECG, CXR) are done in Pre Surgery Center

Other diagnostic testing such as cardiac echocardiogram and nuclear stress test may be ordered & scheduled if warranted.

Patient education is done to help decrease anxiety about surgery or anesthesia as well as pre and post-op education

To help prevent surgical complications such as NV-HAP and surgical site infection.

For example, the importance of CDB/Incentive spirometry, early mobility.

Oral and dental care instructions and dental referral if necessary.

Hibiclens instructions for prior to surgery.

Patients are also given specific pre operative bowel prep instructions for the ERAS pathway.




### PRE-OP INSTRUCTIONS

Surgery Date:

**2 DAYS PRIOR TO SURGERY:** Starting today,  please **DO NOT** shave or wax anywhere on your body.

**1 DAY PRIOR TO SURGERY:**  You can have a regular diet until **2:00 pm** today and take medications as instructed.

2:00 PM	3:00 PM	1 Hour After Having Clear Bowel Movement	3 Hours After Having Clear Bowel Movement	Bed Time
<p><b>No more solid food.</b></p> <p>Start a clear liquid diet (any liquid you can see through).</p> <ul style="list-style-type: none"> <li>✓ Water</li> <li>✓ Clear broth: beef or chicken</li> <li>✓ Gatorade</li> <li>✓ Lemonade or Kool-Aid</li> <li>✓ Soda, tea, coffee (no cream)</li> <li>✓ Jell-O (without fruit)</li> <li>✓ Popsicles</li> <li>✓ Juices without pulp</li> </ul> <p>Please <b>NO RED</b> liquids.</p>	<p>Take <b>Metoclopramide</b> 10 mg (1st dose).</p> <p>Start drinking <b>Golytely/ Nulytely</b> bowel prep:</p> <ul style="list-style-type: none"> <li>• Drink as directed until your bowel movements are clear.</li> <li>• You can stop once it is clear. You do not need to finish the whole container.</li> </ul>	<p>Take: <b>Neomycin</b> 1 gm and <b>Metronidazole</b> 500 mg (1st dose of antibiotics).</p>	<p>Take: <b>Neomycin</b> 1 gm and <b>Metronidazole</b> 500 mg (2nd dose of antibiotics).</p> <p>Take <b>Metoclopramide</b> 10mg (2nd dose).</p>	<p>Take: <b>Neomycin</b> 1 gm and <b>Metronidazole</b> 500 mg (3rd dose of antibiotics).</p> <p>Take a shower and use Hibiclens cleansing packet or bottle. (See next page for instructions).</p> 

### DAY OF SURGERY:

- Take a shower again and use Hibiclens skin cleansing packet or bottle. (See next page for instructions).
- Take your morning medications as instructed: **Metoclopramide** 10 mg (3rd dose) &
- Drink Gatorade 20 oz Thirst Quencher G Series, start at: \_\_\_\_\_ to be finished by: \_\_\_\_\_
- **STOP** all liquids by: \_\_\_\_\_
- Check in at: \_\_\_\_\_ by: \_\_\_\_\_

# HIBICLENS

Antiseptic / Antimicrobial Skin  
Cleanser

Please **DO NOT** shave or wax starting 2 days before surgery

## EVENING BEFORE SURGERY:

- Wash your hair with regular shampoo
- Rinse your hair and body with water
- Shower from the neck down with *Hibiclens* soap
- DO NOT** use *Hibiclens* on face, hair or genitals
- Rinse well
- Dry with a clean towel
- Put on clean clothes
- DO NOT** use lotions or creams



## MORNING OF SURGERY:

- Repeat the same steps as above
- Put on clean & comfortable clothes



\*Although rare, if you develop a rash or itchiness with this cleanser, rinse off with water right away and do not repeat wash.

## GUIDE TO FEELING BETTER

	3 Hours After Surgery	Day 1 After Surgery	Day 2 After Surgery-Discharge	At Home
<b>Pain Control</b>	Pain medication by mouth. By injection only if needed. 	Pain medication by mouth. 	Pain medication by mouth. 	Pain medication by mouth. Take as instructed. 
<b>Activity</b>	Get out of bed and into chair. Walk. 	Get out of bed when you eat. Walk at least 3 times in the hallway. 	Sit in a chair when you eat. Walk farther. Walk more. 	Activity as tolerated. No heavy lifting greater than 15lbs. 
<b>Breathing Exercises</b>	Do your breathing exercises 10 times every hour while awake. 	Do your breathing exercises 10 times every hour while awake. 	Do your breathing exercises 10 times every hour while awake. 	Do your breathing exercises 10 times every hour while awake until your activity level is back to normal. 
<b>Nutrition</b>	You may have clear liquids starting in the recovery room. 	Stay hydrated by drinking. You may also start eating soft, easy to digest food. 	Stay hydrated by drinking. You may have solid food as tolerated. 	Continue to eat and drink as tolerated. Eat solid food. 
<b>Other</b>	• IV fluid • Urine Tube • Oxygen by mask for 6 hours  *Tell your nurse and doctor if you pass gas or have a bowel movement	• Take out urine tube • Stop IV fluid  *Tell your nurse and doctor if you pass gas or have a bowel movement	You may go home today if cleared by your doctor. Arrange for a ride home from the hospital. 	Please call your doctor if you have questions. 

## Smoking and Your Surgery

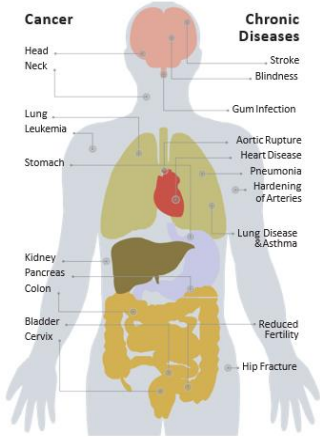
**Smoking does a lot of bad things to your body**

**Cancer**


- Head
- Neck
- Lung
- Stomach
- Kidney
- Pancreas
- Colon
- Bladder
- Cervix

**Chronic Diseases**


- Stroke
- Blindness
- Gum Infection
- Aortic Rupture
- Heart Disease
- Pneumonia
- Hardening of Arteries
- Lung Disease & Asthma
- Reduced Fertility
- Hip Fracture



### Healing is another thing that smoking hurts



A non-smoker's wound



A smoker's wound


When a wound opens up, it's called a deschisance and it can happen after a day, a week, or longer. It is very important that you quit smoking as soon as you know you need surgery.

**You're Not Alone**

If you wish to quit tell your doctor or nurse. It's never too late to quit. Hawaii Tobacco Quitline is one source to help you stop smoking. Go to [HAWAIIQUITLINE.ORG](http://HAWAIIQUITLINE.ORG) or call 1(800) QUIT NOW.

HAWAII TOBACCO QUITLINE

**1-800 QUIT-NOW**



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## APRN NURSE NAVIGATOR ROLE

- The APRN role is to serve as a liaison within the care team including the surgeon, anesthesiologist, primary care provider, as well as ancillary staff encountered to care for the patient along the continuum of the surgical encounter.
  - Notes from Pre Surgery appointment as well as a summary note on discharge will be sent to PCP
- Follow the patient post-operatively to ensure that pathway goals are met.
  - If goals are not being met, collaborate with necessary providers to return patient to pathway
- Ensure that follow-up arrangements for post-discharge are made with conjunction with case management.

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# Perioperative Process

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9/26/2016



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## Perioperative Process

**THE QUEEN'S MEDICAL CENTER** Enhanced Recovery After Surgery (ERAS)  
Protocol Algorithm for Colorectal Cases

### PREOP ASSESSMENT

- Referral to Pre-Surgery Center
- Patient Education on ERAS Protocol
- Nutritional Optimization
- Smoking Cessation
- Diabetes Control

### DAY BEFORE SURGERY

- Regular Diet until 2 pm (Clear Liquid Diet thereafter)
- Start Mechanical and Oral Antibiotic Bowel Prep
  - Golytely
  - Metoclopramide 10 mg, 3 doses Q6H (first dose with Golytely)
  - Neomycin 1 gm and Metronidazole 500 mg or Erythromycin 500 mg, 3 doses
- Chlorhexidine Shower
- Night Before Surgery
- Morning of Surgery

### DAY OF SURGERY PRE-OPERATIVE:

- Clear liquids up to 3 hours prior to surgery (unless contraindicated), then NPO except meds
- Gatorade 20 oz Thirst Quencher G Series (3 hours prior to surgery)

### PRE-OPERATIVE HOLDING AREA MEDS:

- **GI RECOVERY:**
  - Alvimopan (Entereg) 12 mg PO (contraindicated in chronic narcotic use or coronary artery disease)
- **PAIN MEDS:**
  - Celecoxib 200 mg PO (avoid in patients with coronary artery disease or if bowel anastomosis is planned)
  - Gabapentin 300-600 mg PO (300 mg if age greater than or equal to 65 years)
  - Acetaminophen 975 mg PO (15 mg/kg if less than 50 kg)
- **PONV:**
  - Scopolamine transdermal patch for 24 hours (if less than 65 years)
  - Aprepitant 40 mg PO (if at high risk for PONV)

### • ANTIBIOTICS:

- Cefazolin (start at 2 g if less than 100 kg, and 3 g if greater than 100 kg) + Metronidazole or
- If Penicillin allergic, Ciprofloxacin + Metronidazole or Ciprofloxacin + Clindamycin

### • ANTICOAGULATION:

- Lovenox 40 mg SQ (unless neuraxial block is planned)

### DAY OF SURGERY INTRA-OPERATIVE:

- **BLOCKS (Open Surgery)**
  - Continuous Thoracic Epidural
  - Single Shot Spinal (0.2-0.3 mg of preservative free Morphine)
  - Continuous Transversus Abdominis Plane (TAP) Block – (bilateral)
  - Continuous Paravertebral Block (unilateral or bilateral)
- **BLOCKS (Laparoscopic Surgery)**
  - TAP Block (bilateral)
  - Single Shot Spinal (0.2-0.3 mg of preservative free Morphine)
  - Single Shot Paravertebral Block (bilateral)



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## Perioperative Process

### • INTRAOPERATIVE MANAGEMENT (open or laparoscopic)

- ☐ Heparin 5000 units SQ one hour after placement of neuraxial block
- ☐ Lidocaine (if regional was contraindicated or unsuccessful)
  - Bolus: 0.25-1.5 mg/kg 20 minutes prior to incision
  - Infusion: 0.25-1.5 mg/kg/hr
  - Discontinue at the end of surgery
- ☐ Magnesium 30 mg/kg after induction
- ☐ Ketamine 0.1-0.5 mg/kg/hr after induction
  - Discontinue at the end of surgery
- ☐ Dexamethasone 4 mg after induction
- ☐ Perioperative Goal Directed Therapy (PGDT) to maintain euvolemia
  - Edwards ClearSight or FloTrac
  - Masimo Pleth Variability Index (PVI)
- ☐ Minimize use of intraoperative opioids
- ☐ Hypothermia prevention (maintain greater than 36 Celsius core temperature)
- ☐ Avoidance of Nitrous Oxide
- ☐ Avoidance of drains and nasogastric tube
- ☐ Use separate clean fascial closure tray
- ☐ Ondansetron 4 mg at the end of surgery

## Postoperative Process

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9/26/2016



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## Results

Irminne Van Dyken MD

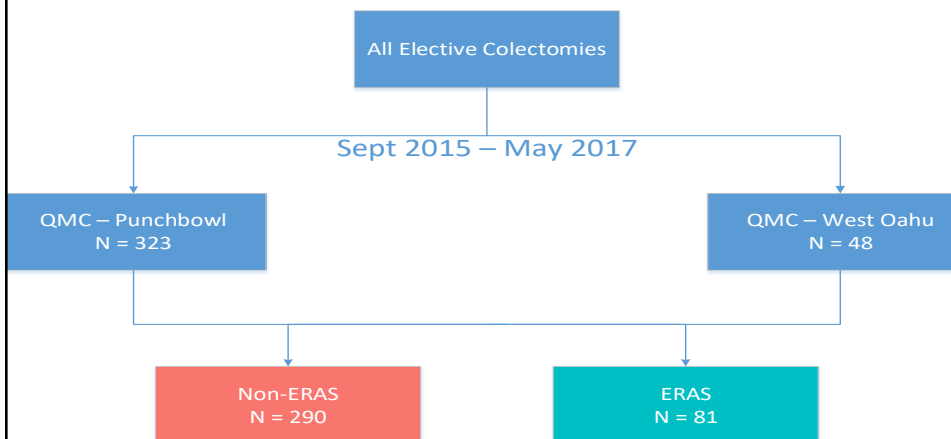
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## ERAS at Queen's Health Systems

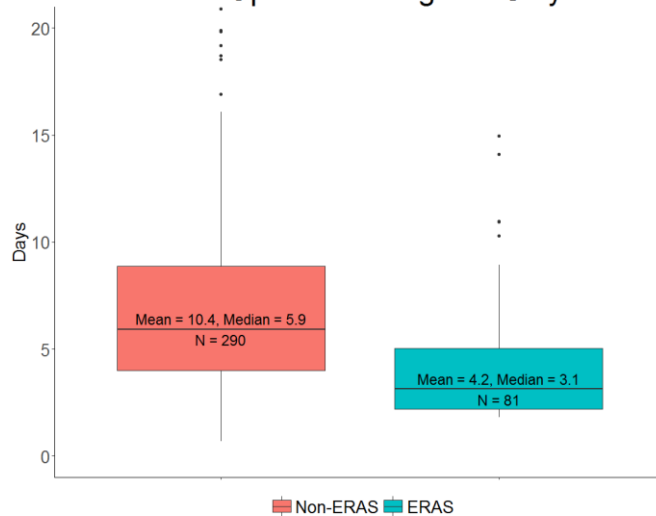


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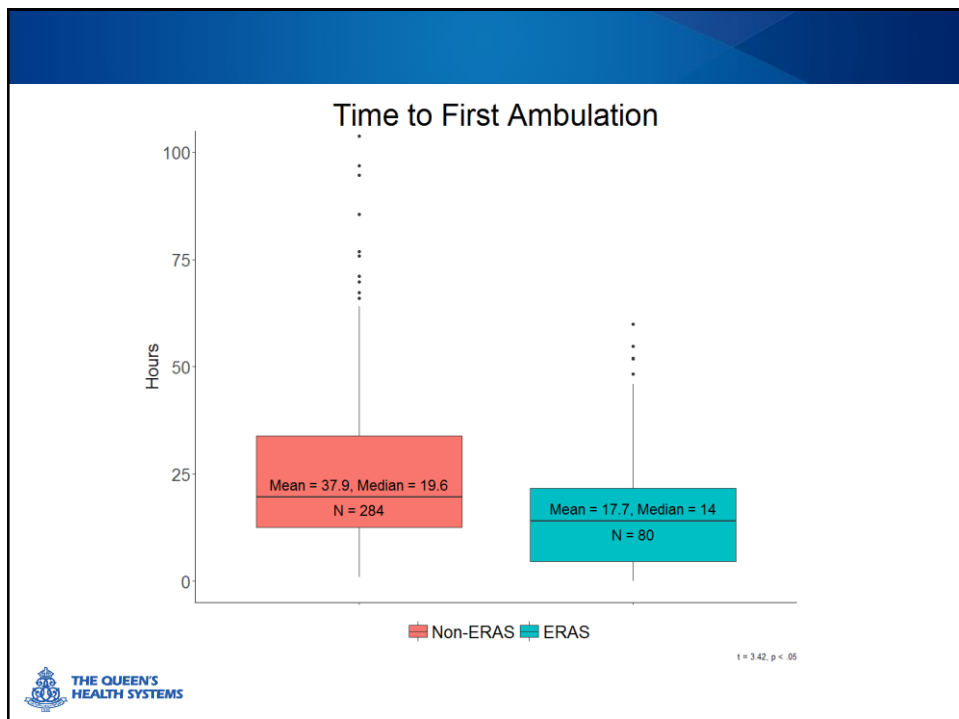
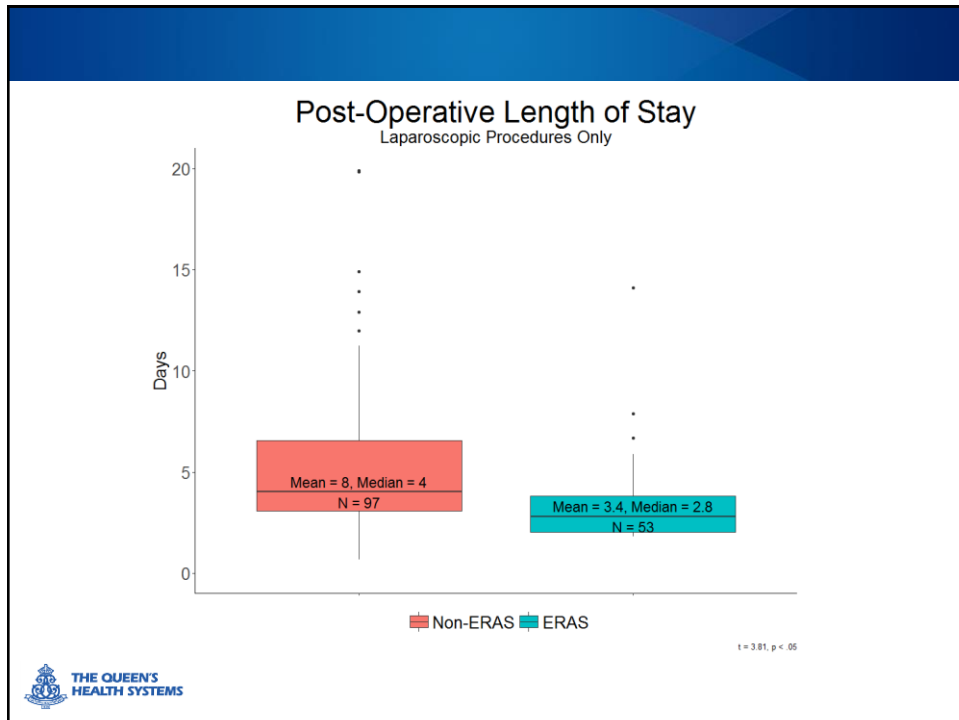
## ERAS Demographics

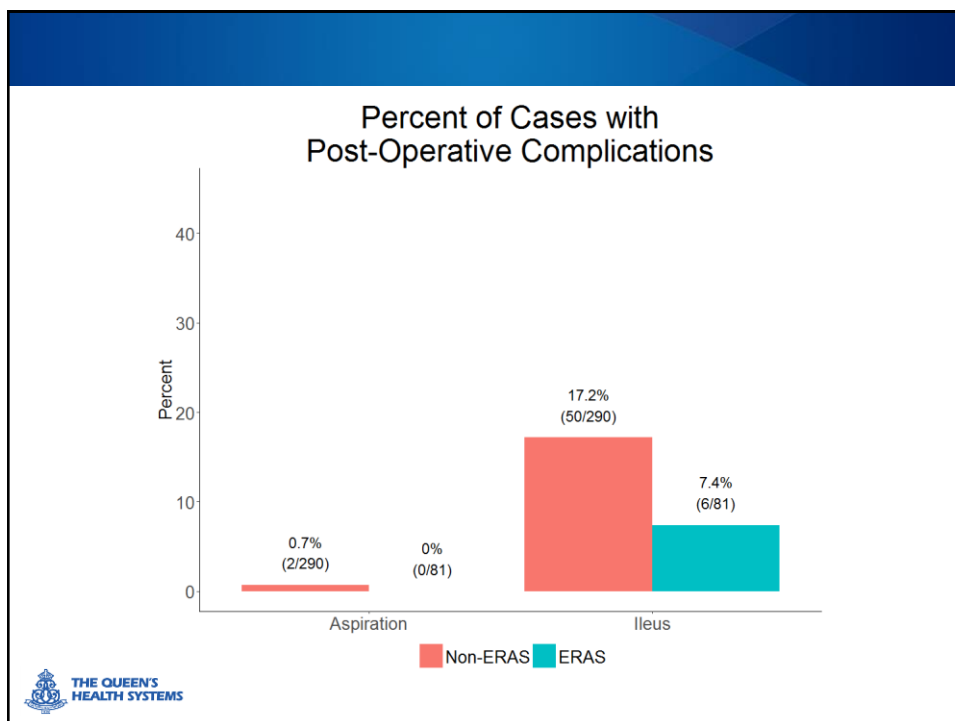
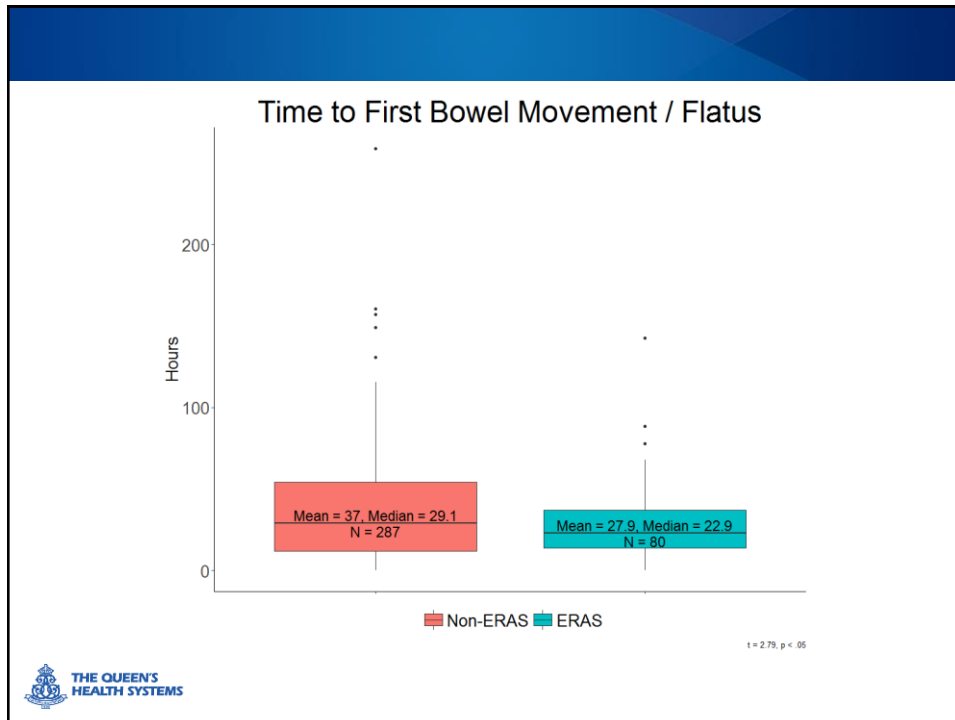
	ERAS	Non-ERAS
Cases	81	290
Age	64.7 ± 13.8	60.2 ± 14.1
Gender, Female	41 (51%)	144 (50%)
Laparoscopy	53 (67%)	97 (34%)
ASA Score 3 or Above	49 (60%)	173 (60%)
Charlson/Deyo Risk Score 3 or Above	60 (74%)	230 (79%)

## Post-Operative Length of Stay



t = 5.62, p &lt; .05





# Next Steps

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9/26/2016



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**SURGERY: (ERAS) Colorectal Postop Manage My Version** — Required Add Order

**(ERAS) Colorectal Postop Orders — Required**

**Transfer Patient**  
This patient has an active **Admit to Hospital Inpatient order**. Enter a Transfer order to change patient location.

- ☐ Transfer to Med/Surg
- ☐ Transfer to Telemetry
- ☐ Transfer to SICU

**Code Status**  
>Link to QMC Code Status  
☒ Code Status: Full Support

- ☐ Code Status: DNR w/
- ☐ DNR without Adult Ed

**Vital Signs/Monitoring**  
☒ Vital Signs, Standard

☒ Strict I & O

☒ Weigh & Record

**Notify MD**  
☒ Notify Anesthesiologist

☐ Notify Attending

☐ Notify House Officer

**Activity**  
☒ Elevate head of bed

☐ Ambulate within 3 hours

☐ Ambulate with assistance

**Tubes/Drains**  
CONTINUOUS, Starting 9/8/16 Until Specified

- ☐ Foley catheter to gravity drainage
- ☐ DC Foley
- ☐ DC Foley POD #1
- ☐ DC Foley POD #2
- ☐ Straight Cath with
- ☐ NG tube to low int
- ☐ Flush NG tube
- ☐ Jackson Pratt (JP)

**Treatments**  
☐ Change IV to Sal

☐ Incentive Spirom

☒ O2 via Non-Rebreather

☐ O2 via Non-Rebreather

☐ O2 via Oxylin

**Diet**  
☒ Clear Liquid Diet

☐ Full Liquid Diet

**IVs**  
☐ LR

**Post-op Beta Blocker order for patients on beta blocker prior to hospital arrival — Required**  
ACC/AHA 2007 and 2009 Focused Update Class I guidelines recommend "beta-blockers should be continued in patients undergoing surgery who are receiving beta blockers for treatment of conditions with ACC/AHA Class I guideline indications for the drug. (Level of Evidence: C)".  
If beta-blocker is not ordered, use .bb or .SCIP SmartP

- ☐ Patient has active beta-blocker
- ☐ metoprolol 12.5 mg tab
- ☐ carvedilol 3.125 tab
- ☐ atenolol 12.5 mg tab
- ☐ Other Beta-blockers
- ☐ Reason for no beta-blocker
- ☐ Reason for no beta-blocker

**Meds - Postop Antibiotic**  
☐ ceFAZolin 2 g/metroNID

☐ ceFAZolin 3 g/metroNID

☐ ampicillin/sulbactam (U

**Alternative Antibiotic T**  
Cipro is not recommended for suspected intra-abdominal infections and must be used for anaerobic coverage.

- ☐ ciprofloxacin 400 mg/cilid
- ☐ ciprofloxacin 400 mg/m

**Pain Meds**  
☐ acetaminophen 975 mg tab

☐ Oral, Q6H (AS SCHEDULED), Starting 9/8/16, Routine

☐ alvimopan (ENTEREG) Orders

☐ celecoxib 100 mg cap

☐ fentanyl 10mcg/ml PR

☐ gabapentin (NEURO

☐ ketorolac 30 mg IV (V

☐ ketorolac 15 mg IV P

☐ morphine 1 mg/ml, I

☐ morphine 2.4 mg IV

☐ oxycodone 5 mg tab

☐ oxycodone 10 mg

☐ oxycodone 15 mg

**Other Meds**  
☐ bisacodyl (DULCOLU

☐ magnesium oxide 4

**VTE Prophylaxis**  
Surgeon to notify Anes scheduled to be antio for prevention of thrombopuncture employed, at developing an epidural hyperlinks in drug or

☐ Procedure-Based R

☐ Procedure-Based Re

☐ Risk-Based Recom

☐ Risk-Based Recom

**Mechanical/Pharmacologic VTE Prophylaxis**  
Notes: For End Stage Renal Disease (ESRD) use of heparin is recommended if pharmacologic VTE prophylaxis is desired.

☐ VTE prophylaxis already ordered

☒ Flowtron Intermittent Compression Device Panel

Please DO NOT REMOVE the first order from panel. Required for Quality Measure (Mechanical VTE Prophylaxis Association (MVASA) Use)

☐ heparin 5,000 un

☐ heparin 5,000 un

☐ enoxaparin (LOV

☐ enoxaparin (LOV

☐ enoxaparin (LOV

**Enoxaparin VTE Prophylaxis Monitoring**  
☐ CBC without Diff - Baseline (Enoxaparin use is not recommended without baseline CBC)

☐ CBC without Diff - Follow up 7 days after baseline, then more frequent monitoring Q14D (AM ROUNDS), Starting 9/16

☐ PT/APTT - Baseline

☐ Creatinine - Baseline

☐ Creatinine - Follow-up every 14 days after last level, until monitoring Q14D (AM ROUNDS), Starting 9/22

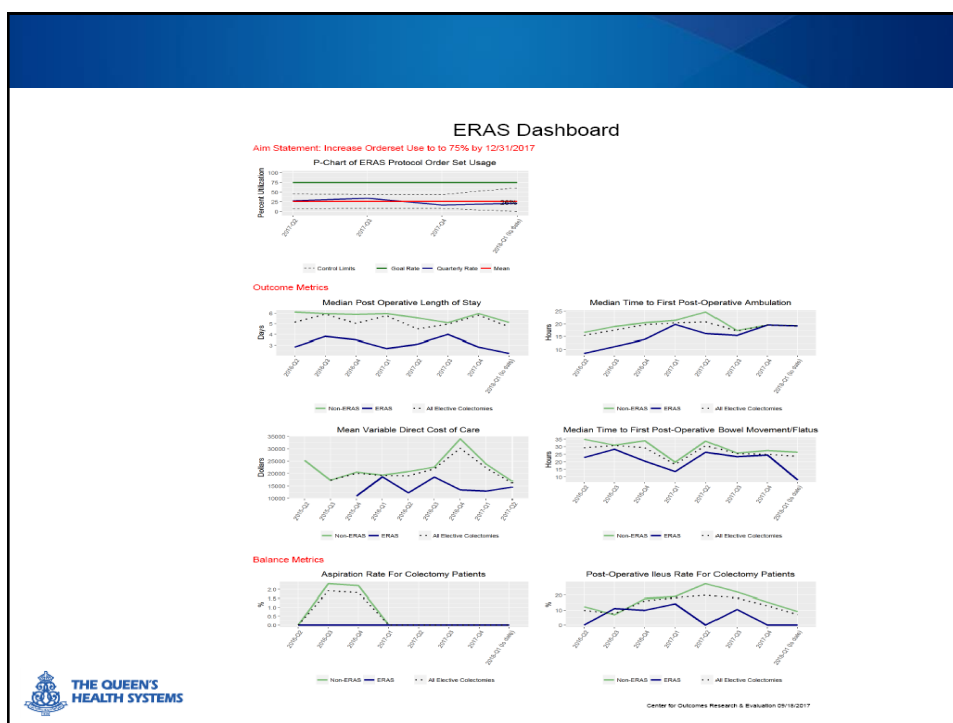
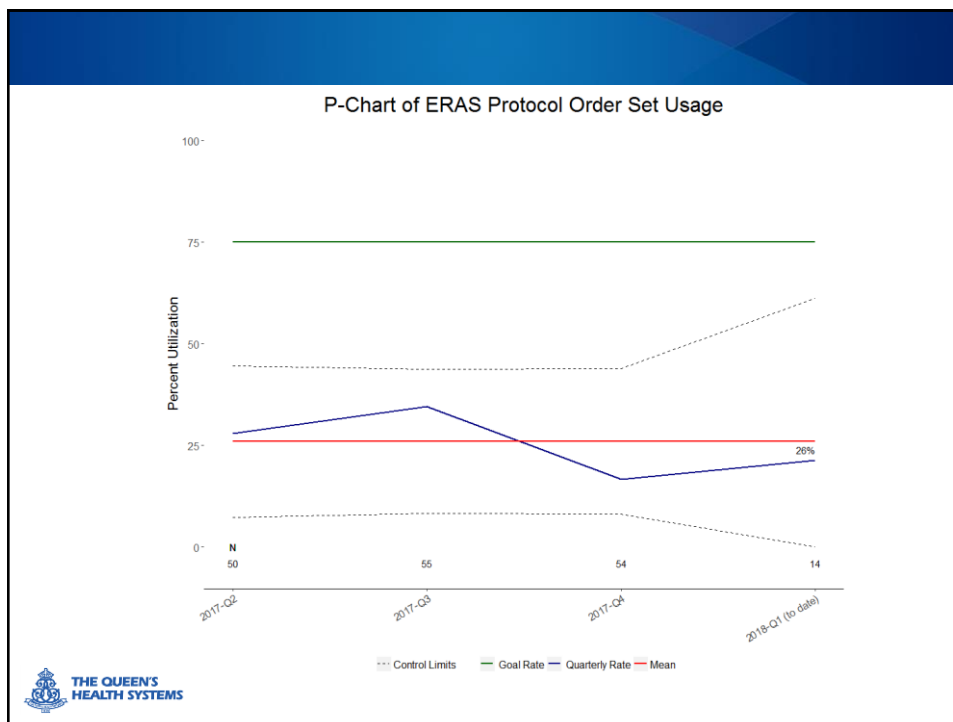
**Other**  
☐ CBC w/o Diff - Today

☐ CBC w/o Diff - Tomorrow

☐ CBC

☐ Basic Metabolic Panel (Lyte's BUN, Cre, Gluc, Ca+)

☐ I-STAT #8G



**SURGERY: (ERAS) Colorectal Postop Manage My Version** — Required Add Order

**(ERAS) Colorectal Postop Orders** — Required

- Transfer Patient**  
This patient has an active Admit to Hospital Inpatient order. Enter a Transfer order to change patient location.
  - ☐ Transfer to Med/Surg
  - ☐ Transfer to Telemetry
  - ☐ Transfer to SICU
- Code Status**  
>Link to QMC Code Status  
☒ Code Status: Full Support  
☐ Code Status: DNR w/Resuscitation
- Tubes/Drains**
  - ☐ Foley catheter to gravity drainage  
CONTINUOUS, Starting 9/8/16 Until Specified
  - ☐ DC Foley
  - ☐ DC Foley POD #1
  - ☐ DC Foley POD #2
  - ☐ Straight Cath with
- Post-op Beta Blocker order for patients on beta blocker prior to hospital arrival** — Required  
 ACC/AHA 2007 and 2009 Focused Update Class I guidelines recommend "beta-blockers should be continued in patients undergoing surgery who are receiving beta blockers for treatment of conditions with ACC/AHA Class I guideline indications for the drug. (Level of Evidence: C)".  
 If beta-blocker is not ordered, please use the following guideline indications for the drug. (Level of Evidence: C):  
☒ **Enoxaparin** 30mg BID for 10 days
- Pain Meds**
  - ☐ oxycodone 10 mg
  - ☐ oxycodone 15 mg
  - ☐ enoxaparin (LOW)
  - ☐ enoxaparin (LOW)
  - ☐ enoxaparin (LOW)
  - ☐ enoxaparin (LOW)
- Activity**
  - ☐ Notify Attending
  - ☐ Notify House Officer
  - ☒ Elevate head of bed
  - ☒ Turn, cough & deep breathe
  - ☐ Ambulate within 3 hours
  - ☐ Ambulate with assistance
- Diet**
  - ☒ Clear Liquid Diet
  - ☐ Full Liquid Diet
  - ☐ LR
- Meds - Postop Antibiotic**
  - ☐ ceFAZolin 2 g/metroNID
  - ☐ ceFAZolin 3 g/metroNID
  - ☐ ampicillin/sulbactam (U)
- Alternative Antibiotic Therapy**  
Cipro is not recommended for suspected intra-abdominal infections and must be used for anaerobic coverage.
  - ☐ ciprofloxacin 400 mg/cid
  - ☐ ciprofloxacin 400 mg/m
- Other Meds**
  - ☐ bisacodyl (DULCOLAX)
  - ☐ magnesium oxide 400 mg
- VTE Prophylaxis**  
Surgeon to notify Anesth scheduled to be anticoagulated for prevention of thromboembolism, or developing an epidural catheter, or hyperlinks in drug order.
  - ☐ Procedure-Based Recommendation
  - ☐ Risk-Based Recommendation
- Enoxaparin Dosing**  
Baseline labs must be obtained or pharmacist und...  
☒ Enoxaparin baseline
- Labs**
  - ☐ CBC w/o Diff - Today
  - ☐ CBC w/o Diff - Tomorrow
  - ☐ CBC
  - ☐ Basic Metabolic Panel (Lytic, BUN, Cre, Gluc, Ca+)
  - ☐ I-STAT ARG

# Anesthesia ERAS Order Sets

Mahalo!



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