

# The ERAS Experience at Kaiser Permanente Hawaii

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## ERAS at KP Hawaii

- Background
- Our process
- Our results to date
- Future refinements

## Background – KP Hawaii

- Integrated health care delivery system
  - Inpatient and outpatient services
- Clinical presence on 4 islands (Oahu, Maui, Big Island, and Kauai)
- Main hospital: Moanalua Medical Center in Honolulu (about 285 beds)
- 250,000+ members
- 9 General surgeons on Oahu
  - 2 colorectal fellowship trained



## Background – ERAS at KPH

- Started our program in Fall 2014
- Part of a Kaiser nationwide initiative
- Local support gathered from key players
  - Nursing
  - Anesthesia
  - Surgery
  - Dietary
  - PT
  - Pharmacy

## Matching ISCR - Preop

### ISCR

- Preop education
- Bowel prep
- Preop bathing
- Reduced fasting
- Glucose control
- Normothermia

### KP Hawaii

- Preop education: surgeon and POM nurse
- Bowel prep: neomycin, metronidazole and PEG
- CHG wipes in preop area
- Reduced fasting + carbohydrate load combined; administered 2 hr preop at check in
- Glucose control
- Normothermia with warming blanket

## Matching ISCR - Preop

### ISCR

- Prophylactic antibiotics
- Preoperative VTE prophylaxis
- Skin prep

### KP Hawaii

- Cefazolin + metronidazole preferred; Cipro + metronidazole if PCN allergic
- Heparin 5000 U SC preop
- Chloroprep

## Matching ISCR - Intraop

### ISCR

- Standard intraop anesthesia pathway
- Postoperative N/V prophylaxis
- Normothermia
- Euvolemia
- Avoidance of NG tube

### KP Hawaii

- General anesthesia with TAP block (bupivacaine) performed by anesthesia team
- Ondansetron 4-8 mg IV and dexamethasone
- Normothermia with forced air warmer
- Judicious use of IV fluids, limit to <1200 mL for most cases
- OG tube used if needed (helpful for splenic flexure/transverse colon dissection)

## Matching ISCR - Postop

### ISCR

- VTE prophylaxis
- Multimodal analgesia
- Early alimentation
- Early ambulation
- Early foley catheter removal
- Minimize IV fluids

### KP Hawaii

- Heparin 5000 U SC Q8 h
- Scheduled IV acetaminophen x 1-3 doses post op, then PO; ketorolac if renal function is normal
- Clears, ADAT POD 0
- OOB to chair POD 0
- Foley out POD 1 unless pelvic dissection
- IV fluids 75 mL/hr x 24 hrs (or less if tolerating PO well)

## Differing from ISCR

### ISCR

- Multimodal pre-anesthesia medications
- Intraoperative anesthesia pathway
- Intraop ventilation w tidal volume of 6-8 mL/kg
- Postoperative multimodal analgesia choices

### KP Hawaii

- No routine use of gabapentin, NSAID, or alvimopan preop
- No routine use of non-narcotic adjuncts (Lidocaine, ketamine, magnesium, etc)
- No standardized tidal volume
- Occasional but rare use of lidocaine patch; oxycodone is given preferentially to tramadol

## Our Results

- Taken from NSQIP colorectal targeted data
  - Operations are concentrated primarily among 2 colorectal surgeons and most cases were deemed appropriate for ERAS protocol
  - Includes a wide variety of colorectal resections (colectomy, proctectomy, open and laparoscopic)
- Apologies for limited breakdown analysis of numbers, lack of statistical analysis

## KP Hawaii Results

Year	n	SSI (all)	VTE	UTI	30 d readmit	Median LOS (days)
2013	147	5 (3%)	1 (1%)	0	8 (5%)	18
2014	117	10 (9%)	0	2 (2%)	8 (7%)	12
2015	122	6 (5%)	0	1 (1%)	7 (6%)	17
2016	168	5 (3%)	1 (1%)	1 (1%)	11 (7%)	4

## Areas of Questions

- Why such variability in number of cases from year to year?
- Is NSQIP an adequate proxy for our ERAS data?
- Why such a rapid decline in LOS in 2016?

## Goals for the Future

- Better (standardized) documentation of steps along the pathway to assess compliance with protocol
- Refining selection criteria for participation in ERAS
  - Age limits?
  - Conditions (e.g., bowel obstruction, stoma creation)
- Refinements to protocol
  - Adding gabapentin, consideration for liposomal bupivacaine for TAP block, oral acetaminophen rather than IV to help reduce cost

Thank you!

## ERAS Preop Order Set

**Order Sets**

☐ BLOOD TRANSFUSION  
☐ General Surgery ERAS Post-Op  
☐ GI Procedure  
☐ Glucose Management  
☐ Imaging Assisted Biopsy / Aspiration / Drainage IP  
☐ Parenteral Nutrition - Adult  
☐ Patient Controlled Analgesia - Adult  
☐ PICC / MIDLINE Insertion and Management

☐ SMOKING CESSATION THERAPY ORDERSET IP HI  
☐ SURG ADMISSION  
☐ SURG POSTOP AMBULATORY ADMIT TO OBSERVATION  
☐ SURG PREOP  
☐ Surgery Discharge Orders  
☒ TJ ERAS General Surgery PreOp  
☐ Original  
☒ User

Right click on an Order Set to add to favorites.

Open Order Sets   
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  Remove Open

**Orders**

**Order Sets**

Multiple Versions of User Order Sets     Do Not Show This Again

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▼ TJ ERAS General Surgery PreOp (User) [Manage My Version](#)

**ORDERS** Collapse

▼ **Nursing Orders**

☒ **NURSING COMMUNICATION ORDER**  
☒ NOW, ERAS DATE: \*\*\*  
☒ **MEASURE VITAL SIGNS**  
 NOW, Per unit policy  
☒ **NOTIFY PHYSICIAN**  
 Notify M.D. for significant changes in vital signs, temperature, or changes from baseline  
☒ **MEASURE INTAKE AND OUTPUT**  
 SEE COMMENTS. Verify carbohydrate drinks 3 hrs before OR NPO status -- Solids 8 hrs prior to OR Document completion times of each in preop checklist and I/O's  
☒ **NURSING MEDICATION COMMUNICATION**  
 VERIFY ERAS protocol  
☐ **NOZIN**  
 Routine-IP, NOZIN, ORDER ONLY FOR TOTAL JOINT, HYSTERECTOMY, AND OPEN HEART CASES. Apply Nozin 3 separate times in each nostril. Start 1 hour before procedure  
☐ **CHG BODY WASH**  
 Routine-IP, CHG BODY WASH, ORDER ONLY FOR TOTAL JOINT (FOR INPATIENT, POST-OP USE), HYSTERECTOMY, AND OPEN HEART CASES. Apply directly on the skin or on wash cloth. Wipe into skin using a wash cloth. Let sit for at least 1 minute. Wipe off thoroughly with a wash cloth and water.

CLICK THE ADD ORDER BUTTON TO OPEN THE PREFERENCE LIST WINDOW (Type to search) Collapse  
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## General Preop Order Set, #1

**Order Sets**

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▼ SURG PREOP [Manage My Version](#)

**NURSING** Collapse

▼ Beta Blocker Protocol  
☒ **NOTIFY ANESTHESIA**  
 ONCE, if patient is on a Beta Blocker Protocol.  
☐ **Wipe surgical site**  
 NOW, Wipe surgical site

▼ Surgical Prep  
☒ **CLIP HAIR AT SURGICAL SITE PREOPERATIVELY**  
 Details

**DIET** Collapse

▼ Diet  
☐ NPO  
 NOW  
☐ NPO AFTER MIDNIGHT  
 AFTER MIDNIGHT  
☐ NPO EXCEPT FOR MEDICATIONS  
 NOW  
☐ NPO AFTER MIDNIGHT EXCEPT MEDS  
 AFTER MIDNIGHT

**MEDICATIONS** Collapse

▼ Prophylactic Antibiotics  
☐ **Cefazolin 1 g (ANCEF/KEFZOL)**  
 1 g, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, To be given in OR by Anesthesia  
☐ **Cefazolin 2 g (ANCEF/KEFZOL)**  
 intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, To be given in OR by Anesthesia. Recommended for weight greater than 90 kg or 200 pounds. Attach via to NS 100 mL bag via the Vial 2 Bag 20mm adaptor. Infuse over 30 min. Once attached, MUST start infusion within 1 hour.  
☐ **Cefoxitin 1 g (MEFOXIN)**  
 1 g, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, To be given in OR by Anesthesia  
☐ **Cefoxitin 2 g Val2Bag (Mefoxin)**  
 2 g, intravenous, ONE TIME, Administer over 30 Minutes, PREOP. To be given in OR by Anesthesia. Recommended for weight greater than 90 kg or 200 pounds. Attach via to NS 100 mL bag via the Vial 2 Bag 20mm adaptor. Infuse over 30 min. Once attached, MUST start infusion within 1 hour.  
☐ **Ciprofloxacin 400 mg (CIPRO)**  
 400 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 1 Hours, To be given within 2 hours prior to incision  
☐ **Clindamycin 900 mg (CLEOCIN)**  
 600 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, To be given in OR by anesthesia.  
☐ **MetroNIDAZOLE 500 mg (FLAGYL)**  
 500 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 60 Minutes, To be given within 2 hours prior to incision. No alcohol or alcohol containing medication.  
☐ **Gentamicin 80 mg - Patient Below 50 kg**  
 80 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, (For patient's weight below 50 kg) To be given in OR by  
☐ **Gentamicin 120 mg - Patient 50 kg to 80 kg**



## General Preop Order Set, #2

**Order Sets**

☐ **Clindamycin 300 mg (CLEOCIN)**  
 600 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, To be given in OR by anesthesia.

☐ **Metronidazole 500 mg (FLAGYL)**  
 600 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 60 Minutes, To be given within 2 hours prior to incision. No alcohol or alcohol containing medication.

☐ **Gentamicin 80 mg - Patient Below 50 kg**  
 80 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, (For patient's weight below 50 kg) To be given in OR by Anesthesia.

☐ **Gentamicin 120 mg - Patient 50 kg to 80 kg**  
 120 mg, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, (For patient's weight 50 kg to 80 kg) To be given in OR by Anesthesia.

☐ **Gentamicin 2 mg per kg - Patient above 80 kg**  
 2 mg/kg/dose, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 30 Minutes, (For patient's weight above 80 kg) To be given within 2 hrs prior to incision. Dose (2 mg per kg) will be based on adjusted body weight if actual body weight is greater than ideal body weight. (Weight used for dosing = \_\_\_\_ kg). Dose to be rounded to nearest 10 mg increment.

☐ **Vancomycin 1 g**  
 1 g, intravenous, PREOP - ONE TIME for 1 dose, see admin inst., Administer over 60 Minutes, To be given within 2 hrs prior to incision. Reason for Vancomycin Prophylaxis: [ 35962]

**DVT Prophylaxis**  
☒ **APPLY SEQUENTIAL COMPRESSION DEVICE**  
 Apply venodynes on day 1 of admission while on bedrest. Discontinue when patient is ambulating. Apply to both calves in OR prior to induction of anesthesia.

☐ **Heparin (Subcutaneous)**  
 5,000 Units, Subcutaneous, PREOP - ONE TIME for 1 dose, see admin inst., Give within 2 hours of surgery. Do not give if patient on enoxaparin or other low molecular weight heparin. Caution in patients with epidural, spinal or lumbar puncture.

☐ **Wave Chemical VTE Prophylaxis - Patient at High Risk for Bleeding**  
 Patient at high risk for bleeding.

**Other Medications**  
☐ **Acetaminophen 1 g**  
 1 g, Oral, PREOP - ONE TIME for 1 dose, see admin inst., to be given with a sip of water

**ORDERS** Collapse  
 > Imaging  
 > Lab  
☐ **TYPE AND SCREEN**  
 Draw stat non-rotine, ONCE  
☐ **PT AND INR, HANDHELD ANALYZER**  
☐ **HCG, URINE**  
☐ **ELECTROLYTE PANEL (NA, K, CL, CO2)**

xxxxxxxxxxx End of Order Set xxxxxxxxxxx Collapse  
 -

CLICK THE ADD ORDER BUTTON TO OPEN THE PREFERENCE LIST WINDOW (Type to search) Collapse  
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☒ Close F9 Previous F7 Next F8

## General Postop ERAS Order Set, #1

**Order Sets**

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**General Surgery ERAS Post-Op Manage My Version**

**ADMISSION** Collapse  
**Admission Orders**  
☒ **Admit to Hospital as Inpatient**  
**Do not uncheck the order below for prn IV piggy back flush. This is required for nursing**  
☒ **ADMIT TO HOSPITAL AS INPATIENT**  
 Admitting M.D. SAHWA, REBECCA S (M.D.)  
 Level of Care: MedSurg  
 Attending M.D. SAHWA, REBECCA S (M.D.)  
 Estimated length of stay: Two Midnights or More  
 Certification: I certify that inpatient services for 2 or more midnights are reasonable and necessary for the treatment of this patient. Medical necessity is documented in the inpatient admission assessment or the inpatient admitting diagnosis and order.  
 Post hospital plan: Supporting documentation for inpatient admission certification and the plan for post-hospital care will be located in the electronic health record (EHR) Notes activity.  
 Patient Care: Inpatient  
☒ **INITIATE NURSING IV ORDER**  
 UNTIL DISCONTINUED. For intermittent IVPB without running IV, hang primary IV using NS to flush secondary med line. If incompatible use D5W. NOTE: Large Volume Infusion Pump Tubing dwell volume = 20 ml, flush.  
☐ **Admit to Hospital as Observation**

**CODE STATUS** Collapse  
**Code Status**  
☒ **CODE STATUS, FULL CODE**  
 Full Code  
☐ **DNR w/ EXCEPTIONS**  
 Partial Code  
☐ **DNR**  
 DNR

**NURSING - Enhanced Recovery After Surgery** Collapse  
**Enhanced Recovery After Surgery**  
**Nursing Orders**  
☒ **IMPLEMENT ENHANCED RECOVERY AFTER SURGERY PROTOCOL**  
 Enhanced Recovery After Surgery  
☒ **MEASURE VITAL SIGNS**  
 EVERY 4 HOURS  
☒ **NURSING COMMUNICATION ORDER**  
 NOW, Consult PT - Please consult PT for evaluation and treatment of any ERAS patients whose current level of function is less than preadmission level of function. If patient meets conditional criteria, enter PT Consult Order for Evaluate and Treat as action per MD order.  
**Notify M.D.**  
☒ **NOTIFY PHYSICIAN**  
 If Temperature is 38.0 or greater -- Heart Rate greater than 120 or less than 50 -- SBP greater than 180 or less than 90 -- DBP greater than 110 -- Significant Bleeding or drainage at operative site -- Urine Output less than 100 ml in 4 hours.  
☐ **NOTIFY ANESTHESIA**  
 CHICE - If patient is on a Beta Block Evaluated

## General Postop ERAS Order Set, #2

**Order Sets**

**Notify M.D.**

- ☒ **NOTIFY PHYSICIAN**  
If Temperature is 38°C or greater, Heart Rate greater than 120 or less than 50, SBP greater than 180 or less than 90, DBP greater than 110, Significant Bleeding or drainage at operative site, Urine Output less than 100 ml in 4 hours.
- ☐ **NOTIFY ANESTHESIA**  
ONCE, If patient is on a Beta Block Protocol.
- ☐ **IF EPIDURAL IN PLACE, NOTIFY ANESTHESIA FOR ORDERS**  
ONCE, If Epidural in place, notify anesthesia for orders.

**Intake and Output**

- ☒ **MEASURE INTAKE AND OUTPUT**  
EVERY SHIFT
- ☐ **FOLEY CATHETER**  
UNTIL DISCONTINUED, To gravity drainage. Remove foley following first ambulation or by POD#2, whichever occurs first.
- ☒ **BLADDER SCAN**  
PER PROTOCOL
- ☐ **JP DRAIN**  
UNTIL DISCONTINUED, JP Drain to Bulb Suction
- ☐ **NG TO LOW WALL SUCTION**  
INTERMITTENT, Low intermittent

**Activity / Hygiene**

- ☒ **AMBULATE PATIENT**  
4 TIMES A DAY, Ambulate 4 times a day.
- ☐ **BEDREST**  
CONTINUOUS, Strict
- ☐ **ACTIVITY, BEDREST w/ BATHROOM PRIVILEGES**  
CONTINUOUS, With SBP
- ☒ **GET UP IN CHAIR**  
AS TOLERATED, Start evening of surgery. Up in chair for meals.
- ☒ **INITIATE NURSING HYGIENE ORDER**  
ONCE, Oral care out of bed.

**Weight**

- ☒ **MEASURE WEIGHT**  
ONCE, On admission
- ☐ **WEIGHT ON ADMISSION AND EVERY OTHER DAY**  
ON ADMISSION, and Every Other Day

**DIET** Collapse

**Diet**

- ☐ **NPO**  
NOW
- ☐ **NPO EXCEPT MEDICATIONS**  
NOW
- ☐ **DIET AS TOLERATED REGULAR**  
Room Service Assist until patient able to call on their own. Assist patient to request foods patient desires/able to tolerate.
- ☐ **CLEAR LIQUIDS**  
NEXT MEAL

## General Postop ERAS Order Set, #3

**Order Sets**

**ON ADMISSION, and Every Other Day**

**DIET** Collapse

**Diet**

- ☐ **NPO**  
NOW
- ☐ **NPO EXCEPT MEDICATIONS**  
NOW
- ☐ **DIET AS TOLERATED REGULAR**  
Room Service Assist until patient able to call on their own. Assist patient to request foods patient desires/able to tolerate.
- ☐ **CLEAR LIQUIDS**  
NEXT MEAL
- ☐ **CLEAR LIQUIDS ADVANCE AS TOLERATED**  
NEXT MEAL, Advance as tolerated to "1"
- ☐ **DIABETIC**  
NEXT MEAL
- ☐ **REGULAR**  
NEXT MEAL
- ☒ **NURSING COMMUNICATION ORDER**  
NOW, Patient to chew gum 4 times a day to assist with food digestion. Document gum chewing in NOURISHMENT ROW.

**RESPIRATORY** Collapse

**Respiratory**

- ☒ **ADMINISTER O2 THERAPY**  
Mode: Nasal Cannula  
Liters per min: 2  
Titrate to keep SpO2 greater than 90%
- ☒ **INITIATE INCENTIVE SPIROMETRY**  
EVERY HOUR, 10 times per hour while awake
- ☐ **BIPAP VENTILATION**  
CONTINUOUS
- ☐ **CPAP VENTILATION**  
CONTINUOUS

**IV ACCESS** Collapse

**IV Access**

- ☐ **No IV Access**  
no new start iv order on admission, discontinue if start IV
- ☒ **Insert IV Access - Peripheral**  
Flush peripheral line per protocol. If patient already has central line or port in place, enter the appropriate panel order as action per MD order, and discontinue this peripheral IV order as action per MD Order.
- ☐ **CONVERT IV TO SALINE LOCK WHEN TOLERATING PO WELL, UNLESS ON PCA**  
Convert IV to saline lock when tolerating PO well, unless on PCA
- ☒ **Sodium Chloride 0.9 % Inj Syg 2 mL (NORMAL SALINE FLUSH)**  
2 mL, intravenous, EVERY 4 HOURS, First Dose Today at 1400, Until Discontinued  
flush line with 2 mL q4h and PRN
- ☐ **PNL INSERT IV (ACCESS) - NON-TUNNELLED CVP/OSQ (P/H)**  
PNL INSERT IV (ACCESS) - PICO/MID/LINE CVP/OSQ (P/H)

## General Postop ERAS Order Set, #4

**Order Sets**

☐ **No IV Access**  
no new start iv order on admission, discontinue if start IV

☒ **Insert IV Access - Peripheral**  
☒ **Flush peripheral line per protocol.** If patient already has central line or port in place, enter the appropriate panel order as action per MD order, and discontinue this peripheral IV order as action per MD Order.  
 Flush peripheral line per protocol. If patient already has central line or port in place, enter the appropriate panel order as action per MD order, and discontinue this peripheral IV order as action per MD Order - UNTIL DISCONTINUED

☐ **CONVERT IV TO SALINE LOCK WHEN TOLERATING PO WELL, UNLESS ON PCA**  
Convert IV to saline lock when tolerating PO well, unless on PCA

☒ **Sodium Chloride 0.9 % Inj Syg 2 mL (NORMAL SALINE FLUSH)**  
2 mL, intravenous, EVERY 8 HOURS, First Dose Today at 1400, Until Discontinued  
flush line with 2 mL, q1h and PRN

☐ **PNL INSERT IV (ACCESS) - NON-TUNNELLED CVP OSQ IP HI**  
☐ **PNL INSERT IV (ACCESS) - PICC/MIDLINE CVP OSQ IP HI**  
☐ **PNL INSERT IV (ACCESS) - ACCESSED PORTS CVP OSQ IP HI**  
☐ **PNL INSERT IV (ACCESS) - NON-ACCESSED PORTS CVP OSQ IP HI**

**PHARMACY SERVICES** Collapse

☒ **Inpatient Pharmacy Services**  
1 Each, Miscel. (Med Suppl, Non-Drugs), SEE INSTRUCTION starting Today at 1147 until Wed 6/17/20 at 2359  
Inpatient Pharmacy Services This inpatient order gives the pharmacist permission to initiate the following on hospitalized patients: 1) Renal Protocol for when criteria met At least 15 years old CrCl less than 50 mL/min Medication and dose included in the Renal Protocol 2) Pharmaciat may sign off Renal protocol when CrCl above 60 mL/min\*\* 2) Therapeutic Interchange Protocol 3) Remove exact duplicate medications per policy

**MEDICATIONS** Collapse

☒ **IV Solutions**  
☐ **D5-LR**  
1,000 mL, intravenous, CONTINUOUS, at 125 mL/hr  
☐ **D5-NaCl 0.45 % with KCl 20 mEq**  
1,000 mL, intravenous, CONTINUOUS, at 125 mL/hr  
☐ **LR**  
1,000 mL, intravenous, CONTINUOUS, at 125 mL/hr  
☐ **NaCl 0.9 %**  
1,000 mL, intravenous, CONTINUOUS, at 125 mL/hr

☒ **DVT Prophylaxis**  
☒ **APPLY SEQUENTIAL COMPRESSION DEVICE**  
Apply venodynes on day 1 of admission while on bedrest. Discontinue when patient is ambulating. Apply to both calves while in bed.  
☒ **Heparin Porcine Inj 5,000 Units**  
5,000 Units, Subcutaneous, EVERY 8 HOURS, First Dose Today at 1400, Until Discontinued  
Do not give if patient on enoxaparin or other low molecular weight heparin. Caution in patients with epidural, spinal or lumbar puncture.  
☒ **Heparin Porcine**  
Missing Weight for dose checking  
☐ **Enoxaparin (LOVENOX)**  
40 mg, Subcutaneous, QAILY, Do not give if patient on heparin. Caution in patients with epidural, spinal, or lumbar puncture.  
☐ **Waive Chemical VTE Prophylaxis - Patient at High Risk for Bleeding**  
Patient at high risk for bleeding.

## General Postop ERAS Order Set, #5

**Order Sets**

☒ **APPLY SEQUENTIAL COMPRESSION DEVICE**  
Apply venodynes on day 1 of admission while on bedrest. Discontinue when patient is ambulating. Apply to both calves while in bed.

☒ **Heparin Porcine Inj 5,000 Units**  
5,000 Units, Subcutaneous, EVERY 8 HOURS, First Dose Today at 1400, Until Discontinued  
Do not give if patient on enoxaparin or other low molecular weight heparin. Caution in patients with epidural, spinal or lumbar puncture.  
☒ **Heparin Porcine**  
Missing Weight for dose checking  
☐ **Enoxaparin (LOVENOX)**  
40 mg, Subcutaneous, QAILY, Do not give if patient on heparin. Caution in patients with epidural, spinal, or lumbar puncture.  
☐ **Waive Chemical VTE Prophylaxis - Patient at High Risk for Bleeding**  
Patient at high risk for bleeding.

**General Meds**

☐ **Acetaminophen Tab (TYLENOL)**  
650 mg, Oral, EVERY 4 HOURS AS NEEDED, headache, mild pain (1-3), temp > 38C/100.4F, Maximum 4 g acetaminophen per day for all acetaminophen containing products. If IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

☐ **Acetaminophen Supp (TYLENOL)**  
650 mg, Rectal, EVERY 4 HOURS AS NEEDED, headache, mild pain (1-3), temp > 38C/100.4F, Use if unable to take PO or NPO. Maximum 4 g acetaminophen per day for all acetaminophen containing products.

☐ **Acetaminophen IV 1,000 mg (OFIRMEV) - Patient 50 Kg or above**  
1,000 mg, intravenous, EVERY 6 HOURS for 4 doses, Administer over 15 Minutes, Max doses per order = 4. If therapy must be continued beyond that, the drug must be reordered. Do not use with any other acetaminophen containing products. Total dose not to exceed 4 g per day. IV modality for the following: (1) NPO or unable to tolerate oral intake (NPO) (2) Requires rapid onset to manage anticipatory pain (3) failure of oral meds. (no drop in pain intensity for dose administered) after at least 45 minutes.

☐ **Acetaminophen IV 15 mg per Kg (OFIRMEV) - Patient below 50 Kg**  
15 mg/kg/dose, EVERY 6 HOURS for 4 doses, Administer over 15 Minutes, Max single order dose not more than 750 mg. Total daily dose not to exceed 3750 mg per day. Max doses per order = 4. If therapy must be continued beyond that, the drug must be reordered. Do not use with any other acetaminophen containing products. IV modality for the following: (1) NPO or unable to tolerate oral intake (NPO) (2) Requires rapid onset to manage anticipatory pain (3) failure of oral meds. (no drop in pain intensity for dose administered) after at least 45 minutes.

☐ **Diphenhydramine (BENADRYL) 25 MG CAP PO**  
25 mg, Oral, EVERY BEDTIME AS NEEDED, see admin inst., May repeat 1 dose as needed for insomnia only, in 1 hour if unable to sleep.

☐ **Diphenhydramine Inj (BENADRYL) ②**  
25 mg, intravenous, EVERY BEDTIME AS NEEDED, insomnia, Use if unable to take PO or NPO. May repeat 1 dose as needed for insomnia only, in 1 hour if unable to sleep.

☐ **Famotidine IV 20 mg (PEPCID)**  
20 mg, intravenous, EVERY 12 HOURS, Mix with NS 10 mL, slow IV push over 2 min

☐ **Famotidine Tab 20 mg (PEPCID)**  
20 mg, Oral, 2 TIMES A DAY, start when taking Oral.

☐ **Melatonin Tab**  
1 mg, Oral, EVERY BEDTIME AS NEEDED, insomnia

☐ **Melatonin Tab**  
3 mg, Oral, EVERY BEDTIME AS NEEDED, insomnia

**Antiemetics**

☐ **Ondansetron (ZOFIRAN)**  
4 mg, intravenous, EVERY 8 HOURS AS NEEDED, nausea/vomiting, Use this agent first. If ondansetron is ineffective, use second line agent as ordered for Nausea / Vomiting. If none available, contact MD for an additional order.

☐ **Promethazine (PHENERGAN)**  
12.5 mg, intravenous, EVERY 4 HOURS AS NEEDED, nausea/vomiting, Shall meet ALL of the following guidelines: 1. Greater than or equal to 2 years of age AND 2. If administering via peripheral IV route, give via WPI, or diluted in 20 mL normal saline. Use large patient veins. Administer slowly through a running IV using injection port closest to the IV bag. Advise patient to report IV site discomfort.

**Analgesics - If On PCA, DC PCA Before Ordering Analgesics**

☐ **Morphine 2 mg IV**

## General Postop ERAS Order Set, #6

**Order Sets**

**PROFENIDAZOL (P-HERCORN)**  
12.5 mg, intravenous, EVERY 4 HOURS AS NEEDED, nausea/vomiting. Shall meet ALL of the following guidelines: 1. Greater than or equal to 2 years of age AND 2. If administering via peripheral IV route, give via IVPB, or diluted in 20 mL normal saline. Use large patent veins. Administer slowly through a running IV using injection port closest to the IV bag. Advise patient to report IV site discomfort.

**Analgesics - If On PCA, DCA PCA Before Ordering Analgesics**

☐ **Morphine 2 mg IV**  
2 mg, intravenous, EVERY 2 HOURS AS NEEDED, mild pain (1-3). CAUTION!! Morphine concentration is 2 MG PER ML, IV modality for the following: (1) NPO or unable to tolerate oral intake (NIV) (2) Requires rapid onset to manage anticipatory pain (3) failure of oral meds, oral form ineffective (no drop in pain intensity for dose administered) after at least 45 minutes.

☐ **Morphine 3 mg IV**  
3 mg, intravenous, EVERY 2 HOURS AS NEEDED, moderate pain (4-6). Rhindis, Moderate Pain (4-6). CAUTION!! Morphine concentration is 2 MG PER ML, IV modality for the following: (1) NPO or unable to tolerate oral intake (NIV) (2) Requires rapid onset to manage anticipatory pain (3) failure of oral meds, oral form ineffective (no drop in pain intensity for dose administered) after at least 45 minutes.

☐ **Morphine 4 mg IV**  
4 mg, intravenous, EVERY 2 HOURS AS NEEDED, severe pain. Severe Pain. CAUTION!! Morphine concentration is 2 MG PER ML, IV modality for the following: (1) NPO or unable to tolerate oral intake (NIV) (2) Requires rapid onset to manage anticipatory pain (3) failure of oral meds, oral form ineffective (no drop in pain intensity for dose administered) after at least 45 minutes.

☐ **Ketorolac 15 mg (TORADOL) - Patient 65 yo or above OR less than 50 Kg**  
15 mg, intravenous, EVERY 6 HOURS for 20 doses, For 5 days

☐ **Ketorolac 30 mg (TORADOL) - Patient below 65 yo OR wt 50 Kg or above**  
30 mg, intravenous, EVERY 6 HOURS for 20 doses, For 5 days.

☐ **oxycodone Tab 5 mg (ROXICODONE)**  
5 mg, Oral, EVERY 4 HOURS AS NEEDED, mild pain (1-3), If IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

☐ **oxycodone Tab 10 mg (ROXICODONE)**  
10 mg, Oral, EVERY 4 HOURS AS NEEDED, moderate pain (4-6), If IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

☐ **PERCOCET 5-325 mg (Oxycodone-Acetaminophen) 1 Tab**  
1 tablet, Oral, EVERY 4 HOURS AS NEEDED, mild pain (1-3). Maximum 4 g acetaminophen per day for all acetaminophen containing products if IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

☐ **PERCOCET 5-325 mg (Oxycodone-Acetaminophen) 2 Tabs**  
2 tablet, Oral, EVERY 4 HOURS AS NEEDED, moderate pain (4-6). Maximum 4 g acetaminophen per day for all acetaminophen containing products if IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

☐ **NORCO 5-325 mg (Hydrocodone-Acetaminophen) 1 Tab**  
1 tablet, Oral, EVERY 4 HOURS AS NEEDED, mild pain (1-3). Maximum 4 g acetaminophen per day for all acetaminophen containing products if IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

☐ **NORCO 5-325 mg (Hydrocodone-Acetaminophen) 2 Tabs**  
2 tablet, Oral, EVERY 4 HOURS AS NEEDED, moderate pain (4-6). Maximum 4 g acetaminophen per day for all acetaminophen containing products if IV modality given for anticipatory or breakthrough pain, wait at least 45 minutes before administering additional pain medications.

**Prophylactic Antibiotics**

☐ **Cefazolin 1 g (ANCEF/KEFZOL)**  
1 g, intravenous, EVERY 8 HOURS for 3 doses, Administer over 30 Minutes

☐ **Cefazolin 2 g (ANCEF/KEFZOL)**  
2 g, intravenous, EVERY 8 HOURS for 3 doses, Administer over 30 Minutes, Prophylaxis. Recommended for weight greater than 90 kg or 200 pounds

☐ **Clindamycin 900 mg (CLEOCIN)**  
900 mg, intravenous, EVERY 8 HOURS for 3 doses, Administer over 30 Minutes

☐ **Metronidazole 500 mg (FLAGYL)**  
500 mg, intravenous, EVERY 8 HOURS for 3 doses, Administer over 60 Minutes, No alcohol or alcohol containing medication.

☐ **Ciprofloxacin 400 mg (CIPRO)**  
400 mg, intravenous, EVERY 12 HOURS for 2 doses, Administer over 1 Hours

**Therapeutic Antibiotics**

☐ **Cefoxitin 1 g (MEFOXIN)**  
1 g, intravenous, EVERY 8 HOURS, Administer over 30 Minutes

## General Postop ERAS Order Set, #7

**Order Sets**

☐ **Ciprofloxacin 400 mg (CIPRO)**  
400 mg, intravenous, EVERY 12 HOURS for 2 doses, Administer over 1 Hours

**Therapeutic Antibiotics**

☐ **Cefoxitin 1 g (MEFOXIN)**  
1 g, intravenous, EVERY 8 HOURS, Administer over 30 Minutes

☐ **Cefoxitin 2 g (Mefoxin)**  
2 g, intravenous, EVERY 8 HOURS, Administer over 30 Minutes, Attach vial to NS 100 mL bag via the Vial 2 Bag 20mm adaptor. Infuse over 30 min. Once attached, MUST start infusion within 1 hour.

☐ **Cefazolin 1 g (ANCEF/KEFZOL)**  
1 g, intravenous, EVERY 8 HOURS, Administer over 30 Minutes

☐ **Cefazolin 2 g (ANCEF/KEFZOL)**  
2 g, intravenous, EVERY 8 HOURS, Administer over 30 Minutes, Recommended for weight greater than 90 kg or 200 pounds

☐ **Clindamycin 900 mg (CLEOCIN)**  
900 mg, intravenous, EVERY 8 HOURS, Administer over 30 Minutes

☐ **Ciprofloxacin 400 mg (CIPRO)**  
400 mg, intravenous, EVERY 12 HOURS, Administer over 1 Hours

☐ **Metronidazole 500 mg (FLAGYL)**  
500 mg, intravenous, EVERY 8 HOURS, Administer over 60 Minutes, No alcohol or alcohol containing medication.

☐ **Gentamicin PER PHARMACY PROTOCOL**  
1 Each, intravenous, SEE INSTRUCTION, Dosing and monitoring by pharmacist. Do not document medication administration on this protocol order.

☐ **Vancomycin PER PHARMACY PROTOCOL**  
1 Each, intravenous, SEE INSTRUCTION, Dosing and monitoring by pharmacist. Do not document medication administration on this protocol order.

☐ **UNASYN 3 g (Ampicillin-Sulbactam)**  
3 g, intravenous, EVERY 6 HOURS, Administer over 30 Minutes

☐ **ZOSYN IVPB 3.375 g (4-Hr Infusion) (Piperacillin-Tazobactam)**  
intravenous, EVERY 8 HOURS, Administer over 4 Hours, EXTENDED 4-HR INFUSION

**SCIP Post Op Beta Blockers**

Start beta blocker if indicated on POD 1 or POD 2 unless otherwise documented using the documentation orders below

**Guideline Developer:** TJC Global Measures and NQF (National Quality Forum)  
**Source(s) of Funding / Sponsoring Group:** Kaiser Permanente Regional Quality  
**Date Released:** 2003 (Updated 2013, January)

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☐ **Beta Blocker post op not indicated - patient not on Beta blockers prior to admission**  
Beta Blocker post op not indicated - patient not on Beta blockers prior to admission

☐ **Beta Blocker post op will not be given at this time due to high risk for hemodynamic compromise**  
Beta Blocker post op will not be given at this time due to high risk for hemodynamic compromise

☐ **Metoprolol IVPB 5 mg (LOPRESSOR)**  
5 mg, intravenous, EVERY 6 HOURS, # MUST BE GIVEN AS IVPB (unless patient is ICU level of care or in monitored bed) # hold for Systolic BP below 100 or HR below 60

☐ **Metoprolol IVPB 5 mg (LOPRESSOR)**  
5 mg, intravenous, EVERY 6 HOURS, # MUST BE GIVEN AS IVPB (unless patient is ICU level of care or in monitored bed) # hold for Systolic BP below 100 or HR below 60

☐ **Metoprolol Tab 12.5 mg (LOPRESSOR)**  
12.5 mg, Oral, hold for Systolic BP below 100 or HR below 60

☐ **Metoprolol Tab 25 mg (LOPRESSOR)**  
25 mg, Oral, hold for Systolic BP below 100 or HR below 60

☐ **Metoprolol Tab 50 mg (LOPRESSOR)**  
50 mg, Oral, hold for Systolic BP below 100 or HR below 60

## General Postop ERAS Order Set, #8

**Order Sets** ? Actions

**Guideline Developer:** TJC Global Measures and NQF (National Quality Forum)  
**Source(s) of Funding / Sponsoring Group:** Kaiser Permanente Regional Quality  
**Date Released:** 2003 (Updated 2013, January)

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☐ Beta Blocker post op not indicated - patient not on Beta blockers prior to admission  
 Beta Blocker post op not indicated - patient not on Beta blockers prior to admission

☐ Beta Blocker post op will not be given at this time due to high risk for hemodynamic compromise  
 Beta Blocker post op will not be given at this time due to high risk for hemodynamic compromise

☐ Metoprolol IVPB 5 mg (LOPRESSOR)  
 5 mg, Intravenous, EVERY 6 HOURS, ## MUST BE GIVEN AS IVPB (unless patient is ICU level of care or in monitored bed) # hold for Systolic BP below 100 or HR below 60

☐ Metoprolol IVPB 5 mg (LOPRESSOR)  
 5 mg, Intravenous, EVERY 6 HOURS, ## MUST BE GIVEN AS IVPB (unless patient is ICU level of care or in monitored bed) # hold for Systolic BP below 100 or HR below 60

☐ Metoprolol Tab 12.5 mg (LOPRESSOR)  
 12.5 mg, Oral, hold for Systolic BP below 100 or HR below 60

☐ Metoprolol Tab 25 mg (LOPRESSOR)  
 25 mg, Oral, hold for Systolic BP below 100 or HR below 60

☐ Metoprolol Tab 50 mg (LOPRESSOR)  
 50 mg, Oral, hold for Systolic BP below 100 or HR below 60

**ORDERS** Collapse

▼ Admission Labs

☐ CBC w/ DIFF  
 STAT, ONCE

☐ CBC w/o DIFF  
 STAT, ONCE

☐ ELECTROLYTES  
 STAT, ONCE

☐ BUN  
 STAT, ONCE

☐ CREATININE, PLASMA  
 STAT, ONCE

☐ GLUCOSE, RANDOM  
 STAT, ONCE

☐ CALCIUM  
 STAT, ONCE

☐ MAGNESIUM  
 STAT, ONCE

☐ PHOSPHORUS  
 STAT, ONCE

☐ LIPASE  
 STAT, ONCE

☐ AMYLASE  
 STAT, ONCE

▼ Next AM Labs

☐ CBC w/ DIFF  
 Routine, NEXT AM

## General Postop ERAS Order Set, #9

**Order Sets** ? Actions

☐ AMYLASE  
 STAT, ONCE

▼ Next AM Labs

☐ CBC w/ DIFF  
 Routine, NEXT AM

☐ CBC w/o diff  
 Routine, NEXT AM

☐ LYLES  
 Routine, NEXT AM

☐ BUN  
 Routine, NEXT AM

☐ CREATININE, PLASMA  
 Routine, NEXT AM

☐ GLUCOSE  
 Routine, NEXT AM

☐ CALCIUM  
 Routine, NEXT AM

☐ MAGNESIUM  
 Routine, NEXT AM

☐ PHOSPHORUS  
 Routine, NEXT AM

☐ HEMOGLOBIN A1C  
 Routine, NEXT AM

☐ ALBUMIN, SERUM  
 Routine, NEXT AM

☐ LIPASE  
 Routine, NEXT AM

☐ AMYLASE  
 Routine, NEXT AM

☐ ALT  
 Routine, NEXT AM

☐ AST  
 Routine, NEXT AM

☐ ALKPPOS  
 Routine, NEXT AM

☐ TOTAL BILI  
 Routine, NEXT AM

▼ Imaging

☐ XR CHEST PORTABLE  
 Routine-IP, Clinical Indications: \*\*\*

☐ XR CHEST PA AND LAT  
 Routine-IP, Clinical Indications: \*\*\*

▼ EKG

☐ EKG 12 LEAD  
 NOW

GLUCOSE MANAGEMENT IN DIABETIC PATIENTS Collapse

## General Postop ERAS Order Set, #10

**Order Sets** ? Actions

**GLUCOSE MANAGEMENT IN DIABETIC PATIENTS** Collapse

☐ **FINGERSTICK CHECK (POCT)**  
GEM ROUTINE

☒ **Insulin Lispro (HUMALOG) Sliding Scale**

☐ **Insulin Lispro (HUMALOG) - LOW dosing - Guideline Med**  
1-7 Units, Subcutaneous, SEE INSTRUCTION, INSULIN LISPRO (HUMALOG) SLIDING SCALE BLOOD GLUCOSE (mg per dL) INSULIN LISPRO DOSE 70-120: no action; 121-150: 1 unit; 151-200: 2 units; 201-250: 3 units; 251-300: 4 units; 301-350: 5 units; 351-400: 6 units; 401-450: 7 units and recheck glucose in 2 hours, if still above 401: Call M.D.; if above 450: Call M.D.; if patient about to eat, give with prandial insulin if ordered. Do not give intravenously. (Guideline Med)

☐ **Insulin Lispro (HUMALOG) - MEDIUM dosing - Guideline Med**  
2-14 Units, Subcutaneous, SEE INSTRUCTION, INSULIN LISPRO (HUMALOG) SLIDING SCALE, - Medium Dosing, BLOOD GLUCOSE (mg per dL) INSULIN LISPRO DOSE 70-120: no action; 121-150: 2 units; 151-200: 4 units; 201-250: 6 units; 251-300: 8 units; 301-350: 10 units; 351-400: 12 units; 401-450: 14 units and recheck glucose in 2 hours, if still above 401: Call M.D.; if above 450: Call M.D.; if patient about to eat, give with prandial insulin if ordered. Do not give intravenously. (Guideline Med)

☐ **Insulin Lispro (HUMALOG) - HIGH dosing - Guideline Med**  
3-15 Units, Subcutaneous, SEE INSTRUCTION, INSULIN LISPRO (HUMALOG) SLIDING SCALE BLOOD GLUCOSE (mg per dL) INSULIN LISPRO DOSE 70-120: no action; 121-150: 3 units; 151-200: 5 units; 201-250: 7 units; 251-300: 9 units; 301-350: 11 units; 351-400: 13 units; 401-450: 15 units and recheck glucose in 2 hours, if still above 401: Call M.D.; if above 450: Call M.D.; if patient about to eat, give with prandial insulin if ordered. Do not give intravenously. (Guideline Med)

☐ **Insulin Lispro (HUMALOG) - CUSTOM dosing - Guideline Med**  
Subcutaneous, SEE INSTRUCTION, INSULIN LISPRO (HUMALOG) SLIDING SCALE, BLOOD GLUCOSE (mg per dL) INSULIN LISPRO DOSE 70-120: no action; 121-150: 1 unit; 151-200: 2 units; 201-250: 3 units; 251-300: 4 units; 301-350: 5 units; 351-400: 6 units; 401-450: 7 units and recheck glucose in 2 hours, if still above 401: Call M.D. If above 450: Call M.D. If patient about to eat, give with prandial insulin if ordered. Do not give intravenously. (Guideline Med)

☒ **Hypoglycemia Protocol**

☒ **NOTIFY PHYSICIAN**  
Notify M.D. if glucose outside of treatment parameter; or if glucose recheck after asymptomatic hypoglycemia is less than 70, or if glucose recheck after treatment is less than 90.

☒ **GLUCOSE**  
STAT, NURSE TO RELEASE: Nurse to release if fingerstick blood sugar is less than 50 mg/dL.

☒ **INSTA-GLUCOSE Oral Gel 24 g (Dextrose-Dextrin-Maltose)**  
24 g Oral. AS NEEDED: 2 doses starting Today at 1147 Until Discontinued, see admin inst., for hypoglycemia - see hypoglycemia nursing orders  
If patient can take oral MD, give as needed for glucose below 70, or below 90 with signs or symptoms of hypoglycemia and notify MD. Repeat fingerstick glucose in 15 minutes. If less than 90 may repeat x1 in 15 minutes if signs and symptoms of hypoglycemia persist. Repeat glucose in 1 hour and notify MD if less than 90.

☒ **D50W Inj Syg 12.5 g**  
12.5 g (25 mL), INTRAVENOUS, AS NEEDED: starting Today at 1147 Until Discontinued, see admin inst., for hypoglycemia - see hypoglycemia nursing orders  
If patient NPO, give as needed for glucose below 70, or below 90 with signs or symptoms of hypoglycemia and notify MD. May repeat x1 in 15 minutes if signs and symptoms of hypoglycemia persist. Repeat glucose in 1 hour and notify MD if less than 90.

☒ **Glucagon Inj 1 mg (GLUCAGEN DIAGNOSTIC KIT)**  
1 mg, intramuscular, AS NEEDED: 2 doses starting Today at 1147 Until Discontinued, see admin inst., for hypoglycemia - see hypoglycemia nursing orders  
If patient NPO without IV access, give as needed for glucose below 70, or below 90 with signs or symptoms of hypoglycemia and notify MD. May repeat x1 in 15 minutes if signs and symptoms of hypoglycemia persist. Repeat glucose in 1 hour and notify MD if less than 90.

xxxxxxxxxxxx End of Order Set xxxxxxxxxxxx Collapse

☒ **CLICK THE ADD ORDER BUTTON TO OPEN THE PREFERENCE LIST WINDOW (Type to search)** Collapse

You can search for an order by typing in the header of this section.

☒ Close F9 Previous F7 Next F8