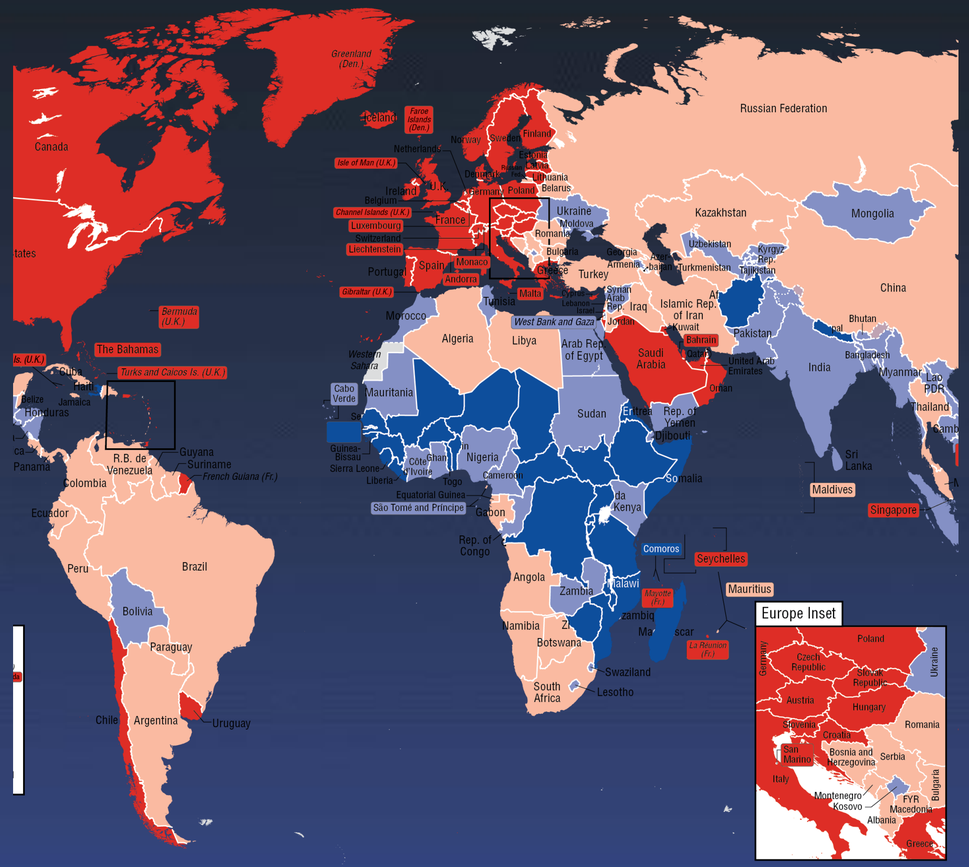
Enhanced Recovery after Colorectal Surgery

: Why is it Important in low-income Economies?



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Financial Disclosures

None

None

THE DOGMA

- “A principle or set of principles laid down by authority as inconvertibly true”
- DOGMAS in Colorectal Surgery: Preoperative prolonged fasting

Nasogastric tube

Drains

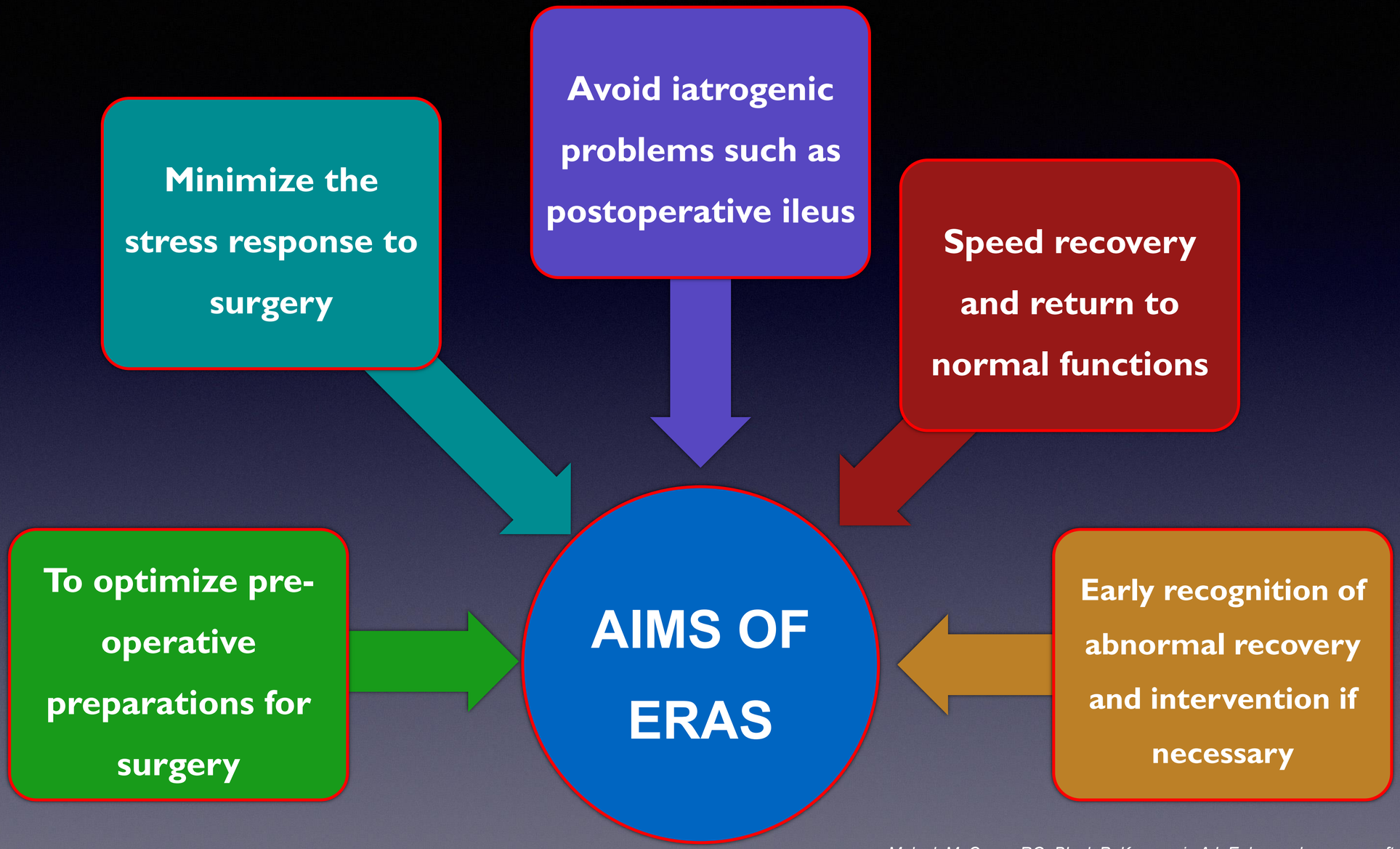
Prolonged bed rest

…but Evidence always trumps Dogma

ERAS

- ERAS protocols are multimodal perioperative care pathways designed to achieve early recovery after surgical procedures by maintaining pre-operative organ function and reducing profound stress response following surgery

- Initiated by Professor **Henrik Kehlet** in 1993, ERAS, enhanced recovery programs (ERPs) or “fast-track” programs



Melnyk M, Casey RG, Black P, Koupparis AJ. Enhanced recovery after surgery (ERAS) protocols: Time to change practice? Can Urol Assoc J. 2011 Oct;5(5):342-8. doi: 10.5489/cuaj.11002. PMID: 22031616; PMCID: PMC3202008.

ERAS implementation

- Studies have noted a fall in surgical (anastomotic leaks, etc.), as well as non-surgical complications (nosocomial infections, etc.) in the post-operative period.
- Successful implementation of ERAS programs reduces duration of hospital stay
- ERAS is associated with better quality of life outcomes when compared to traditional care and management
- Early discharge means patient turnover times are reduced and institutes may be able to serve more patients within the available infrastructure.

- Pathway coordinator
- Surgeon lead
- Anesthesia lead
- Nurse manager surgery ward
- Clinical nurse specialist- pain
- Physiotherapist
- Nutritionist
- Pharmacist
- Librarian

PLUS Clinical Experts
for each pathway – surgical lead, anesthesia, nurse

PHASES OF ERAS

- Pre-operative
- Intra-operative
- Post-operative

Components of enhanced recovery program

Preop

Optimization

Prehabilitation

?bowel prep

Reduced fasting

CHO loading

Minimally Invasive

Intraop

Fluid balance

Normothermia

Regional anesthesia

Activation

Multimodal opioid sparing analgesia

Fast acting anesthetics

Postop

PONV and Ileus prophylaxis

Periop nutrition
Early mobilization

No NG

Early removal catheters & drains

Daily care maps
Discharge criteria

PRE-OPERATIVE- COMPONENTS

- Patient counseling and education (decrease fear and anxiety plus stoma education)
- Pre-operative optimization (assessment and control of medical conditions)
- Bowel preparation
- Thromboembolic prophylaxis
- Pre-operative fasting and carbohydrate loading
  - Clear liquid 2 hrs , solid diet. 6 hrs, carbohydrate loading
- Anti-microbial prophylaxis (1 hour befor skin incision and repeate in > 4 hrs) and skin preparation

INTRAOPERATIVE COMPONENTS

- Anesthesia protocol
- Surgical approach
- Fluid management
- Preventive intra-op hypothermia
- Pelvic drainage

Fluid management

- Hyper /hypovolemia →splanchnic hyper/hypoperfusion→ ileus→ increased morbidity→ increased LOS
- Goal directed fluid therapy (GDFT): intra- op doppler to maintain intravascular volume, cardiac output and tissue perfusion while avoiding fluid overload
- Monitoring urine output is difficult
  - Alternative: CVP , heart rate and arterial pressure

Prevent Intra-op Hypothermia

- Prolonged exposure→ temp <36 degrees → increased wound infections, blood loss and complications.

- Maintain normothermia using external heaters and warm iv fluids.

Ann Surg 2000

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A Clinical Pathway to Accelerate Recovery After Colonic Resection

Linda Basse, MD, Dorthe Hjort Jak

From the Department of Surgical C

Objective
To investigate the feasibility of a 48
program after colonic resection.

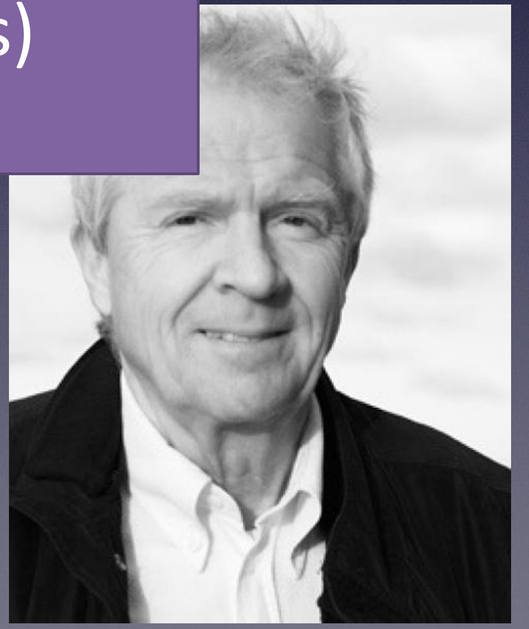
Summary Background Data
Postoperative hospital stay after c
to 12 days, with a complication rat
factors for early recovery include s
function, paralytic ileus, pain, and f
esized that an accelerated multimo
with optimal pain relief, stress redu
thesia, early enteral nutrition, and e
hance recovery and reduce the co

Methods
Sixty consecutive patients undergoing elective colonic resection were prospectively studied using a well-defined postoperative care program including continuous thoracic epidural analgesia and enforced early mobilization and enteral nutrition, and a planned 48-hour postoperative hospital stay. Postoperative follow-up was scheduled at 8 and 30 days.

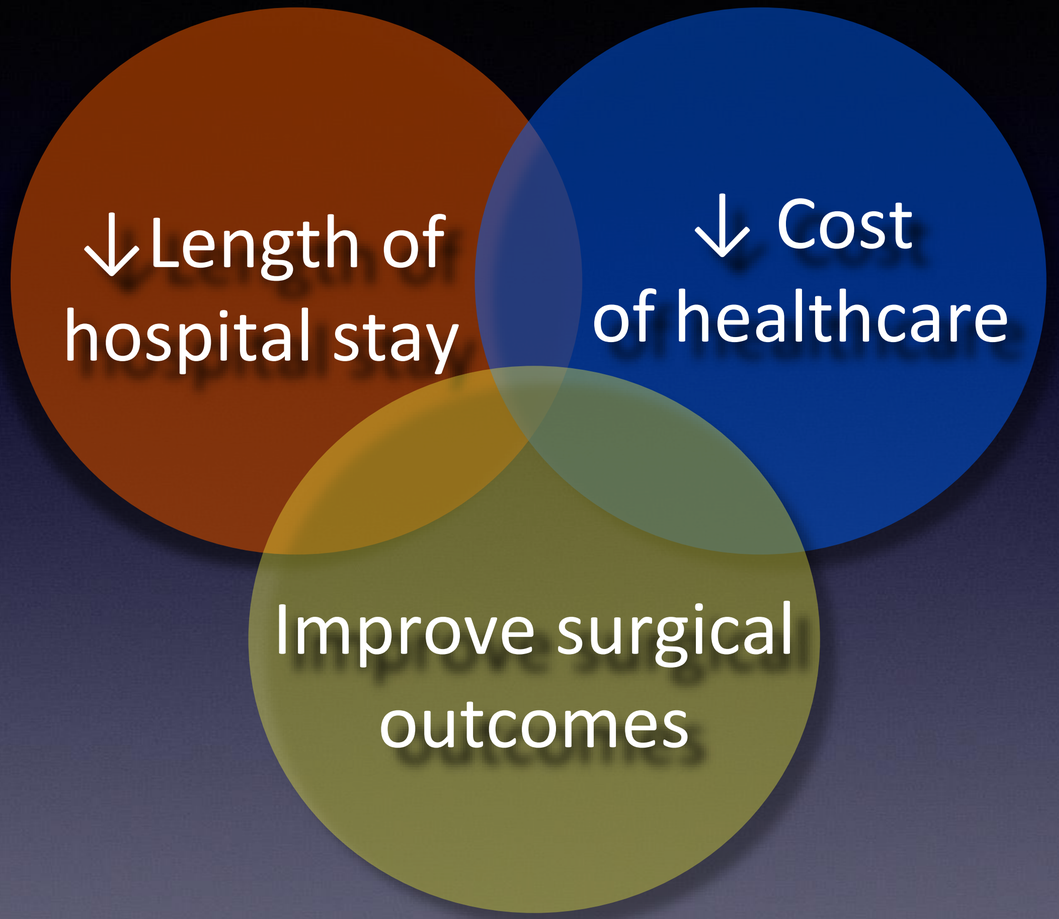
A multimodal rehabilitation program may significantly reduce the postoperative hospital stay in high-risk patients undergoing colonic resection. Such a program may also reduce postoperative ileus and cardiopulmonary complications. These results may have important implications for the care of patients after colonic surgery and in the future assessment of open versus laparoscopic colonic resection.

The postoperative hospital stay after colonic resection is usually 6 to 12 days,[1–6] with a complication rate of 10% to 20%, because many patients are elderly and at high risk. approximately 4 to 6 days.[6,10,11] However, in studies on the effect of laparoscopic-assisted colonic resection, there has rarely been a focus on revising perioperative care programs

- ✓ 60 patients (74 yo)
- ✓ Open colon resection + “accelerated multimodal rehabilitation program”
- ✓ Epidural, early feeding and mobilization
- ✓ Median LOS 2 days (mean 3 days)
- ✓ 15% readmissions



Results



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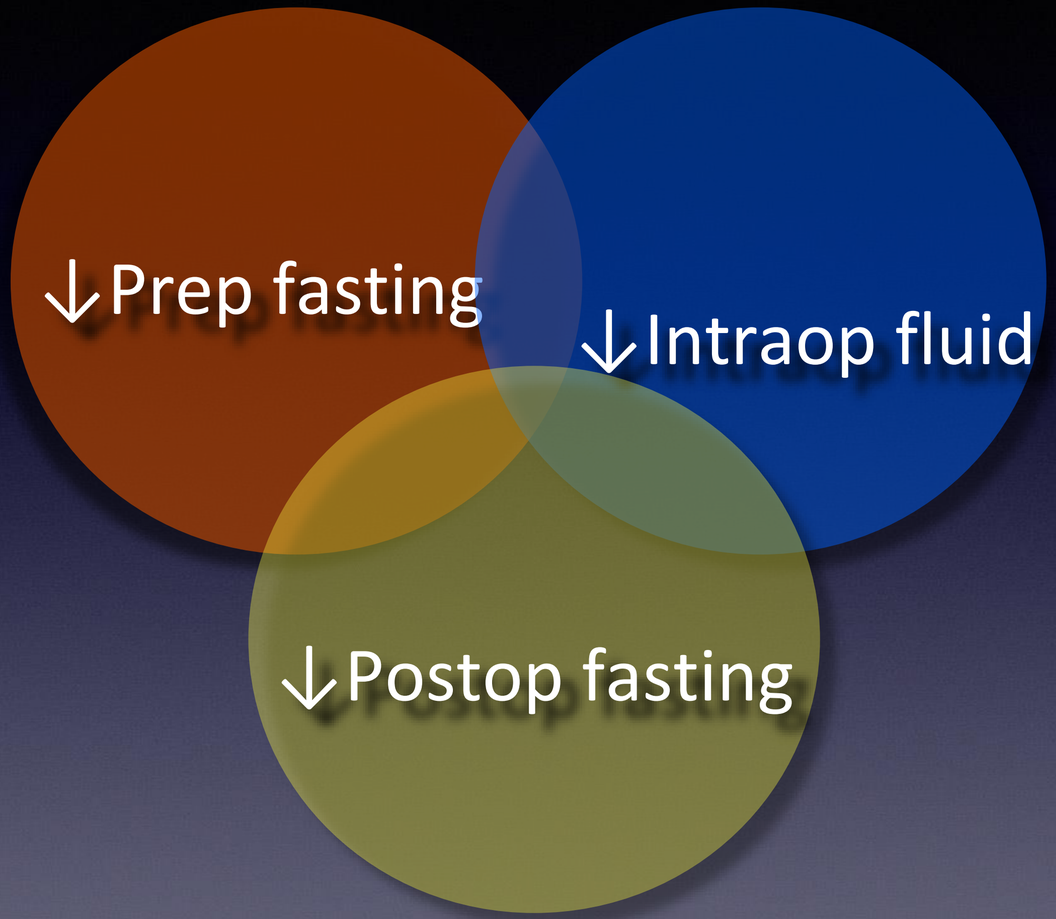
Summary of Resumption of Function



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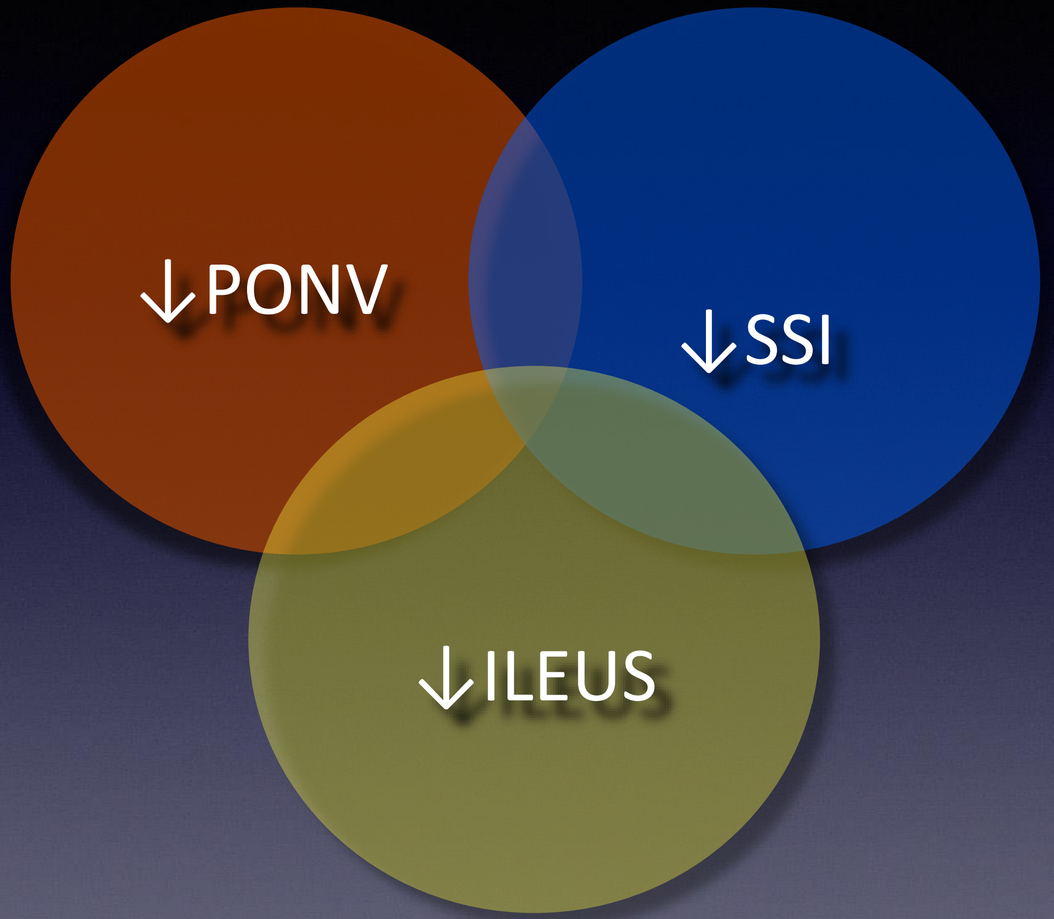
Summary of ↓Complications



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Economic impact of ERAS

- The economic impact of applying ERAS protocols has been widely described in colorectal surgery. Sammour et al. were the first to demonstrate savings per patient of 4429$

  Sammour T et al. N. Z. Med. J. 2010

- Two systematic reviews, concluding that the ERAS protocol was a cost-effective intervention in colorectal surgery, with associated healthcare cost savings

  Lee L et al. Ann. Surg. 2014 , Lemanu D.P et al. Colorectal. Dis. 2014

- Feng et al. studied the application of ERAS protocols applied to laparoscopic colorectal approaches, observing that they reduced hospital costs due to improved recovery and reduced hospital stay

Cost-Effectiveness of Enhanced Recovery vs Conventional Perioperative Management

	Conventional Care (n=95)	Enhanced Recovery (n=95)	p
Preoperative management			
Written patient education	0 (0%)	95 (100%)	<0.001
Mechanical bowel prep	63 (66%)	34 (36%)	<0.001
Sedative	54 (57%)	0 (0%)	<0.001
Carbohydrate drink	0 (0%)	46 (48%)	<0.001
Intraoperative management			
Antibiotic prophylaxis	95 (100%)	95 (100%)	1.000
Mean IV crystalloid, ml (SD)	2475 (1368)	1707 (1122)	<0.001
Mean IV colloid, ml (SD)	429(405)	305(385)	0.038
Abdominal drain	13(14%)	4(4%)	0.022
NG tube left in situ	5(5%)	1(1%)	0.097
Normothermia	91 (96%)	91 (96%)	0.710
Thoracic epidural	61 (64%)	56 (59%)	0.456
Laparoscopic	45(47%)	71 (75%)	<0.001
New stoma	33(35%)	22 (23%)	0.056

Lee L, Mata J, Augustin B, Ghitulescu G, Boutros M, Charlebois P, Stein B, Liberman AS, Fried GM, Morin N, Carli F, Latimer E, Feldman LS. Cost-Effectiveness of Enhanced Recovery versus Conventional Perioperative Management for Colorectal Surgery. Ann Surg 2015 Dec; 262(6):1026-33

Results in decreased length of stay

Postoperative Management	Conventional Care (n=95)	Enhanced Recovery (n=95)	p
Median days to mobilization > 2h/day, days [IQR]	2[1-2]	1[1-2]	<0.001
Median days to discontinuation of IV fluids, days [IQR]	3[2-5]	1[1-1]	<0.001
Median days passage of first flatus, days [IQR]	3[2-3]	1[1-2]	<0.001
Median days to receive oral fluids, days [IQR]	2[1-3.5]	0[0-0]	<0.001
Median days to tolerate solid diet, days [IQR]	4[3-5]	1[1-2]	<0.001
Median days to removal of bladder catheter, days [IQR]	2[1-3]	1[1-1]	<0.001
Median total hospital stay, days [IQR]	**7 [5-9]**	**4 [3-7]**	**<0.001**

Lee L, et al. Ann Surg 2015 Dec; 262(6):1026-33

TABLE 3. C
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Postdischarge outcomes
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†Includes b

Clinical outcomes

Total hospitalization, mean (SD): 9.8(12) vs 6.5(6)d* 60-d readmissions: 11 vs 13% 60-d complications: 43 vs 40%

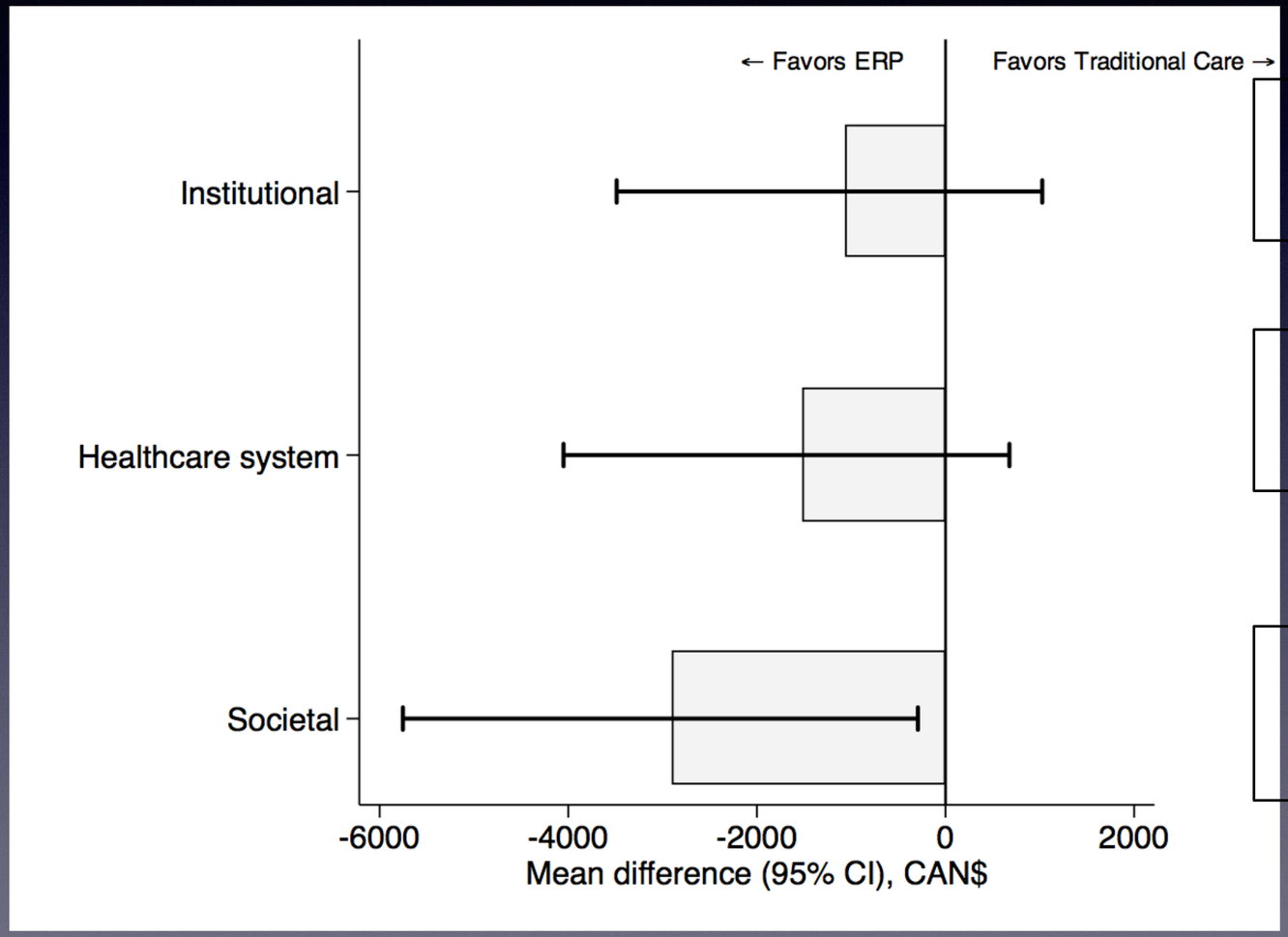
Complication severity, mean (SD): 10.7(17) vs 10.2(14)

Postdischarge outcomes

Lost days from work: 35(20) vs 26(18)* Caregiver lost days from work: 5(12) vs 1.3(2.6)* Postoperative CLSC visits: 3.7(9) vs 1.4 (4.6)* No difference in HRQoL (SF-6D)

Lee L, et al. Ann Surg 2015 Dec; 262(6):1026-33

Mean difference in costs from Different Perspectives (per patient)



Institutional cost saving
-$1,150 (-3487 to 905)

Health care system cost saving
-$1,602(-4,050 to 517)

Society cost saving
-$2,985(-5,753 to -373)*

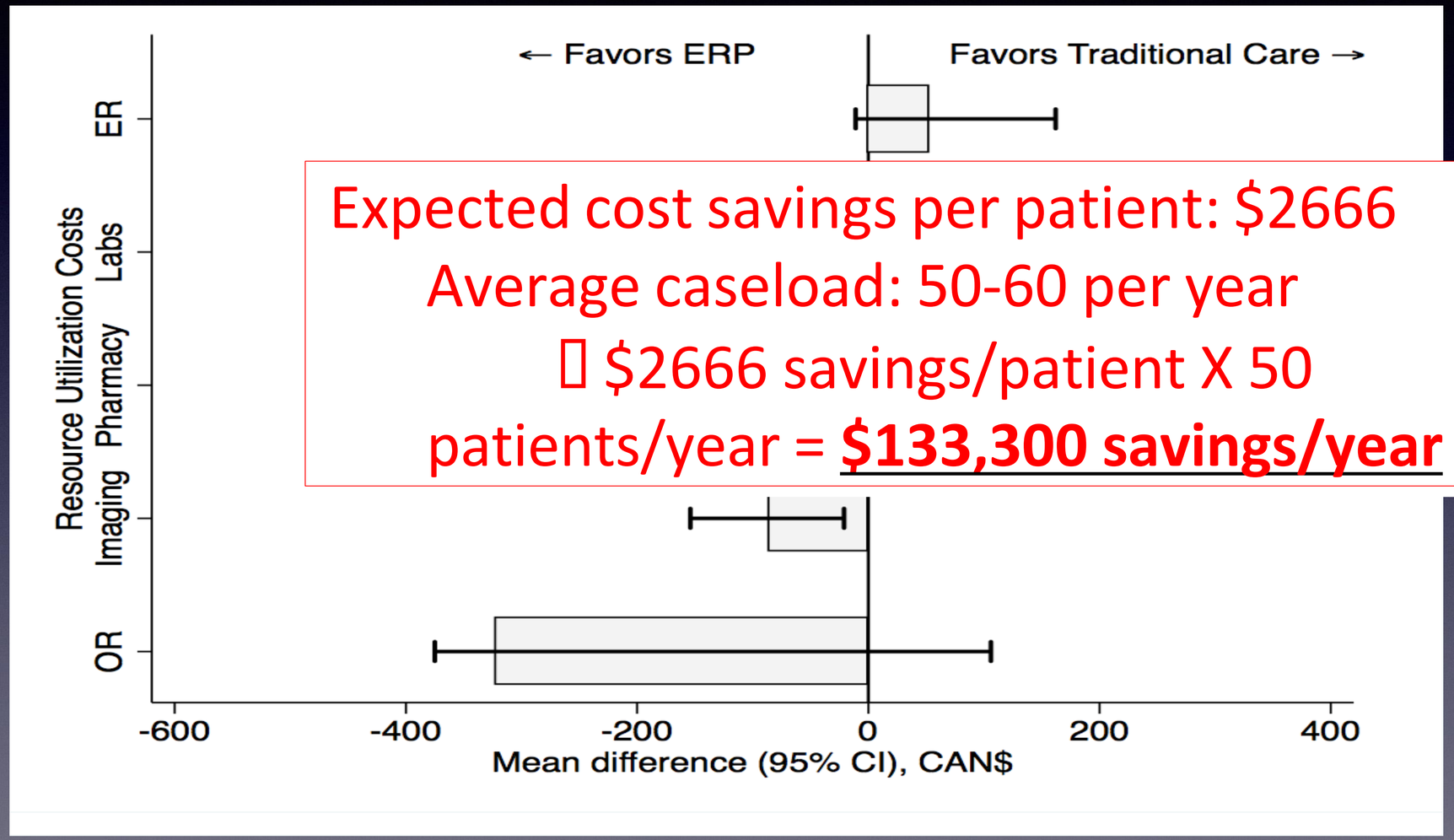
Lee et al, Ann Surg 2015

Original article

Economic impact of an enhanced recovery pathway for oesophagectomy

L. Lee[1], C. Li[1], N. Robert[1], E. Latimer[4], F. Carli[2], D. S. Mulder[3], G. M. Fried[1], L. E. Ferri[1,3] and L. S. Feldman[1]

Br J Surg 2013;100(10); 1326-34



Expected cost savings per patient: $2666

Average caseload: 50-60 per year

 $2666 savings/patient X 50 patients/year = **$133,300 savings/year**

Summary: Pathway approach

- Need to change the culture
- Focus on patient's recovery
- Get evidence into practice
- Improve interdisciplinary environment
- Applicable across procedures
- Decreases variability

Increase value* of what we do

*outcomes that matter to patients/ cost

Conclusions

ERAS should be the norm in any clinical practice

It is evidence-based

Prevents catabolic states

Promotes early resumption of organ function

Reduces postop. complications

Reduces LOS

Reduces cost of care


THANK YOU!