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

Matching ISCR - Preop

ISCR	KP Hawaii
• Prophylactic antibiotics	• Cefazolin + metronidazole preferred; Cipro + metronidazole if PCN allergic
• Preoperative VTE prophylaxis	• Heparin 5000 U SC preop
• Skin prep	• 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 adjunctions (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

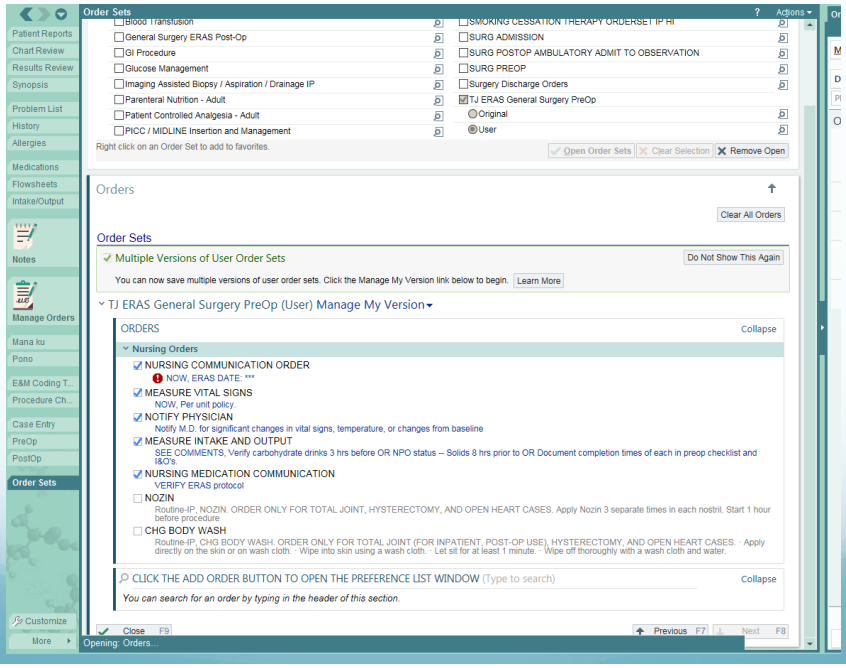
- Why such variability in number of cases from year to year?
- Is NSQIP an adequate proxy for our ERAS data?
- Why such a rapid decline in LOS in 2016?

Goals for the Future

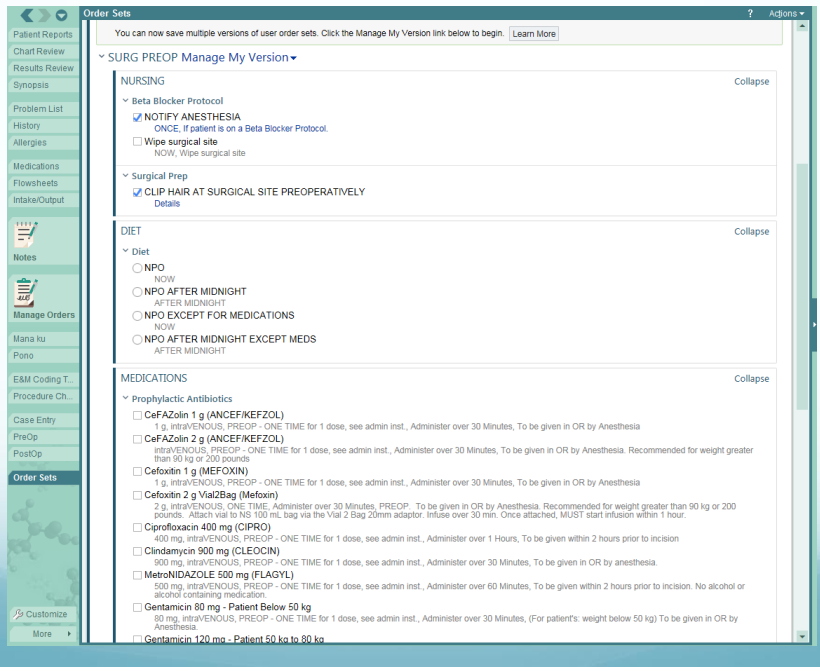
- Better (standardized) documentation of steps along the pathway to assess compliance with protocol
- Refining selection criteria for participation in ERAS
  - Age limits?
  - Conditions (e.g., bowel obstruction, stoma creation)
- Refinements to protocol
  - Adding gabapentin, consideration for liposomal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

Thank you!

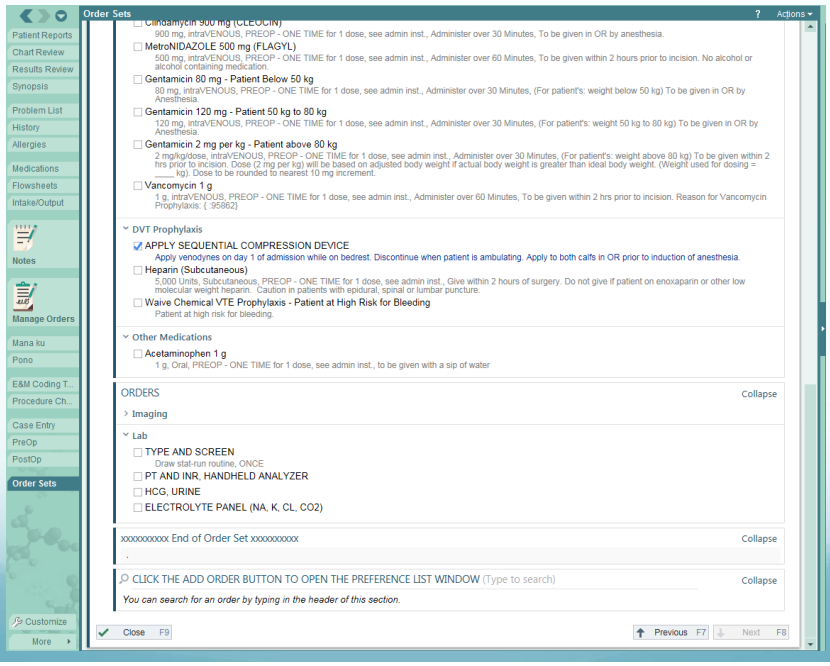
ERAS Preop Order Set



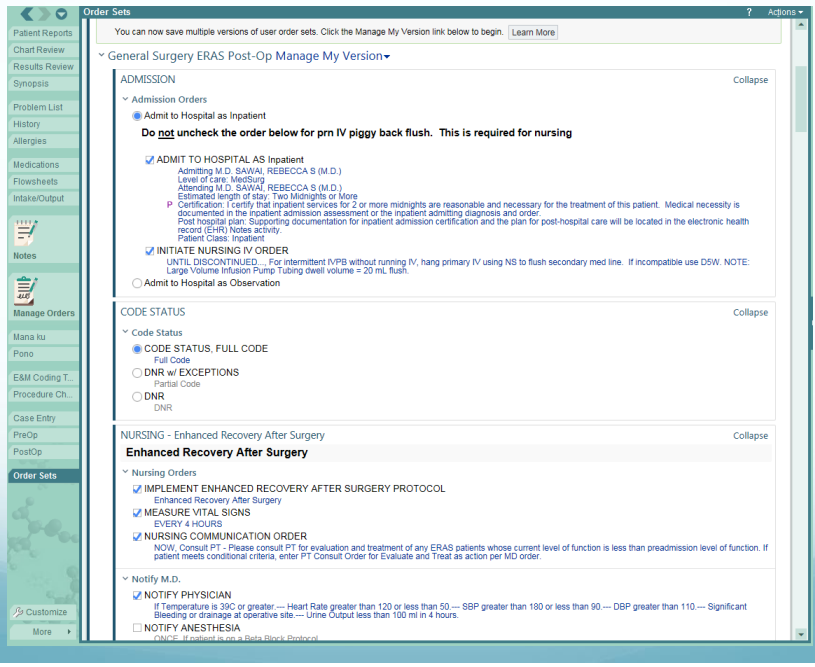
General Preop Order Set, #1



General Preop Order Set, #2



General Postop ERAS Order Set, #1



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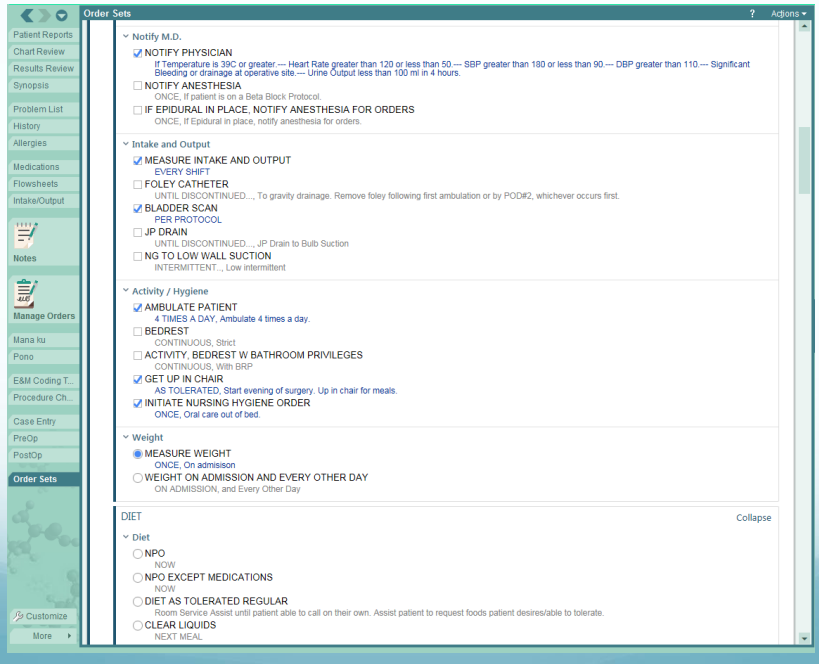

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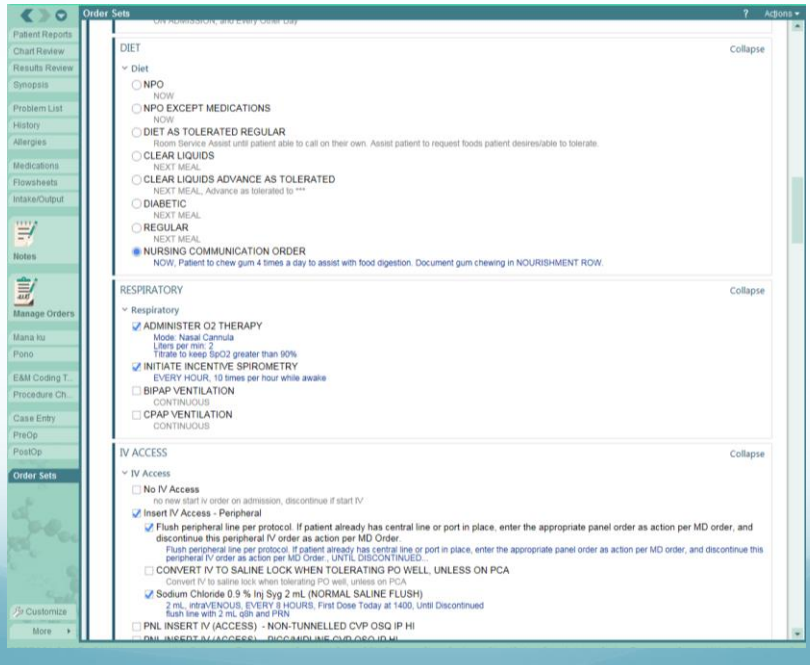

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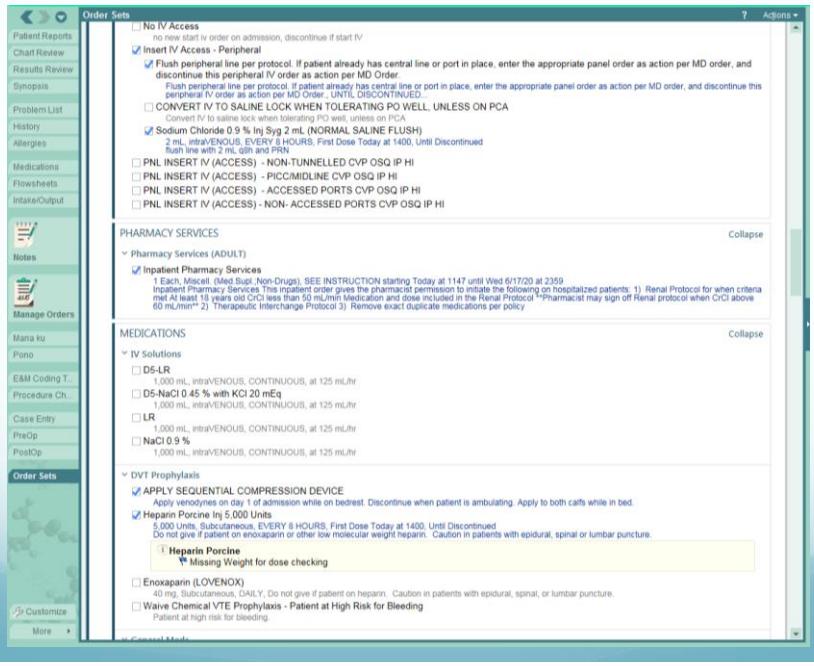

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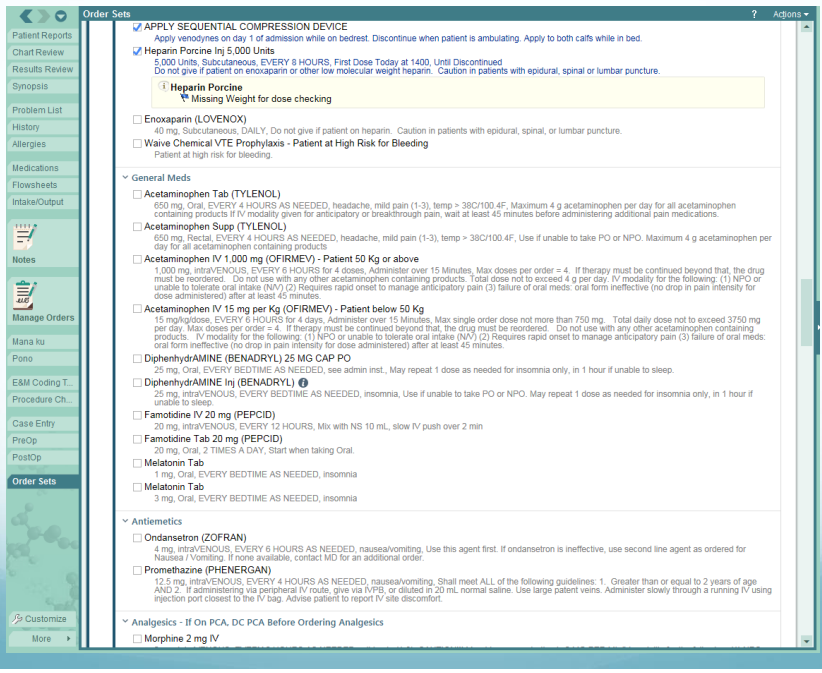
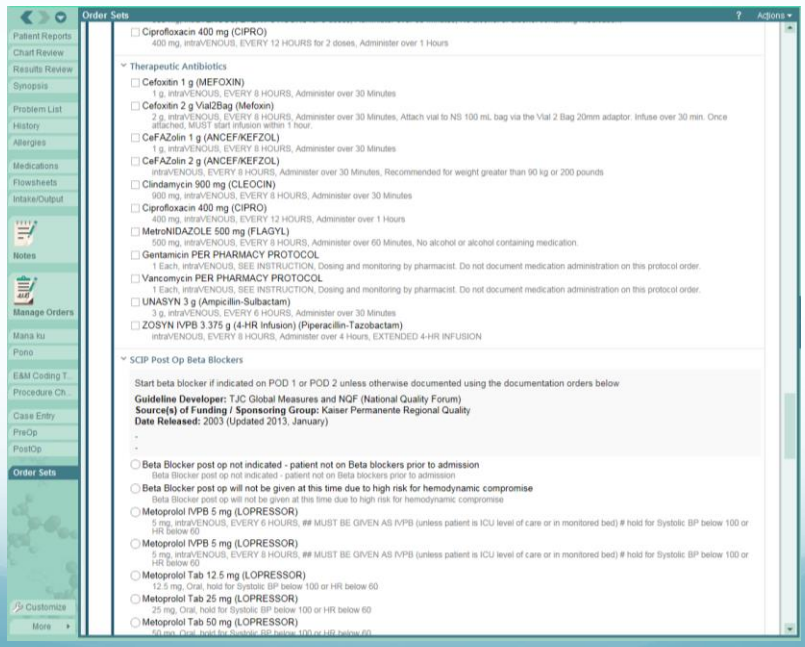


General Postop ERAS Order Set, #6

General Postop ERAS Order Set, #7



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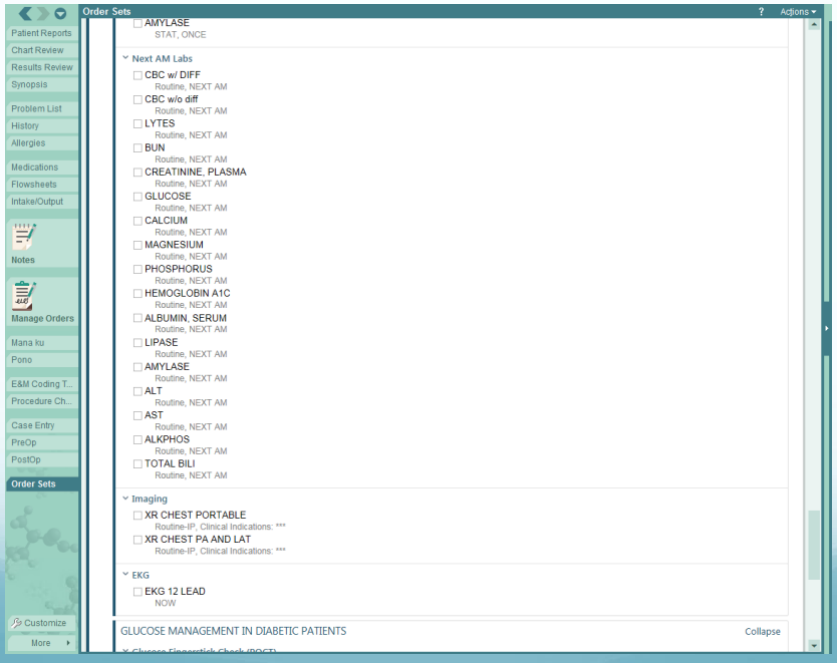
General Postop ERAS Order Set, #9



General Postop ERAS Order Set, #10