ASCO Quality Training Program

Project Title: **Reducing length of stay after open cytoreductive surgery for patients with gynecologic cancers**

Presenter's Name: Ernest Han MD, PhD

Institution: City of Hope

Date: June 28, 2019

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Institutional Overview

- 217 in patient beds
- 4 Gyn Oncologists on campus and 4 in the community
- Open cytoreductive surgery (tumor debulking) performed for ovarian and uterine cancers at City of Hope main campus.

City of Hope Comprehensive Cancer Center, Duarte, CA

Ovarian Cancer Therapy: Impact of Tumor Debulking Surgery

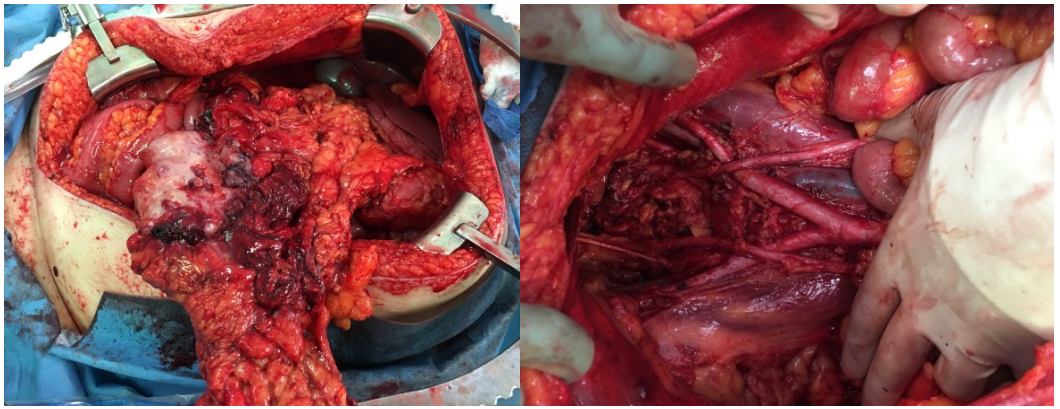
Neoadjuvant Chemotherapy ⇢ Surgery → Chemotherapy

- Surgery
  - Cytoreduction/ Tumor Debulking
  - Hyperthermic Intraperitoneal Chemotherapy
- Chemotherapy
  - IV Carboplatin and Paclitaxel
  - Intraperitoneal Chemotherapy (Median OS 66 mon)

Vergote et al 2010 NEJM

Residual Cancer after Debulking	Median OS (months)
PDS R0	45
PDS 1-10 mm	32
PDS >10 mm	26
IDS R0	38
IDS 1-10 mm	27
IDS >10 mm	25

PDS=primary debulking surgery
IDS=interval debulking surgery



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Problem Statement

Problem Statement: For calendar year 2018, the average length of stay (LOS) was 11.21 days for patients undergoing open cytoreductive surgery for gynecologic cancers. LOS is linked to patient satisfaction, cost, and access.

Team Members

Ernest Han MD PhD, Team Lead

Jamie Sullivan MD, Core Team Member

Steven Sentovich, MD, Core Team Member

Kathy McNeese RN MN CNS ONC, Team Member (Quality Lead)

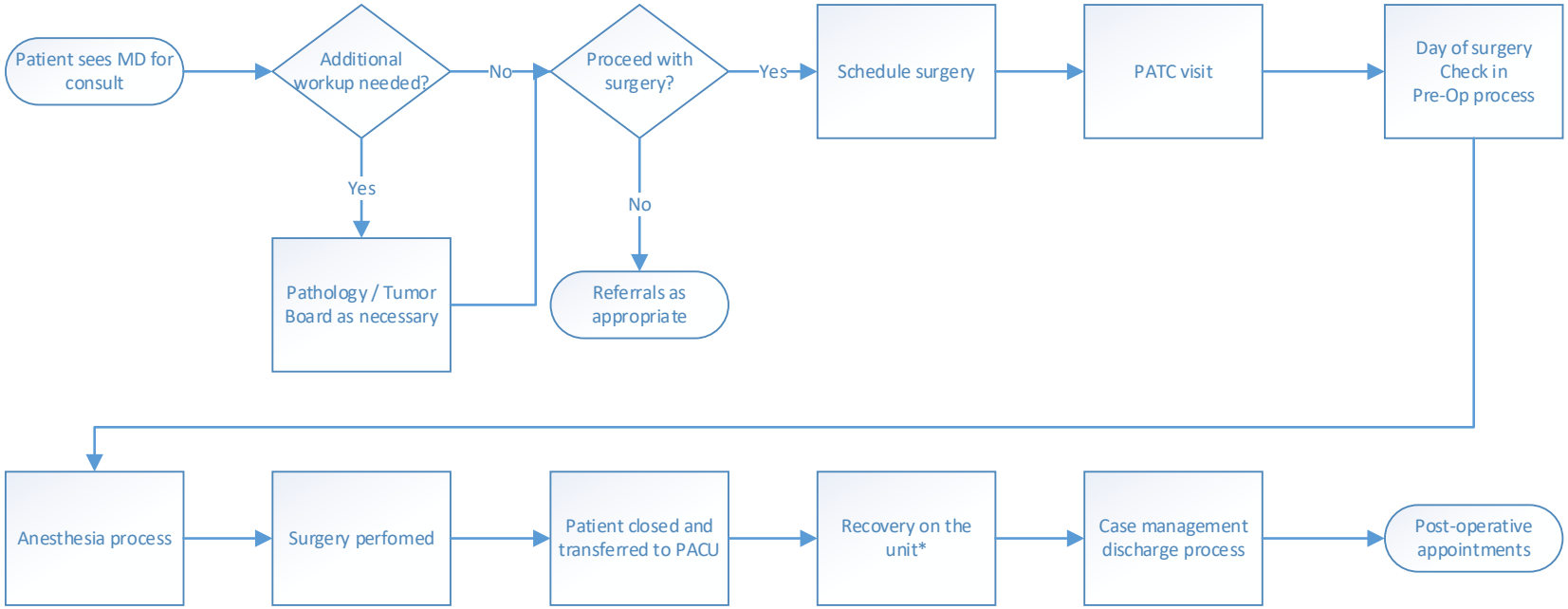
Priscilla Ohanesian, Team Member

Denise Morse, Team Member (Analytics Lead)

Steve Power, QTP Improvement Coach

Process Map

CoH Gyn Surgery Process Flow



* Pain control, Nausea control, Bowel function, Bladder function, Wound care, Fluid management, Medical Problem management (Htn, Diabetes, etc.), Sleep care/Rest, Ambulation/physical therapy/ OT, Psychosocial care, DVT prophylaxis, Nutrition/dietary

Last updated 3/13/19

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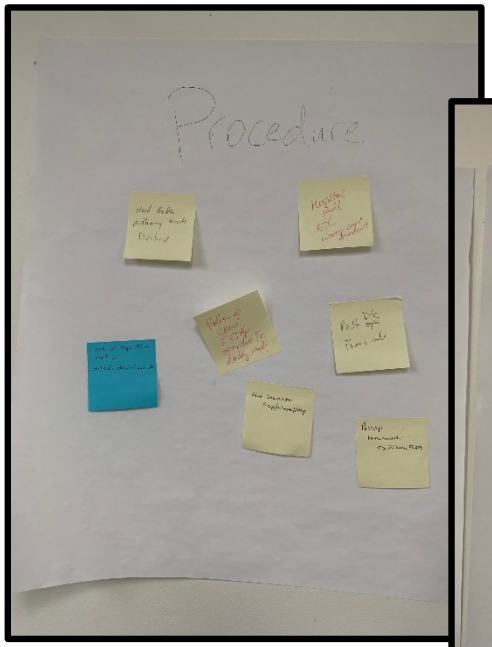
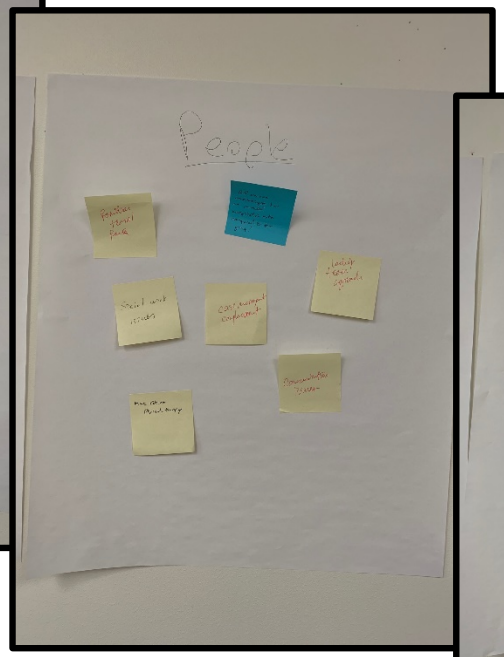
Cause & Effect Diagram

Multidisciplinary team brainstorming exercise to discover causal factors

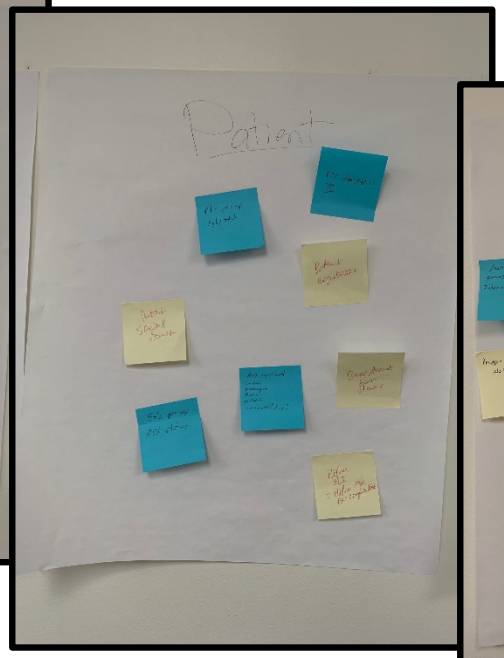
Procedure



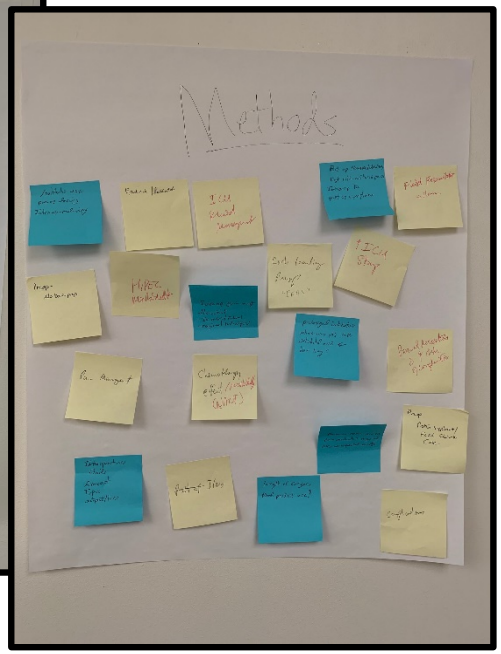
People



Patient



Methods



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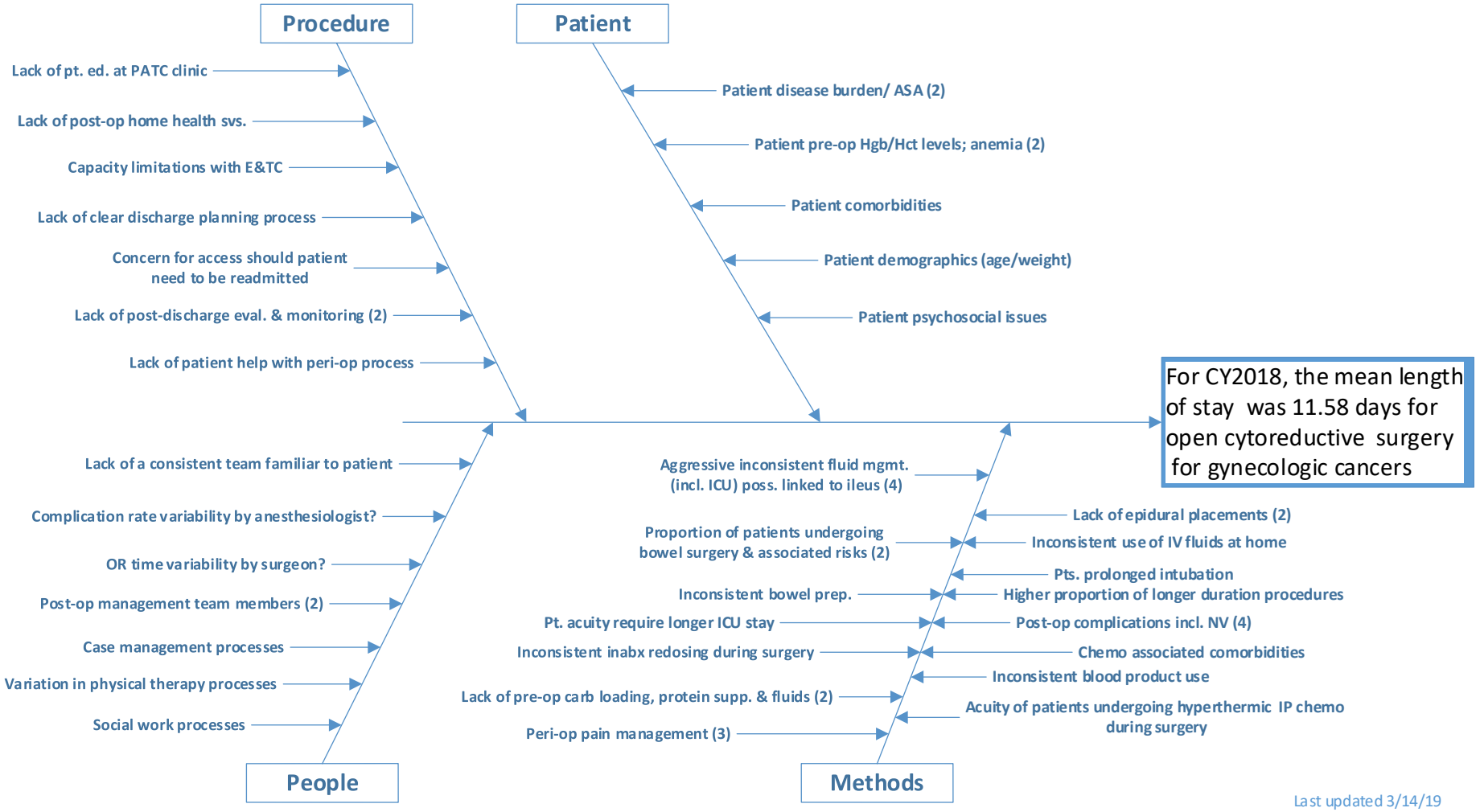
Cause & Effect Diagram



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Baseline Data

Examples of procedures in baseline data:

19	Gynecologic Oncology	0UT90ZZ	Resection of Uterus, Open Approach
18	Gynecologic Oncology	0UT70ZZ	Resection of Bilateral Fallopian Tubes, Open Approach
16	Gynecologic Oncology	0UT20ZZ	Resection of Bilateral Ovaries, Open Approach
6	Gynecologic Oncology	0TN60ZZ	Release Right Ureter, Open Approach
6	Gynecologic Oncology	0DBW0ZZ	Excision of Peritoneum, Open Approach

Aim Statement

By October 2019, the mean LOS for a patient undergoing open cytoreductive surgery for gynecology cancers will be 8 days. This represents a 29% reduction from the baseline performance.

Measures

- Outcome Measure: LOS, LOS O/E
- Process Measure: preop, intraop, postop measures
- Balance Measure: Readmission, Cost Index, Patient Satisfaction, complications until 30 days post-discharge
- Patient population: Patients undergoing open cytoreductive surgery for gynecologic cancers
  - Exclusions: cervix cancer pelvic exenterations
- Calculation methodology:
  - Numerator: observed length of stay
  - Denominator Expected length of stay
- Data source: Epic chart review, Vizient CDBRM
- Data collection frequency: Weekly / Monthly
- Data quality (any limitations): Limited by documentation in clinical chart

Diagnostic Data

- This is a work in progress
- With recent advent of Enhanced Recovery after Surgery (ERAS) in gynecologic oncology, there are recommended guidelines
- Goal is to obtain data on preoperative, intraoperative, and postoperative measures
  - How close do we follow ERAS guidelines currently?

Diagnostic Data

Preoperative:

- Mechanical Bowel preparation given
  - If so, what type of prep given
- Administration of Carbohydrate loading drink
- Dietary restrictions 24 hrs prior to surgery
- Administration of Preoperative pain medications
- Venothromboembolic prophylaxis administered
- Bathe or shower with soap/antiseptic agent night before surgery

Diagnostic Data

Intraoperative:

- Preop antibiotics administered
  - If so, what was administered
- Chlorohexidine-alcohol for skin prep used
- Administration of antiemetic during surgery
  - If so, what was administered and when
- Anesthesia used
  - Use of short acting anesthetic agent
  - Use of total intravenous anesthesia
  - Use of local wound infiltration (TAP block, local to skin)
- Surgical drain use
- Nasogastric tube use
- Use of warming device before and during surgery
- Use of lactated ringers (to reduce salt load)
- Goal-directed fluid therapy use

Diagnostic Data

Postoperative:

- Solid Diet started on postop day (POD) 0
- Use of oral nutritional supplements on POD 0
- Glycemic control < 200 mg/dl
- Analgesia administered
  - What type was used (acetaminophen, ibuprofen, pregabalin, opioids)
- Patient admitted to non-ICU floor
- Patient extubated to PACU
- Postop fluid use
  - How much used daily
- Foley catheter removed POD 1
- Ambulation 8x/day, out of bed 8 h/d, all meals in chair
- Bowel routine administered (miralax, senna, lactulose, other)
- Venothromboembolic prophylaxis use
  - Pharmacologic use on POD 1
  - SCDs postop

Diagnostic Data- Preoperative

ERAS Compliance Measure	Pre-ERAS	Post-ERAS	P value
Preadmission patient education	0%		
Avoidance of oral bowel prep	88%		
Preoperative oral carbohydrate treatment	0%		
Thrombosis prophylaxis	100%		
Antibiotic prophylaxis	100%		

N = 17

Diagnostic Data- Intraoperative

ERAS Compliance Measure	Pre-ERAS	Post-ERAS	P value
Avoidance of epidural or spinal anesthesia	100 %		
Upper body forced-air heating cover used	59 %		
Avoidance of nasogastric tube after surgery	65 %		
Avoidance of surgical drains	76 %		
Received long-acting systemic opioid intraop	ND		

N = 17

Diagnostic Data- Postoperative

ERAS Compliance Measure	Pre-ERAS	Post-ERAS	P value
Prompt termination of foley cath on POD#1	29 %		
Patient weight recorded POD#1 and < 2 kg weight gain (compared to preop weight)*	44 %		
Prompt termination of intravenous fluids after POD#1	0 %		
Oral Energy intake POD#0 (≥ 300 kcal)	0 %		
Oral Energy intake POD#1 (≥ 600 kcal)	0 %		
Stimulation of gut motility	24 %		
Mobilize/ambulate patient on POD#0	ND		

N = 17; * N = 9;

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Diagnostic Data- Postoperative Complications < 30 days

ERAS Compliance Measure	Pre-ERAS	Post-ERAS	P value
Respiratory Complication	12 %		
Infectious Complication	24 %		
Cardiovascular Complication	12 %		
Renal, hepatic, pancreatic, and GI complication	35 %		
Anastomotic Leak	0 %		
Transfusion without hemorrhage	35 %		
Anesthetic Complication	0 %		
Psychiatric Complication	0 %		

N = 17

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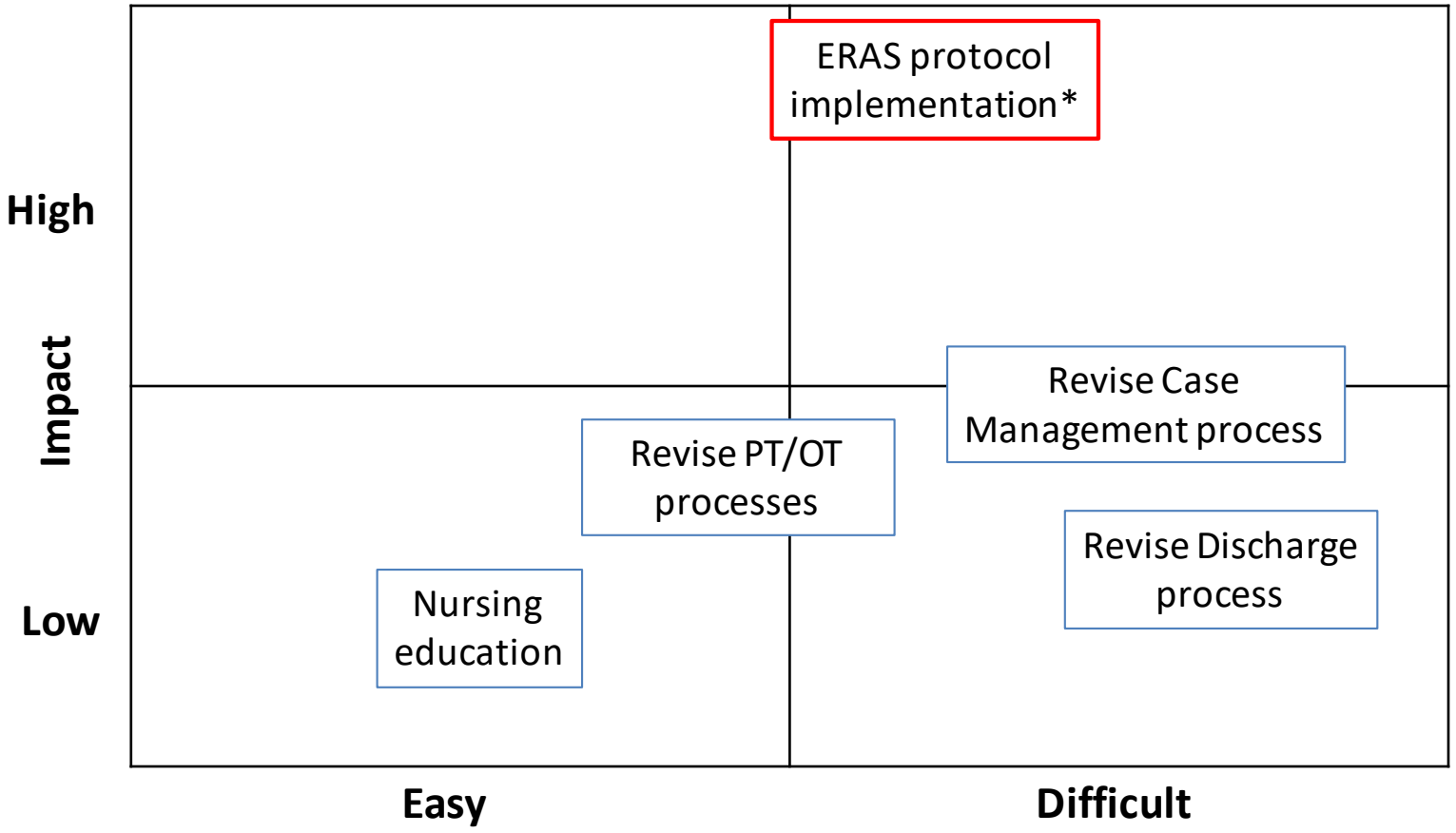
Prioritized List of Changes
(Priority/Pay –Off Matrix)



*ERAS protocol implementation addresses multiple causal factors

PDSA Plan (Test of Change)

Date of PDSA Cycle	Description of Intervention	Results	Action Steps
April 2019	1. Identify elements of ERAS appropriate for Gyn Onc surgery 2. Acquire data of current management practices	1. Literature review identified preop, intraop, postop interventions 2. See data assessment	Identify and prioritize ERAS interventions
May 2019	Development of ERAS protocol by surgical team	Finalize protocol	Implementation of ERAS protocol via EPIC
June 4, 2019	Production of ERAS pathway for EPIC EMR	EPIC build required; may take months	Design temporary measure to distribute preop and postop ERAS template
June 18, 2019	Distribution of temporary ERAS pathway to stakeholders; Initiate ERAS	Pending	

Materials Developed

- **Preoperative**:
- No mechanical bowel prep
- Diet
  - Evening before surgery
    - Solids ok until midnight
    - Ensure Clear 1 bottle 9 pm
  - Morning of surgery
    - Clear Liquids ok until 5 am, then NPO
    - Ensure Clear 1 bottle at 5am
- Chlorhexidine bath/shower night before surgery

Materials Developed

- **<u>OR Holding</u>**:
- Preop pain meds
  - Acetaminophen 1000 mg PO once
  - Celecoxib 400 mg PO once
  - Tramadol ER 300 mg PO once
  - Gabapentin 600 mg PO once
- DVT prophylaxis
  - Heparin 5000 U SQ or
  - Lovenox 40 mg SQ
  - SCDs prior to induction of anesthesia

Materials Developed

- **Intraoperative**:
- Antimicrobial
  - Chloroprep for skin cleaning
  - Preop antibiotics
    - If no bowel resection anticipated, ancef 2 gm IV (3gm if wt > 120 kg)
    - If bowel resection anticipated, ancef 2 gm IV + Flagyl 500 mg IV or Ertapenem 1 gm IV
- Anesthesia
  - Local wound infiltration
    - Incision site with 0.25% bupivacaine with epinephrine or Exparel
    - Subcostal TAP block with 0.25% bupivacaine with epinephrine or Exparel
    - TAP block with 0.25% bupivacaine with epinephrine or Exparel
  - Total intravenous anesthesia
  - Short acting anesthetic (if Total IV anesthesia not used)
- Maintenance of normothermia
  - Active warming device used (started in preop holding)
- Avoid surgical drains and NGTs

Materials Developed

- **Postoperative**:
- Diet
  - Regular or low fat/low fiber diet on POD#0
  - Oral nutritional supplements on POD#0 and continue on discharge
  - Glycemic control with FSBS < 200 mg/dl
- Pain medications
  - Acetaminophen 1000 mg PO q8 hrs POD#0
  - Ibuprofen 600 mg PO q6hrs POD#0
  - Pregabalin (Lyrica) 75 mg PO BID x 48 hrs starting PM POD#1
  - IF above meds ineffective or contraindicated
    - Oxycodone 5-10 mg PO q 4hr prn
    - Tramadol 100 mg PO q4 hr prn
    - IV opioid only if PO ineffective within 30 min for breakthrough
    - Start PCA if patient needs 2 or more dosed of IV breakthrough in a 24 hr period
- Antiemetics
  - Zofran 4mg PO q6hrs PRN nausea
  - Prochlorperazine 10 mg IV q6 hr breakthrough nausea after 30 min from Zofran
- Postop fluids
  - 0.5 ml/hr/kg (typical duration of 8-12 hrs)
  - Fluid bolus of 250-500 ml for UOP < 20 ml/hr
  - Peripheral lock IV when oral intake at least 600 ml

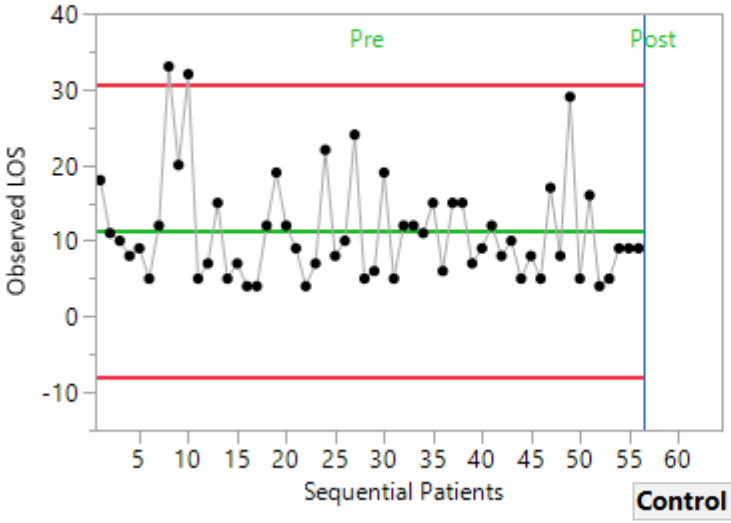
Materials Developed

- **Postoperative**:
- Foley Catheter
  - D/c POD#1 in am (assuming no contraindications)
- Activity
  - Ambulate 8x per day
  - All meals in chair
  - OOB 8 hrs/day
- Bowel routine (select one or more; hold if diarrhea develops)
  - Senna 1-2 tabs PO qhs
  - Magnesium hydroxide 25ml PO qhs
  - Lactulose 15-30 ml PO TID
  - Miralax 17 gm PO daily
  - Metamucil 1-2 packets PO daily
- VTE prophylaxis
  - Lovenox 40 mg SQ daily starting POD#1 and continue for 28 days with laparotomy
  - SCDs while in bed

Change Data

Control Chart

Individual Measurement of losobs

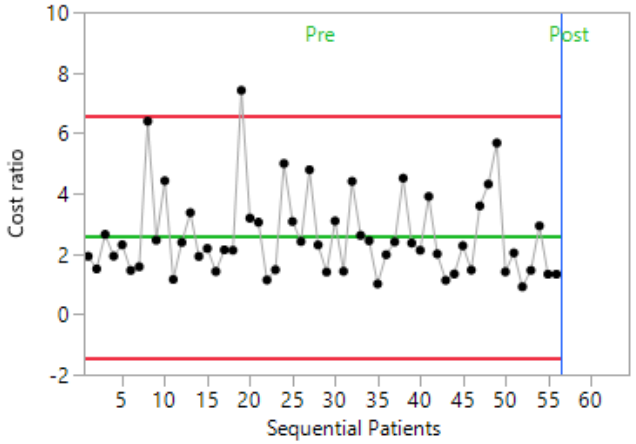


Phase Limits

Phase	LCL	Avg	UCL
Pre	-8.07323	11.21429	30.50181
Post	.	.	.

Control Chart

Individual Measurement of Cost ratio



Phase Limits

Phase	LCL	Avg	UCL
Pre	-1.43233	2.568436	6.569203
Post	.	.	.

Conclusions

- Implementation of ERAS protocol initiated. No conclusion on LOS changes with ERAS implementation

Next Steps/Plan for Sustainability

- Reassess our team's ability to deliver ERAS pathway for patients undergoing debulking surgery
  - Identify barriers to delivering ERAS
- Plan to phase in additional support changes for promoting ERAS
  - Nursing education and support of ERAS
    - Outpatient nursing
    - Inpatient nursing
  - Engage prehab team
    - Occupational therapy
    - Dietician
    - Preadmission Testing

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