

# Procedura ERAS w onkologii

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Wykorzystano materiały dzięki  
uprzejmości dr M. Pędziwiatra Kraków

## Tradycyjny protokół okołoperacyjny w chirurgii kolorektalnej

- przyjęcie 2 dni wcześniej
- przygotowanie jelita
- konsultacja anestezjologiczna w trakcie pobytu
- zaprzestanie podaży płynów od wieczora dnia poprzedzającego zabieg
- operacja sposobem klasycznym
- podaż dużej ilości płynów (5-6 litrów krystaloidów)
- 2 dreny
- zgłębnik żołądkowo-jelitowy na kilka dni po zabiegu
- terapia przeciwbólowa oparta na opioidach
- dieta ścisła przez 4 dni po zabiegu
- uruchomienie w 3-4 dobie pooperacyjnej
- pierwszy stolec po 5-7 dniach po zabiegu
- wypis po 8-11 dniach od operacji

Kehlet H, Buchler M, Care after Colonic Operation—Is it Evidence-Based? Results from a Multinational Survey in Europe and the United States , J Am Coll Surg. 2006

## Protokół fast-track

### **Recovery after laparoscopic colonic surgery with epidural analgesia, and early oral nutrition and mobilisation**

*L Bardram, P Funch-Jensen, P Jensen, M E Crawford, H Kehlet*

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The rate of postoperative recovery is determined by pain, stress-induced organ dysfunction, and limitations in conventional postoperative care. We attempted to provide "stress-free" colonic resection for neoplastic disease in eight elderly high-risk patients by a combination of laparoscopically assisted surgery, epidural analgesia, and early oral nutrition and mobilisation. Effective pain relief allowed early mobilisation, and hospital stay was reduced to 2 days without nausea, vomiting, or ileus. Postoperative fatigue and impairment in functional activity were avoided. Major advances in postoperative recovery can be achieved by early aggressive perioperative care in elderly high-risk patients undergoing colonic surgery.

*Lancet* 1995; **345**: 763–64



## Gdzie jesteśmy dziś?

95% chirurgów myśli, że jest wśród 5% najlepszych.

30-40% chorych nie jest leczonych zgodnie z dostępną wiedzą medyczną

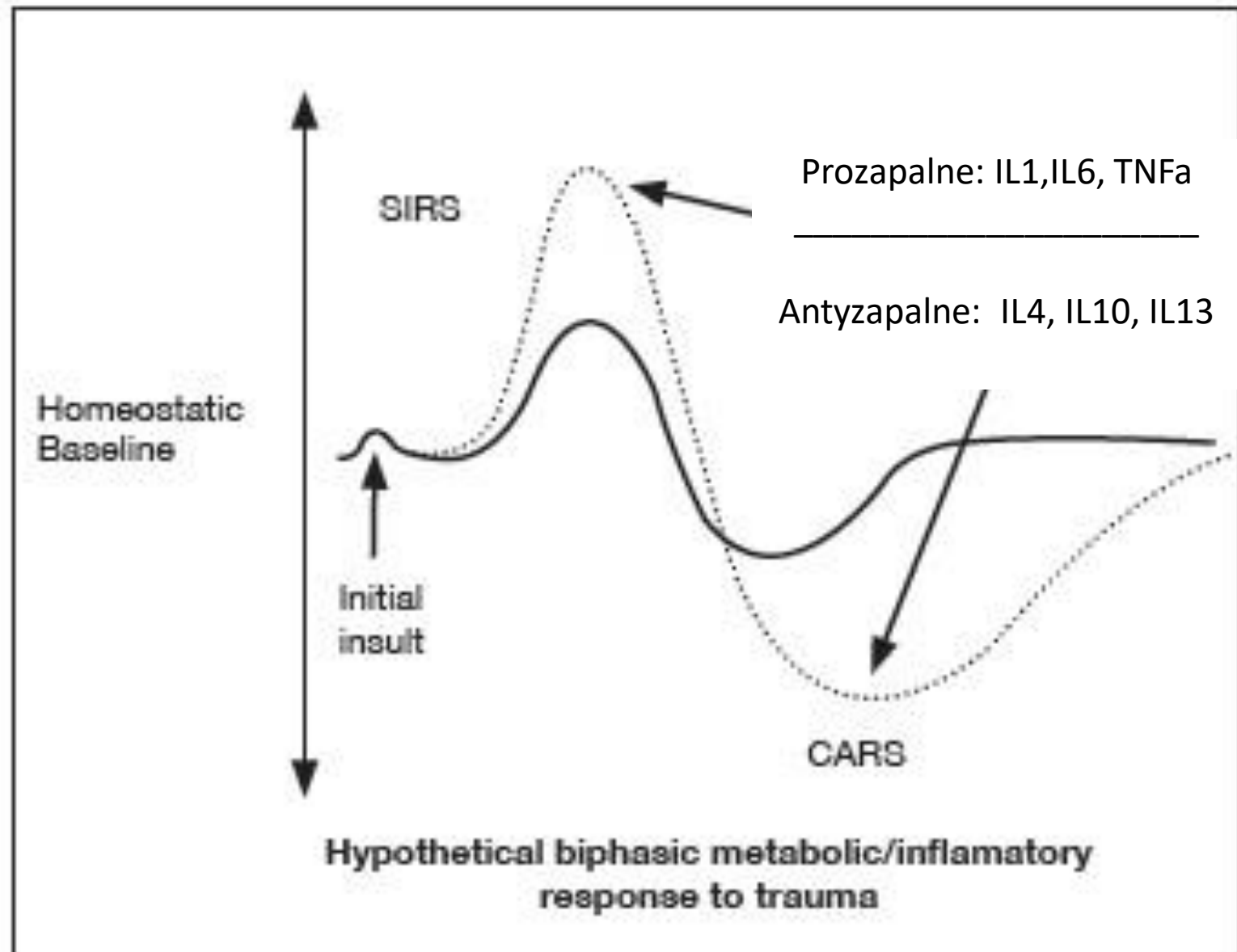
u 15-20% pacjentów stosuje się postępowanie, które szkodzi lub jest nieskuteczne.

## Protokół Enhanced Recovery After Surgery



# Cele metaboliczne okołooperacyjnego prowadzenia pacjenta

Ograniczanie wyrzutu cytokin (nie pogłębiać SIRS/CARS)  
Ograniczanie insulinooporności  
Zwalczanie oporności anabolicznej  
Unikanie przewodnienia i odwodnienia  
Oszczędzanie beztłuszczowej masy ciała

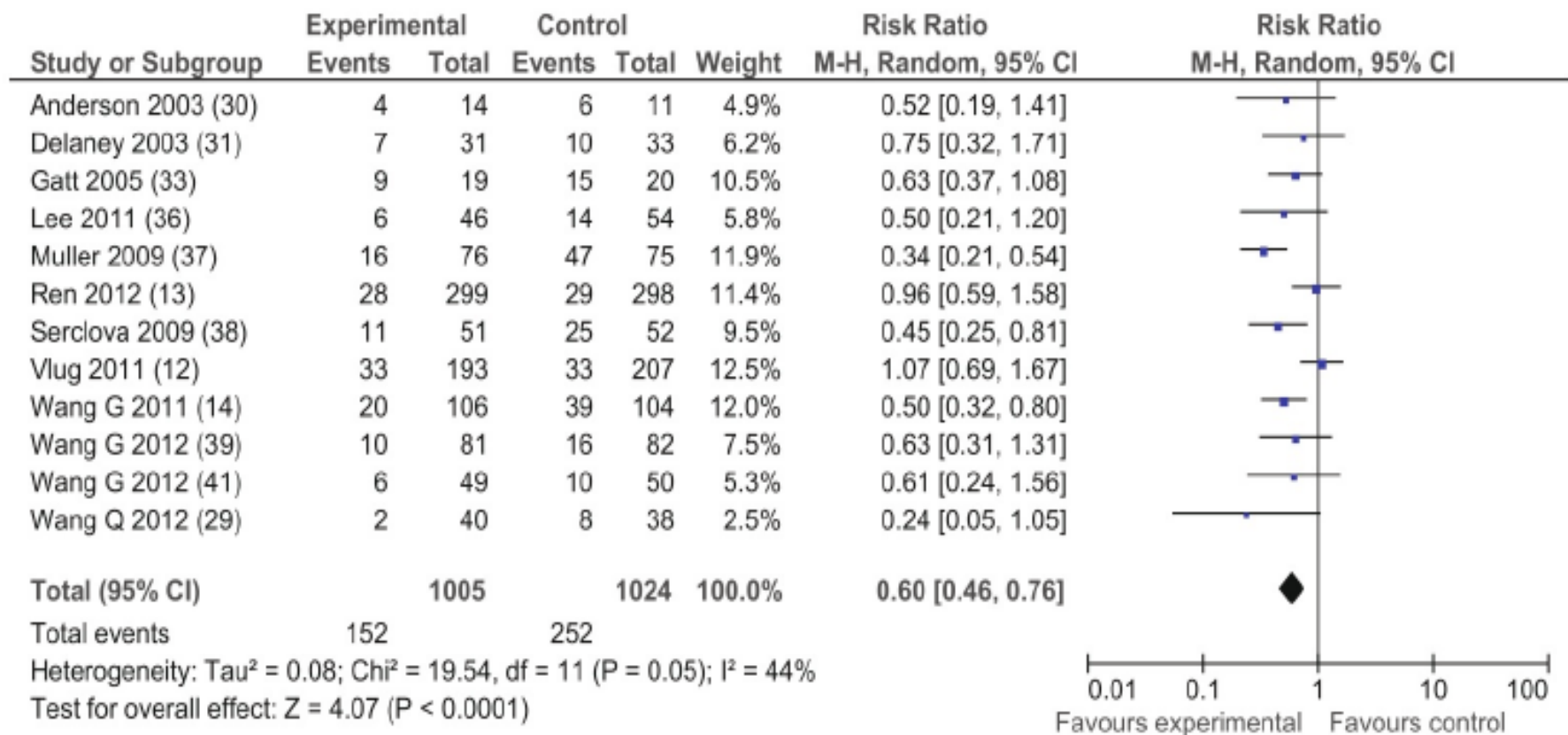


## **Enhanced Recovery Program in Colorectal Surgery: A Meta-analysis of Randomized Controlled Trials**

**Massimiliano Greco · Giovanni Capretti ·  
Luigi Beretta · Marco Gemma · Nicolò Pecorelli ·  
Marco Braga**

**16 badań z randomizacją, 2376 chorych**

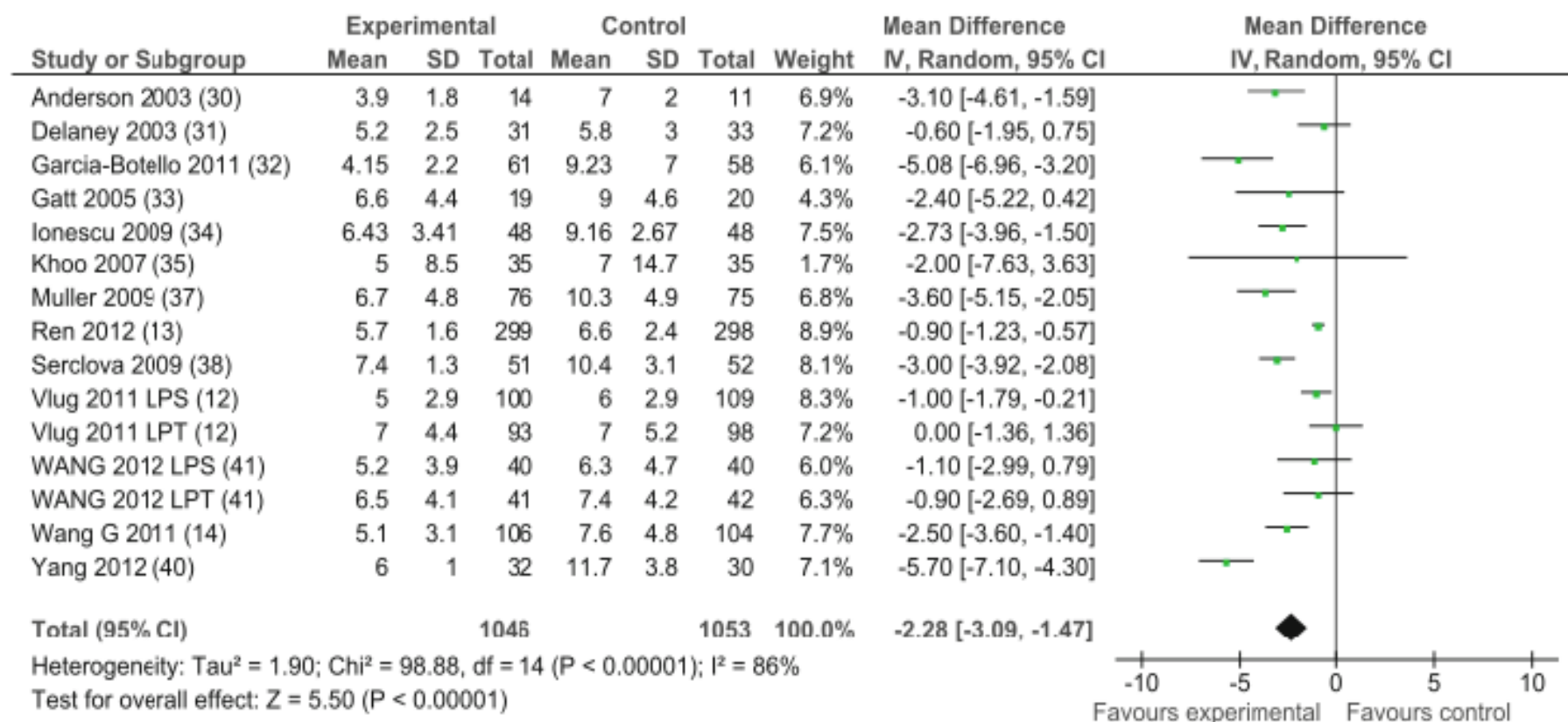




**Fig. 1** Pooled estimates of overall morbidity comparing enhanced recovery after surgery versus standard care. *CI* confidence interval, *df* degrees of freedom, *RR* risk ratio

Zmniejszenie odsetka powikłań o 40%

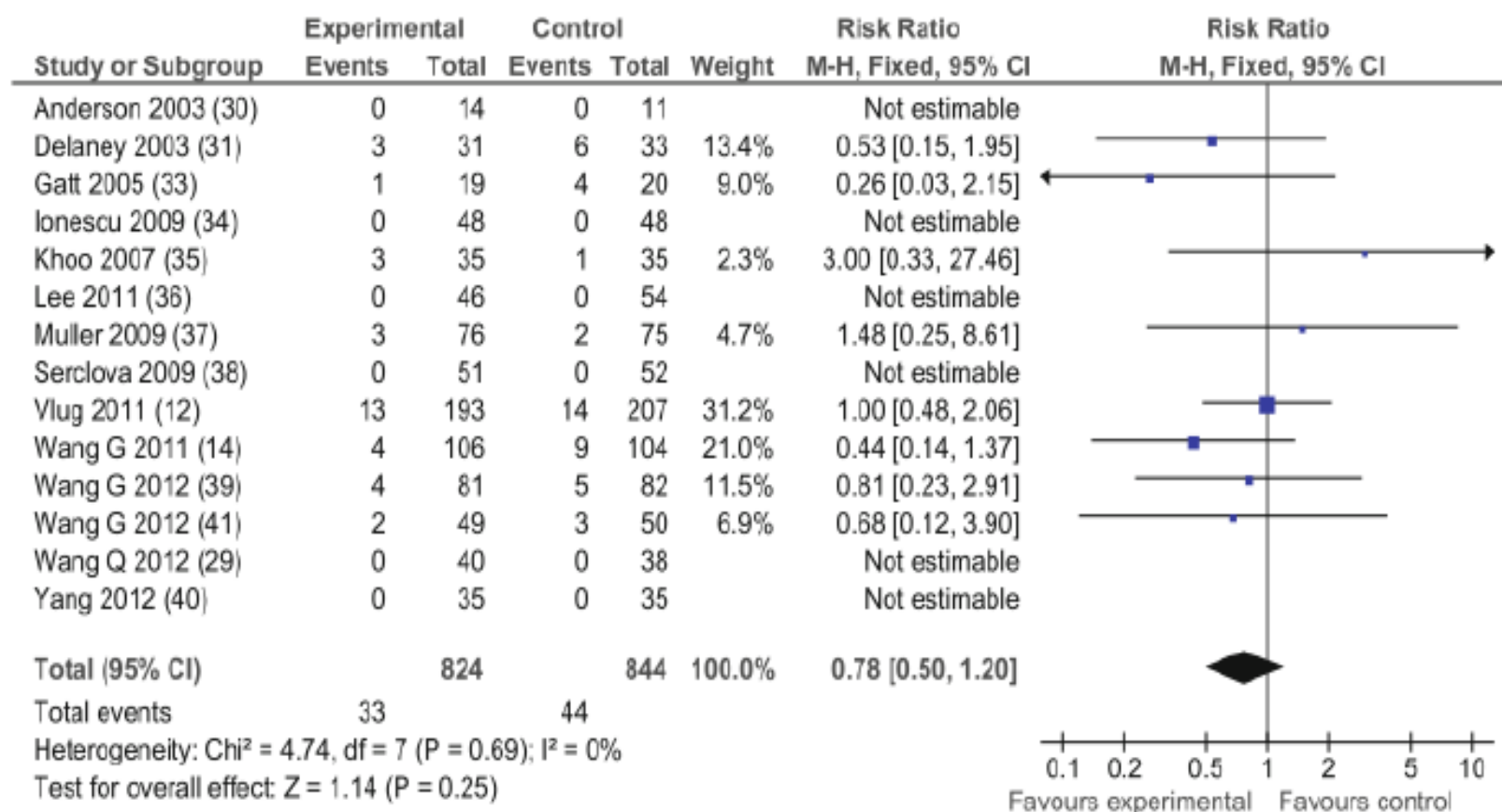
## Czas hospitalizacji



**Fig. 6** Pooled estimates of length of hospital stay comparing enhanced recovery after surgery versus standard care. *CI* confidence interval, *df* degrees of freedom, *RR* risk ratio

**Skrócenie czasu hospitalizacji o 2,3 dnia**

## Ponowne przyjęcia



**Fig. 7** Pooled estimates of hospital readmission comparing enhanced recovery after surgery versus standard care. *CI* confidence interval, *df* degrees of freedom, *RR* risk ratio

**Brak wpływu na odsetek ponownych przyjęć**

## Stan odżywienia

Istnieje szereg badań naukowych dokumentujących wpływ stanu odżywienia na przebieg pooperacyjny, liczbę i charakter powikłań okołoperacyjnych oraz śmiertelność.

**Velanovich V.** The value of routine preoperative laboratory testing in predicting postoperative complications: a multivariate analysis. **Surgery** 1991;109:236–43.

**Engelman D i wsp.** Impact of body mass index and albumin on morbidity and mortality after cardiac surgery. **J Thorac Cardiovasc Surg** 1999;118:866–73.

**Koval K i wsp.** The effects of nutritional status on outcome after hip fracture. **J Orthop Trauma** 1999;13:164–9.

**Dannhauser A i wsp.** Preoperative nutritional status and prognostic nutritional index in patients with benign disease undergoing abdominal operations – **Part I.** **J Am Coll Nutr** 1995;14:80–90.

**Jagoe R i wsp.** The influence of nutritional status on complications after operations for lung cancer. **Ann Thorac Surg** 2001;71: 936–43.50.

**Mazolewski P i wsp.** The impact of nutritional status on the outcome of lung volume reduction surgery: a prospective study. **Chest** 1999;116:693–6.

**van Bokhorst i wsp.** The impact of nutritional status on the prognoses of patients with advanced head and neck cancer. **Cancer** 1999;86: 519–27.

**Lavernia C i wsp.** Nutritional parameters and short term outcome in arthroplasty. **J Am Coll Nutr** 1999;18:274–8.

**Rey-Ferro M i wsp.** Nutritional and immunologic evaluation of patients with gastric cancer before and after surgery. **Nutrition** 1997;13:878–81.

**Pedersen i wsp.** Nutrition as a prognostic indicator in amputations. A prospective study of 47 cases. **Acta Orthop Scand** 1992;63:675–8.

**Sandstrom R i wsp.** The effect of postoperative intravenous feeding (TPN) on outcome following major surgery evaluated in a randomized study. **Ann Surg** 1993;217:185–95.



## Stan odżywienia

- W okresie przedoperacyjnym u chorych z dużym ryzykiem rozwoju niedożywienia należy włączyć interwencję żywieniową na okres 10-14 dni nawet kosztem odroczenia terminu zabiegu operacyjnego.
- Przedoperacyjna podaż doustnych preparatów żywieniowych bogatych w dodatki immunomodulujące przez 5-7 dni u chorych poddawanych dużym operacjom onkologicznym w obrębie przewodu pokarmowego w istotny sposób zmniejsza częstość powikłań pooperacyjnych oraz skraca czas pobytu w szpitalu.

**ESPEN Guidelines on adult enteral nutrition** Clinical Nutrition 2006;25:177-360

**Braga M i wsp.** Perioperative immunonutrition in patients undergoing cancer surgery: results of a randomized double-blind phase 3 trial. **Arch Surg** 1999;134(4):428–33.

**Senkal M i wsp.** Outcome and cost- effectiveness of perioperative enteral immunonutrition in patients undergoing elective upper gastrointestinal tract surgery: a prospective randomized study. **Arch Surg** 1999;134(12):1309–16.

**Tepaske R, i wsp.** Effect of preoperative oral immune-enhancing nutritional supplement on patients at high risk of infection after cardiac surgery: a randomised placebo-controlled trial. **Lancet** 2001;358(9283):696–701.

**Braga M i wsp.** Preoperative oral arginine and n-3 fatty acid supplementation improves the immunometabolic host response and outcome after colorectal resection for cancer. **Surgery** 2002;132(5): 805–14.

**Meyenfeldt von M, i wsp.** Perioperative nutritional support: a randomized clinical trial. **Clin Nutr** 1992;11:180–6.

Nadal są chirurdzy, którzy nie  
widzą ...





# Brak przygotowania jelita do zabiegu

## – nierówna walka z dogmatem od ponad 40 lat

Mechanical bowel preparation for elective colorectal surgery  
(Review)

George SKG, Mace D, Wille-Jørgensen P



### PLAIN LANGUAGE SUMMARY

#### Mechanical bowel preparation for elective colorectal surgery may not improve outcome for patients

Until recently it was thought that vigorous preoperative mechanical cleansing of the bowel (mechanical bowel preparation), together with the use of oral antibiotics, reduced the risk of septic complications after non-emergency (elective) colorectal operations. Mechanical bowel preparation was performed routinely prior to colorectal surgery until 1972, when this procedure started to be questioned. Well designed clinical trials were published, and their results caused some colorectal surgeons to doubt this traditional belief.

This review has identified all known trials that compared any kind of mechanical bowel preparation with no preparation (**Comparison 1**) and mechanical bowel preparation with rectal enema (**Comparison 2**) in patients submitted to elective colorectal surgery. Five new trials have been included in this third update of the review, bringing the total number of included trials to 18 (5805 participants). Analysis of these 18 trials showed no statistically significant differences in how well the three groups of patients (mechanical bowel preparation group, no preparation group and rectal enemas) did after surgery in terms of leakage at the surgical seam of the bowel ends, mortality rates, peritonitis, need for reoperation, wound infection, and other non-abdominal complications. Consequently, there is no evidence that mechanical bowel preparation improves the outcome for patients. Further research on mechanical bowel preparation or enemas versus no preparation in patients submitted for elective rectal surgery and laparoscopic colorectal surgery is warranted.

18 badań z randomizacją, 5805 chorych

Brak różnic w wynikach leczenia.

# Informacja !

**83 %** pacjentów chciałoby być informowanymi przez lekarza, który będzie operował

**75 %** pacjentów preferuje ustną komunikację

**60 %** pacjentów chciałoby uzyskać informację w dniu kwalifikacji do operacji lub w dniu przyjęcia

**86 %** pacjentów chciałoby usłyszeć o operacji i rekonwalecencji niż o możliwych powikłaniach (33 %)

**11 %** pacjentów widzi potrzebę wsparcia psychologicznego przed operacją

Poinformowanie chorego powinno być elementem rozmowy budującej zaufanie w bezpośredniej relacji lekarz operujący – pacjent.

Operator powinien – w zależności od możliwości percepcyjnych – przedstawić przebieg zabiegu i rekonwalescencję a mniej koncentrować się na możliwych powikłaniach.

Psychother Psychosom Med Psychol. 2001 Feb;51(2):56-61.

**[Patients' need for information before surgery].**

Hoermann S., Doering S., Richter R., Walter MH, Schüssler G.





Realne  
deklaracje

...





## Przedoperacyjny napój węglowodanowy

A meta-analysis of randomised controlled trials on preoperative oral carbohydrate treatment in elective surgery<sup>☆</sup>

Sherif Awad <sup>a,d</sup>, Krishna K. Varadhan <sup>a,d</sup>, Olle Ljungqvist <sup>b,c,e</sup>, Dileep N. Lobo <sup>a,\*,e</sup>

**21 badań z randomizacją (1685 chorych)**

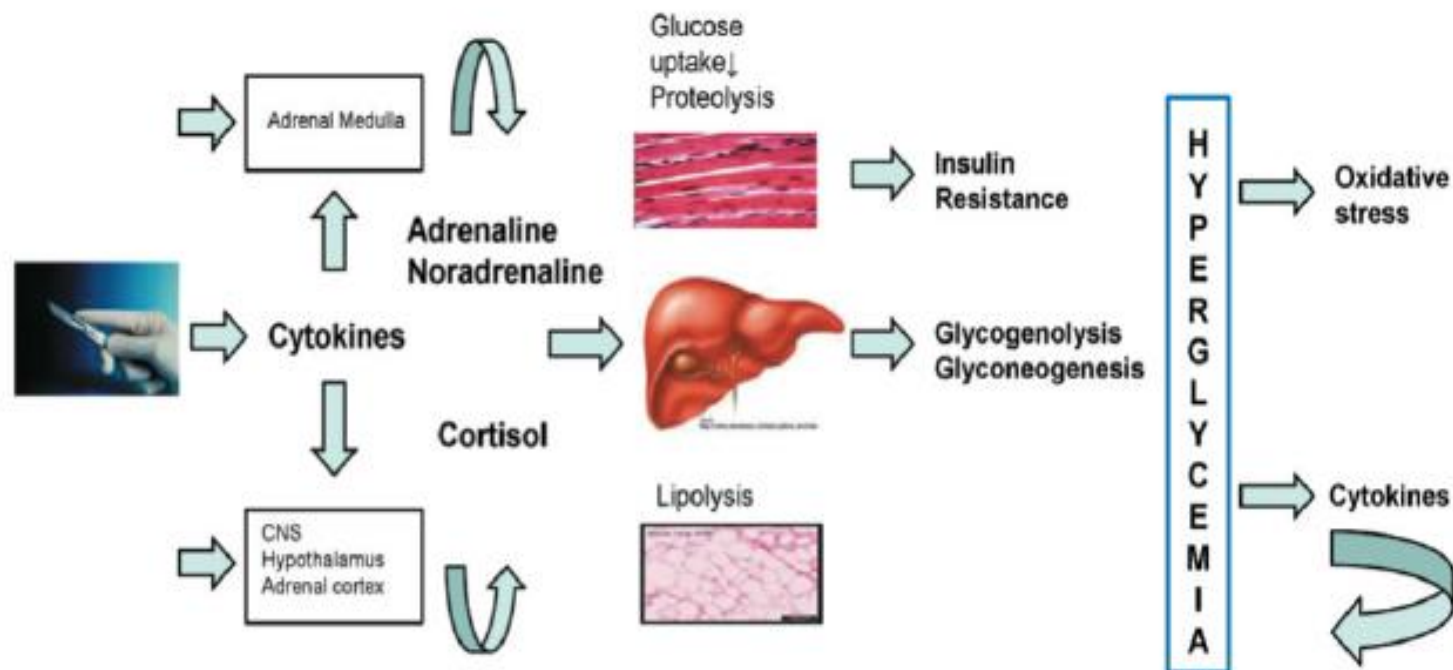
- różne rodzaje zabiegów (kolorektalne, ortopedyczne, kardiochirurgiczne, cholecystektomia, resekcje wątroby, żołądka)
- **nie stwierdzono powikłań wynikających z podania napoju na 2h przed zabiegiem**
- **istotny wpływ na obniżenie insulinooporności pooperacyjnej**
- **brak różnic w czasie hospitalizacji dla procedur, których średni pobyt <2 dni**
- **skrócenie czasu hospitalizacji (o około 1 dzień) w grupie chorych po dużych zabiegach operacyjnych**

Awad S, Clin Nutr. 2013; 32(1):34-44



## Co powoduje opóźnienie powrotu do pełnej aktywności?

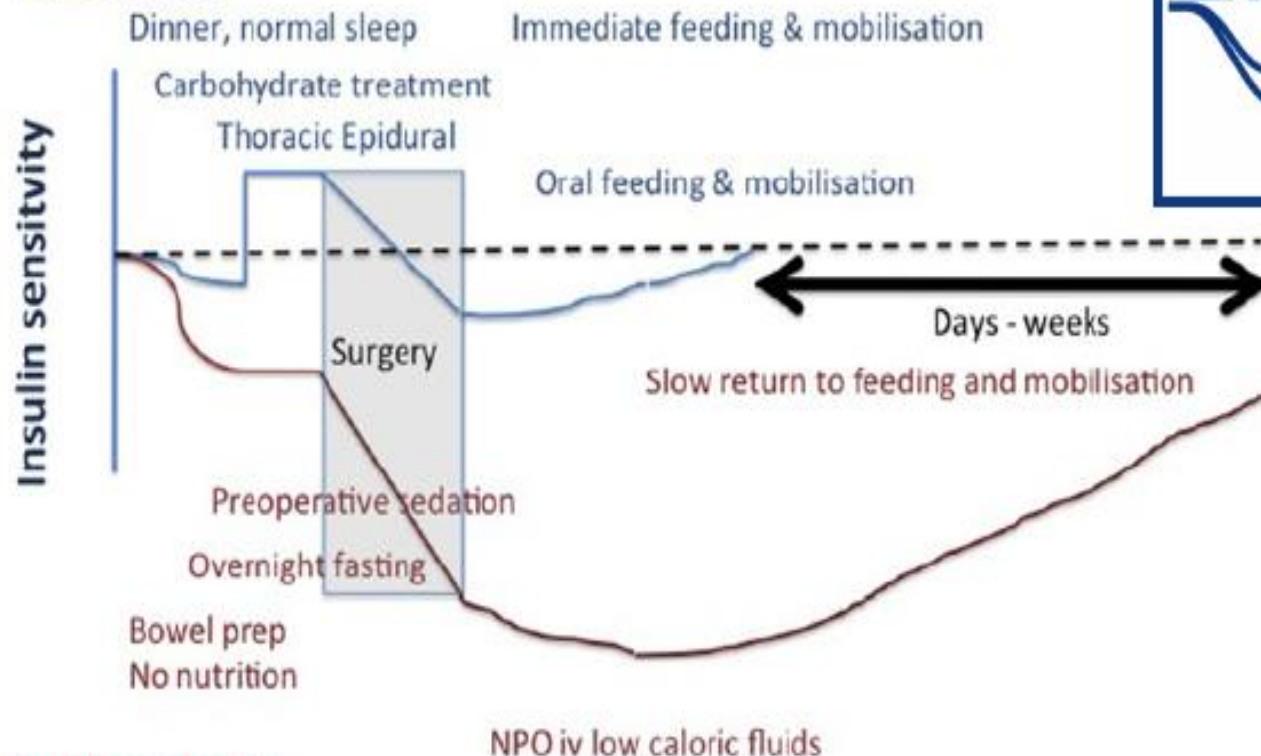
### Surgical stress



## Co powoduje opóźnienie powrotu do pełnej aktywności?

ERAS<sup>®</sup>

### ERAS Care



### Traditional care



# Po zabiegu operacyjnym ....

|                     | Kalorie (kcal) | Na (mmol) |
|---------------------|----------------|-----------|
| NaCl 0,9 % 1000 ml  | 0              | 152       |
| Glukoza 5 % 1000 ml | 200            | 0         |
| Sol. Ringeri 500 ml | 0              | 73,5      |

wody: **2500 ml**      kalorie: **200**      Na **225,5**

Dobowe zapotrzebowanie

woda: 25-35 ml/kg      kalorie: 20-25 kcal/kg      125 mmol

**2100 - 2450**

**1400 - 1750**

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7 dni

17 500

1400

1575

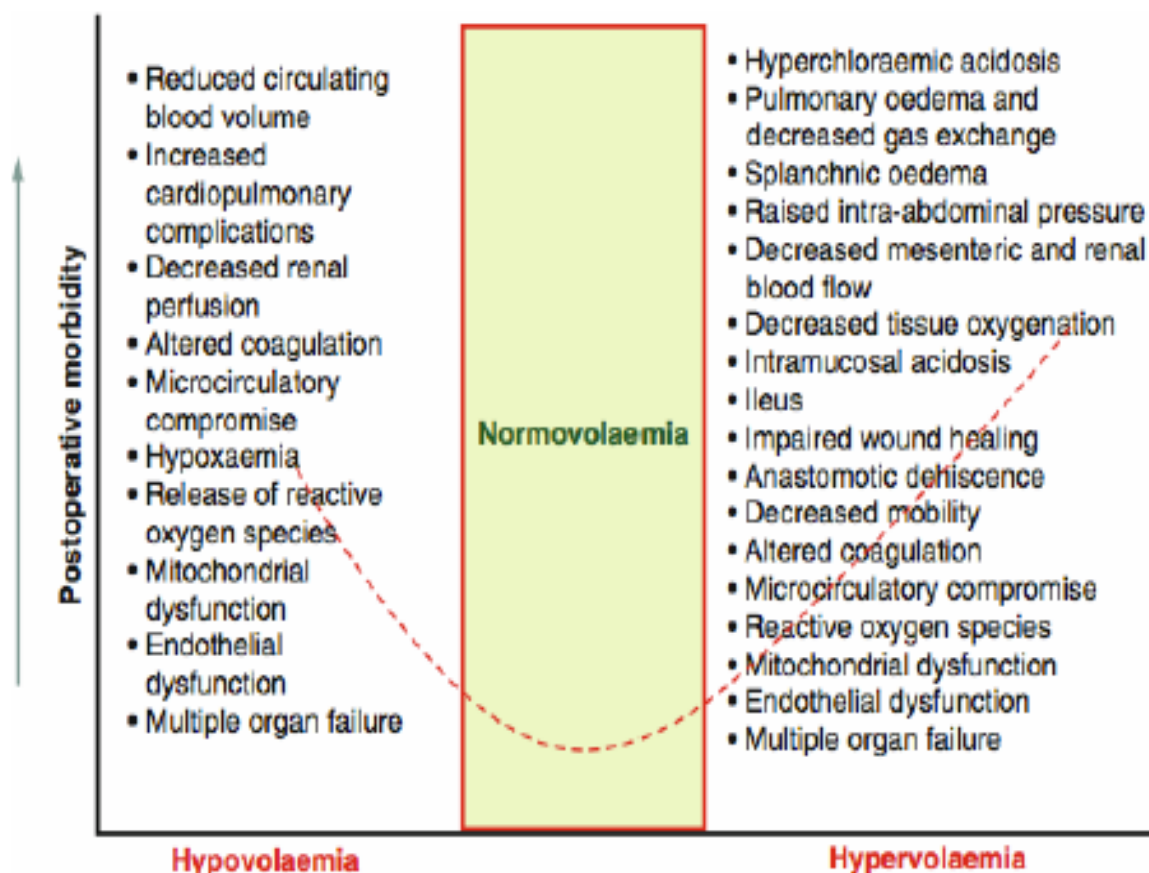
Proszę mi zaufać,  
jestem lekarzem



Jak w 7 dni utopić pacjenta w słonej wodzie tak,  
żeby nikt nie zauważył

## Ile płynów ?

- 25-35 ml/kg m.c./d
- 1 mmol Na/kg m.c./d



## Technika operacyjna

### Laparoskopia vs. klasyczna chirurgia

- COST (2004)
- Leung (2004)
- CLASSIC (2005)
- COLOR (2005)
- COLOR II (2013)
- Lacy (2002)
- ....
- ....
- ....

*N Engl J Med.* 2015 Apr 2;372(14):1324-32. doi: 10.1056/NEJMoa1414882.

#### **A randomized trial of laparoscopic versus open surgery for rectal cancer.**

Bonjer HJ<sup>1</sup>, Deijen CL, Abis GA, Cuesta MA, van der Pas MH, de Lange-de Klerk ES, Lacy AM, Bemelman WA, Andersson J, Angerette E, Rosenberg J, Fuerst A, Haglund E; COLOR II Study Group.

⊕ Collaborators (56)

⊕ Author information

#### **Abstract**

**BACKGROUND:** Laparoscopic resection of colorectal cancer is widely used. However, robust evidence to conclude that laparoscopic surgery and open surgery have similar outcomes in rectal cancer is lacking. A trial was designed to compare 3-year rates of cancer recurrence in the pelvic or perineal area (locoregional recurrence) and survival after laparoscopic and open resection of rectal cancer.

**METHODS:** In this international trial conducted in 30 hospitals, we randomly assigned patients with a solitary adenocarcinoma of the rectum within 15 cm of the anal verge, not invading adjacent tissues, and without distant metastases to undergo either laparoscopic or open surgery in a 2:1 ratio. The primary end point was locoregional recurrence 3 years after the index surgery. Secondary end points included disease-free and overall survival.

**RESULTS:** A total of 1044 patients were included (699 in the laparoscopic-surgery group and 345 in the open-surgery group). At 3 years, the locoregional recurrence rate was 5.0% in the two groups (difference, 0 percentage points; 90% confidence interval [CI], -2.6 to 2.6). Disease-free survival rates were 74.8% in the laparoscopic-surgery group and 70.8% in the open-surgery group (difference, 4.0 percentage points; 95% CI, -1.9 to 9.9). Overall survival rates were 86.7% in the laparoscopic-surgery group and 83.6% in the open-surgery group (difference, 3.1 percentage points; 95% CI, -1.6 to 7.8).

**CONCLUSIONS:** Laparoscopic surgery in patients with rectal cancer was associated with rates of locoregional recurrence and disease-free and overall survival similar to those for open surgery. (Funded by Ethicon Endo-Surgery Europe and others; COLOR II ClinicalTrials.gov number, NCT00297791.).



# Prophylactic nasogastric decompression after abdominal surgery (Review)

37 badań z randomizacją (5711 chorych)

- cholecystektomia => rozległe operacje brzuszne
- o 45% większe ryzyko powikłań w grupie ze zgłębnikiem
- opóźnienie powrotu perystaltyki w grupie z sondą
- bez wpływu na ryzyko rozejść zespoleń, ZMO i czas hospitalizacji
- istotnie rzadziej występowały nudności i wymioty w grupie ze zgłębnikiem, ale większy dyskomfort dla pacjentów

# Profilaktyka i zwalczanie nudności i wymiotów

## Skala Apfel

- płeć żeńska
- pacjent niepalący tytoniu
- pooperacyjne nudności i wymioty lub choroba lokomocyjna w wywiadzie
- pacjenci otrzymujący opioidy.
- im młodszy pacjent, tym ryzyko większe
- ryzyko zwiększa się wraz z wydłużeniem czasu zabiegu

ondansetron 8mg, metoclopramid 10 mg,  
deksametazon 8 mg

## Drenaż pola operacyjnego.



### Evidence-based Value of Prophylactic Drainage in Gastrointestinal Surgery

#### *A Systematic Review and Meta-analyses*

*Henrik Petrowsky, MD,\* Nicolas Demartines, MD,\* Valentin Rousson, PhD,† and  
Pierre-Alain Clavien, MD, PhD, FACS, FRCS\**

*Annals of Surgery • Volume 240, Number 6, December 2004*

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**Conclusion:** Many GI operations can be performed safely without prophylactic drainage. Drains should be omitted after hepatic, colonic, or rectal resection with primary anastomosis and appendectomy for any stage of appendicitis (recommendation grade A), whereas prophylactic drainage remains indicated after esophageal resection and total gastrectomy (recommendation grade D). For many other GI procedures, especially involving the upper GI tract, there is a further demand for well-designed RCTs to clarify the value of prophylactic drainage.

## Drenaż pola operacyjnego.

### Consensus guidelines for enhanced recovery after gastrectomy

#### Enhanced Recovery After Surgery (ERAS®) Society recommendations

K. Mortensen<sup>1</sup>, M. Nilsson<sup>2</sup>, K. Slim<sup>3</sup>, M. Schäfer<sup>4</sup>, C. Mariette<sup>5</sup>, M. Braga<sup>6</sup>, F. Carli<sup>7</sup>, N. Demartines<sup>4</sup>, S. M. Griffin<sup>8</sup> and K. Lassen<sup>1</sup> on behalf of the Enhanced Recovery After Surgery (ERAS®) Group

A meta-analysis of four RCTs<sup>71</sup> including 438 patients randomized to either perianastomotic drain or no drain found no differences between the groups with respect to wound infection, postoperative pulmonary infection, intra-abdominal abscess, mortality, time to flatus, and initiation of soft diet. Both incidence of postoperative complications and length of stay were lower in the no-drain group. A Cochrane analysis<sup>72</sup> concluded that there was no convincing evidence to support routine use of postoperative drains after gastrectomy for gastric cancer.

#### Summary and recommendation

*Avoiding the use of abdominal drains may reduce drain-related complications and shorten hospital stay after gastrectomy.*

*Evidence level: High*

*Recommendation grade: Strong*

*BJS* 2014; 101: 1209–1229

November 2014, Volume 101, Number 11

# BJS





## Zapobieganie hipotermii

| niekorzystny skutek                          | normotermia      | hipotermia       | źródło                         |
|----------------------------------------------|------------------|------------------|--------------------------------|
| niedokrwienie mięśnia sercowego, arytmia     | 1%               | 6%               | Frank, JAMA 1997               |
| śródoperacyjna utrata krwi                   | $1,7 \pm 0,3$ l  | $2,2 \pm 0,5$ l  | Schmeid, Lancet 1996           |
| zapotrzebowanie na krew                      | 1 jednostka      | 8 jednostek      | Schmeid, Lancet 1996           |
| zakażenie miejsca operowanego                | 6%               | 19%              | Kurz, NEJM 1996                |
| utrata azotu z moczem                        | 982 mmol/d       | 1798 mmol/d      | Carli, BJA 1989                |
| czas trwania blokady nerwowo-mięśniowej      | $44 \pm 4$ min.  | $68 \pm 7$ min.  | Leslie, Anesth Analg 1995      |
| szybkość powrotu świadomości po znieczuleniu | $53 \pm 36$ min. | $94 \pm 65$ min. | Lenhardt, Anaesthesiology 1997 |
| Czas hospitalizacji                          | $12,1 \pm 4,4$ d | $14,7 \pm 6,5$ d | Kurz, NEJM 1996                |

~~Czy wprowadzenie diety doustnej w okresie pooperacyjnym  
powinno odbywać się stopniowo na przestrzeni kilku dni?~~

**Nikt nie udowodnił słuszności tego stwierdzenia.**

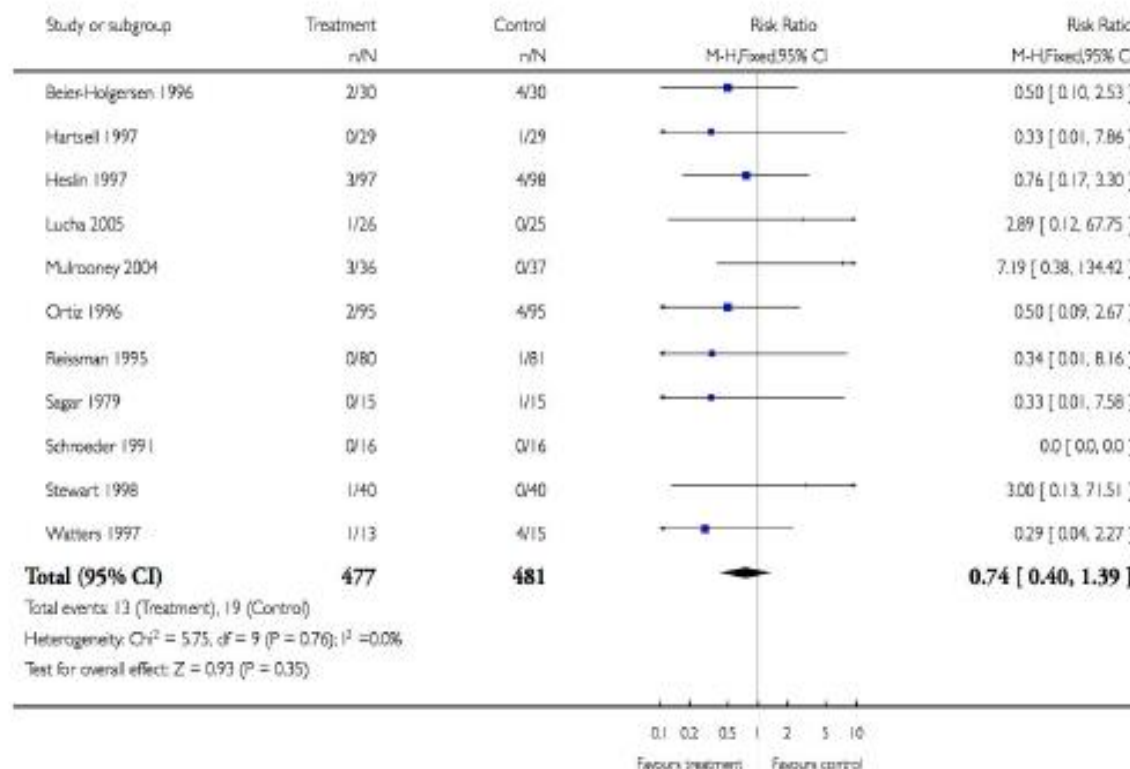
*Myślimy tak, ponieważ wszyscy inni ludzie też tak myślą albo dlatego, że niezależnie od wszystkiego, my tak myślimy, albo dlatego, że tak nam powiedziano i myślimy tak, jak musimy myśleć. (Henry Sidgwick 1838-1900)*



THE COCHRANE  
COLLABORATION®

## Early enteral nutrition within 24h of colorectal surgery versus later commencement of feeding for postoperative complications (Review)

### Outcome 3 anastomotic leakage / dehiscence.

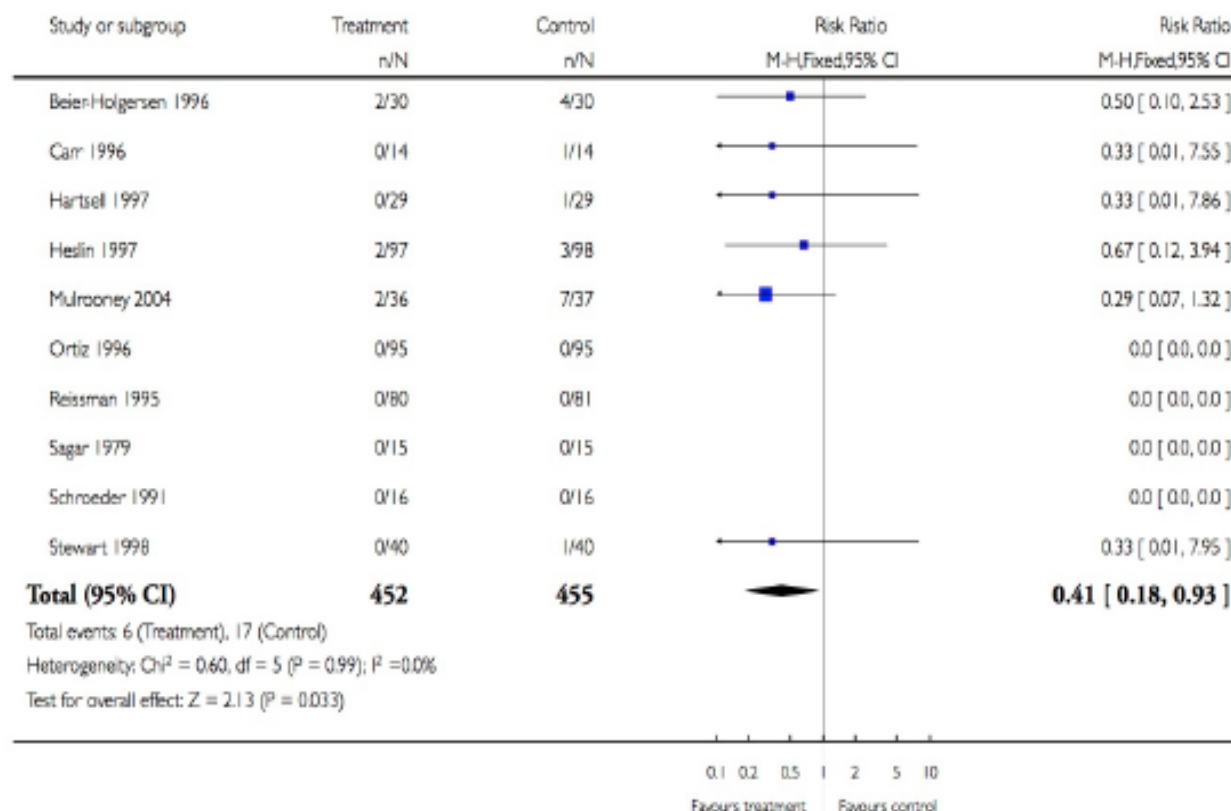


**Wczesne żywienie dojelitowe nie zwiększa odsetka nieszczelności.**

Andersen, Cochrane Review 2006

# Early enteral nutrition within 24h of colorectal surgery versus later commencement of feeding for postoperative complications (Review)

## Outcome 4 mortality.



**Wczesne żywienie dojelitowe zmniejsza śmiertelność w okresie okołoperacyjnym.**



# Protokół ERAS – rak jelita grubego

## Przed przyjęciem do szpitala

1. Kwalifikacja do leczenia, ocena stopnia niedożywienia
2. Rozmowa z chorym na temat planowanego leczenia
3. Interwencja żywieniowa w razie potrzeby
4. Konsultacja anestezjologiczna i ustalenie terminu zabiegu
5. Zalecenia odnośnie aktywności fizycznej (spacery min. 30 minut przez min. 14 dni)
6. Prośba o ogolenie brzucha, ew. odbytu na 5 dni przed zabiegiem

# Protokół ERAS – rak jelita grubego

W dniu przyjęcia do szpitala (dzień przed zabiegiem operacyjnym)

1. Rozmowa z chorym (wyjaśnienie istoty operacji, przebiegu zabiegu, omówienie planu znieczulenia do zabiegu oraz zalet i powikłań ewentualnego znieczulenia zewnątrzoponowego, omówienie pierwszych godzin po operacji, prośba o zaangażowanie rodziny, dieta, możliwe powikłania i zdarzenia niepożądane znieczulenia i zabiegu, plan na najbliższe dni)
2. Dieta pełna (wyjątek chorzy z rakiem odbytnicy i przygotowaniem jelita), spożywanie przynajmniej 2 litrów płynów przez cały dzień
3. Kąpiel
4. Konsultacja anestezyjologiczna
5. Clexane 40 mg sc. o godzinie 17.00 (na czas pobytu oraz 30 dni po wypisie ze szpitala)

# Protokół ERAS – rak jelita grubego

## W dniu zabiegu

1. 2x Pre-op na 3 godziny przed operacją  
(jeśli zabieg odbywa się później można podać kolejną dawkę)
2. U chorych z rakiem odbytnicy do TME i ileostomii – przygotowanie jak do kolonoskopii
3. Podanie antybiotyków (Zinacef, Metronidazol)
4. Przewiezienie na blok operacyjny (znieczulenie, cewnikowanie, zabieg operacyjny, TAP block)
5. Rozpoczęcie leczenia przeciwbólowego na stałe (kontrola pod kątem przepisanych opioidów)  
(Paracetamol 1000 mg 4x dziennie co 6h, Ketonal 100 mg co 8h, Pyralgina 2,5 mg co 12h),  
ew. znieczulenie zewnątrzoponowe w pompie 0,125% bupiwakaina przepływ 2-4 ml/h,  
tlenoterapia bierna przez pierwszą dobę
6. Kontrola przepisanych płynów. Rozpoczęcie podawania płynów doustnie (około 800 ml)  
oraz Nutridrink na kolację
6. Uruchomienie w 2h po zabiegu (siadanie, wstawanie, chodzenie)
7. W razie wystąpienia nudności leczenie przeciwwymiotne – ondansetron 8 mg (Atossa)

# Protokół ERAS – rak jelita grubego

## Pierwsza doba po zabiegu

1. Kontynuacja leczenia przeciwbólowego (dożylne i ew. zewnątrzoponowe w pompie).  
Jeśli występują silne bóle, a nie było TAP block można wykonać pod kontrolą USG  
(2x20 ml 0,25% bupiwakainy)
  2. Usunięcie cewnika z pęcherza moczowego
  3. Dieta II + zupy, picie przynajmniej 1500 ml niegazowanych płynów
  4. Włączenie leku przeczyszczającego (Menthoparafinol 3x1 łyżka)
- 
1. Ograniczenie (najlepiej do zera) podaży płynów dożylnych
  2. Uruchomienie chorego (przynajmniej 4-6 godzin poza łóżkiem)
  3. Badania dodatkowe w razie konieczności

# Protokół ERAS – rak jelita grubego

## Druga doba po zabiegu

1. Usunięcie cewnika zewnątrzoponowego (jeśli był)
2. Kontynuacja leczenia przeciwbólowego w formie doustnej
3. Dieta pełna

## Kolejne doby po zabiegu operacyjnym

1. Usunięcie wkłuc obwodowych
2. Planowanie wypisu do domu
3. Ustalenie terminu wizyty u onkologa



# Protokół ERAS – rak jelita grubego

## Kryteria wypisu do domu

1. Możliwość przyjmowania pełnej diety
2. Spożywanie płynów nie wymagające uzupełniania dożylnego
3. Gojące się prawidłowo rany pooperacyjne
4. Dolegliwości bólowe, które mogą być kontrolowane przy pomocy leków doustnych
5. Pełne uruchomienie
6. Chory może liczyć na opiekę rodziny, znajomych

JAMA Otolaryngology-Head & Neck Surgery | Review

# Optimal Perioperative Care in Major Head and Neck Cancer Surgery With Free Flap Reconstruction

## A Consensus Review and Recommendations From the Enhanced Recovery After Surgery Society

**Table. Enhanced Recovery After Surgery Recommendations for Perioperative Care in Head and Neck Cancer Surgery With Free Flap Reconstruction**

| Item                                             | Recommendation                                                                                                                                                                                                                                                                                                                                                                   | Evidence                               | Recommendation                                      |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------|
| Preadmission education                           | All patients undergoing major head and neck cancer surgery with free flap reconstruction should receive structured teaching from a qualified health practitioner.                                                                                                                                                                                                                | Low                                    | Strong                                              |
| Perioperative nutritional care                   | All patients undergoing major surgery for head and neck cancer should undergo preoperative comprehensive nutritional assessment, with a special focus on dysphagia and risk for refeeding syndrome. Preoperative nutrition intervention is recommended for those identified as malnourished.                                                                                     | High                                   | Strong                                              |
|                                                  | A standard polymeric enteral nutrition formula should be considered suitable for use in patients requiring preoperative nutrition support.                                                                                                                                                                                                                                       | Low                                    | Weak                                                |
|                                                  | A standard polymeric enteral nutrition formula should be considered suitable for use in patients requiring postoperative nutrition support. There are insufficient data to provide a recommendation on the use of immunonutrition                                                                                                                                                | Moderate                               | Conditional                                         |
|                                                  | Preoperative fasting should be minimized. In patients suitable for oral intake and with appropriate screening and management for those presenting with dysphagia or risk of refeeding syndrome, clear fluids should be permitted for up to 2 hours and solids for up to 6 hours prior to anesthesia. Preoperative CHO treatment may be offered to head and neck cancer patients. | High (fluids), low (solids), low (CHO) | Strong (fluids), strong (solids), conditional (CHO) |
|                                                  | Oral diet is the first choice for all patients tolerating it. In patients for whom oral feeding cannot be established postoperative tube feeding should be initiated within 24 hours. Nutrition interventions should be developed in consultation with the multidisciplinary team and individualized according to nutritional status and surgical procedure.                     | Moderate                               | Strong                                              |
| Prophylaxis against thromboembolism              | Patients undergoing head and neck cancer surgery with free flap reconstruction are at increased risk of VTE and should undergo pharmacologic prophylaxis; however, the risk of bleeding must be weighed against the benefits on an individualized basis.                                                                                                                         | High                                   | Strong                                              |
| Antibiotic prophylaxis                           | Perioperative antibiotics are not indicated for short clean head and neck oncologic procedures. In clean-contaminated procedures, perioperative antibiotics should be given 1 hour prior to surgery and continued for 24 hours.                                                                                                                                                  | High                                   | Strong                                              |
| Postoperative nausea and/or vomiting prophylaxis | Patients undergoing head and neck cancer surgery should receive preoperative and intraoperative medications to mitigate Postoperative nausea and/or vomiting. A combination of corticosteroid and antiemetic should be considered.                                                                                                                                               | High                                   | Strong                                              |
| Preanesthetic medications                        | Patients should receive short acting anxiolytics, given intravenously and titrated to required effect. Long acting anxiolytics and opioids should be avoided.                                                                                                                                                                                                                    | High                                   | Strong                                              |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                         |          |        |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|
| Standard anesthetic protocol                   | The anesthetic protocol should not only prevent awareness, but also minimize adverse effects and allow patients to awaken and recover rapidly; therefore, avoidance of too deep anesthesia, especially in elderly patients, is recommended.                                                                                                                                                             | Low      | Strong |
| Preventing hypothermia                         | Normothermia should be maintained intraoperatively. Temperature monitoring is necessary to ensure normothermia is maintained.                                                                                                                                                                                                                                                                           | High     | Strong |
| Perioperative fluid management                 | Fluids should be managed in a goal-directed manner, avoiding over and under hydration.                                                                                                                                                                                                                                                                                                                  | Moderate | Strong |
| Routine postoperative intensive care admission | Routine intensive care unit admission to facilitate an immediate postoperative period of deep sedation and artificial respiration is not necessary. A subset of low-risk uncomplicated patients may be treated safely after recovery from anesthesia in a high dependency unit or specialist ward, provided adequate skilled nursing and medical coverage is provided.                                  | Low      | Weak   |
| Pain management                                | Opioid-sparing, multimodal analgesia, utilizing NSAIDs, COX inhibitors, and paracetamol, are preferred for patients undergoing head and neck cancer surgery. Patient-controlled analgesia can be considered if multimodal analgesia approaches are insufficient. No recommendation can be made on the role of additional nerve blocks.                                                                  | High     | Strong |
| Postoperative flap monitoring                  | Free flap monitoring should be performed at least hourly for the first 24 hours postoperatively. Monitoring should be continued for the duration of the patient's stay with tapering of intensity after the first 24 hours. Method of monitoring should include, at a minimum, clinical examination by staff experienced with free flap monitoring. Adjunct monitoring techniques should be considered. | Moderate | Strong |
| Postoperative mobilization                     | Early mobilization, within the first 24 hours of surgery is recommended for patients undergoing major head and neck cancer surgery.                                                                                                                                                                                                                                                                     | Moderate | Strong |
| Postoperative wound care                       | Vacuum assisted closure is recommended for complex cervical wounds.                                                                                                                                                                                                                                                                                                                                     | High     | Strong |
|                                                | Vacuum assisted closure may be considered for free flap donor site.                                                                                                                                                                                                                                                                                                                                     | Moderate | Strong |
|                                                | Polyurethane film or hydrocolloid dressings should be used for skin graft donor site treatment.                                                                                                                                                                                                                                                                                                         | High     | Strong |
| Urinary catheterization                        | Urinary catheters should be removed as soon as the patient is able to void, ideally less than 24 hours after completion of surgery.                                                                                                                                                                                                                                                                     | High     | Strong |
| Tracheostomy care                              | Decannulation after tracheostomy and stoma closure is recommended.                                                                                                                                                                                                                                                                                                                                      | High     | Strong |
|                                                | Surgical closure of the tracheostomy site is recommended.                                                                                                                                                                                                                                                                                                                                               | Moderate | Strong |
| Postoperative pulmonary physical therapy       | Pulmonary physical therapy should be initiated as early as possible after head and neck reconstructions to avoid pulmonary complications.                                                                                                                                                                                                                                                               | High     | Strong |



# Consensus guidelines for enhanced recovery after gastrectomy

## Enhanced Recovery After Surgery (ERAS®) Society recommendations

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|                                     | Summary and recommendations                                                                                                                                                                                                                                   | Evidence level                      | Recommendation grade |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------|
| Preoperative nutrition              | Routine use of preoperative artificial nutrition is not warranted, but significantly malnourished patients should be optimized with oral supplements or enteral nutrition before surgery                                                                      | Very low                            | Strong               |
| Preoperative oral pharmaconutrition | The benefit shown for major gastrointestinal cancer surgery in general has not been reproduced in dedicated trials on patients undergoing gastrectomy. Although a benefit cannot be excluded, there is presently insufficient evidence for this patient group | Moderate                            | Weak                 |
| Access                              | <i>Distal gastrectomy:</i> Evidence supports LADG in early gastric cancer as it results in fewer complications, faster recovery and may be performed to a standard that is oncologically equivalent to open access surgery.                                   | High                                | Strong               |
|                                     | For advanced disease, T2–T4a gastric cancer, more data on long-term survival comparing LADG and ODG are needed                                                                                                                                                | Moderate                            | Weak                 |
|                                     | <i>Total gastrectomy:</i> There is some evidence supporting LATG owing to lower postoperative complications, shorter hospital stay and oncological safety. However, LATG is technically demanding                                                             | Moderate                            | Weak                 |
| Wound catheters and TAP block       | Evidence is conflicting regarding wound catheters in abdominal surgery                                                                                                                                                                                        | Wound catheters:<br>Low to moderate | Weak                 |
|                                     | Evidence is strong in support of TAP block in abdominal surgery in general, although the effect is evident only during the first 48 h after surgery and none of the evidence is from gastrectomies                                                            | TAP blocks: Low                     | Weak                 |

|                                                   |                                                                                                                                                                                  |          |        |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|
| Nasogastric/nasojejunal decompression             | Nasogastric tubes should not be used routinely in the setting of enhanced recovery protocols in gastric surgery                                                                  | High     | Strong |
| Perianastomotic drains                            | Avoiding the use of abdominal drains may reduce drain-related complications and shorten hospital stay after gastrectomy                                                          | High     | Strong |
| Early postoperative diet and artificial nutrition | Patients undergoing total gastrectomy should be offered drink and food at will from POD 1. They should be advised to begin cautiously and increase intake according to tolerance | Moderate | Weak   |
|                                                   | Patients clearly malnourished or those unable to meet 60% of daily requirements by POD 6 should be given individualized nutritional support                                      | Moderate | Strong |
| Audit                                             | Systematic audit improves compliance and clinical outcomes                                                                                                                       | Low      | Strong |

## Guidelines for perioperative care for pancreaticoduodenectomy: Enhanced Recovery After Surgery (ERAS<sup>®</sup>) Society recommendations

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José E. de Aguiar-Nascimento<sup>f</sup>, Markus Schäfer<sup>g</sup>, Rowan W. Parks<sup>b</sup>, Kenneth C.H. Fearon<sup>b</sup>,  
Dileep N. Lobo<sup>h</sup>, Nicolas Demartines<sup>g</sup>, Marco Braga<sup>i</sup>, Olle Ljungqvist<sup>j,k</sup>, Cornelis H.C. Dejong<sup>c</sup> on behalf  
of the ERAS<sup>®</sup> Society, the European Society for Clinical Nutrition and Metabolism and the International  
Association for Surgical Metabolism and Nutrition

|                                                                    |                                                                                                                                                                                                                                                                                                                                                             |                                                                      |                                                 |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------|
| Preoperative counselling                                           | Patients should receive dedicated preoperative counselling routinely.                                                                                                                                                                                                                                                                                       | Low                                                                  | Strong                                          |
| Perioperative biliary drainage                                     | Preoperative endoscopic biliary drainage should not be undertaken routinely in patients with a serum bilirubin concentration $<250 \mu\text{mol/L}$ .                                                                                                                                                                                                       | Moderate                                                             | Weak                                            |
| Preoperative smoking and alcohol consumption                       | For alcohol abusers, 1 month of abstinence before surgery is beneficial and should be attempted. For daily smokers, 1 month of abstinence before surgery is beneficial. For appropriate groups, both should be attempted.                                                                                                                                   | Alcohol abstinence: Low<br>Smoking cessation: Moderate               | Strong                                          |
| Preoperative nutrition                                             | Routine use of preoperative artificial nutrition is not warranted, but significantly malnourished patients should be optimized with oral supplements or enteral nutrition preoperatively.                                                                                                                                                                   | Very low                                                             | Weak                                            |
| Perioperative oral immunonutrition (IN)                            | The balance of evidence suggests that IN for 5–7 days perioperatively should be considered because it may reduce the rate of infectious complications in patients undergoing major open abdominal surgery.                                                                                                                                                  | Moderate                                                             | Weak                                            |
| Oral bowel preparation                                             | Extrapolation of data from studies on colonic surgery and retrospective studies in PD show that MBP has no proven benefit. MBP should not be used.                                                                                                                                                                                                          | Moderate                                                             | Strong                                          |
| Preoperative fasting and preoperative treatment with carbohydrates | Intake of clear fluids up to 2 h before anaesthesia does not increase gastric residual volume and is recommended before elective surgery. Intake of solids should be withheld 6 h before anaesthesia. Data extrapolation from studies in major surgery suggests that preoperative oral carbohydrate treatment should be given in patients without diabetes. | Fluid intake: High<br>Solid intake: Low<br>Carbohydrate loading: Low | Fasting: Strong<br>Carbohydrate loading: Strong |
| Preanaesthetic medication                                          | Data from studies on abdominal surgery show no evidence of clinical benefit from pre-operative use of long-acting sedatives, and they should not be used routinely. Short-acting anxiolytics may be used for procedures such as insertion of epidural catheters.                                                                                            | No long-acting sedatives: Moderate                                   | Weak                                            |
| Anti-thrombotic prophylaxis                                        | LMWH reduces the risk of thromboembolic complications, and administration should be continued for 4 weeks after hospital discharge. Concomitant use of epidural analgesia necessitates close adherence to safety guidelines. Mechanical measures should probably be added for patients at high risk.                                                        | High                                                                 | Strong                                          |
| Antimicrobial prophylaxis and skin preparation                     | Antimicrobial prophylaxis prevents surgical-site infections, and should be used in a single-dose manner initiated 30–60 min before skin incision. Repeated intraoperative doses may be necessary depending on the half-life of the drug and duration of procedure.                                                                                          | High                                                                 | Strong                                          |

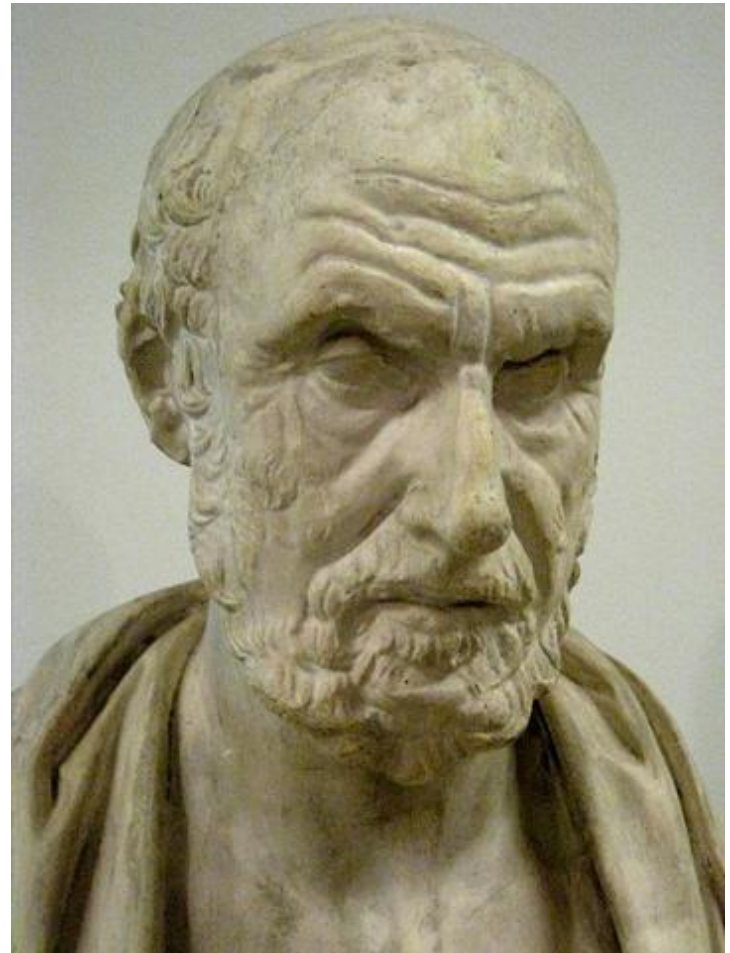
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|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------|
| Epidural analgesia                                    | Mid-thoracic epidurals are recommended based on data from studies on major open abdominal surgery showing superior pain relief and fewer respiratory complications compared with intravenous opioids.                                                                                                                                                                                                                                                                 | Pain: High<br>Reduced respiratory complications: Moderate<br>Overall Morbidity: Low                     | Weak                  |
| Intravenous analgesia                                 | Some evidence supports the use of PCA or intravenous lidocaine analgesic methods. There is insufficient information on outcome after PD.                                                                                                                                                                                                                                                                                                                              | PCA: Very Low<br>I.V. Lidocaine: Moderate                                                               | Weak                  |
| Wound catheters and transversus abdominis plane block | Some evidence supports the use of wound catheters or TAP blocks in abdominal surgery. Results are conflicting and variable, and mostly from studies on lower gastrointestinal surgery.                                                                                                                                                                                                                                                                                | Wound catheters: Moderate<br>TAP blocks: Moderate                                                       | Weak                  |
| Postoperative nausea and vomiting (PONV)              | Data from the literature on gastrointestinal surgery in patients at risk of PONV show the benefits of using different pharmacological agents depending on the patient's PONV history, type of surgery and type of anaesthesia. Multimodal intervention during and after surgery is indicated.                                                                                                                                                                         | Low                                                                                                     | Strong                |
| Incision                                              | The choice of incision is at the surgeon's discretion, and should be of a length sufficient to ensure good exposure.                                                                                                                                                                                                                                                                                                                                                  | Very low                                                                                                | Strong                |
| Avoiding hypothermia                                  | Intraoperative hypothermia should be avoided by using cutaneous warming, i.e., forced-air or circulating-water garment systems.                                                                                                                                                                                                                                                                                                                                       | High                                                                                                    | Strong                |
| Postoperative glycaemic control                       | Insulin resistance and hyperglycaemia are strongly associated with postoperative morbidity and mortality. Treatment of hyperglycaemia with intravenous insulin in the ICU setting improves outcomes but hypoglycaemia remains a risk. Several ERAS protocol items attenuate insulin resistance and facilitate glycaemic control without the risk of hypoglycaemia. Hyperglycaemia should be avoided as far as possible without introducing the risk of hypoglycaemia. | Low                                                                                                     | Strong                |
| Nasogastric intubation                                | Pre-emptive use of nasogastric tubes postoperatively does not improve outcomes, and their use is not warranted routinely.                                                                                                                                                                                                                                                                                                                                             | Moderate                                                                                                | Strong                |
| Fluid balance                                         | Near-zero fluid balance, avoiding overload of salt and water results in improved outcomes. Perioperative monitoring of stroke volume with transoesophageal Doppler to optimize cardiac output with fluid boluses improves outcomes. Balanced crystalloids should be preferred to 0.9% saline                                                                                                                                                                          | Fluid balance: High<br>Oesophageal Doppler: Moderate<br>Balanced crystalloids vs. 0.9% saline: Moderate | Strong                |
| Perianastomotic drain                                 | Early removal of drains after 72 h may be advisable in patients at low risk (i.e., amylase content in drain <5000 U/L) for developing a pancreatic fistula. There is insufficient evidence to recommend routine use of drains, but their use is based only on low-level evidence.                                                                                                                                                                                     | Early removal: High                                                                                     | Early removal: Strong |
| Somatostatin analogues                                | Somatostatin and its analogues have no beneficial effects on outcome after PD. In general, their use is not warranted. Subgroup analyses for variability in the texture and duct size of the pancreas are not available.                                                                                                                                                                                                                                              | Moderate                                                                                                | Strong                |



Do chwili obecnej nie ukazało się żadne badanie, które wykazywałoby aby wprowadzenie zasad opieki okołoperacyjnej opartej o protokół ERAS wiązało się z pogorszeniem wyników leczenia.

# Dla zwolenników medycyny „tradycyjnej”

- ERAS wymyślił ...  
Hipokrates
- „Primum non nocere”



# Dla zwolenników medycyny „nowoczesnej”

Wpływ stosowania protokołu ERAS na wyniki leczenia

Meta-analizy/przeglądy piśmiennictwa/badania z randomizacją:

- Greco 2013
- Lemanu 2013
- Lv 2012
- Vlug (LAFA) 2011
- Kennedy (EnROL) 2014
- Spanjersberg (Cochrane) 2011
- Rawlinson 2011
- Varadhan 2010
- Wind 2006
- Li 2013
- Zhuang 2013
- Song 2012
- Abraham 2011
- Adamina 2014
- Walter 2009
- Wang 2012
- Lee 2014

**Evidence Based Medicine**

Badania kliniczne z randomizacją za wszelką cenę?



*...poszukiwani ochotnicy do wieloośrodkowego badania klinicznego z randomizacją pod tytułem „Skoki ze spadochronem vs. bez spadochronu”*