Rencontres d’Anesthésie SANOFI 2014

Rehabilitation en Chirurgie Digestive

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Biarritz - 14&15 Juin 2014

Déclaration de liens d’intérêts

Je déclare ne pas avoir de lien d’intérêt en rapport avec le contenu de cette présentation

Leading article

Fast-track surgery

H. Kehlet[1] and D. W. Wilmore[2]

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

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

Lancet 1995; 345: 763-64

The accelerated recovery, effective into the late postoperative period, suggests that an early aggressive perioperative stress-reducing effort is worth while. Our patients did not have postoperative deterioration in organ function leading to extended stay in hospital and fatigue. This may be an important advantage, since elderly surgical patients usually have impaired recovery of strength after abdominal surgery.

ERAS

Early Rehabilitation After Surgery

- Avoid opiates
- Patient Education
- Carbo hydrate loading
- No MBP
- No Premed
- 2-4 hours fasting
- Active Warming
- Short-acting drugs
- Epidural
- Minimal invasive incision
- No routine NGT
- Active rewarming
- No routine Abdominal drainage
- Routine PONV
- No routine Abdominal drainage
- Early oral fluids
- Early oral Mobilization
- Early oral diet
- Early oral Mobilization

Fearon KCH et al. Clin Nutr 2005
Kehlet H et al. lancet 2005

ERAS

Early Rehabilitation After Surgery

Est-ce que ça marche ?

Analysis 1.2. ERAS versus conventional, Outcome: All Complications

Study or subgroup	ERAS n/N	Conventional n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Anderson 2003	5/14	7/11		14.1 %	0.56 [0.24, 1.29]
Gatt 2005	9/19	15/20		33.9 %	0.63 [0.37, 1.08]
Khoo 2007	9/35	18/35		23.3 %	0.50 [0.26, 0.96]
Serclova 2009	11/51	27/52		28.6 %	0.42 [0.23, 0.75]
Total (95% CI)	**119**	**118**		**100.0 %**	**0.52 [0.38, 0.71]**

- 50%

Total events: 34 (ERAS), 67 (Conventional)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.17$, df = 3 (P = 0.76); $I^2 = 0.0\%$

Test for overall effect: Z = 4.07 (P = 0.000046)

Test for subgroup differences: Not applicable

0.1 0.2 0.5 1 2 5 10

Favours eras | Favours conventional

THE COCHRANE COLLABORATION ®

Spanjersberg WR et al. Cochrane Database Syst Rev. 2011

Analysis 1.7. ERAS versus conventional, Outcome: Hospital Stay

Study or subgroup	ERAS N	Mean(SD)[days]	conventional N	Mean(SD)[days]	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Anderson 2003	14	4 (1.8)	11	7 (2.1)		19.3 %	-3.00 [-4.56, -1.44]
Delaney 2003	31	5.2 (2.5)	33	5.8 (3)		21.7 %	-0.60 [-1.95, 0.75]
Gatt 2005	19	6.6 (4.4)	20	9 (4.6)		9.6 %	-2.40 [-5.22, 0.42]
Khoo 2007	35	5 (8.5)	35	7 (14.75)		3.1 %	-2.00 [-7.64, 3.64]
Muller 2009	76	6.7 (4.84)	75	10.3 (4.97)		19.2 %	-3.60 [-5.17, -2.03]
Serclova 2009	51	7.4 (1.3)	52	10.4 (3.1)		27.1 %	-3.00 [-3.92, -2.08]
Total (95% CI)	**226**		**226**			**100.0 %**	**-2.51 [-3.54, -1.47]**

Heterogeneity: $Tau^2 = 0.80$; $Chi^2 = 11.04$, df = 5 (P = 0.05); $I^2 = 55\%$

Test for overall effect: Z = 4.76 (P < 0.00001)

Test for subgroup differences: Not applicable

- 2 jours

-4 -2 0 2 4

ERAS Conventional

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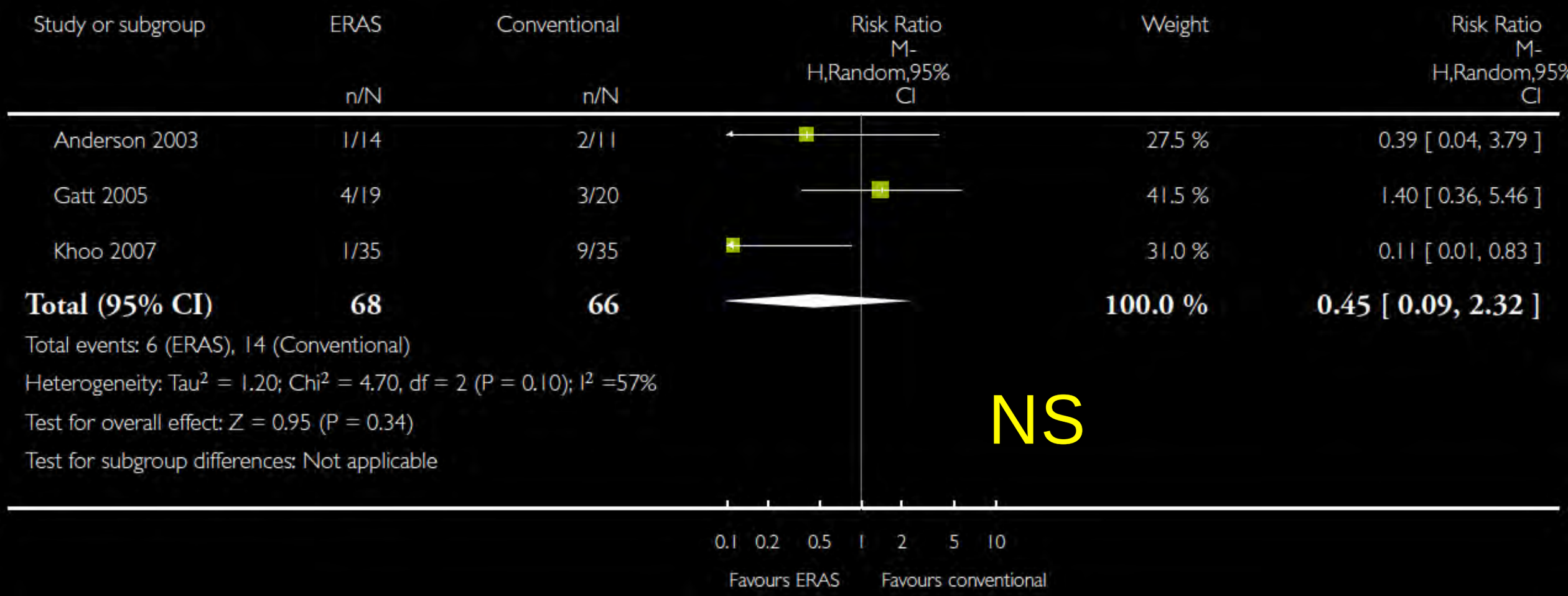
Spanjersberg WR et al. Cochrane Database Syst Rev. 2011

Analysis 1.3. ERAS versus conventional, Outcome: Major Complications



THE COCHRANE COLLABORATION ®

Spanjersberg WR et al. Cochrane Database Syst Rev. 2011

Original article

Br J Surg 2013;100:1108–1114

Cost-effectiveness of the implementation of an enhanced recovery protocol for colorectal surgery

D. Roulin[1], A. Donadini[1], S. Gander[2], A.-C. Griesser[3], C. Blanc[2], M. Hübner[1], M. Schäfer[1] and N. Demartines[1]

	Enhanced recovery ($n = 50$)	Standard care ($n = 50$)	P†
Age (years)*	65·0(17·9)	65·0(13·6)	0·995
Sex ratio (M:F)	28:22	25:25	0·689‡
Body mass index (kg/m^2)*	26·7(5·0)	27·3(4·1)	0·357
ASA grade			0·265‡
I–II	39	33	
III	11	17	
P-POSSUM*			
Physiological	18(6)	19(4)	0·341
Operative	13(4)	13(4)	0·557
Surgical approach			0·016‡
Laparoscopic	33	20	
Open	17	30	
Type of operation			0·528§
Colectomy	27	33	
Anterior resection of rectum	14	9	
Abdominoperineal resection	2	3	
Other	7	5	
Diagnosis			0·294§
Adenocarcinoma	36	29	
Diverticular disease	6	11	
Other	8	10	

Original article

Br J Surg 2013;100:1108–1114

Cost-effectiveness of the implementation of an enhanced recovery protocol for colorectal surgery

D. Roulin[1], A. Donadini[1], S. Gander[2], A.-C. Griesser[3], C. Blanc[2], M. Hübner[1], M. Schäfer[1] and N. Demartines[1]

	Enhanced recovery ($n = 50$)	Standard care ($n = 50$)	P†
Mean compliance with enhanced recovery protocol (%)	71	36	
Time to first passage of flatus (days)*	2 (1–2)	3 (2–4)	0·005
Time to first passage of stool (days)*	3 (2–4)	4 (3–5)	< 0·001
Patients with a complication within 30 days			
Grade I–II	24	19	0·414‡
Grade IIIa–IVb	6	10	0·287‡
Postoperative stay (days)*	7 (5–12)	10 (7–18)	0·003

Table 4 Total individual costs of primary hospital stay

	Mean cost per patient (€)*			
	Enhanced recovery ($n = 50$)	Standard care ($n = 50$)	Mean difference (€)†	P†
Total intraoperative costs	10 573 (9563, 11 667)	8801 (7822, 10 083)	1772 (–5, 3633)	0·031
Disposable materials	2494 (2183, 2808)	1639 (1368, 1951)	855 (409, 1258)	0·002
Anaesthesia and operating room	8079 (7144, 9262)	7162 (6336, 8263)	917 (–651, 2600)	0·212
Intensive and intermediate care	2045 (1367, 2936)	3077 (1864, 4566)	–1032 (–2803, –420)	0·249
Medical care	3122 (2650, 3721)	3653 (3083, 4338)	–531 (–1406, 372)	0·224
Nursing care	4368 (3409, 5663)	5538 (4129, 7458)	–1170 (–3449, 1255)	0·304
Physiotherapy	194 (135, 271)	338 (228, 468)	–144 (–286, –14)	0·058
Medication	588 (455, 760)	966 (663, 1313)	–378 (–713, –76)	0·048
Blood transfusion and testing	261 (163, 373)	393 (223, 583)	–132 (–373, 93)	0·261
Laboratory	476 (367, 592)	993 (718, 1334)	–517 (–845, –238)	0·006
Radiology	143 (77, 214)	422 (265, 611)	–279 (–475, –93)	0·012
Housing and administration	2538 (2219, 2893)	2789 (2358, 3357)	–251 (–891, –388)	0·429

Original article

Br J Surg 2013;100:1108–1114

Cost-effectiveness of the implementation of an enhanced recovery protocol for colorectal surgery

D. Roulin[1], A. Donadini[1], S. Gander[2], A.-C. Griesser[3], C. Blanc[2], M. Hübner[1], M. Schäfer[1] and N. Demartines[1]

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	Mean cost per patient (€)		
	Enhanced recovery ($n = 50$)	Standard care ($n = 50$)	Mean difference (€)*
Enhanced recovery implementation	1011	0	1011
Intraoperative cost	10 573	8801	1772
Preoperative + postoperative costs	13 735	18 169	– 4434
Total costs	25 319	26 970	–1651

Conclusion: Enhanced recovery is cost-effective, with savings evident even in the initial implementation period.

Section Editor: Franklin Dexter

Reduced Length of Hospital Stay in Colorectal Surgery after Implementation of an Enhanced Recovery Protocol

Table 5B. Adjusted Medical Costs* ($, United States)

Hospital department groups	Adjusted difference, (ERAS – traditional)	Lower CI (95%)	Upper CI (95%)	Adjusted *P*
Non-ICU	−509	−1013	−6	0.047
ICU	−1072	−2834	691	0.23
Pharmacy	−463	−914	−12	0.044
Medical and surgical supplies	684	−410	1778	0.22
Lab & ECG	−265	−612	82	0.13
Radiology	16	−263	295	0.91
OR + PACU	20	−220	261	0.87
Anesthesia	−12	−30	7	0.21
Blood related	−89	−249	71	0.27
Dialysis	−167	−722	387	0.55
Total	−1854	−6072	2363	0.39

Timothy E. Miller et al. for the Enhanced Recovery Study Group. Anesth Analg 2014;118:1052-61

ERAS

Early Rehabilitation After Surgery

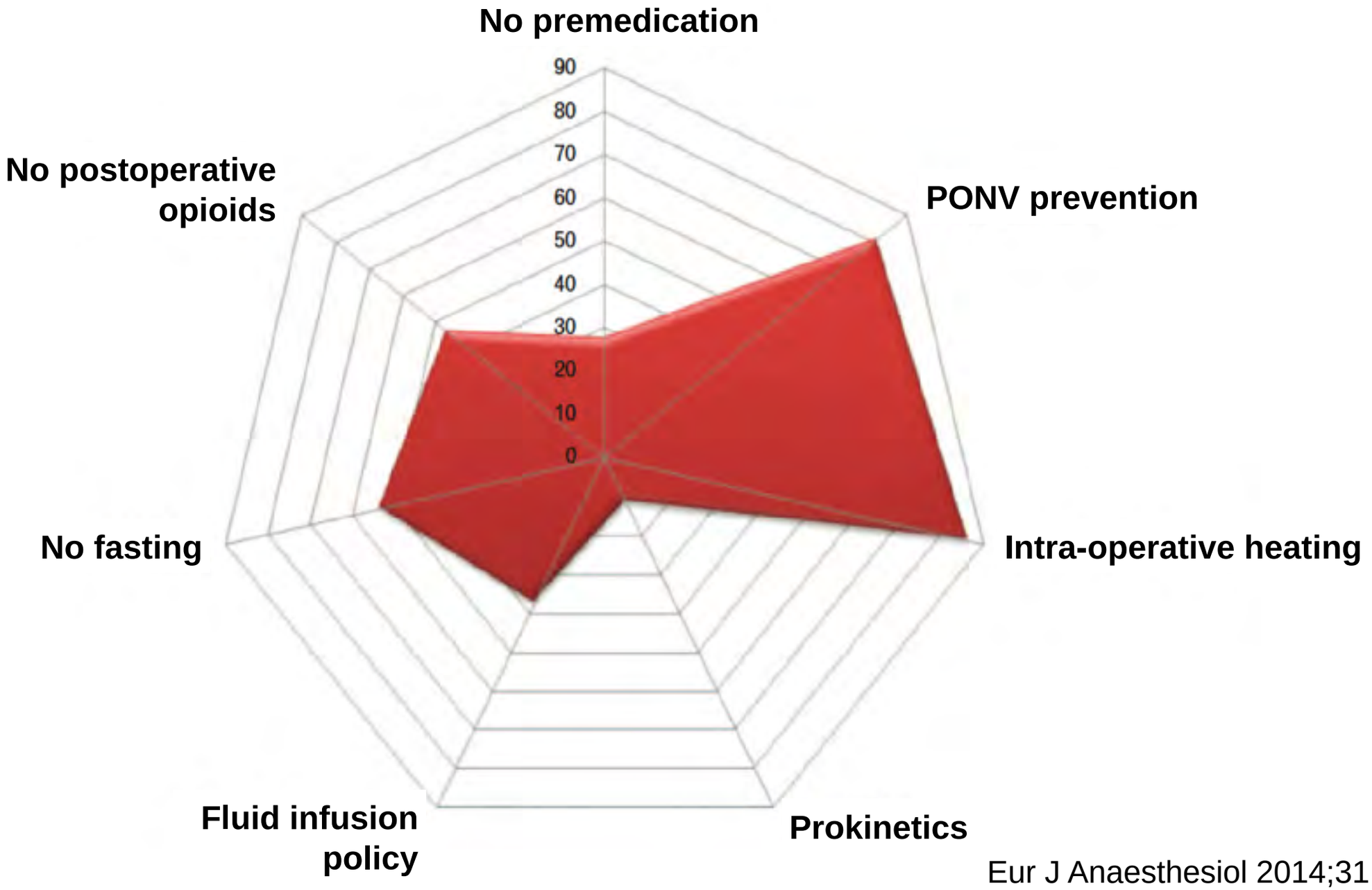
Est-ce appliqué ?

Enhanced recovery after surgery

A survey among anaesthesiologists from 27 countries

Massimiliano Greco, Marco Gemma, Marco Braga, Daniele Corti, Nicolo Pecorelli, Giovanni Capretti and Luigi Beretta

A survey among 139 senior anaesthesiologists (20 questions on ERAS knowledge and current preoperative practice)

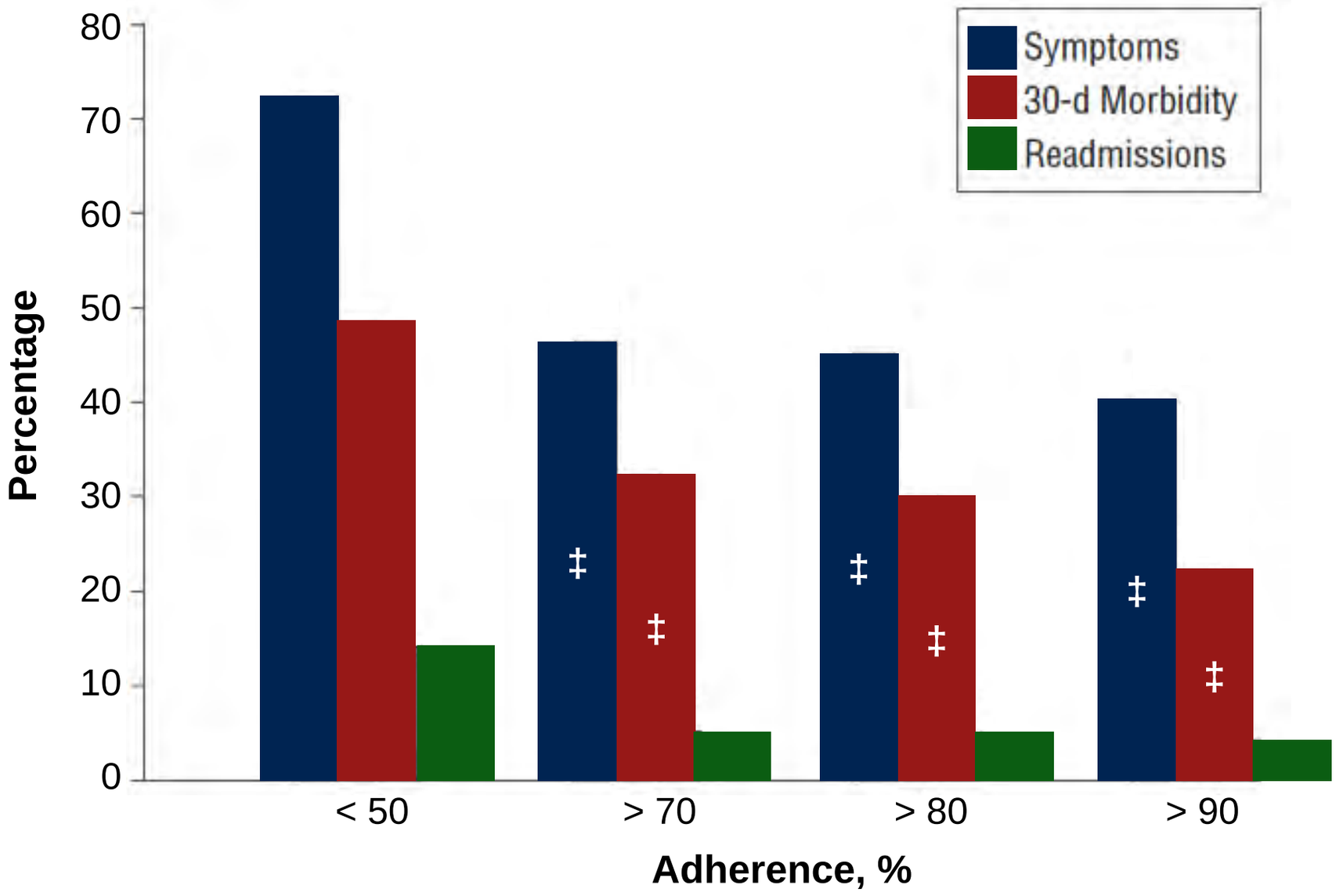


Eur J Anaesthesiol 2014;31:287-8

ONLINE FIRST

Adherence to the Enhanced Recovery After Surgery Protocol and Outcomes After Colorectal Cancer Surgery

Ulf O. Gustafsson, MD, PhD; Jonatan Hausel, MD; Anders Thorell, MD, PhD; Olle Ljungqvist, MD, PhD; Mattias Soop, MD, PhD; Jonas Nygren, MD, PhD; for the Enhanced Recovery After Surgery Study Group



Systematic review

Colorectal Dis. 2012;14:1045-51

Enhanced recovery after surgery protocols – compliance and variations in practice during routine colorectal surgery

J. Ahmed*†, S. Khan*‡, M. Lim*, T. V. Chandrasekaran† and J. MacFie*

Studies	Modalities of ERAS protocols in the intra-operative phase						
	Active warming (%)	High inspired O_2 (80%)	Epidural analgesia (%)	Transverse incisions (%)	Use of nasogastric tube (%)	Restricted intravenous fluids (%)	Use of drains (%)
Nygren *et al.* (2005)	NA	NA	100	96	0	NA	0
Kehlet *et al.* (2006)	NA	NA	8–67	NA	50–95	NA	NA
Polle *et al.* (2007)	100	NA	71	NA	NA	NA	NA
Maessen *et al.* (2007)	79	NA	93	46	NA	NA	NA
Jottard *et al.* (2008)	NA	NA	94	NA	5	NA	NA
Schwenk *et al.* (2008)	NA	NA	87	NA	5	NA	NA
Kahokehr *et al.* (2009)	NA	NA	92	NA	NA	81	NA
Braumann *et al.* (2009)	NA	NA	89	NA	NA	76	NA
Ahmed *et al.* (2010)	NA	95%	93	25	9	NA	12
Gustafsson *et al.* (2011)	97	NA	97	NA	NA	NA	NA
Ramirez *et al.* (2011)	84	NA	38	NA	23	46	47

Conclusion **There is significant variation in the components of, as well as in compliance to, ERAS protocols in daily practice. This may contribute to the observed variation between the studies in length of hospital stay.**

A standardized and practically feasible ERAS protocol should be established in order to improve the implementation and optimal outcome.

J Visc Surg. 2014 Feb;151(1):65-79
Ann Fr Anesth Reanim. 2014 May 19. pii: S0750-7658(14)00100-2

RECOMMENDATIONS

French guidelines for enhanced recovery after elective colorectal surgery

P. Alfonsi[a], K. Slim[b,*], M. Chauvin[c], P. Mariani[d], J.L. Faucheron[e], D. Fletcher[f], the working group of the Société française d'anesthésie et réanimation (SFAR), the Société française de chirurgie digestive (SFCD)

ERAS

Early Rehabilitation After Surgery

1. Quelle stratégie analgésique en chirurgie digestive ?
2. Quelle gestion des apports liquidiens en peropératoire ?

ELSEVIER MASSON

Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en

RECOMMENDATIONS

French guidelines for enhanced recovery after elective colorectal surgery

Question: Does the postoperative analgesia technique have an impact on duration of hospital stay or incidence of complications?

R20 PRESCRIPTION OF A MULTIMODAL ANALGESIA TECHNIQUE, PRIVILEGING NON-OPIOID DRUGS, AND/OR A LOCOREGIONAL TECHNIQUE IS RECOMMENDED (GRADE 1+)

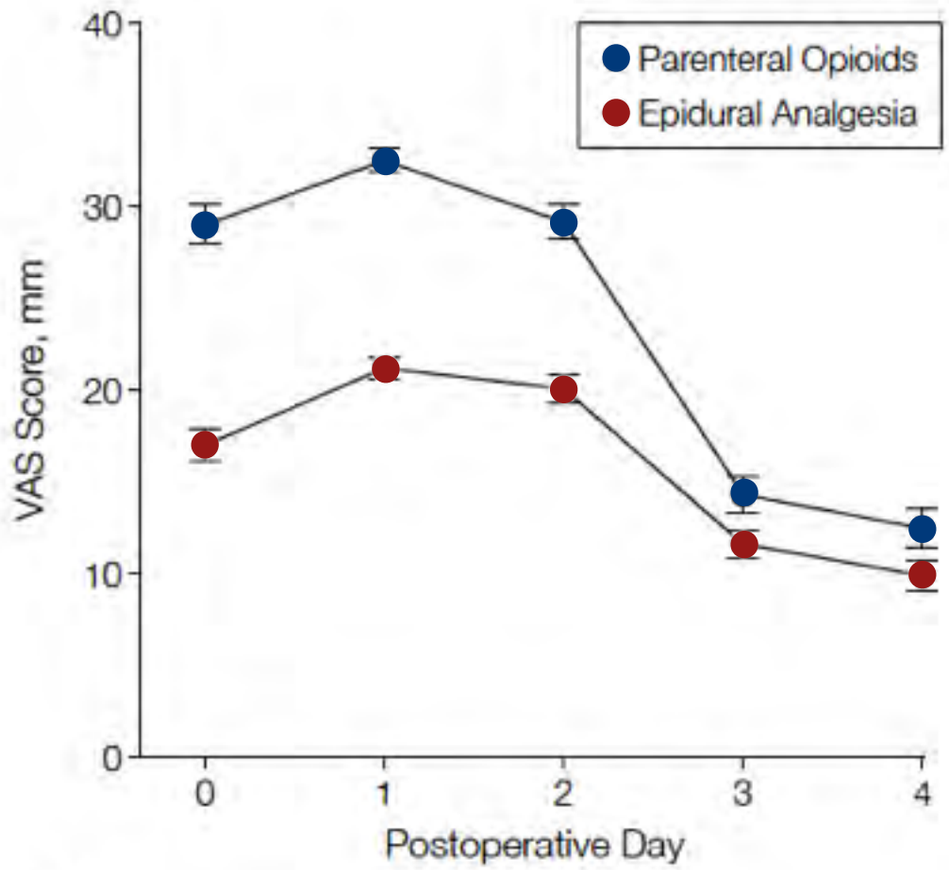
REVIEW

Efficacy of Postoperative Epidural Analgesia

A Meta-analysis

Brian M. Block, MD, PhD
Spencer S. Liu, MD
Andrew J. Rowlingson, BA
Anne R. Cowan, MD
John A. Cowan, Jr, MD
Christopher L. Wu, MD

JAMA
The Journal of the American Medical Association



No. of Patient-Observations

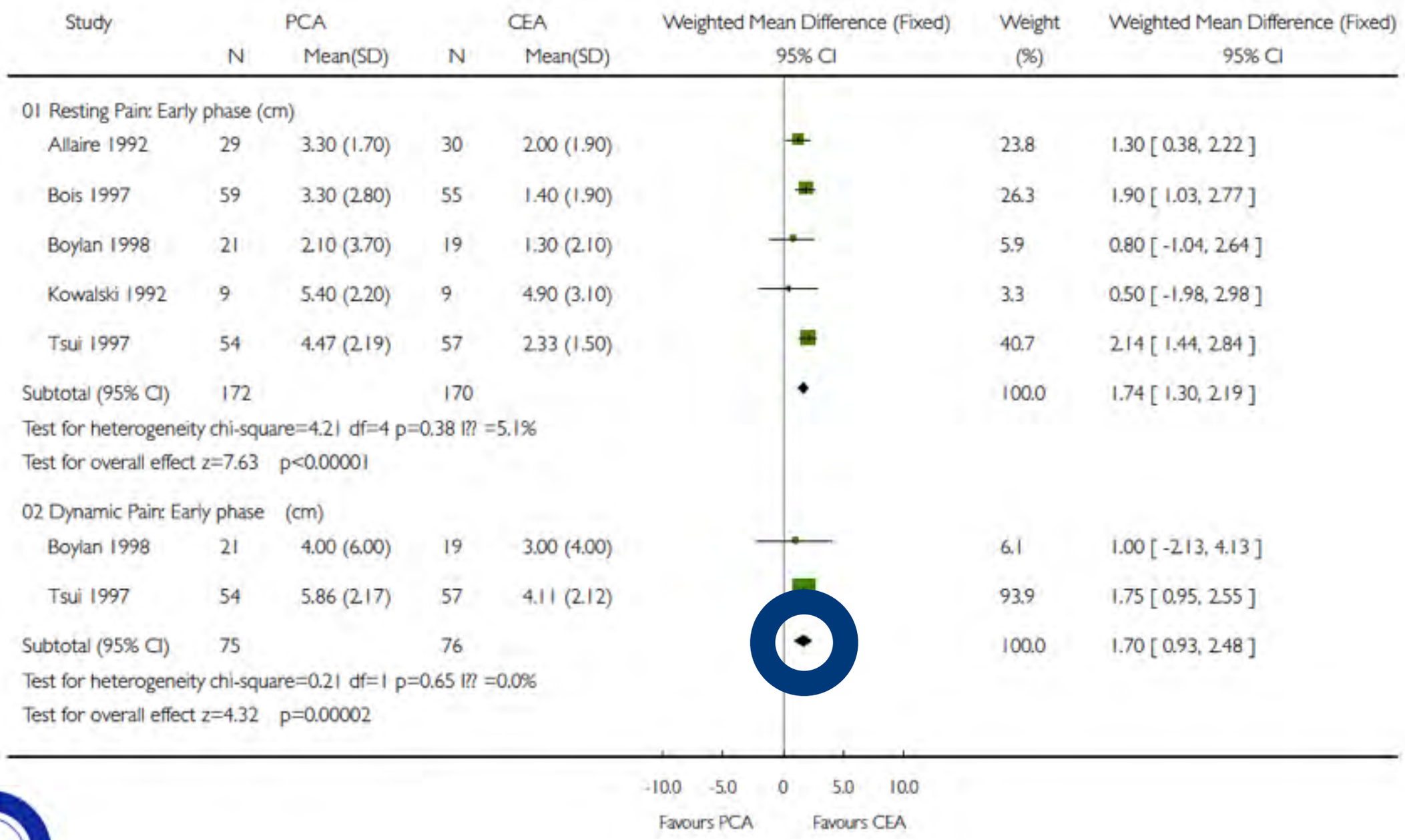
Parenteral Opioids	1104	2635	1496	794	536
Epidural Analgesia	1010	2618	1527	822	566

Conclusion **Epidural analgesia, regardless of analgesic agent, location of catheter placement, and type and time of pain assessment, provided better postoperative analgesia compared with parenteral opioids.**

JAMA. 2003;290:2455-2463

Patient controlled intravenous opioid analgesia versus continuous epidural analgesia for pain after intra-abdominal surgery (Review)

Werawatganon T, Charuluxanun S



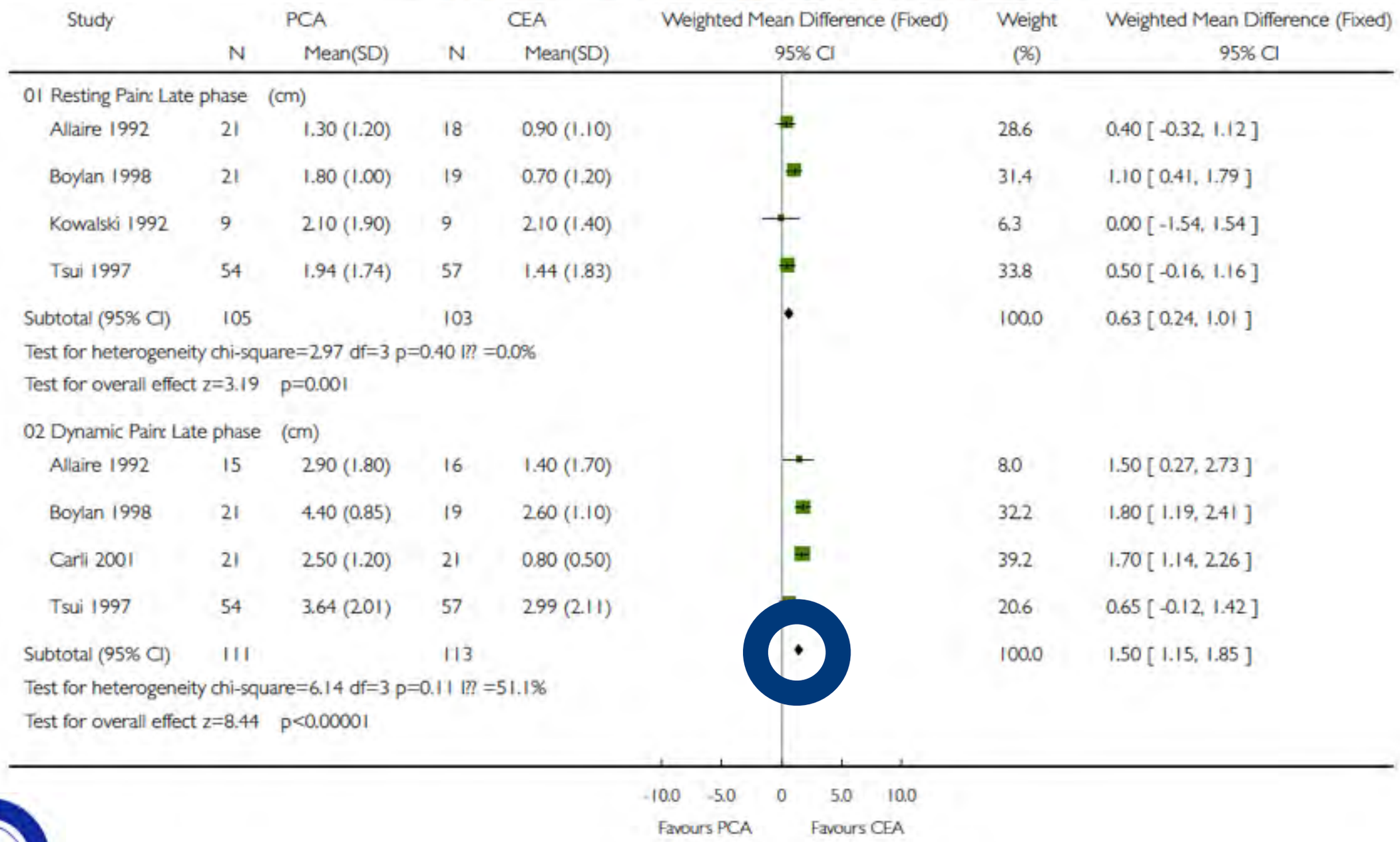
Analgésie précoce (≤ 6 heures)

Cochrane Database Syst Rev. 2005;1:CD004088

THE COCHRANE COLLABORATION®

Patient controlled intravenous opioid analgesia versus continuous epidural analgesia for pain after intra-abdominal surgery (Review)

Werawatganon T, Charuluxanun S



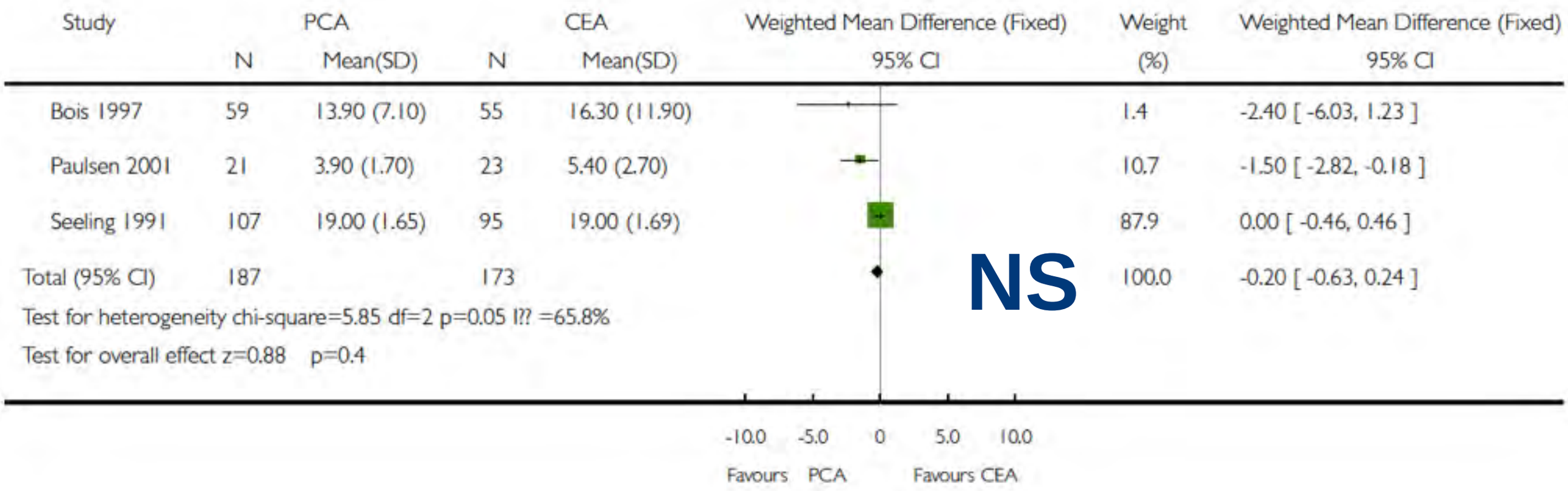
Analgésie tardive (24-72 heures)

THE COCHRANE COLLABORATION®

Cochrane Database Syst Rev. 2005;1:CD004088

Patient controlled intravenous opioid analgesia versus continuous epidural analgesia for pain after intra-abdominal surgery (Review)

Werawatganon T, Charuluxanun S



Durée de séjour

THE COCHRANE COLLABORATION®

Cochrane Database Syst Rev. 2005;1:CD004088

Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery (Review)

Nishimori M, Low JHS, Zheng H, Ballantyne JC

THE COCHRANE COLLABORATION®

Authors' conclusions

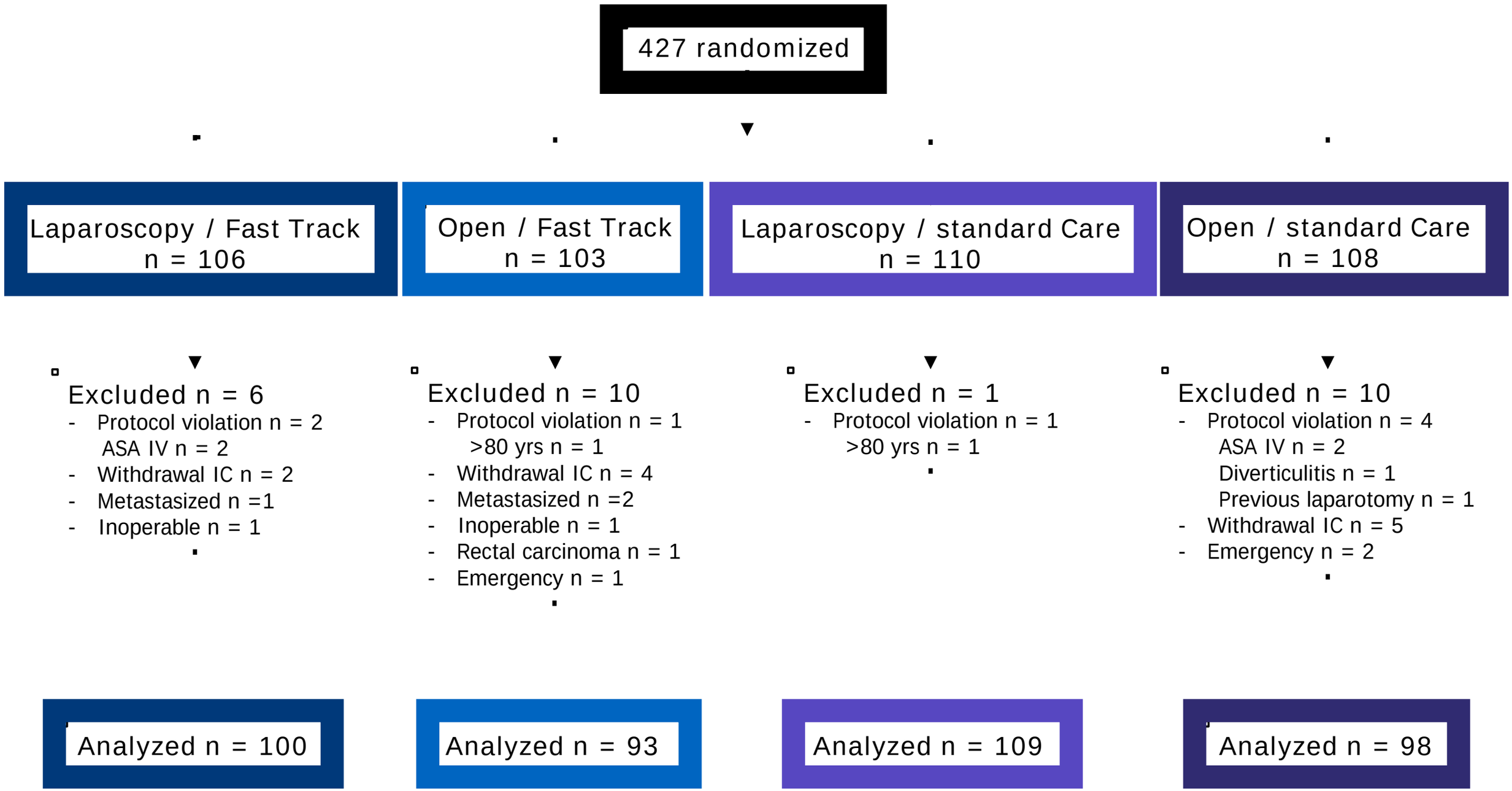
Epidural analgesia provides **better pain relief** (especially during movement) in the period up to three postoperative days. It **reduces the duration of postoperative tracheal intubation** by roughly half. **The occurrence of prolonged postoperative mechanical ventilation, myocardial infarction, gastric complications and renal complications was reduced** by epidural analgesia.

However, current evidence does not confirm the beneficial effect of epidural analgesia on postoperative mortality and other types of complications.

Nishimori M Cochrane Database Syst Rev. 2012 Jul 11;7:CD005059

Laparoscopy in Combination with Fast Track Multimodal Management is the Best Perioperative Strategy in Patients Undergoing Colonic Surgery

LAFA trial



Malaika S. Vlug et al. on behalf of the collaborative LAFA study group

Ann Surg 2011;254:868–875

Critère de jugement principal

LAFA trial

Durée totale d'hospitalisation (en jours)

	Laparoscopy and Fast Track (n = 100)	Open and Fast Track (n = 93)	Laparoscopy and Standard care (n = 109)	Open and Standard care (n = 98)
Total hospital stay, median (IQR), days	5 (4–8)	7 (5–11)	6 (4.5–9.5)	7 (6–13)
Postoperative hospital stay, median (IQR), days	5 (4–7)	6 (4.5–10)	6 (4–8.5)	7 (6–10.5)
Days to fulfill discharge criteria, median (IQR)				
(1) Pain control with oral medication	2 (2–3)	2 (2–4)	3 (2–4)	3 (2–5)
(2) Tolerate solid food	1 (1–2)	1 (1–3)	2 (1–3)	3 (2–5)
(3) Absence of nausea	1 (1–3)	2 (1–5)	1 (1–3)	1 (1–4)
(4a) Passage of first flatus	1 (1–2)	1 (1–3)	2 (1–3)	2 (1–3)
(4b) Passage of first stool	2 (1–4)	3 (2–4)	3 (2–4)	4 (3–6)
(5) Mobilization as preoperative	3 (2–5)	4 (3–7)	5 (4–7)	6 (5–8)
(6) Acceptance of discharge	4 (3–6)	5.5 (4–9)	5.5 (4–8)	7 (5–12)
In-hospital costs				
University hospitals, median (IQR, €)	10,594 (5461–16,763)	12,805 (6847–20,658)	11,967 (6222–17,039)	10,479 (6608–16,875)
Teaching hospitals, median (IQR, €)	5768 (4873–8917)	5497 (4506–6513)	6228 (5280–6604)	5650 (4836–8003)

Ann Surg 2011;254:868–875

Quelle influence de l'analgésie péridurale ?

	Laparoscopy and Fast Track (n = 100)	Open and Fast Track (n = 93)
Cross-over* – no. (%)	3[a] (3)	3[b] (3)
Preoperative phase – Yes, no. (%)		
Preoperative counseling†	96 (96)	92 (99)
Omission of bowel preparation	96 (96)	90 (97)
Intake of CHL – day before surgery median (IQR), liter	0.8 (0.3–0.8)	0.8 (0–0.8)
Day of surgery – Yes, no. (%)		
Intake of CHL – 2 hours before surgery median (IQR), liter	0.4 (0.2–0.4)	0.4 (0–0.4)
No preoperative fasting since midnight	87 (87)	77 (83)
Omission of premedication	69 (69)	61 (66)
Thoracic epidural analgesia	87 (87)	84 (90)
Intraoperative fluid loading, median (IQR), liter	2.2 (1.6–3)	2.5 (2–3)
Suprapubic catheter or no catheter‡	47 (47)	54 (58)
Intake of CHL – after surgery, median (IQR), liter	0.0 (0–0.2)	0.0 (0–0.2)
Total oral intake – after surgery, median (IQR), liter	0.5 (0.1–0.8)	0.3 (0–0.8)
Mobilization – after surgery, median (IQR), liter	0.0 (0–19)	0.0 (0–20)

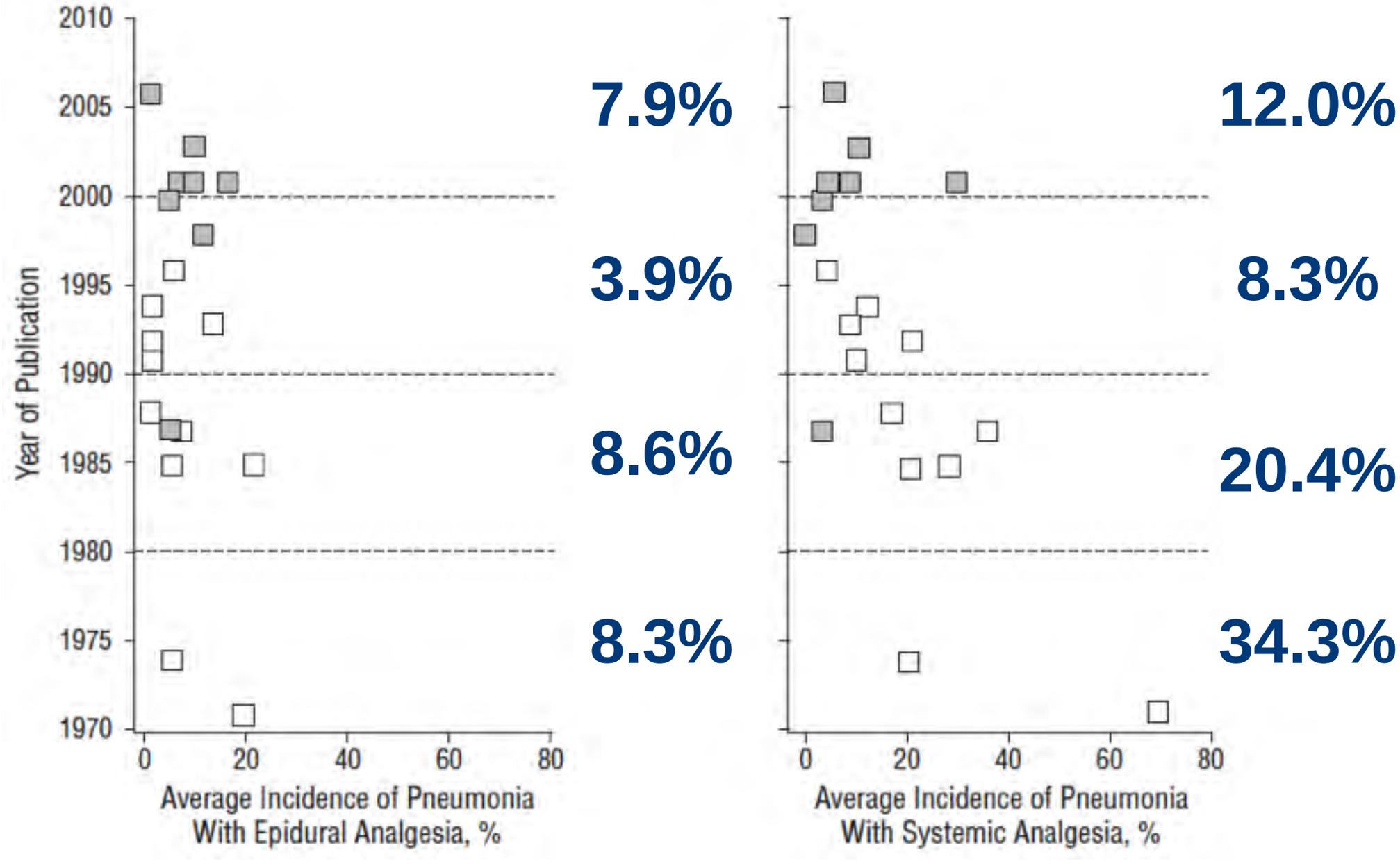
REVIEW ARTICLE

Protective Effects of Epidural Analgesia on Pulmonary Complications After Abdominal and Thoracic Surgery

Arch Surg 2008;143(10):990-999

A Meta-Analysis

Daniel M. Pöpping, MD; Nadia Elia, MD; Emmanuel Marret, MD; Camille Remy, MD; Martin R. Tramèr, MD, DPhil



Epidural Analgesia Is Associated with Improved Health Outcomes of Surgical Patients with Chronic Obstructive Pulmonary Disease

Felix van Lier, M.D., Ph.D.,* Patrick J. van der Geest, M.D.,† Sanne E. Hoeks, Ph.D.,‡ Yvette R. B. M. van Gestel, Ph.D.,‡ Jaap W. Hol, M.D.,† Don D. Sin, M.D., F.C.C.P.,§ Robert Jan Stolker, M.D., Ph.D.,‖ Don Poldermans, M.D., Ph.D.‖

	Pneumonia		30-Day Mortality	
	Multivariate OR [95% CI]	Propensity Adjusted OR [95% CI]	Multivariate OR [95% CI]	Propensity Adjusted OR [95% CI]
Age (per year increase)	1.02 (0.997–1.05)	1.02 (0.99–1.05)	1.06 (1.02–1.11)	1.06 (1.02–1.11)
Male sex	1.7 (0.9–3.3)	1.6 (0.8–3.3)	1.0 (0.4–2.3)	1.0 (0.4–2.4)
BMI ≥ 30	0.9 (0.3–2.2)	0.9 (0.4–2.3)	0.8 (0.2–3.0)	0.8 (0.2–3,0)
COPD classification				
Mild	1	1	1	1
Moderate	2.0 (1.1–3.6)	2.0 (1.1–3.6)	1.0 (0.4–2.8)	1.1 (0.4–2.8)
Severe	1.0 (0.4–2.1)	1.1 (0.4–3.1)	3.0 (1.3–7.4)	3.0 (1.2–7.4)
Lee risk index				
1	1	1	1	1
2	1.3 (0.7–2.3)	1.2 (0.7–2.3)	4.4 (1.4–13)	4.4 (1.4–14)
≥3	1.8 (0.9–3.9)	1.9 (0.9–3.9)	15 (4.6–49)	15 (4.6–49)
Epidural analgesia	0.6 (0.3–0.9)	0.5 (0.3–0.9)	0.6 (0.3–1.2)	0.6 (0.3–1.2)

Anesthesiology 2011; 115:315–21

BMJ

RESEARCH

Perioperative epidural analgesia for major abdominal surgery for cancer and recurrence-free survival: randomised trial

A Comparison of Epidural Analgesia and Traditional Pain Management Effects on Survival and Cancer Recurrence after Colectomy

A Population-based Study

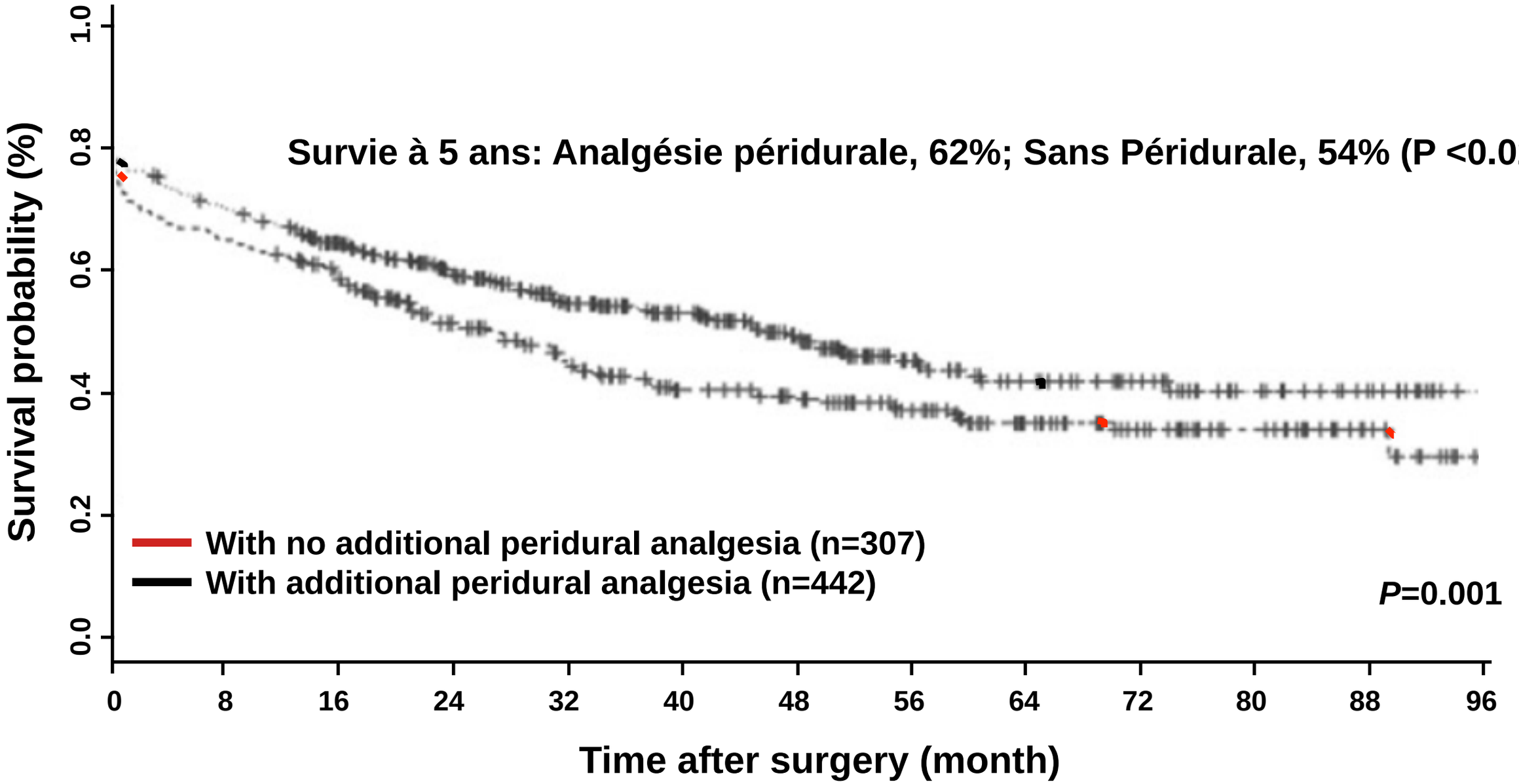
Association between Epidural Analgesia and Cancer Recurrence after Colorectal Cancer Surgery

Peridural Analgesia May Affect Long-term Survival in Patients With Colorectal Cancer After Surgery

An Analysis of a Cancer Registry

PACO-RAS Study

Analyse retrospective de 749 patients opérés d'une chirurgie colorectale pour adénocarcinome entre 2003 et 2009 sous anesthésie générale avec (N = 442) ou sans (N = 307) analgésie péridurale



Holler JP et al. Ann Surg 2013;258:989-93

A prospective study of early removal of the urethral catheter after colorectal surgery in patients having epidural analgesia as part of the Enhanced Recovery After Surgery programme

B. M. Stubbs, K. J. M. Badcock, C. Hyams, F. E. Rizal, S. Warren and D. Francis

Early group: 29±17.4 hr
Late group: 85±66.1 hr

Catheter removal	Patients without urinary retention	Patients with urinary retention	Total number of patients
Early TWOC (before EA removal)	104 (49.8)	14 (6.7)	118 (56.5)
Late TWOC (After EA removal)	89 (42.6)	2 (0.9)	91 (43.5)
Total	193 (92.3)	16 (7.7)	209 (100)

11.9% vs. **0.9%** (P=0.009)

- Male gender was not significantly associated with retention (P = 0.087)
- The mode of surgery (i.e. laparoscopic or open) did not affect the risk of retention:
  Laparoscopic vs Open surgery: 12.3% and 10.8% in the early TWOC group
  2.4% and 2.0% in the late TWOC group

Colorectal Dis. 2013;15:733-6

ERAS

Early Rehabilitation After Surgery

Alternative(s) à l’APD ?

Meta-analysis

British Journal of Surgery 2008; 95: 1331–1338

Meta-analysis of intravenous lidocaine and postoperative recovery after abdominal surgery

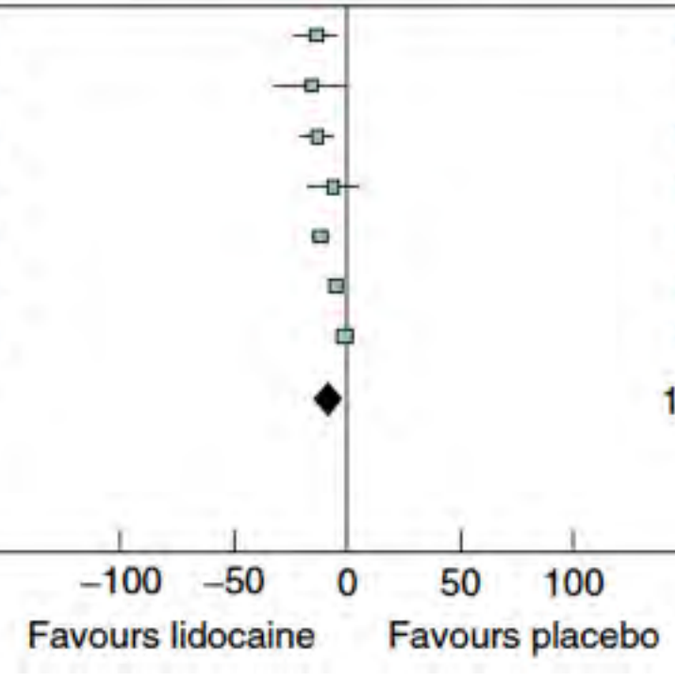
E. Marret[1], M. Rolin[2], M. Beaussier[2] and F. Bonnet[1]

Effect of intravenous lidocaine versus placebo on duration of postoperative ileus

Reference	Lidocaine		Placebo		WMD (random)	Weight (%)	WMD (random)
	n	Ileus (h)*	*n*	Ileus (h)*			
Groudine *et al.*[12]	20	28·50 (13·40)	20	42·10 (16·00)		11·12	−13·60 (−22·75, −4·45)
Herroeder *et al.*[8]	31	66·60 (26·40)	29	82·10 (33·80)		6·67	−15·50 (−30·92, −0·08)
Kaba *et al.*[7]	20	18·00 (9·10)	20	31·30 (11·50)		14·80	−13·30 (−19·73, −6·87)
Koppert *et al.*[13]	20	79·00 (13·34)	20	85·00 (20·76)		10·07	−6·00 (−16·81, 4·81)
Kuo *et al.*[14]	20	60·20 (5·80)	20	71·70 (4·70)		18·26	−11·50 (−14·77, −8·23)
Rimback *et al.*[15]	15	37·60 (2·40)	15	42·40 (4·80)		18·74	−4·80 (−7·52, −2·08)
Wu *et al.*[16]	25	22·10 (1·60)	25	22·90 (1·80)		19·74	−0·80 (−1·74, 0·14)
Total	151		149			100·00	−8·36 (−13·24, −3·47)

Test for heterogeneity: $\chi^2 = 63{\cdot}71$, 6 d.f., $P < 0{\cdot}001$, $I^2 = 90{\cdot}6\%$

Test for overall effect: $Z = 3{\cdot}35$, $P < 0{\cdot}001$



Meta-analysis

British Journal of Surgery 2008; 95: 1331–1338

Meta-analysis of intravenous lidocaine and postoperative recovery after abdominal surgery

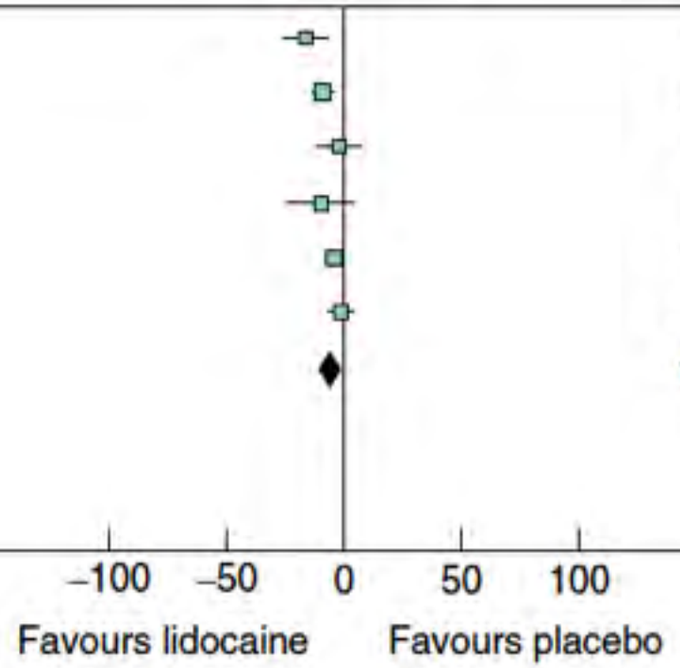
E. Marret[1], M. Rolin[2], M. Beaussier[2] and F. Bonnet[1]

Effect of intravenous lidocaine versus placebo on postoperative pain at 24 h after surgery

Reference	Lidocaine		Placebo		WMD (random)	Weight (%)	WMD (random)
	n	Score (mm)*	*n*	Score (mm)*			
Cassuto *et al.*[11]	10	4·00 (3·00)	10	20·00 (14·00)		11·14	−16·00 (−24·87, −7·13)
Groudine *et al.*[12]	20	4·67 (3·94)	20	13·25 (7·65)		23·49	−8·58 (−12·35, −4·81)
Herroeder *et al.*[8]	31	30·00 (17·00)	29	32·00 (18·00)		11·14	−2·00 (−10·87, 6·87)
Kaba *et al.*[7]	20	11·50 (16·40)	20	21·30 (25·10)		6·31	−9·80 (−22·94, 3·34)
Kuo *et al.*[14]	20	25·00 (5·00)	20	29·00 (3·00)		27·06	−4·00 (−6·56, −1·44)
Wu *et al.*[16]	25	26·00 (3·75)	25	27·00 (11·25)		20·85	−1·00 (−5·65 3·65)
Total	126		124			100·00	−5·93 (−9·63, −2·23)

Test for heterogeneity: $\chi^2 = 13{\cdot}73$, 5 d.f., $P = 0{\cdot}02$, $I^2 = 63{\cdot}6\%$

Test for overall effect: $Z = 3{\cdot}14$, $P = 0{\cdot}002$



British Journal of Surgery 2008; 95: 1331–1338

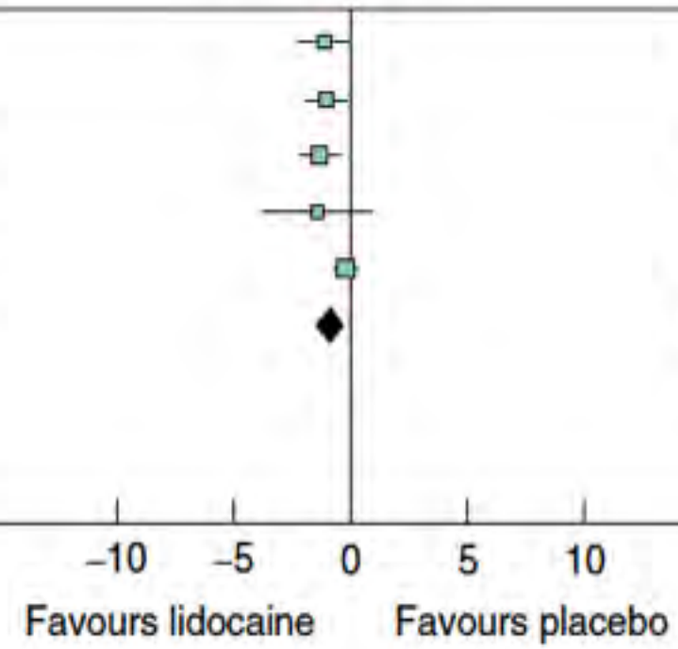
Meta-analysis of intravenous lidocaine and postoperative recovery after abdominal surgery

Effect of intravenous lidocaine versus placebo on length of hospital stay

Reference	Lidocaine		Placebo		WMD (random)	Weight (%)	WMD (random)
	n	Stay (days)*	*n*	Stay (days)*			
Groudine *et al.*[12]	20	4·00 (0·70)	20	5·10 (2·20)		17·37	−1·10 (−2·11, −0·09)
Herroeder *et al.*[8]	31	7·00 (1·00)	29	8·00 (2·00)		22·40	−1·00 (−1·81, −0·19)
Kaba *et al.*[7]	20	2·45 (0·51)	20	3·75 (1·77)		22·44	−1·30 (−2·11, −0·49)
Koppert *et al.*[13]	20	16·80 (4·20)	20	14·20 (3·10)		4·89	−1·40 (−3·69, 0·89)
Kuo *et al.*[14]	20	6·90 (0·80)	20	7·10 (0·80)		32·90	−0·20 (−0·70, 0·30)
Total	111		109			100·00	−0·84 (−1·38, −0·31)

Test for heterogeneity: $\chi^2 = 7{\cdot}51$, 4 d.f., $P = 0{\cdot}11$, $I^2 = 46{\cdot}7\%$

Test for overall effect: $Z = 3{\cdot}08$, $P = 0{\cdot}002$



Quelle posologie utiliser ?

Reference	Oxford Quality Score	No. of patients: Lidocaine	No. of patients: Control	Type of surgery	Lidocaine administration	Additional measures	Endpoints
Cassuto *et al.*[11]	3	10	10	Open cholecystectomy	B[illegible] mg/kg), then [illegible] mg/min for 24 h postop.		Postop. pain (VAS) Postop. opioid PONV
Groudine *et al.*[12]	5	20	20	Radical retropubic prostatectomy	Bolus (1·5 mg/kg) before induction, then 3 mg/min (BW > 70 kg) or 2 mg/min (BW < 70 kg) for 1 h after skin closure	NSAIDs	Pain scores Postop. opioid Time to first flatulence or bowel movement Length of hospital stay
Herroeder *et al.*[8]	5	31	29	Open colorectal surgery	Bolus [illegible] mg/kg) before induction, then [illegible] mg/min until 4 h after skin closure	Fast-track protocol: normothermia, PONV prophylaxis, paracetamol, NSAIDs, AOF	Pain scores Gastrointestinal motility Inflammatory mediators Length of hospital stay
Kaba *et al.*[7]	5	20	20	Laparoscopic colectomy	Bolus [illegible] mg/kg) at induction, then 2 mg/kg/h intraop. and 1·33 mg/kg/h for 24 h postop.	Normothermia, paracetamol, NSAIDs, no postop. nasogastric tube, AOF, active mobilization	Pain scores Postop. opioid Fatigue scores Length of hospital stay Time to first flatus and defaecation

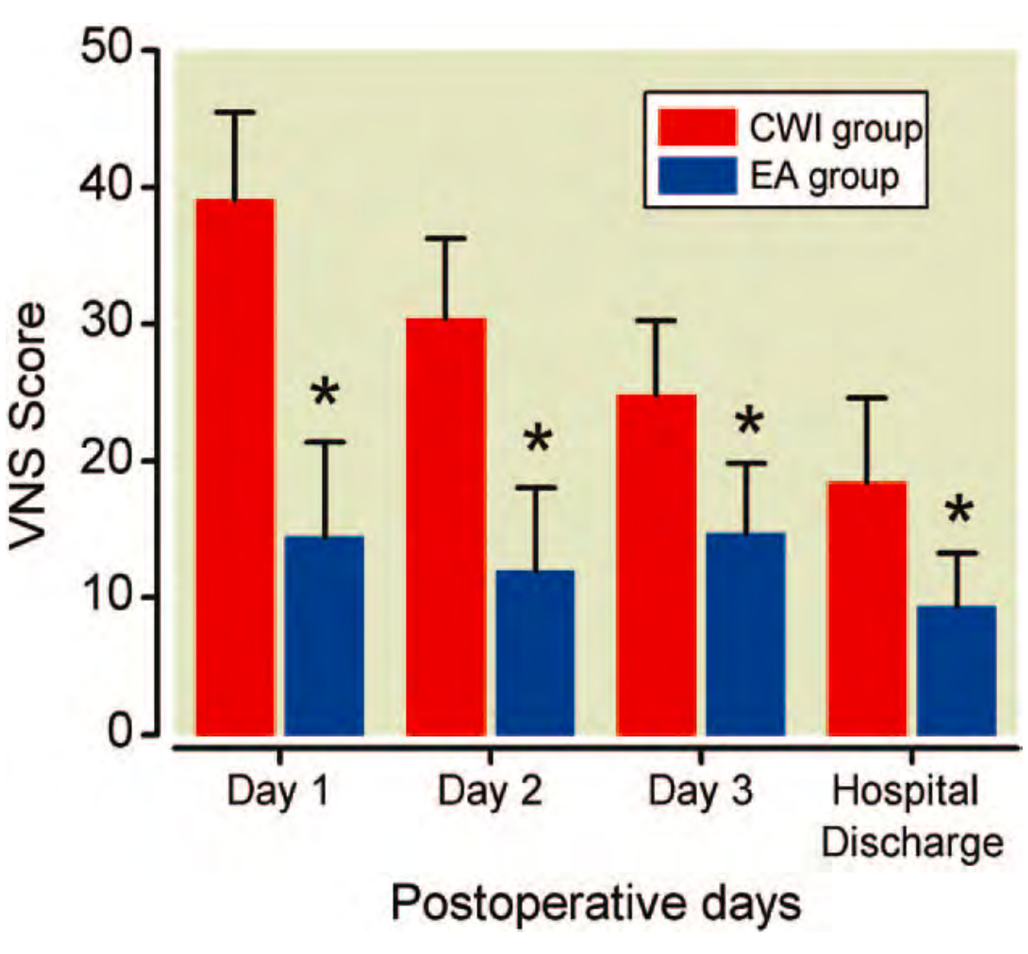
Bolus: 1-2 mg/kg à l'induction, Entretien: 2 mg/kg/h

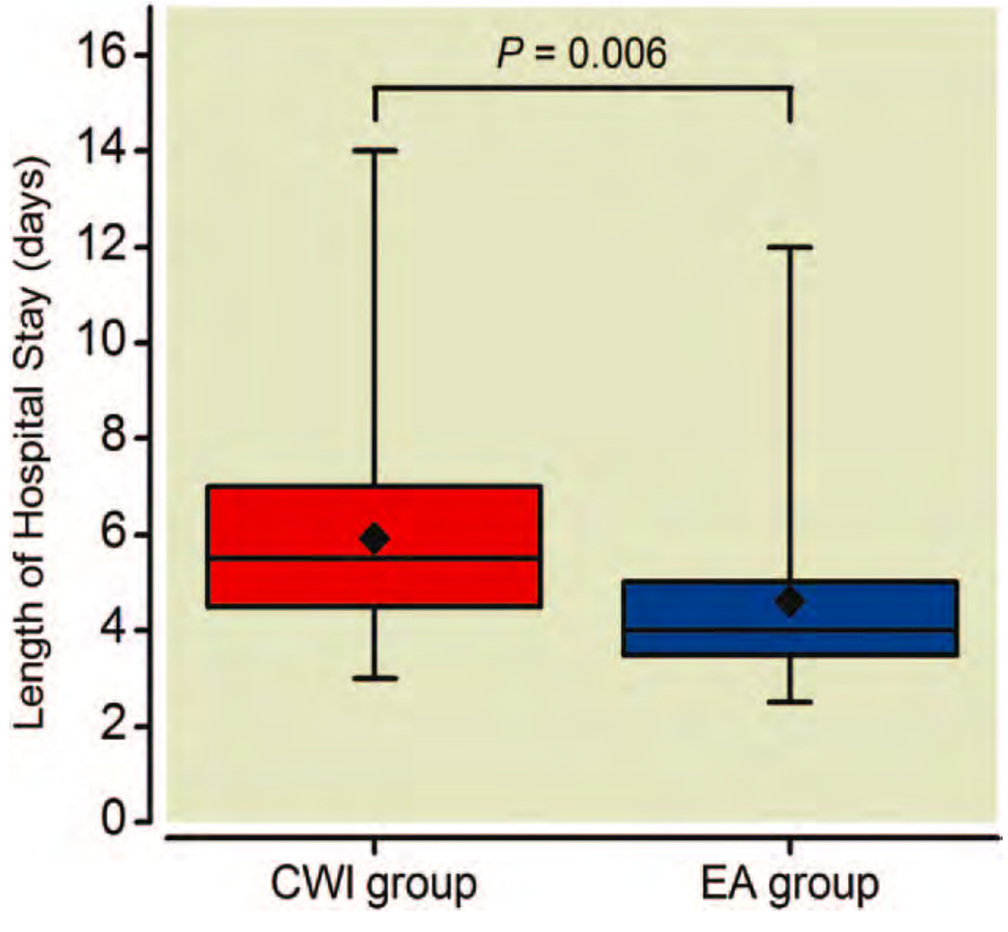
puis 1 mg/kg/h jusqu'à J1

Epidural *versus* Continuous Preperitoneal Analgesia during Fast-track Open Colorectal Surgery

A Randomized Controlled Trial

VS.

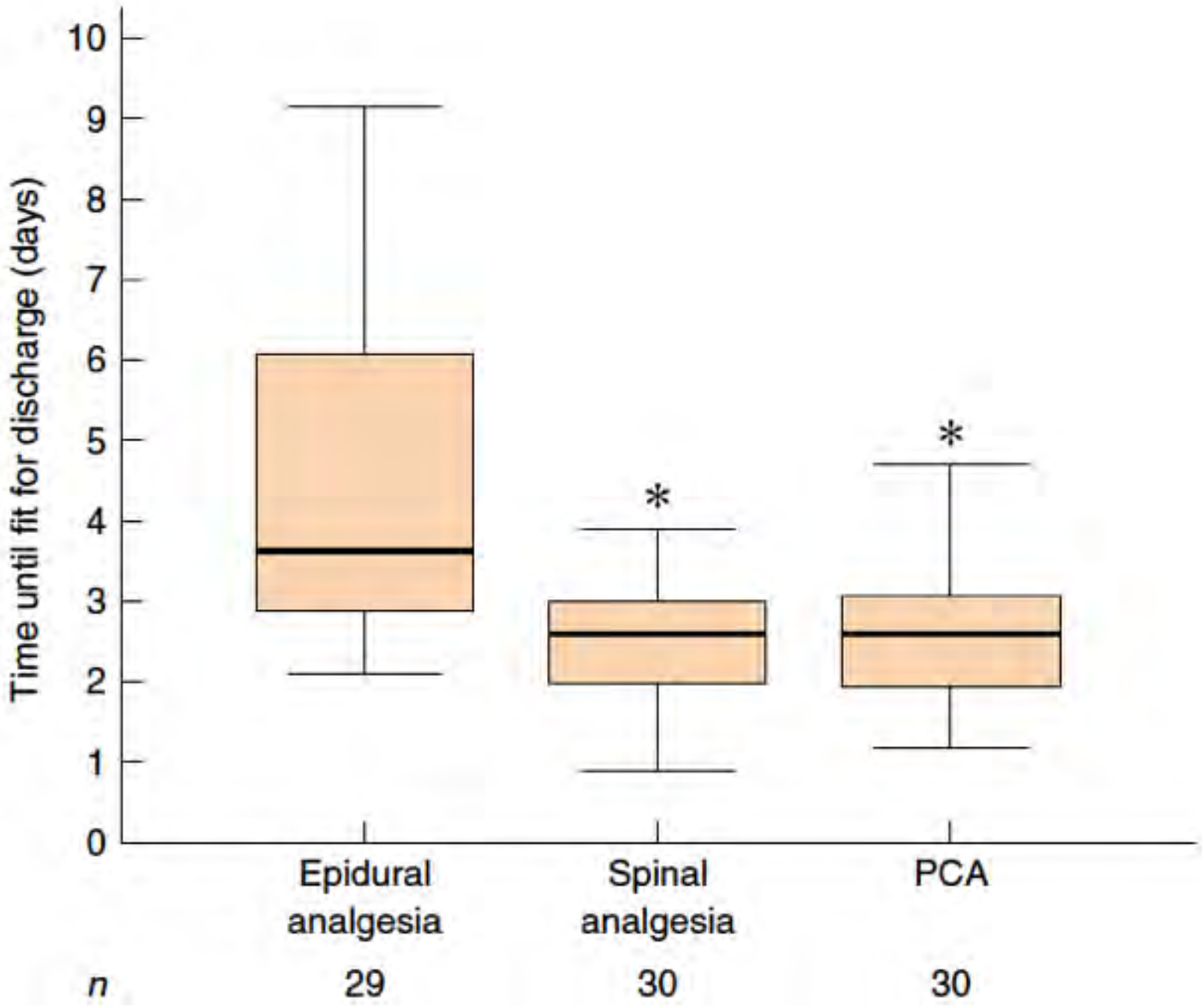




Jouve P et al. Anesthesiology 2013; 118:622–30

Randomized clinical trial

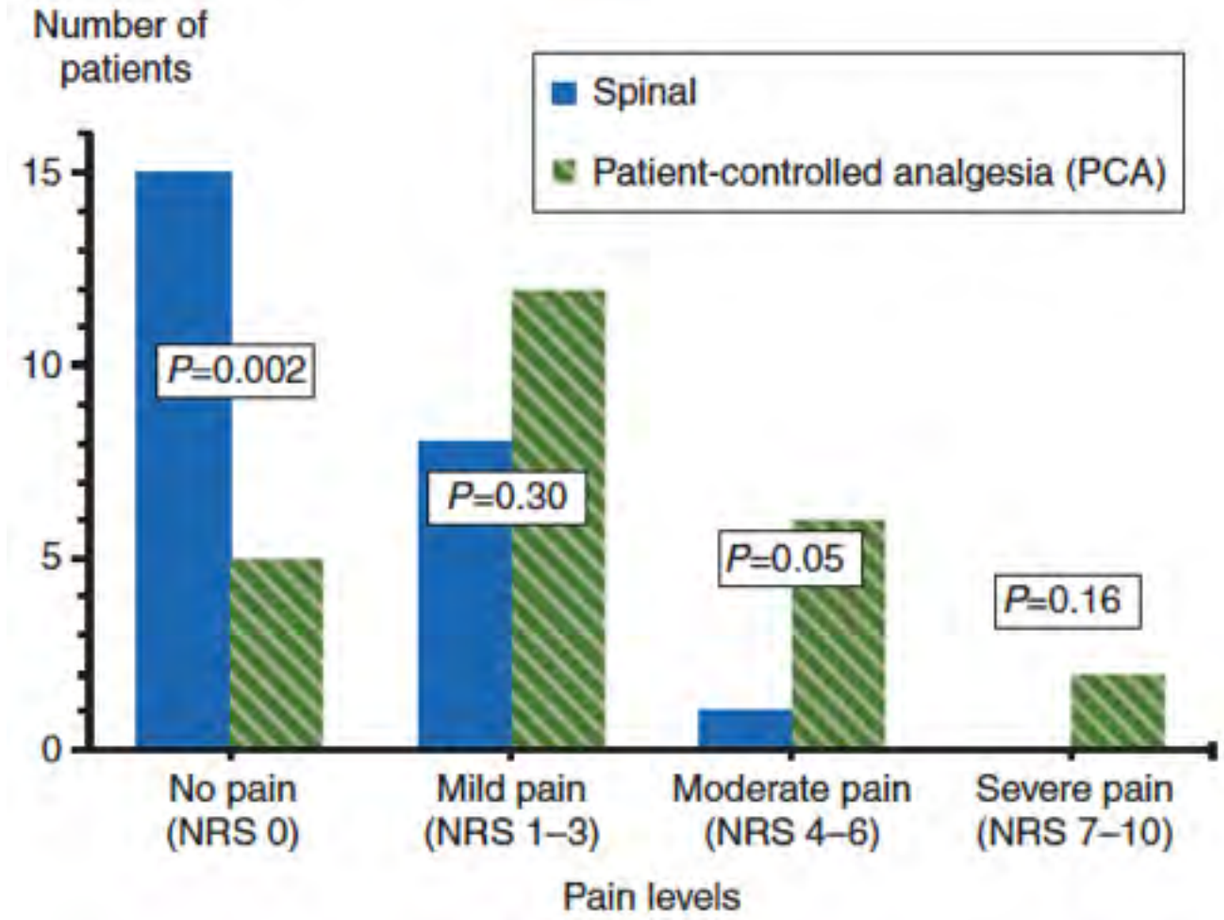
Randomized clinical trial of epidural, spinal or patient-controlled analgesia for patients undergoing laparoscopic colorectal surgery

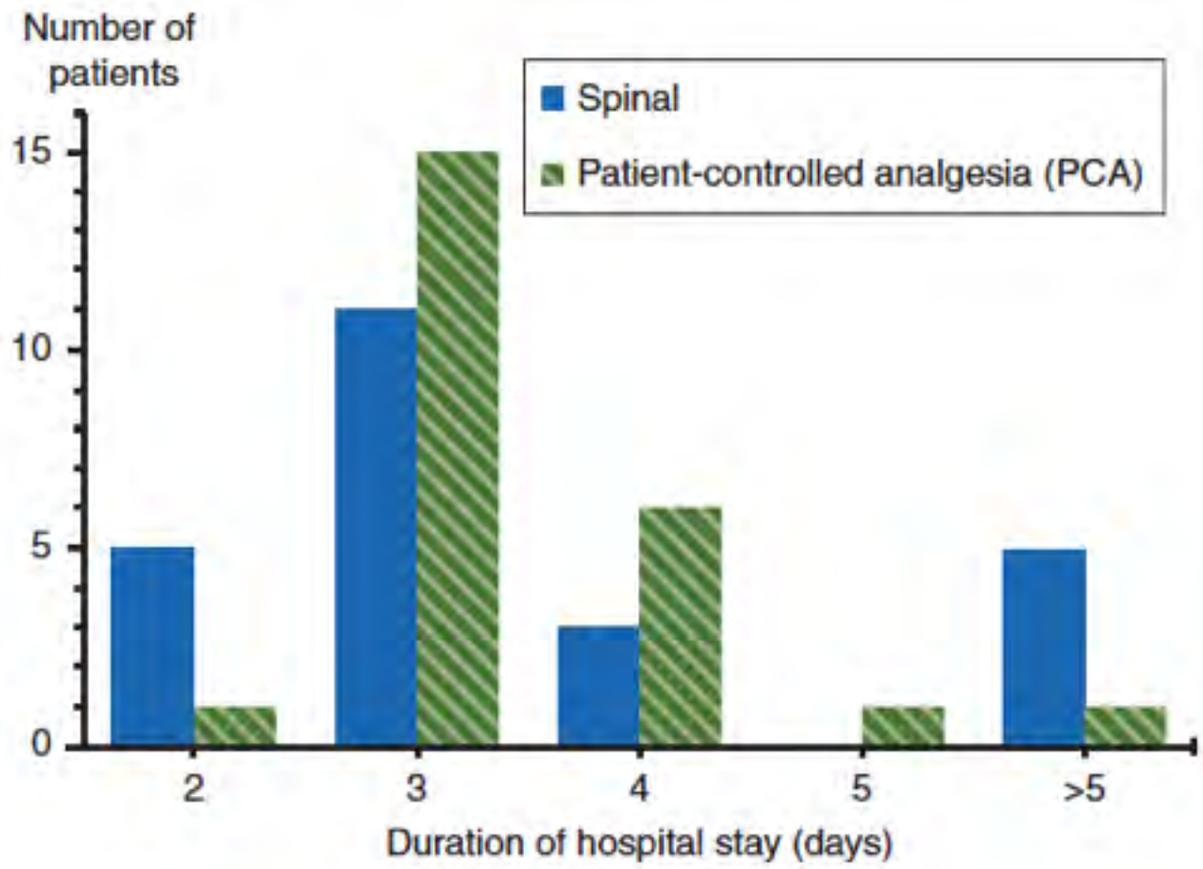


Levy BF et al. British Journal of Surgery 2011;98:1068–1078

Spinal analgesia for laparoscopic colonic resection using an enhanced recovery after surgery programme: better analgesia, but no benefits on postoperative recovery: a randomized controlled trial

Étude prospective randomisée, N = 55 patients





M. Wongyingsinn et al. Br J Anaesth 2012;108:850–6

ERAS

Early Rehabilitation After Surgery

Quelle stratégie analgésique en pratique ?

- Chirurgie par laparotomie : Analgésie péridurale
- Chirurgie par laparoscopie :
  - Facteurs de risque de PPC : Analgésie péridurale
  - Pas de facteurs de risque de PPC :
    1. Lidocaïne IV
    2. Rachianalgésie
    3. PCA

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RECOMMENDATIONS

French guidelines for enhanced recovery after elective colorectal surgery

- **Question: Does the volume of intravenous fluids administered during the operation have an impact on duration of hospital stay or onset of complications?**

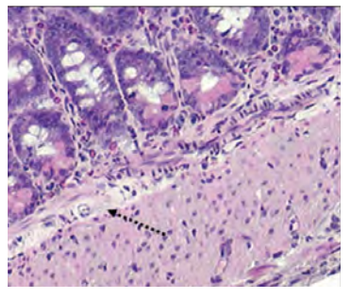
R11 EXCESS FLUID ADMINISTRATION IS NOT RECOMMENDED DURING SURGERY (GRADE 1–)

- **Question: Does monitoring of intra-operative fluid administration have an impact on duration of hospital stay or onset of complications?**

R12 MONITORING INTRA-OPERATIVE FLUID ADMINISTRATION, BASED ON PARAMETERS REFLECTING VOLUME REPLACEMENT, IS RECOMMENDED DURING ELECTIVE COLORECTAL SURGERY (GRADE 1+)

Intraoperative fluids: how much is too much?

M. Doherty[1*] and D.J. Buggy[1,2]



Perioperative morbidity risk

Optimal fluid

Hypovolemia
Tissue Hypoperfusion
Organ dysfunction

Tissue Oedema
Endothelial glycocalyx dysfunction
Hypoxemia
Pulmonary dysfunction

Fluid Load

Doherty M et al. Br J Anaesth 2012; 109(1):69-79

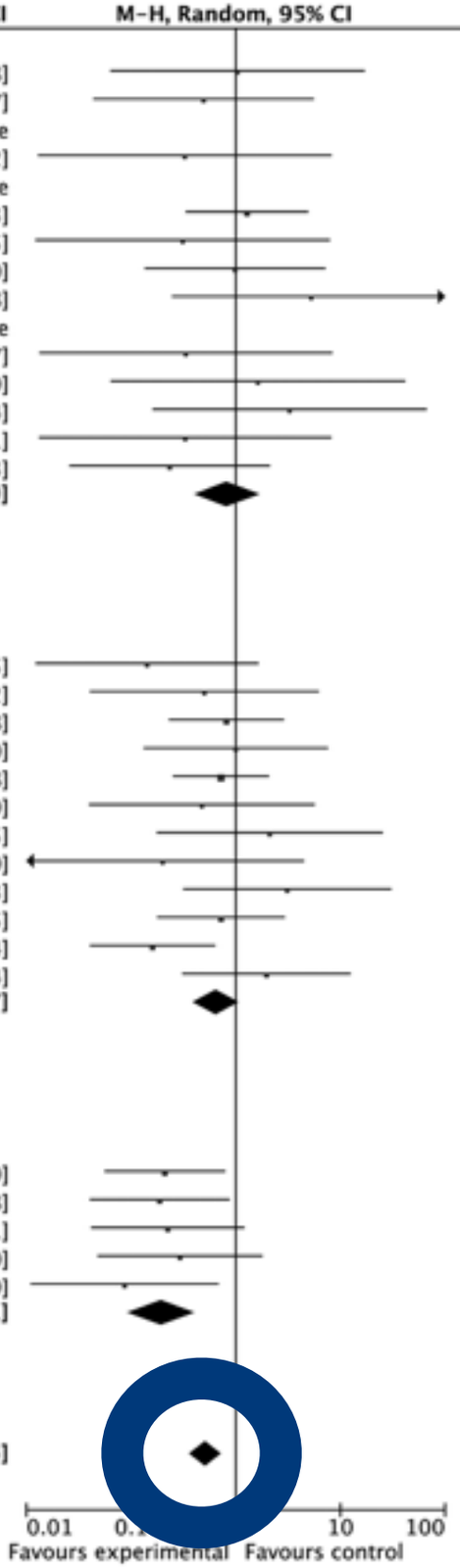
1988 Shoemaker WC et al. Chest,94:1176-1186
1988 Ueno S et al. Surgery,123:278-286
1988 Valentine RJ et al. J Vasc Surg,27:203-211
1991 Berlauk JF et al. Ann Surg,214:289-297
1993 Boyd O et al. JAMA,270:2699-2707
1997 Sinclair S et al. BMJ,315:909-912
1997 Bender JS et al. Ann Surg,226:229-236
1997 Ziegler DW et al. Surgery,122:584-592
1999 Wilson J et al. BMJ, 318:1099-1103
2000 Lobo SM et al. Crit Care Med,28:3396-3404
2002 Gan TJ et al. Anesthesiology,97:820-826
2002 Bonazzi M et al. Eur J Vasc Endovasc Surg,23:445-451
2002 Conway DH et al. Anaesthesia,57:845-849
2002 Venn R et al. Br J Anaesth,88:65-71
2005 Wakeling HG et al. Br J Anaesth,95:634-642
2005 Szakmany T et al. Intensive Care Med,31:656-663
2005 Pearse R et al. Crit Care,9:R687-693
2005 Szakmany T et al. Intensive Care Med,31:656-663
2006 Lobo SM et al. Crit Care,10:R72
2006 Noblett SE et al. Br J Surg,93:1069-1076
2007 Lopes MR et al. Crit Care,11:R100
2007 Donati A et al; Chest,132:1817-1824
2008 Buettner M et al. Br J Anaesth,101:194-199
2008 Harten J et al. Int J Surg,6:197-204
2009 Senagore AJ et al. Dis Colon Rectum,52:1935-1940
2010 Benes J et al. Crit Care,14:R118
2010 Forget P et al. Anesth Analg,111:910-914
2010 Wenkui Y et al. Surgery,147:542-552
2010 Mayer J et al. Crit Care,14:R18
2010 Van Der Linden PJ et al. Eur J Anaesthesiol,27:788-793
2010 Jhanji S et al. Crit Care,14:R151
2011 Cecconi M et al. Crit Care,15:R132
2012 Challand C et al. Br J Anaesth,108:53-62

N>30

Goal-directed Therapy *versus* Standard de soin

Mortalité postopératoire

Study or Subgroup	GDT protocol Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
2.1.1 Mortality 0-4.9%						
Bender 1997	1	51	1	53	1.6%	1.04 [0.06, 17.08]
Benes 2010	1	60	2	60	2.1%	0.49 [0.04, 5.57]
Bonazzi 2002	0	50	0	50		Not estimable
Buettner 2008	0	40	1	40	1.2%	0.33 [0.01, 8.22]
Cecconi 2011	0	20	0	20		Not estimable
Challand 2012	5	89	4	90	7.0%	1.28 [0.33, 4.93]
Conway 2002	0	29	1	28	1.2%	0.31 [0.01, 7.95]
Donati 2007	2	68	2	67	3.2%	0.98 [0.13, 7.20]
Forget 2010	2	41	0	41	1.3%	5.25 [0.24, 112.88]
Gan 2002	0	50	0	50		Not estimable
Noblett 2006	0	51	1	52	1.2%	0.33 [0.01, 8.37]
Senagore 2009	1	42	0	22	1.2%	1.63 [0.06, 41.59]
Van der Linden 2010	3	40	0	17	1.4%	3.27 [0.16, 66.74]
Wakeling 2005	0	67	1	67	1.2%	0.33 [0.01, 8.21]
Wenkui 2010	1	109	4	105	2.6%	0.23 [0.03, 2.13]
Subtotal (95% CI)		**807**		**762**	**25.3%**	**0.83 [0.41, 1.69]**
Total events	16		17			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 5.54$, df = 11 (P = 0.90); $I^2 = 0\%$						
Test for overall effect: Z = 0.50 (P = 0.62)						
2.1.2 Mortality >5-19.9%						
Berlauk 1991	1	68	2	21	2.1%	0.14 [0.01, 1.65]
Harten 2008	1	14	2	15	2.0%	0.50 [0.04, 6.22]
Jhanji 2010	5	45	6	45	7.9%	0.81 [0.23, 2.88]
Mayer 2010	2	30	2	30	3.1%	1.00 [0.13, 7.60]
Pearse 2005	7	62	9	60	11.3%	0.72 [0.25, 2.08]
Sinclair 1997	1	20	2	20	2.1%	0.47 [0.04, 5.69]
Szakmany 2005	2	20	1	20	2.1%	2.11 [0.18, 25.35]
Ueno 1998	0	16	2	18	1.3%	0.20 [0.01, 4.49]
Valentine 1998	3	60	1	60	2.4%	3.11 [0.31, 30.73]
Venn 2002	3	30	8	60	6.4%	0.72 [0.18, 2.95]
Wilson 1999	3	92	8	46	6.6%	0.16 [0.04, 0.64]
Ziegler 1997	3	32	2	40	3.7%	1.97 [0.31, 12.54]
Subtotal (95% CI)		**489**		**435**	**50.9%**	**0.65 [0.39, 1.07]**
Total events	31		45			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 10.46$, df = 11 (P = 0.49); $I^2 = 0\%$						
Test for overall effect: Z = 1.70 (P = 0.09)						
2.1.3 Mortality >20%						
Boyd 1993	3	53	12	54	7.2%	0.21 [0.06, 0.79]
Lobo 2000	3	19	9	18	5.3%	0.19 [0.04, 0.88]
Lobo 2006	2	25	7	25	4.4%	0.22 [0.04, 1.21]
Lopes 2007	2	17	5	16	3.8%	0.29 [0.05, 1.80]
Shoemaker 1988	1	28	18	60	3.0%	0.09 [0.01, 0.69]
Subtotal (95% CI)		**142**		**173**	**23.7%**	**0.20 [0.09, 0.41]**
Total events	11		51			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.86$, df = 4 (P = 0.93); $I^2 = 0\%$						
Test for overall effect: Z = 4.38 (P < 0.0001)						
Total (95% CI)		**1438**		**1370**	**100.0%**	**0.52 [0.36, 0.74]**
Total events	58		113			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 26.22$, df = 28 (P = 0.56); $I^2 = 0\%$						
Test for overall effect: Z = 3.59 (P = 0.0003)						
Test for subgroup differences: $Chi^2 = 9.36$, df = 2 (P = 0.009), $I^2 = 78.6\%$						

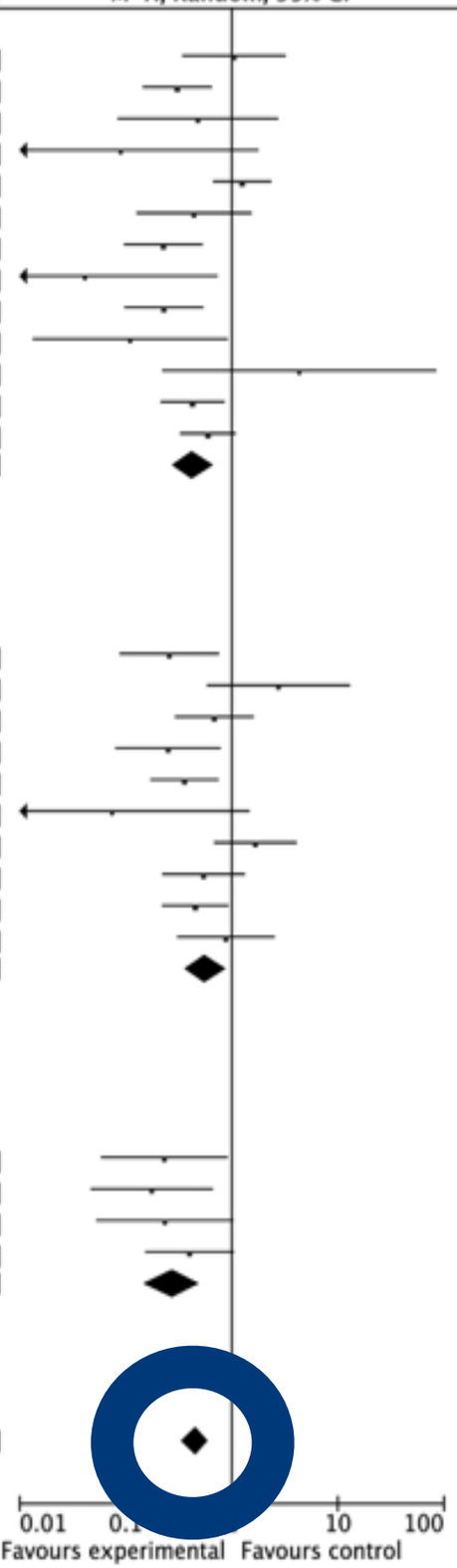


Cecconi M et al.
Crit Care 2013,17:209

Goal-directed Therapy *versus* Standard de soin

Morbidité postopératoire

Study or Subgroup	GDT protocol Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
19.1.1 Mortality 0-4.9%						
Bender 1997	7	51	7	53	3.7%	1.05 [0.34, 3.22]
Benes 2010	18	60	35	60	5.5%	0.31 [0.14, 0.65]
Bonazzi 2002	2	50	4	50	2.1%	0.48 [0.08, 2.74]
Cecconi 2011	16	20	20	20	0.8%	0.09 [0.00, 1.78]
Challand 2012	30	89	26	90	6.2%	1.25 [0.66, 2.36]
Conway 2002	5	29	9	28	3.3%	0.44 [0.13, 1.53]
Donati 2007	9	68	27	67	4.9%	0.23 [0.10, 0.53]
Forget 2010	32	41	41	41	0.9%	0.04 [0.00, 0.73]
Gan 2002	21	50	38	50	4.9%	0.23 [0.10, 0.54]
Noblett 2006	1	51	8	52	1.5%	0.11 [0.01, 0.91]
Van der Linden 2010	4	40	0	17	0.8%	4.32 [0.22, 84.68]
Wakeling 2005	24	67	38	67	5.8%	0.43 [0.21, 0.85]
Wenkui 2010	25	109	35	105	6.3%	0.60 [0.33, 1.09]
Subtotal (95% CI)		**725**		**700**	**46.7%**	**0.43 [0.27, 0.67]**
Total events	194		288			
Heterogeneity: $Tau^2 = 0.31$; $Chi^2 = 26.51$, df = 12 (P = 0.009); $I^2 = 55\%$						
Test for overall effect: Z = 3.69 (P = 0.0002)						
19.1.2 Mortality >5-19.9%						
Berlauk 1991	11	68	9	21	3.9%	0.26 [0.09, 0.76]
Harten 2008	7	14	4	15	2.4%	2.75 [0.58, 12.98]
Jhanji 2010	26	45	30	45	4.9%	0.68 [0.29, 1.61]
Mayer 2010	6	30	15	30	3.6%	0.25 [0.08, 0.79]
Pearse 2005	27	62	41	60	5.5%	0.36 [0.17, 0.75]
Ueno 1998	0	16	5	18	0.8%	0.07 [0.00, 1.47]
Valentine 1998	15	60	10	60	4.7%	1.67 [0.68, 4.08]
Venn 2002	11	30	31	60	4.7%	0.54 [0.22, 1.33]
Wilson 1999	38	92	28	46	5.6%	0.45 [0.22, 0.93]
Ziegler 1997	8	32	11	40	4.0%	0.88 [0.30, 2.53]
Subtotal (95% CI)		**449**		**395**	**40.4%**	**0.56 [0.36, 0.89]**
Total events	149		184			
Heterogeneity: $Tau^2 = 0.25$; $Chi^2 = 18.05$, df = 9 (P = 0.03); $I^2 = 50\%$						
Test for overall effect: Z = 2.46 (P = 0.01)						
19.1.3 Mortality>20%						
Lobo 2000	6	19	12	18	2.9%	0.23 [0.06, 0.91]
Lobo 2006	4	25	13	25	3.0%	0.18 [0.05, 0.66]
Lopes 2007	7	17	12	16	2.6%	0.23 [0.05, 1.03]
Shoemaker 1988	8	28	30	60	4.4%	0.40 [0.15, 1.05]
Subtotal (95% CI)		**89**		**119**	**12.9%**	**0.27 [0.15, 0.51]**
Total events	25		67			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.13$, df = 3 (P = 0.77); $I^2 = 0\%$						
Test for overall effect: Z = 4.12 (P < 0.0001)						
Total (95% CI)		**1263**		**1214**	**100.0%**	**0.45 [0.34, 0.60]**
Total events	368		539			
Heterogeneity: $Tau^2 = 0.24$; $Chi^2 = 49.73$, df = 26 (P = 0.003); $I^2 = 48\%$						
Test for overall effect: Z = 5.45 (P < 0.00001)						
Test for subgroup differences: $Chi^2 = 3.44$, df = 2 (P = 0.18), $I^2 = 41.9\%$						



Cecconi M et al.
Crit Care 2013,17:209

Ann Fr Anesth Reanim. 2013;32:e151-8

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Stratégie du remplissage vasculaire périopératoire☆

Guidelines for perioperative haemodynamic optimization

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Recommandation 1

Chez les patients chirurgicaux considérés « à haut risque », IL EST RECOMMANDÉ de titrer le remplissage vasculaire peropératoire en se guidant sur une mesure du volume d'éjection systolique (VES) dans le but de réduire la morbidité postopératoire, la durée de séjour hospitalier, et le délai de reprise d'une alimentation orale des patients de chirurgie digestive (Grade 1+).

http://www.sfar.org/article/1068/strategie-du-remplissage-vasculaire-perioperatoire

Conclusion

Rehabilitation en Chirurgie Digestive

- Approche multimodale et multidisciplinaire

Chirurgien

Patient

Anesthésiste

Kiné

Infirmière

Rehabilitation en Chirurgie Digestive

- Est-ce que c'est faisable ? **OUI**
- Est-ce que c'est efficace ? **OUI**
- Est-ce que c'est rentable ? **OUI**

Rehabilitation en Chirurgie Digestive

- Est-ce que c'est applicable dans d'autres chirurgies ?

OUI

  - Chirurgie pancréatique
  - Chirurgie hépatique
  - Chirurgie gastrique
  - Chirurgie bariatrique
  - …

GRACE

Groupe francophone de Réhabilitation
Améliorée après Chirurgie

http://www.sfar.org/accueil/article/1153/grace-groupe-de-rehabilitation-amelioree-apres-chirurgie