

Preoperative Optimization and Surgical Site Infection Reduction

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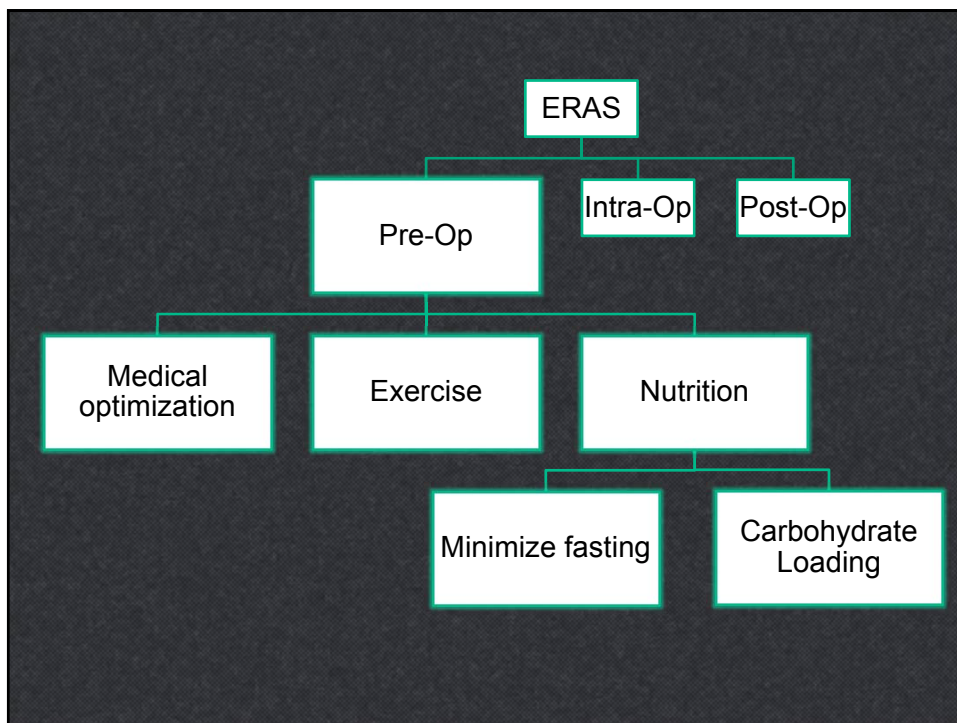
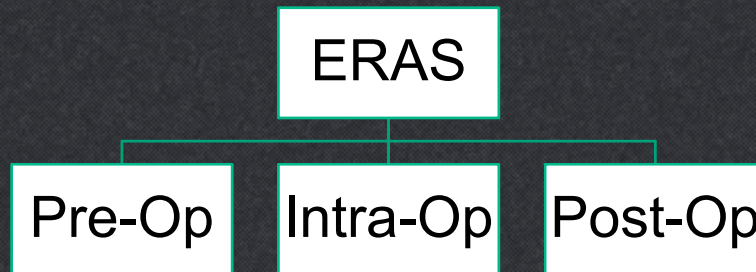
Objectives

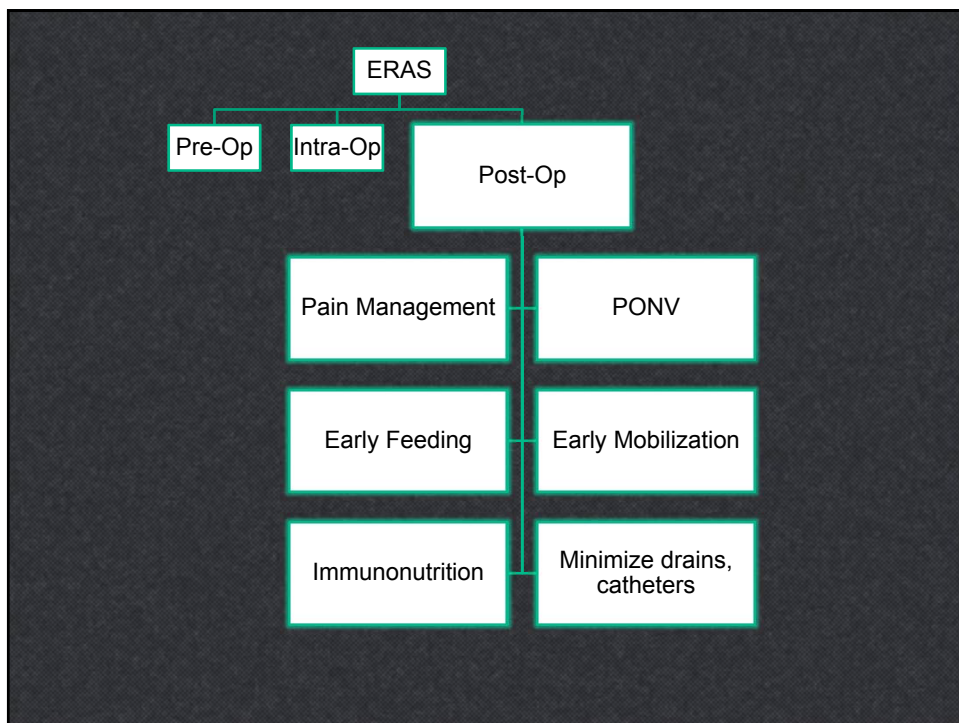
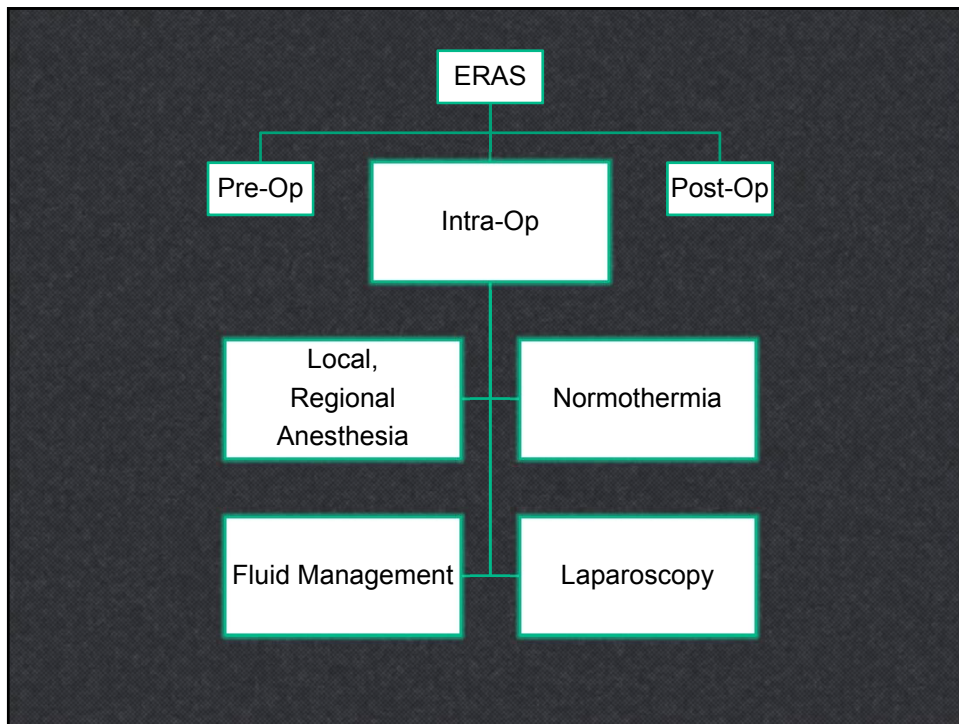
- **Introduce Enhanced Recovery (ERAS)**
- **Discuss Preoperative Optimization**
- **Surgical Site Infection Risk Reduction Strategies**

Preoperative Optimization

- **Meet Tim**
- **55 yo male with new colon cancer**
- **Poor appetite**
- **Smoker**
- **COPD on albuterol prn**
- **BMI 40**
- **History of 10 lb unintentional weight loss over past month**

Enhanced Recovery Pathways





Path to Home Guide : Bowel Surgery

	Day of Surgery	1 Day After Surgery	2 Days After Surgery	3 Days After Surgery
Breathing exercises	10 X every hour sitting	10 X every hour sitting	10 X every hour sitting	10 X every hour sitting
Activities	Sitting in chair	3X daily walking	3X daily walking	Walking outside
Pain control	epidural pain should be kept below 4	epidural pain should be kept below 4	pills pain should be kept below 4	pills pain should be kept below 4
Nutrition	gum, clear liquids, protein drinks	solid food & gum, protein drinks	solid food & gum, protein drinks	solid food & gum, protein drinks
Tubes & lines	Intubated in bed	Walking with catheter	Walking	Walking

Centre d'admission de soins MCGH | Mc GILL University Health Centre | Office d'information des patients du CHUM | PRET SURE | MM

Feldman
et al. Sc
Am
Surgery.

Diagnostic Characteristics of Malnutrition

Identification of two or more of these six criteria is recommended for diagnosis:



White JV, et al. *JPEN J Parenter Enteral Nutr.* 2012;36:275-283.

Loss of Muscle Mass and Function Can Now Diagnose Malnutrition, Independent of Body Weight

Insufficient energy intake

Type of malnutrition	Acute illness or injury-related	Chronic disease-related	Social or environmental cause
Moderate	<75% of est. energy requirement for >7 days	<75% of est. energy requirement for ≥1 month	<75% of est. energy requirement for ≥3 months
Severe	≤50% of est. energy requirement for ≥5 days	≤75% of est. energy requirement for ≥1 month	≤50% of est. energy requirement for ≥1 month

White et al, JPEN 2012

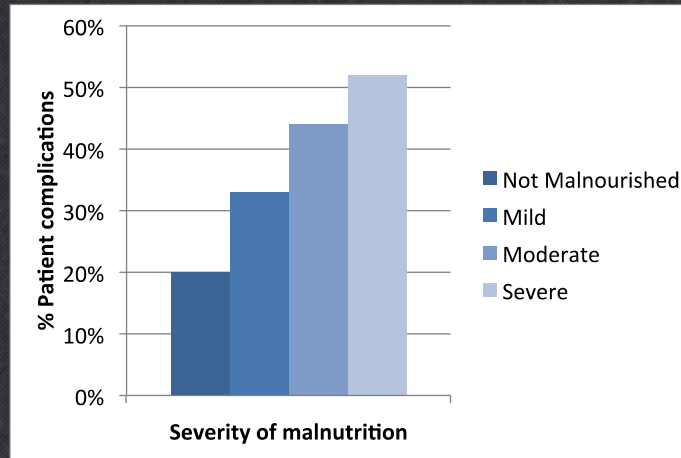
Weight loss

Type of malnutrition	Acute illness or injury-related		Chronic-disease related		Social or environmental cause	
Moderate	%	Time	%	Time	%	Time
	1-2	1 week	5	1 month	5	1 month
	5	1 month	7.5	3 months	7.5	3 months
	7.5	3 months	10	6 months	10	6 months
Severe	%	Time	%	Time	%	Time
	>2	1 week	>5	1 month	>5	1 month
	>5	1 month	>7.5	3 months	>7.5	3 months
	>7.5	3 months	>10	6 months	>10	6 months
			>20	1 year	>20	1 year

White et al, JPEN 2012

Effect of Malnutrition on Surgical Complications

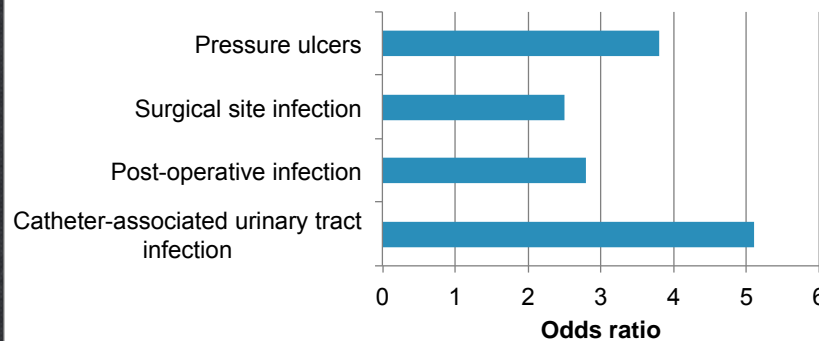
N = 100 patients



Sungurtekin H, *J Am Coll Nutr.* 2004;23:227-232.

Increased risk of post-surgical complications

Risk for complications in malnourished patients

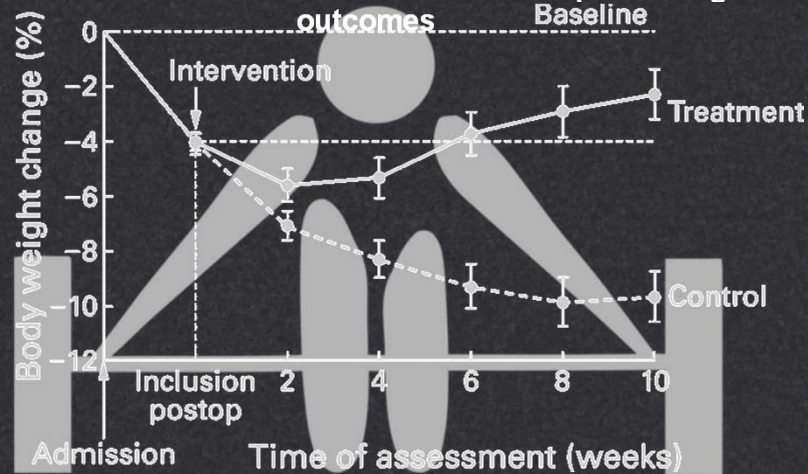


Pre-existing malnutrition increases risk for post-surgical complications by 2- to 5-times.

Fry DE, et al. *Arch Surg.* 2010;145:148-151.

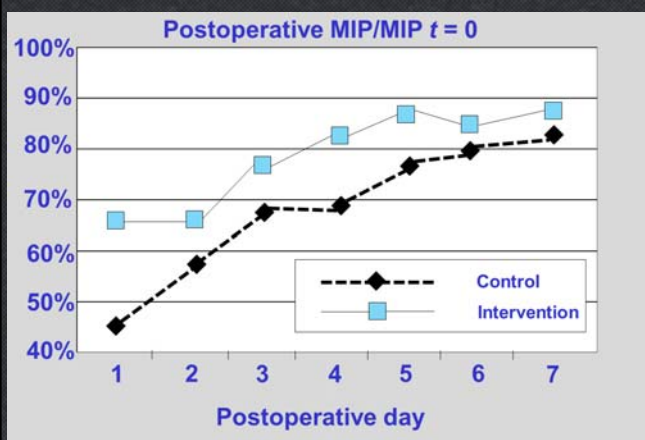
Surgery is a sport – train!

Goal: Increase / maintain muscle mass to improve surgical



Beattie et al. A randomised controlled trial evaluating the use of enteral nutritional supplements postoperatively in malnourished surgical patients Gut 2000.

Evidence for Preoperative Pulmonary Exercise



MIP: maximum inspiratory pressure



Source: Dronkers et. al. Clin Rehabil 2008 vol. 22 no. 2 134-142

Quit Smoking to Reduce SSI

- The odds ratio for SSI in smokers is 1.51 (95%CI, 1.20-1.90; $P < .001$)
- The odds ratio for SSI if smoking on the day of surgery is 1.96 (95%CI, 1.23-3.13; $P < .001$)

JAMA Surg. 2017;152(5):476-483



Real World Application of Immunonutrition Preoperative Oral Supplements: The Strong for Surgery Project

- Elective Colorectal Procedures w/ anastomosis
- Composite Adverse Event Rate (Reintervention, Infection, Anastomotic Leak and/or Death)
 - No preoperative supplements 9.4%
 - Preoperative immunonutrition 7.1%
 - Did not reach statistical significance
- Length of Stay improved with immunonutrition



Thornblade et al. Dis Colon Rectum. 2017 Jan; 60(1): 68–75.

The Power of Oral Nutritional Supplements

High protein oral vs. placebo.

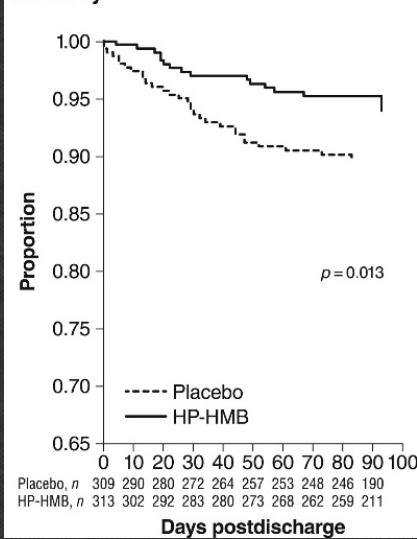
Primary Endpoint was readmission

Study Population:

Congestive heart failure (CHF)
Acute myocardial infarction (AMI)
Pneumonia (PNA)
Chronic obstructive pulmonary disease (COPD)

Deutz et. al. Clinical Nutrition. 2016 Feb;35(1):18-26
(CC BY-NC-ND 4.0)

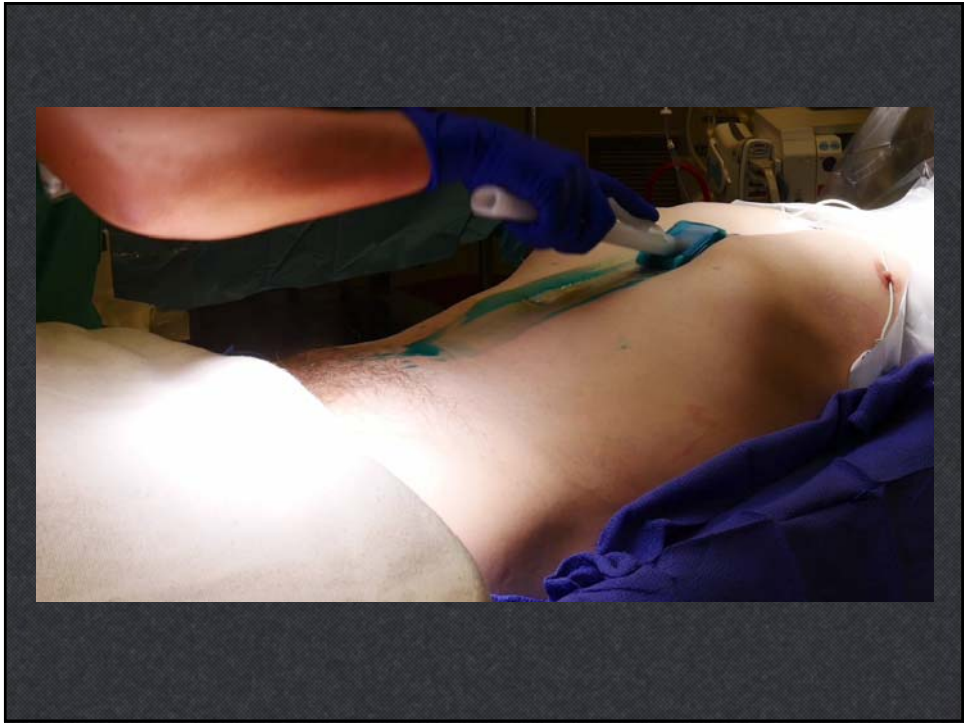
D. Kaplan-Meier Survival Curve: Mortality



SSI Reduction – Gametime!

- Skin care is crucial to SSI reduction





Postoperative Skin Care

- Epithelialization occurs in 48 hours
- Dressings changed before 48 hours require sterile technique
- Most wounds ok for gentle soap/water shower (not bath/soak) after 48 hours

Wound Healing and Abdominal Core Health

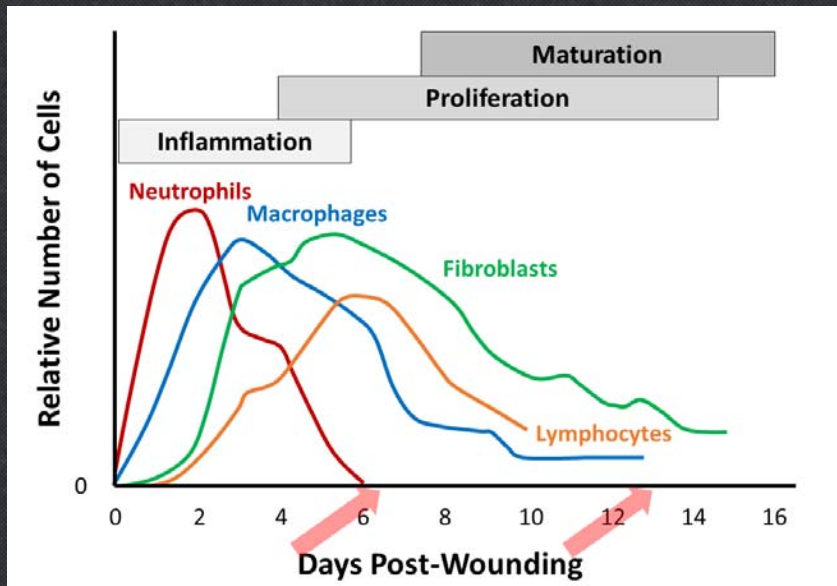
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Professor of Surgery
Chief, Division of General & Gastrointestinal Surgery
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Topics Today

- General concepts of wound healing
- Practical guide to wound infection
- Abdominal Core Health

GENERAL CONCEPTS OF WOUND HEALING

Phases of Wound Healing



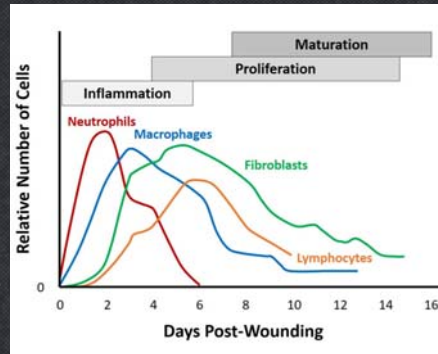
Characteristics of the Phases

- Inflammation -> Exudate
- Proliferation -> Granulation
- Maturation -> Contraction



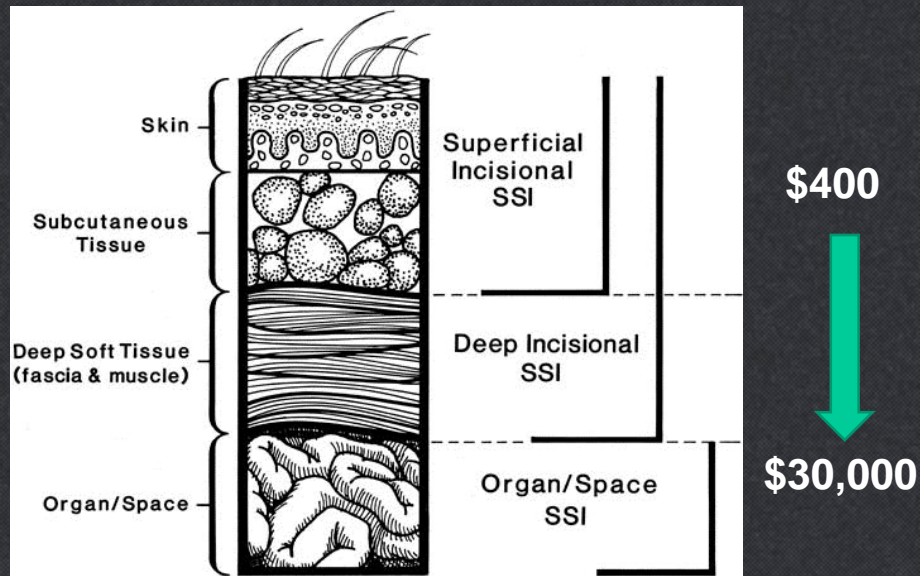
Clinical Implications

- 1 week postop -> protect incision from excessive stretching/moisture
- 2-3 weeks postop -> increase activity
 - ***use pain as your guide



PRACTICAL GUIDE TO WOUND INFECTION

Surgical Site Infection

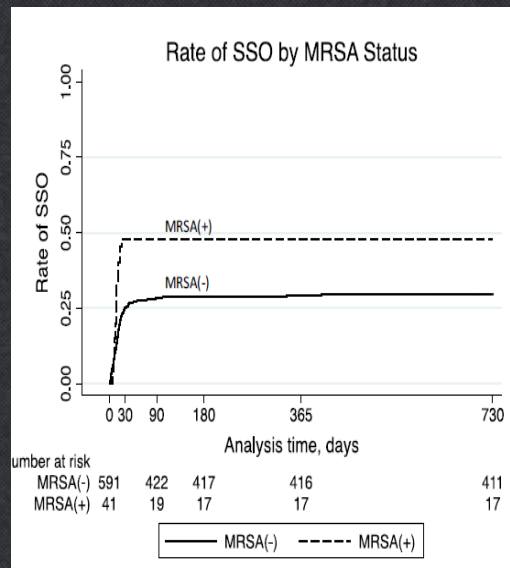


Infect Control Hosp Epidemiol. 1999 Apr;20(4):250-78; quiz 279-80.

Surgical Site Occurrences

- Include all SSIs
- Expand to include other wound events
 - Wound cellulitis
 - Non-healing incision
 - Fascial disruption
 - Skin/soft tissue ischemia
 - Skin/soft tissue necrosis
 - Serous/purulent drainage
 - Stitch abscess
 - Seroma/hematoma
 - EC fistula

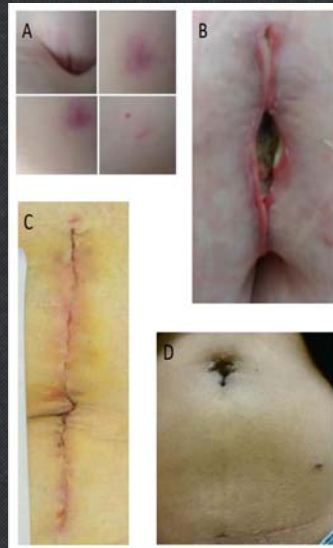
When Do SSOs Occur? Not Just 30 Days!



Baucom, R.B., Ousley, J., Oyefule, O.O. et al. Hernia (2016) 20: 701.

How Do You Recognize a Wound Infection?

- Erythema, heat, swelling, pain...and drainage
- Sometimes can be difficult to differentiate normal postop inflammatory phase of wound healing vs an infection
- Best approach is to follow incision over time

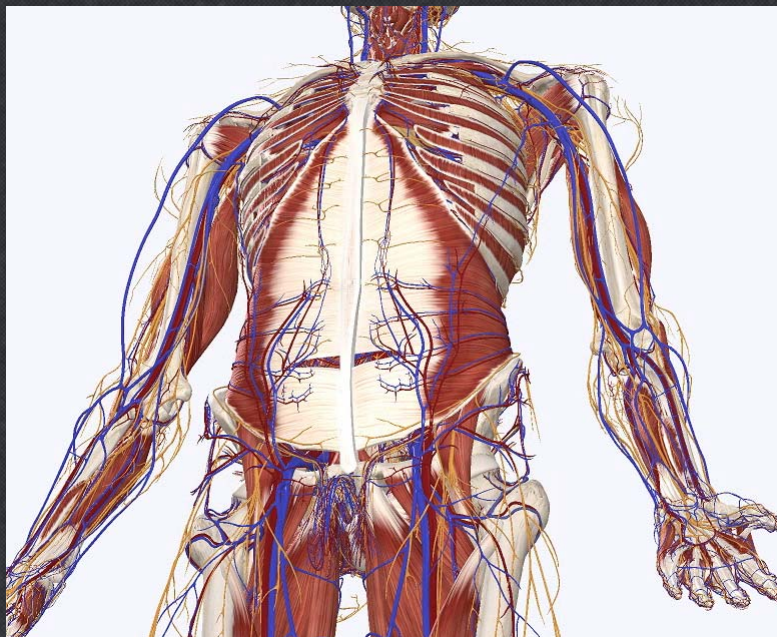


A-Normal
B-SSO
C-SSI
(superficial)
D-Normal

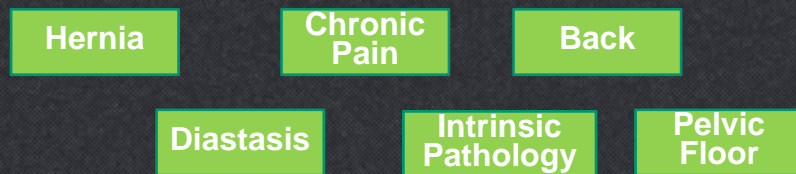
How Do You Treat a Wound Infection?

- Oral antibiotics for wound cellulitis (consider patient risk factors)
- If anything more severe->needs wound opening and local wound care
 - Local wound care – BID packing with iodoform gauze, BID damp to dry with Kerlix, negative pressure dressing
- If signs/symptoms of sepsis->need aggressive treatment
 - Aggressive treatment: admission, IV antibiotics, operative debridement, prosthetic removal
- If any doubt or concern->talk you your proceduralist
 - Communication is key for effective postoperative care;
***PARTNERSHIP

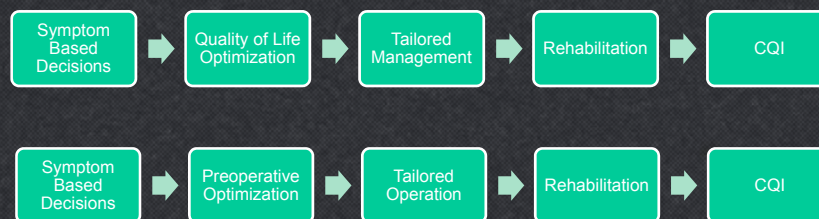
ABDOMINAL CORE HEALTH



Abdominal Core Health *Spectrum of Disease*



Abdominal Core Health *Patient Experience*





THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Center for Abdominal Core Health

Abdominal Core Health *Spectrum of Disease*

Hernia

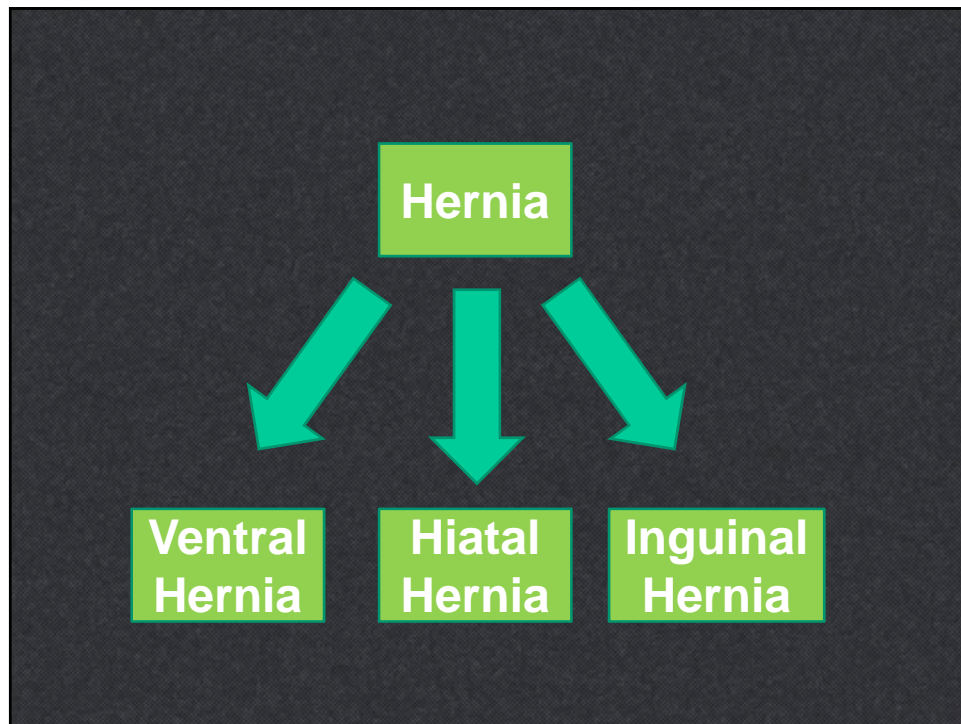
Chronic
Pain

Back

Diastasis

Intrinsic
Pathology

Pelvic
Floor



Common Themes To All Hernias

- Management based on symptoms
 - Exceptions: femoral hernias in women, Spigelian hernias
- Diagnosis made by physical exam
 - Adjuncts can help (CT/US->ventral and femoral; US->inguinal)
- Continuum from normal->hernia can make diagnosis challenging

Incarceration and Strangulation

- Incarceration (opposite: 'Reduceable')
 - Chronic
 - Acute
- Strangulation
 - Incarceration with ischemic or functional compromise
 - Acute

Ventral Hernia



Henry Gray (1918) *Anatomy of the Human Body*
Bartleby.com: Gray's Anatomy, Plate 392
Author: Henry Vandyke Carter

Ventral Hernia

Spontaneous	Acquired
<ul style="list-style-type: none">• Midline<ul style="list-style-type: none">• Umbilical• Epigastric• Hypogastric (rare)• Lateral<ul style="list-style-type: none">• Spigelian	<ul style="list-style-type: none">• Incisional<ul style="list-style-type: none">• Subxyphoid• Suprapubic• Traumatic

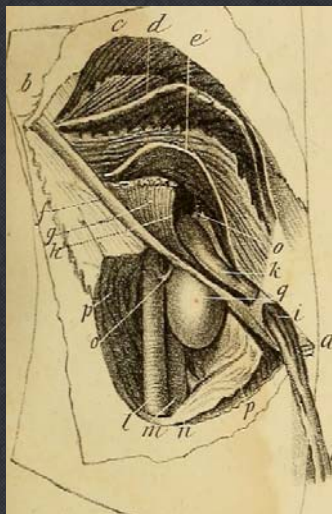
Choices for Repair

- Open vs Minimally Invasive (robotic or laparoscopic)
- Location of mesh
- Type of mesh

Goals of Repair

- Improve quality of life and overall well being
- Minimize risk of recurrence (?chronic disease?)

Inguinal Hernia and Myopectineal Orifice



Types of Hernia in This Region

- Inguinal hernia
- Femoral hernia
- Obturator hernia

Choices for Repair

- Open vs Minimally Invasive (robotic or laparoscopic)
- Open – mesh based or tissue based
- Special situations
 - Open infra-inguinal approach to femoral hernia
 - Laparoscopic approach to obturator hernia

Goals of Repair

- **Improve quality of life**
- **Minimize chronic groin pain**
- **Minimize recurrence**