

Rehabilitación Multimodal

*(Práctica clínica peri-operatoria
basada en la evidencia)*

José M. Ramírez MD, PhD.

ERAS
Fast Track
Recuperación Mejorada
Recuperación Intensificada



1. El paciente

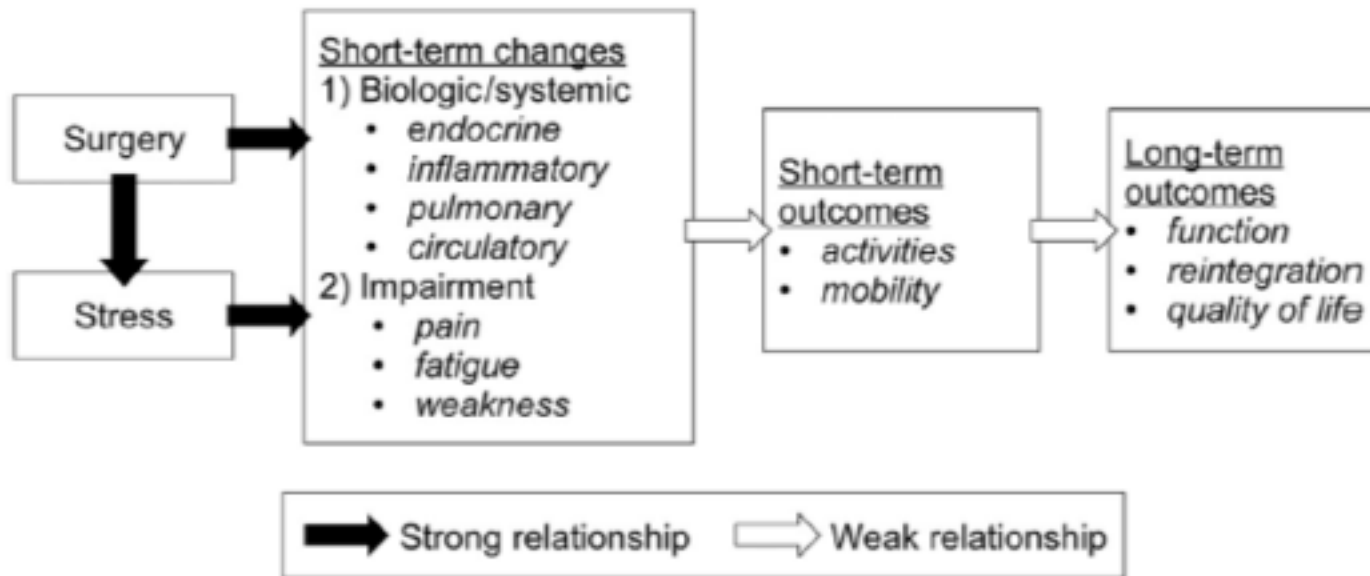


2. Los profesionales



3. La sociedad





Lee et al. Surgery 2014;155:211-6.

EFECTOS FISIOLÓGICOS:

SISTEMA AFECTADO:	EFECTO CLÍNICO
Inmunológico: Linfopenia, leucocitosis, Depresión del sist reticuloendotelial	Depresión del sistema inmunitario
Coagulación: >adhesividad plaquetaria, >activación de la coagulación, <fibrinólisis	>incidencia de tromboembolismo
Endocrino: >ACTH, cortisol, glucagón, epinefrina, >aldosterona, ADH, > catecolaminas, angiotensina II, < insulina y testosterona	>catabolismo protéico, lipólisis, hiperglucemia, retención de agua y sal, vasoconstricción.
Cardiovascular: >trabajo miocárdico (catecolaminas y angiotensina II)	Arritmias, angor, IAM, ICC
Respiratorio: <Compliance pulmonar, >Contractura muscular	Hipoxia hipercapnia atelectasias alteración ventilación-perfusión.
Gastrointestinal: >tono esfínter, <tono musculo liso	Ileo intestinal
Genitourinario: >tono esfínter, <tono musculo liso	Retención urinaria





”En el manejo peri-operatorio convencional se acepta sin reservas que una respuesta importante de estrés es inevitable en toda cirugía mayor. Este concepto ha sido recientemente cuestionado por la evidencia de que gran parte de esta respuesta de estrés se puede evitar con la aplicación adecuada de anestésicos y analgésicos modernos así como técnicas minimizantes del trauma”

Lancet 2003; 362: 1921–28

Henrik Kehlet, Professor of Surgery, Copenhagen



1980s showed that the use of epidurals for major abdominal surgery improved recovery by

- managing pain
- reduce stress response

He thought patients still stayed too long in hospital and by 2000 was describing a multimodal approach to care...

Fast-track/Accelerated/Rapid or Enhanced Recovery





*”En el **manejo peri-operatorio** convencional se acepta sin reservas que una respuesta importante de estrés es inevitable en toda cirugía mayor. Este concepto ha sido recientemente cuestionado por la evidencia de que gran parte de esta respuesta de estrés se puede evitar con la aplicación adecuada de anestésicos y analgésicos modernos así como técnicas minimizantes del trauma”*

Lancet 2003; 362: 1921–28

GETTING WELL: THE BIOLOGY OF
SURGICAL CONVALESCENCE*

By FRANCIS D. MOORE

*Peter Bent Brigham Hospital, Boston, Mass., and Harvard Medical School,
Cambridge, Mass.**Introduction*

At first glance, the titles in this monograph may seem too widely divergent; some papers discuss the necessities of keeping the sick alive, while others examine the problem of returning the alive to work. Nevertheless, I believe all would agree, not only on the unity of the effort, but also that its extent demonstrates the true magnitude of the field of human learning called surgery. The doctors working in either of these areas—the surgeon dealing with the man in shock or the physical therapist rehabilitating him six months later—are both dealing with the same biological phenomenon, namely, the process of getting well after injury.

I shall first review briefly some aspects of convalescence in the usual locking physical, chemical, and metabolic processes, and then discuss the individual's return to normal usefulness, and psychological habitus of his injury, and in that sense his convalescence must be said to include criteria of the social and economic usefulness, and psychological habitus.

In 1950, when reviewing metabolic studies on our patients, we began to discern a pattern. Our studies were crude in the technique and output of nitrogen, so we took the patient's clinical behavior and the familiar laboratory studies. In 1952 we published a brief report, and a year later, I solemnized the foundation.² In the latter I referred to it as a theory of convalescence, another study—a framework on which future studies would be subject to modification as new data became available.

These four periods of convalescence are dynamic biological phases in the

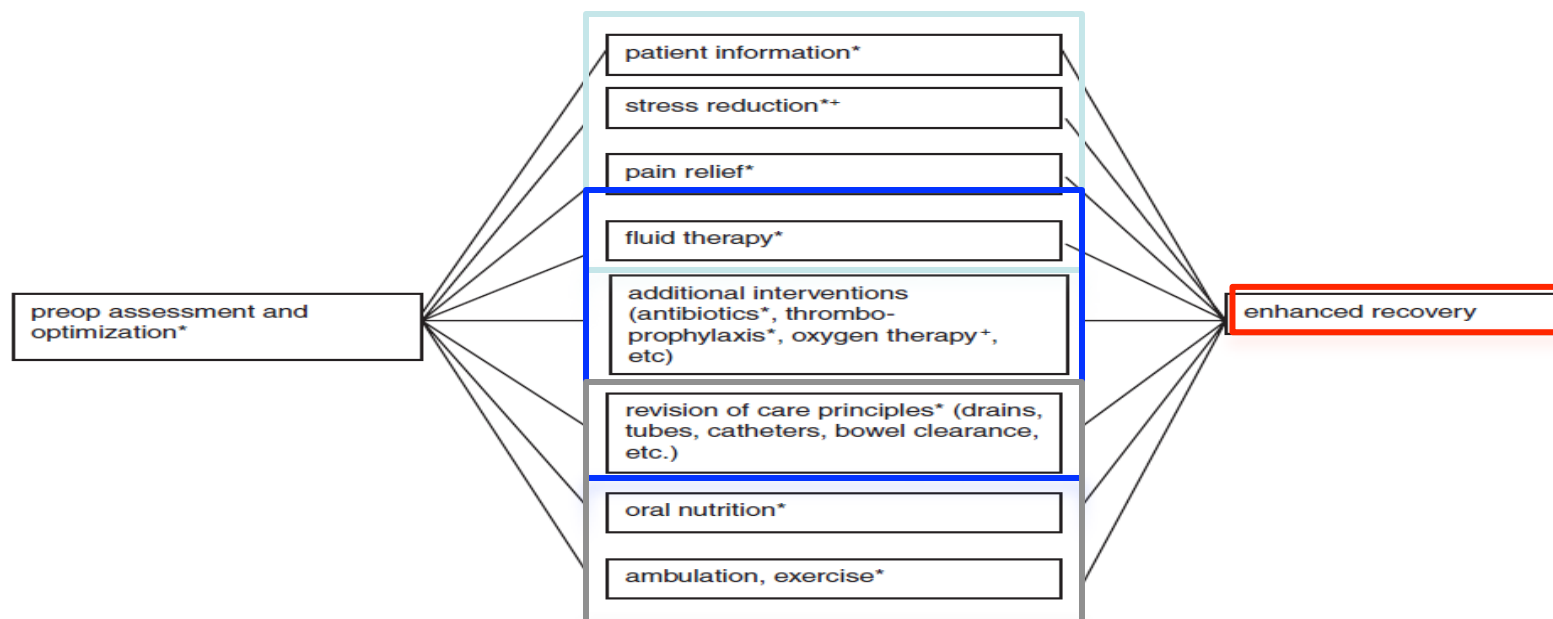
* The research for this paper was supported in part by the Subcommittee on Metabolism in Trauma, Advisory Committee on Metabolism, Office of the Surgeon General, Department of the Army, and in part by a grant from the Atomic Energy Commission, both of Washington, D.C.

The author received assistance also from Winthrop Laboratories, New York, N.Y., and The Upjohn Company, Kalamazoo, Mich.

convalescence or recovery includes “all the interlocking physical, chemical, metabolic, and psychological factors commencing with injury, or even slightly before the injury, and terminating only when the individual has return to normal physical well-being, social and economic usefulness, and psychological habitus

Moore FD. Getting well: the biology of surgical convalescence. Ann N Y Acad Sci 1958;73:387-400.

ERAS Structured pathway:



Evidence-Based Surgical Care and the Evolution of Fast-Track Surgery

Henrik Kehlet, Douglas W. Wilmore. *Ann Surg* 2006; 248: 189–198

Systematic review of enhanced recovery programmes in colonic surgery

J. Wind¹, S. W. Polle¹, P. H. P. Fung Kon Jin¹, C. H. C. Dejong², M. F. von Meyenfeldt², D. T. Ubbink^{1,3}, D. J. Gouma¹ and W. A. Bemelman¹ on behalf of the Laparoscopy and/or Fast Track Multimodal Management *Versus* Standard Care (LAFa) study group and the Enhanced Recovery After Surgery (ERAS) group

¹Department of Surgery, Academic Medical Centre, Amsterdam, ²Department of Surgery, Academic Hospital Maastricht and Nutrition and Toxicology Research Institute Maastricht (NUTRIM), Maastricht University and ³Department of Clinical Epidemiology and Biostatistics, Academic Medical Centre, Amsterdam, The Netherlands

Correspondence to: Dr W. A. Bemelman, Department of Surgery, Academic Medical Centre, Postbox 22660, 1100 DD Amsterdam, The Netherlands (e-mail: w.a.bemelman@amc.uva.nl)

Background: Fast track (FT) programmes optimize perioperative care in an attempt to accelerate recovery, reduce morbidity and shorten hospital stay. The aim of this review was to assess FT programmes for elective segmental colonic resections.

Methods: A systematic review was performed of all randomized controlled trials and controlled clinical trials on FT colonic surgery. The main endpoints were number of applied FT elements, hospital stay, readmission rate, morbidity and mortality. Quality assessment and data extraction were performed independently by three observers.

Results: Six papers were eligible for analysis (three randomized controlled and three controlled clinical trials), including 512 patients. FT programmes contained a mean of nine (range four to 12) of the 17 FT elements as defined in the literature. Primary hospital stay (weighted mean difference – 1.56 days, 95 per cent confidence interval (c.i.) = 2.61 to – 0.50 days) and morbidity (relative risk 0.54, 95 per cent c.i. 0.42 to 0.69) were significantly lower for FT programmes. Readmission rates were not significantly different (relative risk 1.17, 95 per cent c.i. 0.73 to 1.86). No increase in mortality was found.

Conclusions: FT appears to be safe and shortens hospital stay after elective colorectal surgery. However, as the evidence is limited, a multicentre randomized trial seems justified.

Presented as a poster to a meeting of the European Association of Coloproctology, Bologna, Italy, September 2005

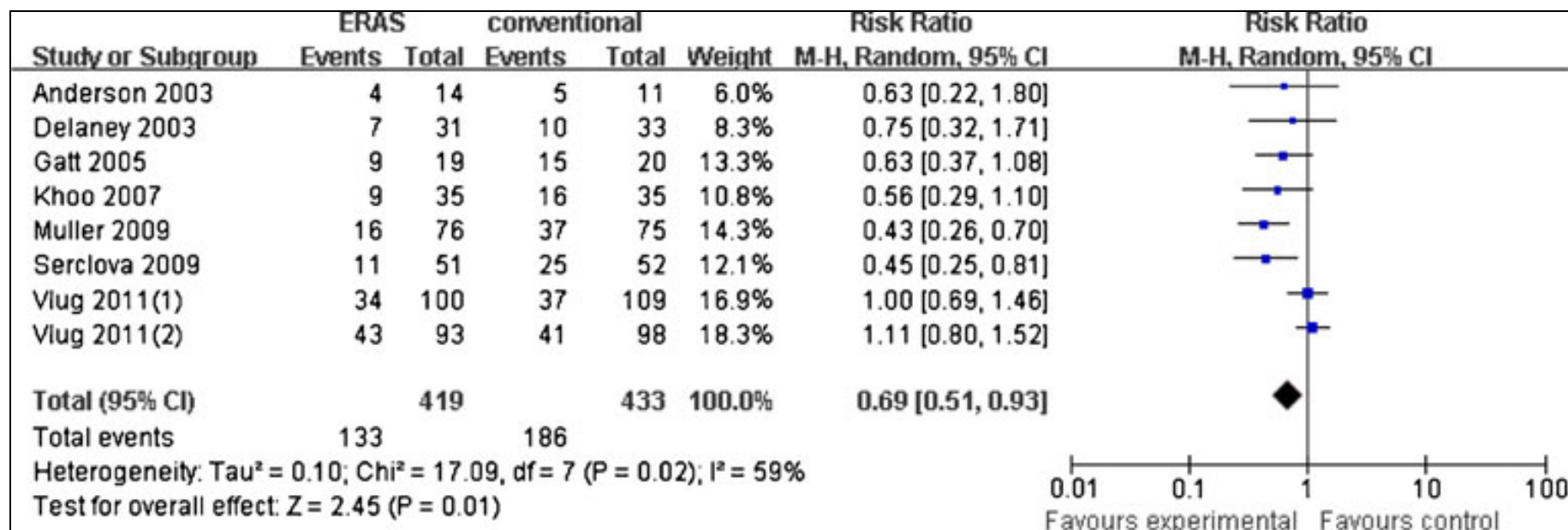
Paper accepted 9 February 2006

Published online in Wiley InterScience (www.bjs.co.uk). DOI: 10.1002/bjs.5384

REVIEW

The enhanced recovery after surgery (ERAS) pathway for patients undergoing colorectal surgery: an update of meta-analysis of randomized controlled trials

Liang Lv · Yong-fang Shao · Yan-bing Zhou

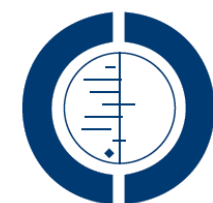


Meta-analysis of the rate of overall complications ⁴

Fast track surgery versus conventional recovery strategies for colorectal surgery (Review)

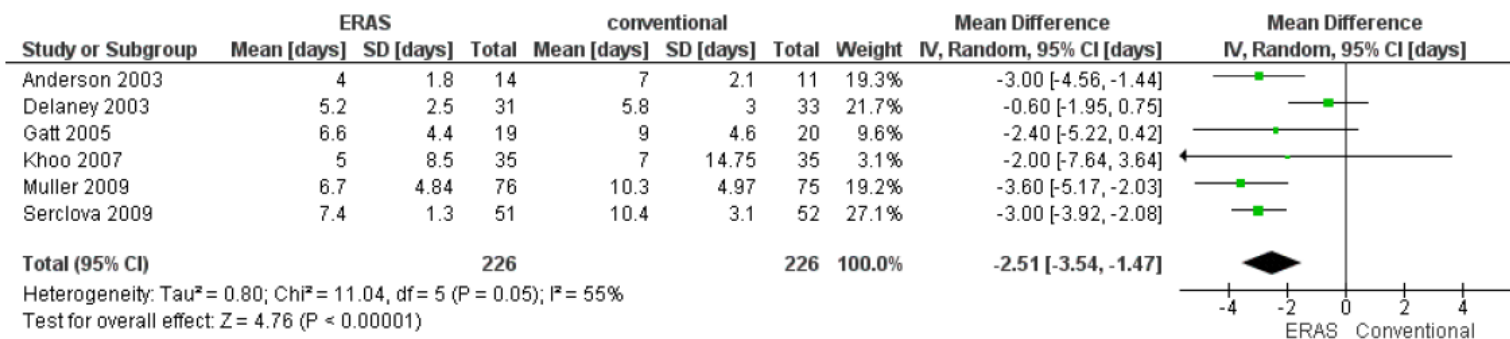
Spanjersberg WR, Reurings J, Keus F, van Laarhoven CJHM

2011



THE COCHRANE
COLLABORATION®

Figure 16. Forest plot of comparison: 2 Sensitivity analyses ERAS vs conventional, outcome: 2.4 hospital stay [days].



Reducción estancia hospitalaria: 3 días

Fast track surgery versus conventional recovery strategies for colorectal surgery (Review)

Spanjersberg WR, Reurings J, Keus F, van Laarhoven CJHM

2011

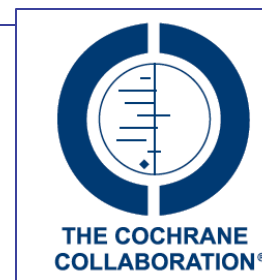
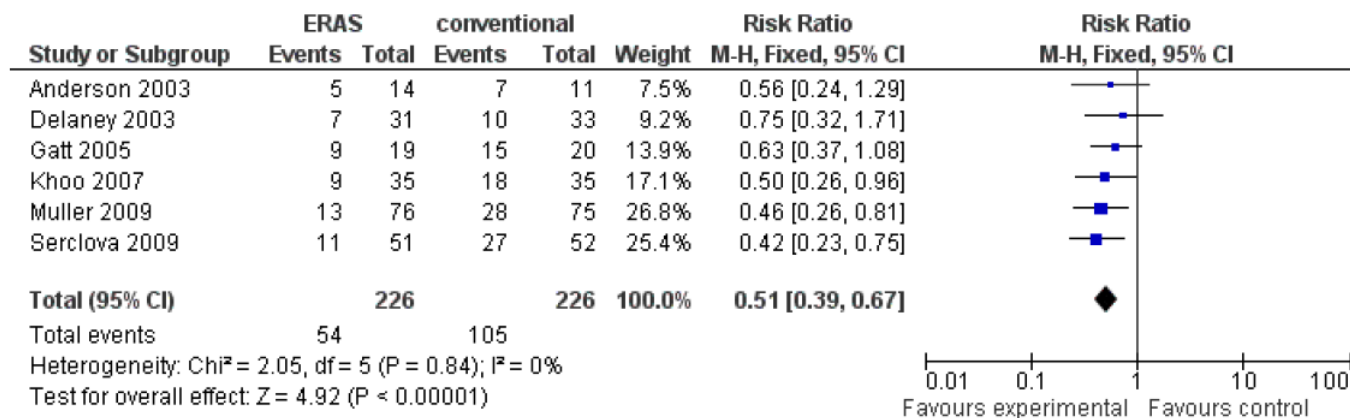


Figure 11. Forest plot of comparison: 2 Sensitivity analyses ERAS vs conventional, outcome: 2.2 Total complications.



Reducción riesgo de complicaciones 46-47%

Evaluation of a fast-track programme for patients undergoing liver resection

Review

Evidence-based review of enhancing postoperative recovery after breast surgery

R. Arsalani-Zadeh, D. ELFadl, N. Yassin and J. MacFie

Postgraduate Medical Institute, University of Hull, Hull HU6 7RX, UK

Correspondence to: Professor J. MacFie (e-mail: johnmacfie@aol.com)

Randomized clinical trial of enhanced recovery *versus* standard care after laparoscopic sleeve gastrectomy

D. P. Lemanu¹, P. P. Singh¹, K. Berridge³, M. Burr³, C. Birch³, R. Babor³, A. D. MacCormick¹, B. Arroll² and A. G. Hill¹

¹Department of Surgery, South Auckland Clinical School, and ²Department of General Practice and Primary Health Care, University of Auckland, and

³Department of Surgery, Middlemore Hospital, Auckland, New Zealand

Correspondence to: Dr D. P. Lemanu, Department of Surgery, South Auckland Clinical School, Middlemore Hospital, Private Bag 93311, Otahuhu, Auckland, New Zealand (e-mail: daniel_lemanu@hotmail.com)

Fast track clinical pathway implications in esophagogastrectomy



ELSEVIER

European Journal of Cardio-thoracic Surgery 36 (2009) 383–392

EUROPEAN JOURNAL OF
CARDIO-THORACIC
SURGERY

www.elsevier.com/locate/ejcts

Fast-track rehabilitation for lung cancer lobectomy: a five-year experience[☆]



JCU

Original Article

The use of a multimodal enhanced recovery program for patients undergoing radical cystectomy

Journal of Clinical Urology
0(0) 1–5
© British Association of
Urological Surgeons 2013
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/2051415813480776
uro.sagepub.com



Enhanced recovery program for hip and knee replacement reduces death rate

A study of 4,500 consecutive primary hip and knee replacements

Ajay Malviya, Kate Martin, Ian Harper, Scott D Muller, Kevin P Emmerson, Paul F Partington, and Mike R Reed

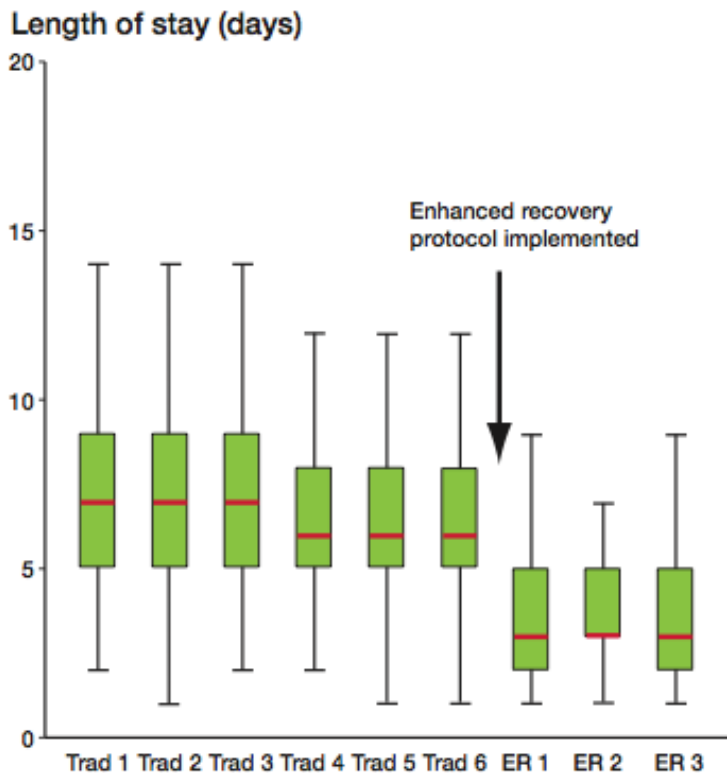
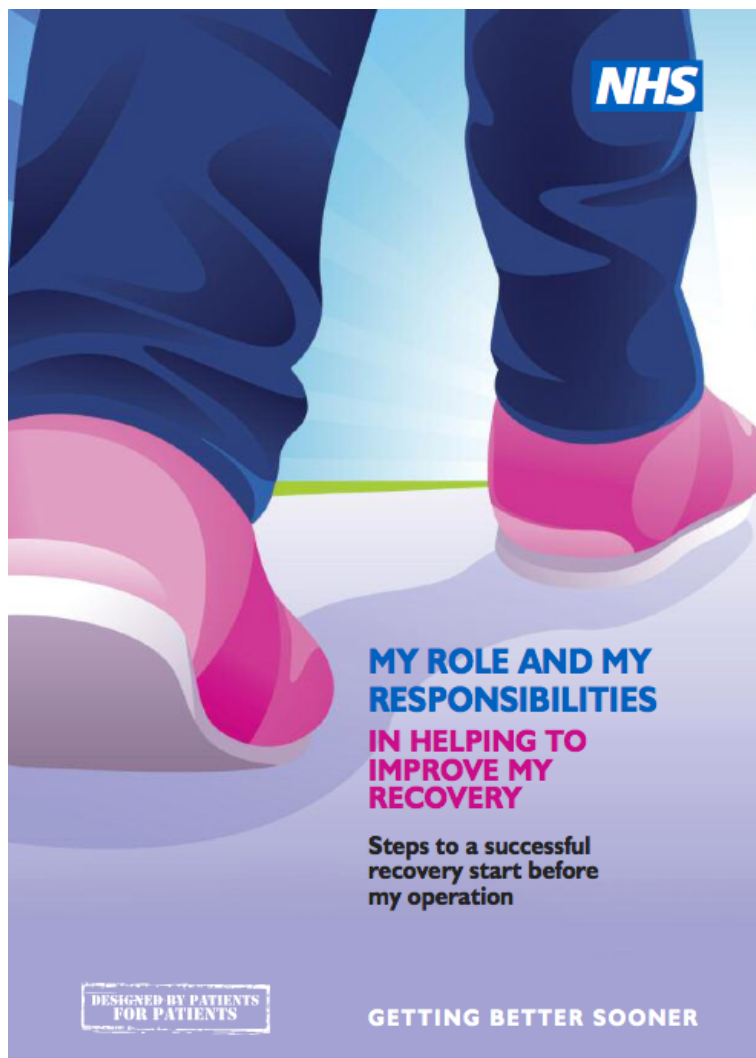


Table 2. Comparison of mortality rates between the 2 groups

	Traditional (n = 3,000)	Enhanced (n = 1,500)	p-value Chi-squared test
Death (30-day)	15 (0.5%)	1 (0.1%)	0.02
Death (90-day)	25 (0.8%)	3 (0.2%)	0.01





WHAT THIS MEANS FOR ME

Planning and actively participating in the steps to success before and after your operation can help you to:

- **LEAVE HOSPITAL, SOONER**
- **MAKE YOU FEEL BETTER, SOONER**
- **RETURN TO NORMAL LIVING, SOONER**

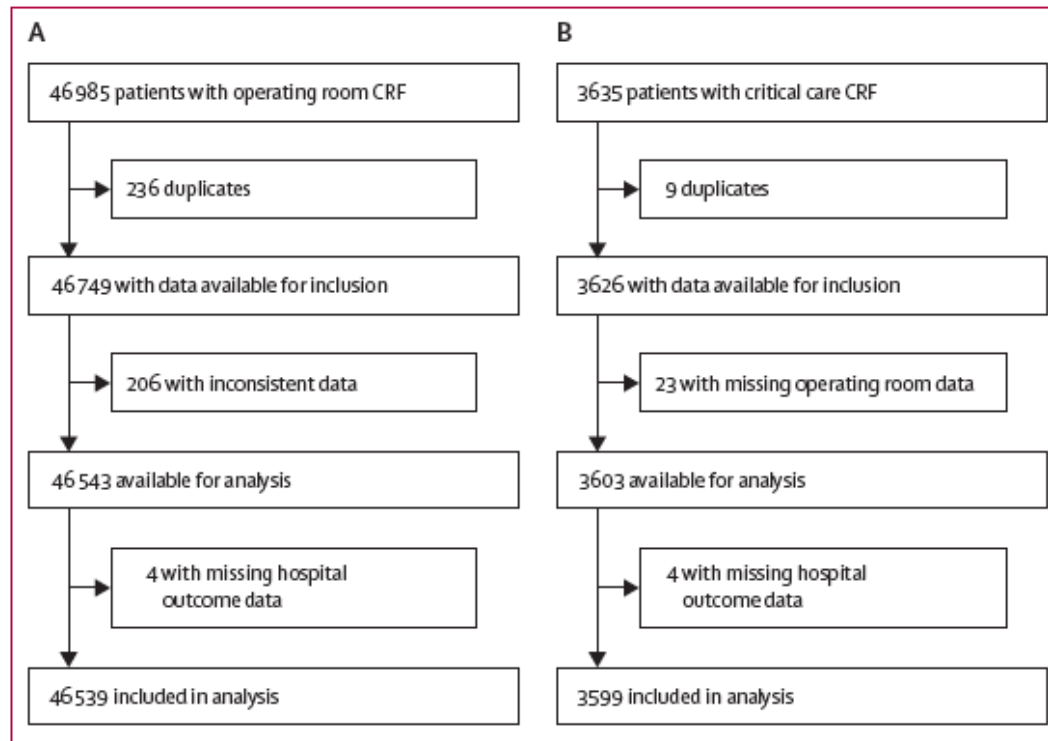
GETTING BETTER SOONER



Mortality after surgery in Europe: a 7 day cohort study

Rupert M Pearse, Rui P Moreno, Peter Bauer, Paolo Pelosi, Philipp Metnitz, Claudia Spies, Benoit Vallet, Jean-Louis Vincent, Andreas Hoeft, Andrew Rhodes, for the European Surgical Outcomes Study (EuSOS) group for the Trials groups of the European Society of Intensive Care Medicine and the European Society of Anaesthesiology*

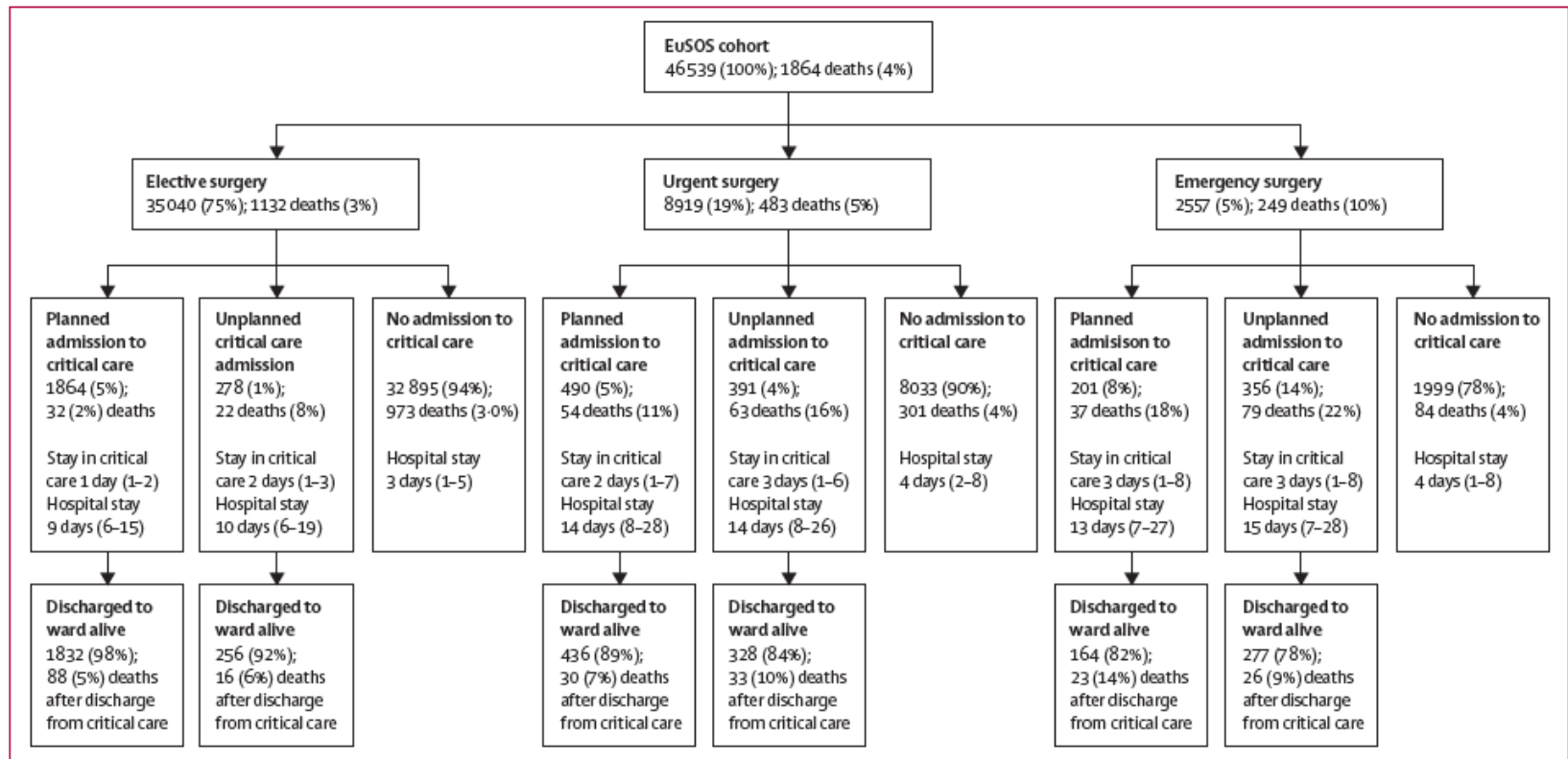
7 day cohort study between patients aged 16 years and 80 years. Patients were included in the study if they had a primary or secondary outcome recorded within 7 days of surgery. Secondary outcome recorded



28 European mortality.

Mortality after surgery in Europe: a 7 day cohort study

Rupert M Pearse, Rui P Moreno, Peter Bauer, Paolo Pelosi, Philipp Metnitz, Claudia Spies, Benoit Vallet, Jean-Louis Vincent, Andreas Hoeft, Andrew Rhodes, for the European Surgical Outcomes Study (EuSOS) group for the Trials groups of the European Society of Intensive Care Medicine and the European Society of Anaesthesiology*



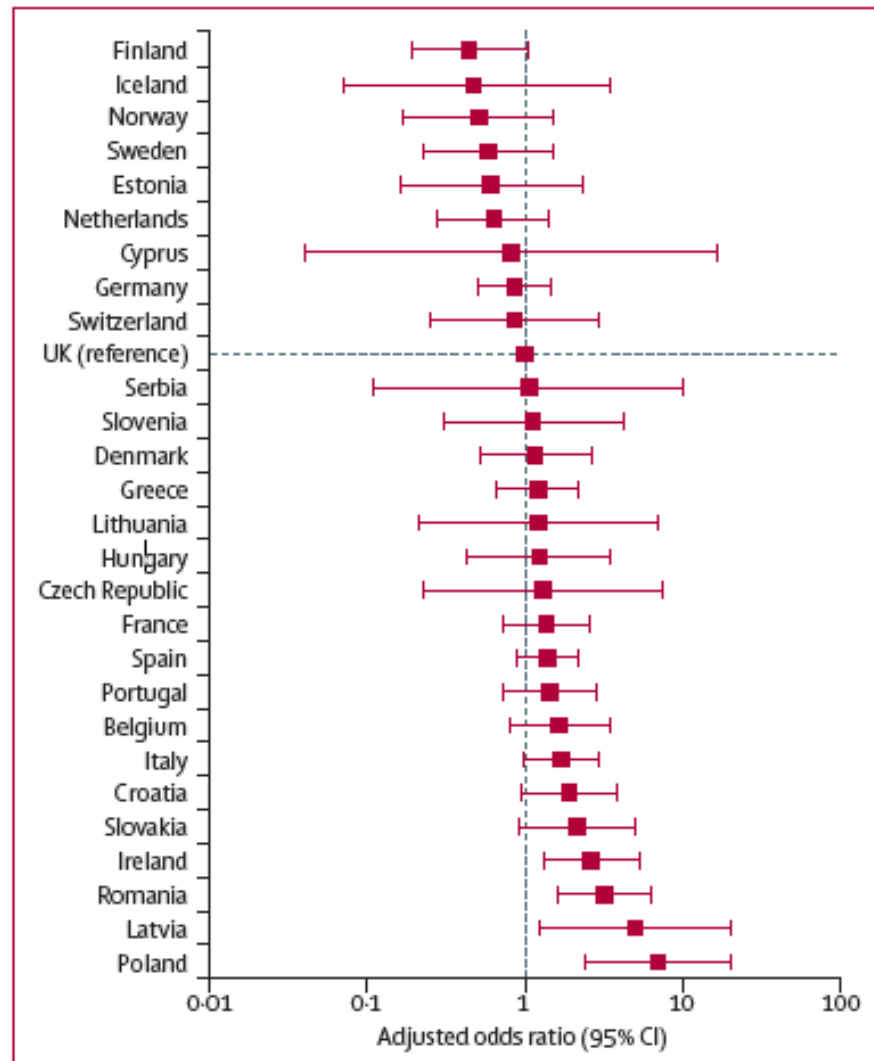
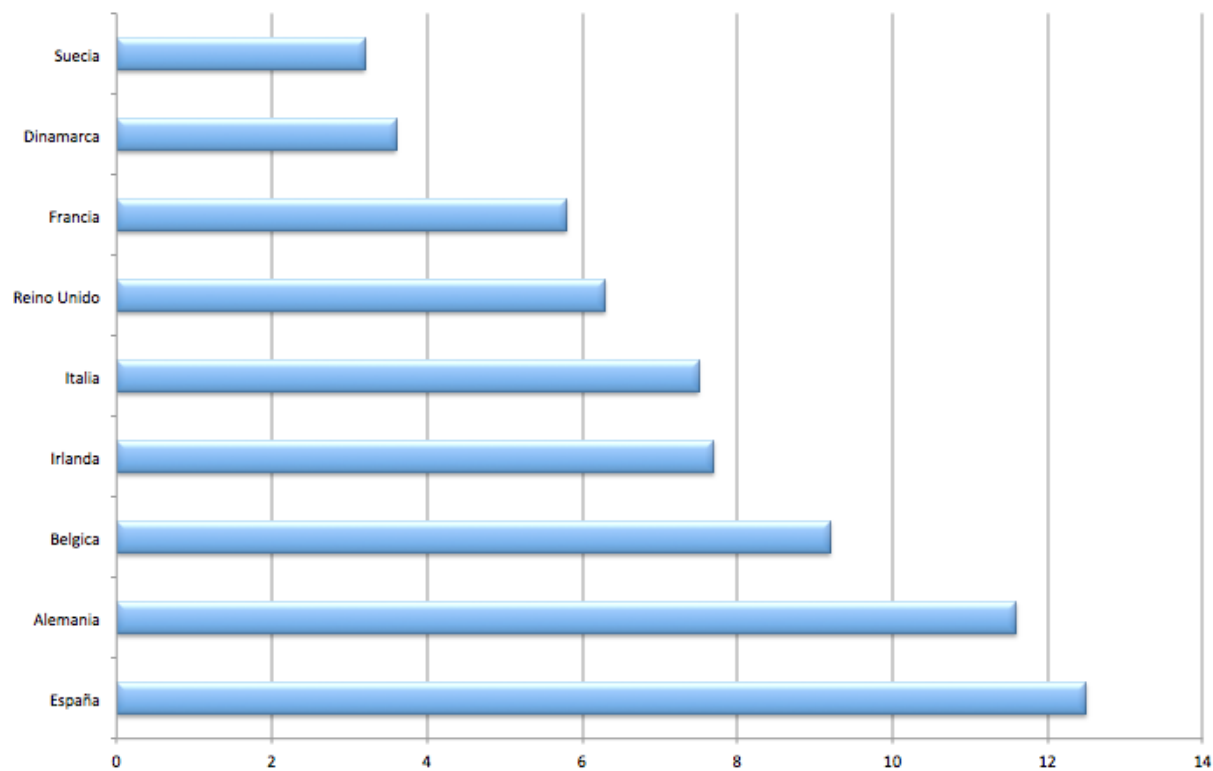


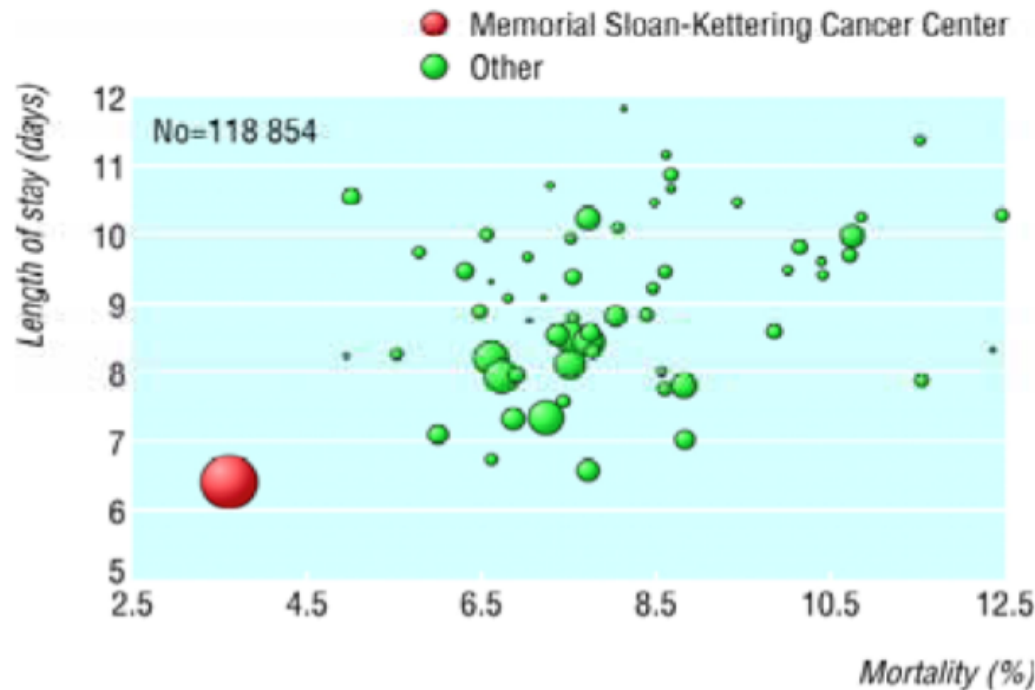
Figure 3: Adjusted odds ratio for death in hospital after surgery for each country



% Pacientes admitidos en UCI

Specialisation can lead to lower cost, better outcomes: cancer example

Fig 1 Risk adjusted mortality from cancer against length of stay for institutions in New York State. The size of the circle indicates the number of patients treated



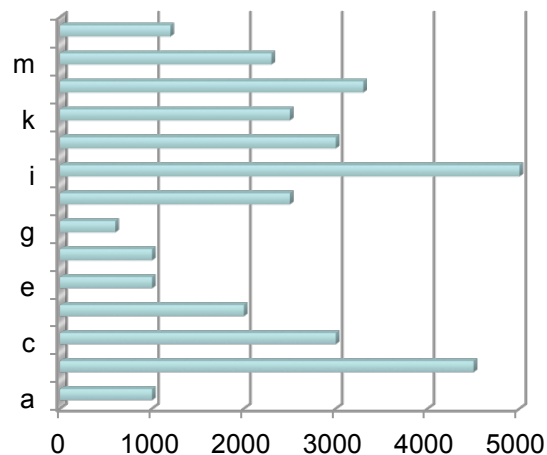
Working Draft - Last Modified: 03/02/2007 21:44:43

Quam, L. et al. BMJ 2005;330:530-533
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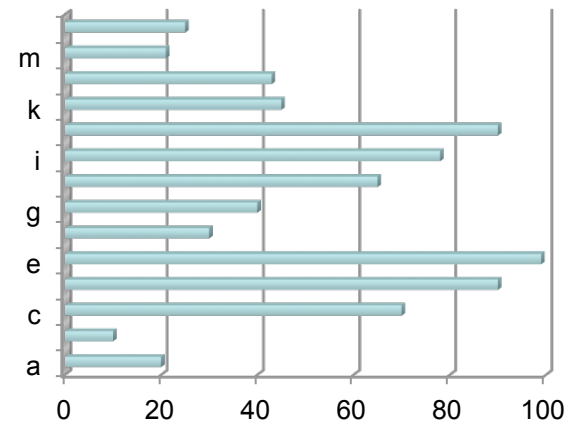


14 Anestesiistas
(9 meses) 2.008
100 pacientes
(Informe interno)

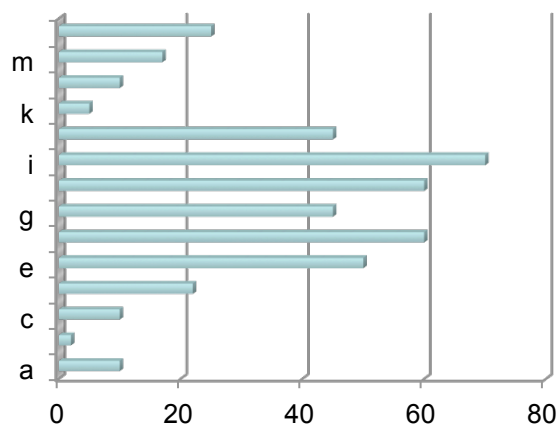
◇	A	B
1	a	7
2	b	8
3	c	6
4	d	9
5	e	7
6	f	10
7	g	11
8	h	9
9	i	5
10	j	6
11	k	5
12	l	9
13	m	6
14	n	2



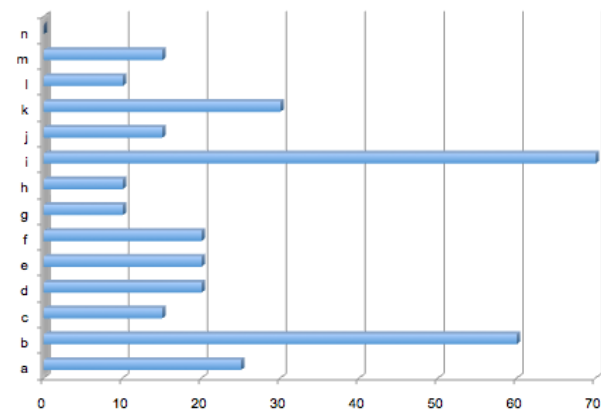
1. Fluidos



2. ¿Arteria? %



3. Epidural (%)

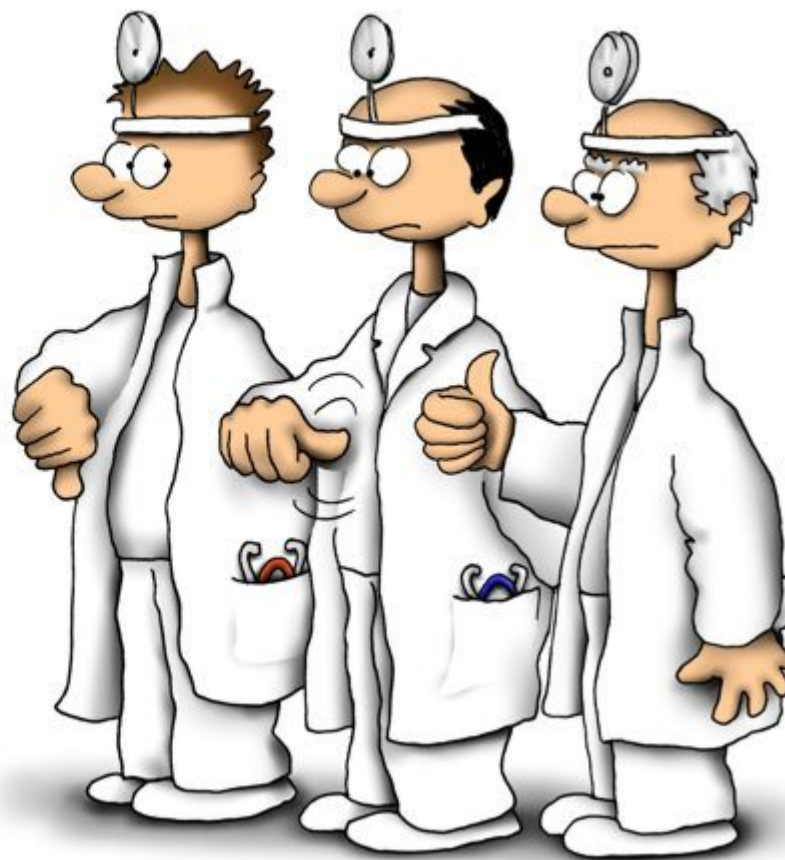


4. Complicaciones (%)

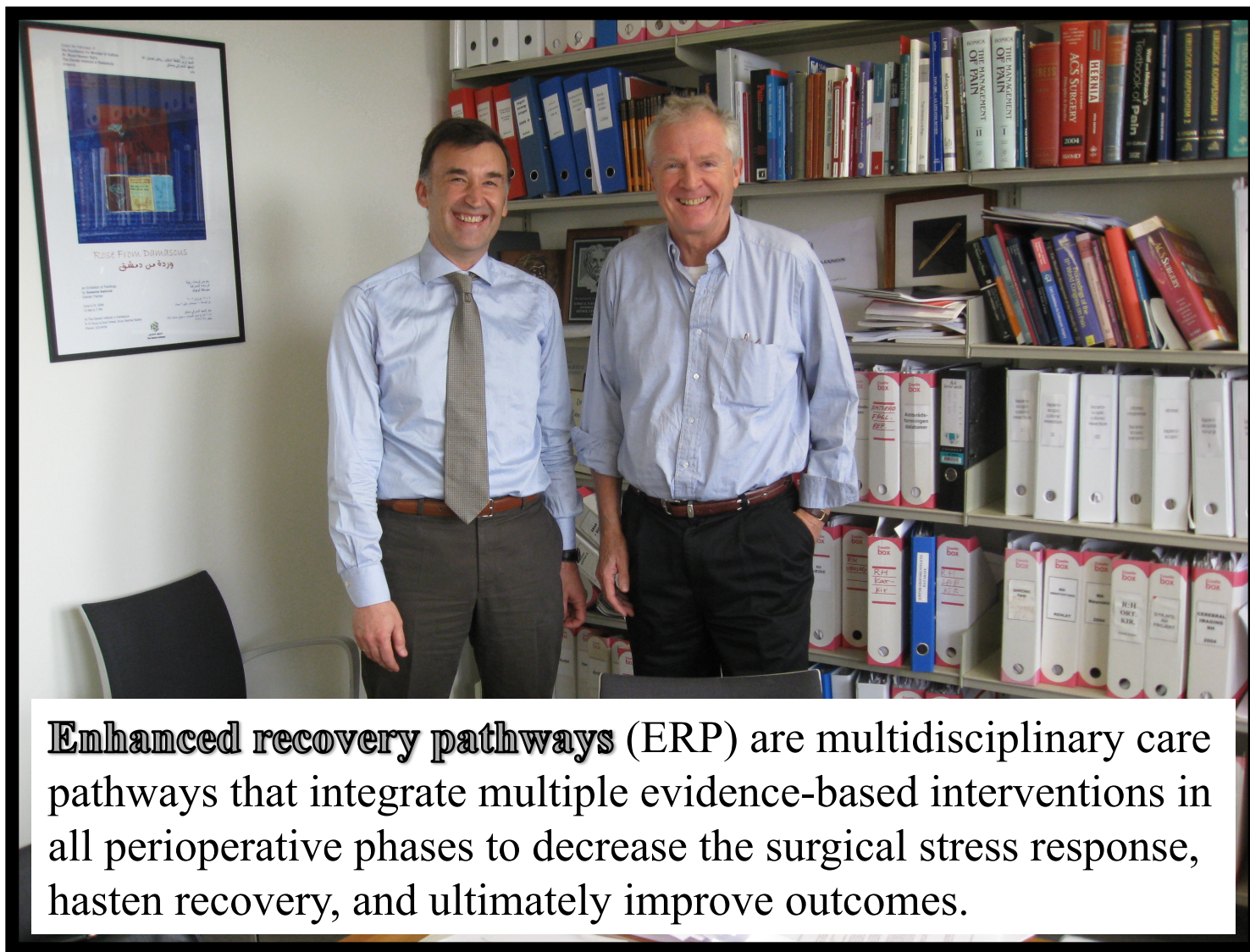
Discusión SI – Pero Una Vía Clínica



OLAF 2003



(c) www.olaf-cartoons.de



Enhanced recovery pathways (ERP) are multidisciplinary care pathways that integrate multiple evidence-based interventions in all perioperative phases to decrease the surgical stress response, hasten recovery, and ultimately improve outcomes.

RICA

Vía clínica de recuperación
intensificada en cirugía abdominal



PROCESO ASISTENCIAL

VISIÓN GENERAL

Tabla 1. Visión general del proceso

Tiempo	Protocolo	Responsabilidad
Previo al Ingreso	Valoración preoperatoria. Optimización nutricional.	Cirujano + Anestesiólogo
Preoperatorio Inmediato (preferiblemente sin ingreso)	Adecuación dietética Iniciar profilaxis tromboembólica* Ayuno 6 horas sólido y 2 horas líquido claro En cirugía de colon no es necesaria la preparación mecánica, siendo su empleo selectivo en cirugía de recto. * Si el paciente ingresa la tarde anterior esto se realizará cuando ingrese	Anestesiólogo + Enfermería Cirujano
Peroperatorio	Preoperatorio Inmediato Enema de limpieza 07:00h (en resección de recto-sigma en aquellos casos en que esté indicado) Colocación de medias compresivas o de compresión neumática intermitente, según riesgo tromboembólico Suplemento de bebida carbohidratada 12.5% maltodextrinas 250 cc 2 horas antes de intervención Administración profiláctica de antibiótico 1 hora antes de incisión quirúrgica cuando esté indicado (o en quirófano) Intraoperatorio Inserción de catéter epidural en cirugía abierta Inducción anestésica Oxigenación FIO2 0.6-0.8 Optimización hemodinámica mediante fluidoterapia guiada por objetivos (FGO) Fluidoterapia en perfusión continua solución balanceada (3.5ml/kg/h para laparoscopia; 7ml/kg/h para laparotomía) Sondaje vesical si precisa Cirugía mínimamente invasiva (siempre que sea posible) No SNG Calentamiento activo con manta térmica y calentador de fluidos Profilaxis de náuseas y vómitos postoperatorios según escala Apfel No drenajes Infiltración de los puertos de laparoscopia o bloqueo del plano transversal del abdomen (TAP) según intervención	Enfermería Enfermería + Anestesiólogo + Cirujano Enfermería + Anestesiólogo

Tiempo	Protocolo	Responsabilidad
Peroperatorio	Postoperatorio Inmediato Mantenimiento activo de temperatura Mantenimiento de FIO2 0.5 2 horas tras fin intervención Analgésica pautada según intervención. Mínima administración de mórnicos Fluidoterapia restrictiva Inicio de tolerancia oral 6 horas tras cirugía Inicio de movilización a las 8 horas tras cirugía Inicio de trombolisis con alteplasa 40mg 22:00 h	Enfermería Enfermería + Anestesiólogo + Cirujano Enfermería + Anestesiólogo
1 día postoperatorio	Suplementación nutricional en casos seleccionados Dieta normal según tolerancia Valorar retirada de drenajes, si existen Movilización activa (cama/sillón/inicio deambulador) Analgésica endovenosa. No mórnicos Si tolerancia oral correcta retirada de líquidos endovenosos. Valorar retirada de sondaje vesical, si lo tuviera	Enfermería + Cirujano
2º día postoperatorio	Valorar retirada de sondaje vesical (si presenta) Dieta normal Movilización activa (deambulación) Retirada de líquidos endovenosos Profilaxis del tromboembolismo Valorar alta a domicilio	Enfermería + Cirujano
Durante resto de hospitalización	Dieta normal Analgésica oral Movilización activa (deambulación) Profilaxis del tromboembolismo Valorar alta a domicilio	Enfermería + Cirujano
Al alta	Mantenimiento de tromboprofilaxis 28 días tras cirugía Control telefónico tras alta Criterios generales de alta: No complicaciones quirúrgicas, no fiebre, dolor controlado con analgésica oral, deambulación completa, aceptación por parte del paciente Consejo de alta/continuidad asistencial Apoyo domiciliario- Coordinación con Atención Primaria	Enfermería + Cirujano + MAP

Visión general

Nota 2- ITC: interconsulta

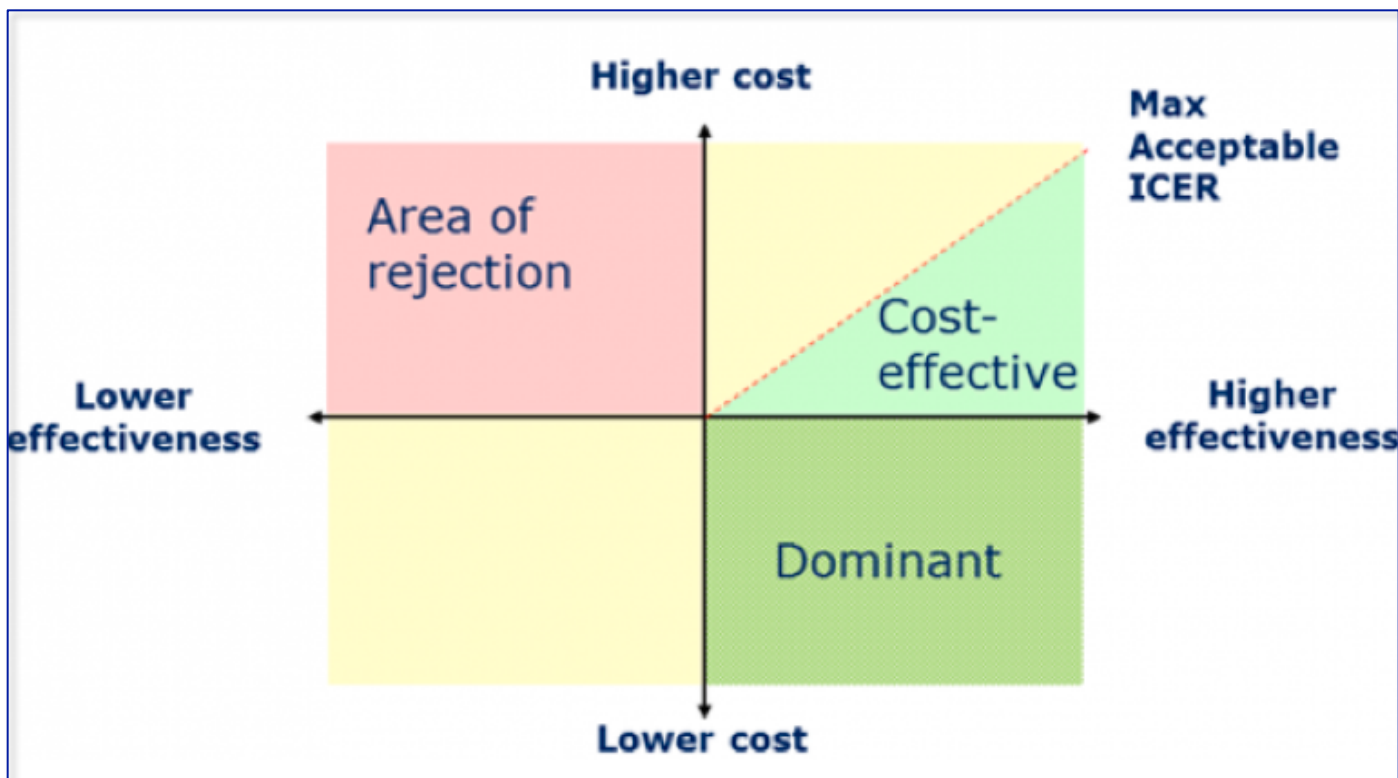


Rehabilitación Multimodal:

Lo mejor para el paciente

Lo mejor para los profesionales





- **New Zealand**

- 4,000€ / patient in the first 50 patients. Study visits & full time included.

(N Z Med J, 2010; 123: 61-70)

- **Switzerland**

- 1,500€ / patient per first 50 patients. Training & full time nurse included

(British Journal of Surgery 2013; 100: 1108–1114)

A Systematic Review of Economic Evaluations of Enhanced Recovery Pathways for Colorectal Surgery

Lawrence Lee, MD, MSc,* Chao Li, MD, MSc,* Tara Landry, MLIS,† Eric Latimer, PhD,‡§ Franco Carli, MD,¶ Gerald M. Fried, MD,* and Liane S. Feldman, MD*

TABLE 2. Cost Data Reported in Included Studies

Study ID	Quality (/19)	Costs	ERP	CC	p/95% CI	Statistical Method
Archibald et al ²¹	6	Total hospital costs (direct + overhead)	US\$ 11662*	US\$ 21037*	P < 0.0001	2-sample hypothesis tests
Bosio et al ²⁴	0	Hospital direct costs				
Folkerson et al ²⁵	16	Direct medical costs				
		Indirect costs				
		Total costs				
Jurowich et al ²⁶	4	Hospital direct costs for the first 5 postoperative days				
Kariv et al ²²	8	Direct hospital costs				
King et al ²³	15	Total costs				
		Indirect costs				
Ren et al ⁸	4	Total costs of the procedure				
		Postoperative costs				
Sammour et al ¹⁰	8	Total hospital costs (incl. protocol development and research fellow's salary)				
Stephen et al ²⁷	8	Total hospital costs (excluding surgeon's fees)				
Vlug et al ⁷	9	Direct hospital costs (university hospitals)				
		Direct hospital costs (teaching hospitals)				

*Mean cost.

†Median cost.

‡In this study, the confidence intervals in the published manuscript indicate confidence interval; Lap, laparoscopic.

§US\$ = US dollars; DKK = Danish Krone; CNY = Chinese Yuan Renminbi; NZ\$ = New Zealand dollars.

¶1 DKK = 0.1573 US\$; 1 € = 1.2647 US\$ in 2010, 1.3449 US\$ in 2011; 1 £ = 1.7460 US\$; 1 CNY = 0.1506 US\$; 1 NZD = 0.7260 US\$; currency exchange rates at date of publication from www.xe.com.

TABLE 3. Incremental Cost-effectiveness Ratio Analysis of Studies With Sufficient Data

Study ID	Incremental Cost* Cost _{ERP} - Cost _{CC}	Incremental Effectiveness E _{CC} - E _{ERP}	ICER
Length of stay			
Archibald et al ²¹	US\$ -9374	4.0 d	ERP dominant
Bosio et al ²⁴	US\$ -6390	4.7 d	ERP dominant
King et al ²³	No difference	6.6 d	ERP potentially cost-effective or dominant
Ren et al ⁸	CNY -1776 (US\$ 279.75)	0.9 d	ERP dominant
Stephen et al ²⁷	US\$ -2240	3.2 d	ERP dominant
Overall complications			
Bosio et al ²⁴	US\$ -6390	20%	ERP dominant
Folkerson et al ²⁵	DKK -9304 (US\$ 10916.47)	30%	ERP dominant
King et al ²³	No difference	No difference	Questionable cost-effectiveness
Sammour et al ¹⁰	NZ\$ -6877 (US\$ 4992.55)	No difference	ERP potentially cost-effective
Stephen and Berger ²⁷	US\$ -2240	No difference	ERP potentially cost-effective

*Values in parentheses represent the US\$ equivalent at the time of publication; currency exchange rates from www.xe.com. Dominant = less costly and more effective; cost-effective = less costly with no difference in effectiveness; questionable cost-effectiveness = no differences in cost and effectiveness.

US\$ = US dollars; CNY = Chinese Yuan Renminbi; DKK = Danish Krone; NZ\$ = New Zealand dollars.

GERM

Grupo Español de Rehabilitación Multimodal

Spanish Working Group In Fast-Track Surgery

AIMS:

- What are our pre-fast track colorectal surgery results?
- ¿What are the difficulties to implant a FT program?
- Once implanted. Degree of Protocol compliance
- Outcome of the protocol.
- To offer others our knowledge and experience.



RESEARCH ARTICLE

Open Access

Enhanced recovery in colorectal surgery: a multicentre study

José M Ramírez¹, Juan A Blasco², José V Roig³, Sergio Maeso-Martínez^{2*}, José E Casal⁴, Fernando Esteban⁵, Daniel Callejo Lic² and for Spanish working group on fast track surgery

Abstract

Background: Major colorectal surgery usually requires a hospital stay of more than 12 days. Inadequate pain management, intestinal dysfunction and immobilisation are the main factors associated with delay in recovery. The present work assesses the short and medium term results achieved by an enhanced recovery program based on previously published protocols.

Methods: This prospective study, performed at 12 Spanish hospitals in 2008 and 2009, involved 300 patients. All patients underwent elective colorectal resection for cancer following an enhanced recovery program. The main elements of this program were: preoperative advice, no colon preparation, provision of carbohydrate-rich drinks one day prior and on the morning of surgery, goal directed fluid administration, body temperature control during surgery, avoiding drainages and nasogastric tubes, early mobilisation, and the taking of oral fluids in the early postoperative period. Perioperative morbidity and mortality data were collected and the length of hospital stay and protocol compliance recorded.

Results: The median age of the patients was 68 years. Fifty-two % of the patients were women. The distribution of patients by ASA class was: I 10%, II 50% and III 40%. Sixty-four % of interventions were laparoscopic; 15% required conversion to laparotomy. The majority of patients underwent sigmoidectomy or right hemicolectomy. The overall compliance to protocol was approximately 65%, but varied widely in its different components. The median length of postoperative hospital stay was 6 days. Some 3% of patients were readmitted to hospital after discharge; some 7% required repeat surgery during their initial hospitalisation or after readmission. The most common complications were surgical (24%), followed by septic (11%) or other medical complications (10%). Three patients (1%) died during follow-up. Some 31% of patients suffered symptoms that delayed their discharge, the most common being vomiting or nausea (12%), dyspnoea (7%) and fever (5%).

Conclusion: The following of this enhanced recovery program posed no risk to patients in terms of morbidity,

Influence of size and complexity of the hospitals in an enhanced recovery programme for colorectal resection

**Antonio Arroyo • José Manuel Ramirez • Daniel Callejo • Xavier Viñas •
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Spanish Working Group in Fast Track Surgery (GERM)**

Conclusion Patients treated according to an enhanced recovery programme develop significantly fewer complications and have a shorter hospital stay. The carrying out of protocol is greater in smaller and less complex hospitals and is directly related to a shorter stay in hospital.

The effect of laparoscopic approach on the postoperative recovery of patients undergoing colorectal cancer surgery with conventional care compared to those included in a fast-track protocol.

Background

Introduction of laparoscopy in colorectal surgery, as well as the implementation of multimodal rehabilitation programs or fast-track (FT) has obtained a better recovery and shorter hospital stay.

Objectives: To study the influence of surgical approach on the postoperative recovery of patients undergoing colorectal cancer surgery with conventional care compared to those included in an FT protocol.

Methods: We report a multicentre prospective study (300 patients) undergoing elective surgery within a FT protocol controlled with a non-concurrent cohort (201 patients) attended before the application of the protocol and who fulfilled the same criteria. Patients ASA IV, with diabetes mellitus, converted to open surgery and those who required a stoma were excluded. The protocol includes the items accepted for these types of programs. Patients were divided into 4 groups: laparoscopy and FT, open and FT, laparoscopy with conventional care (CC) and open surgery with CC. We analyzed differences in hospital stay (HS) and morbidity. Secondary endpoints were mortality and reoperation rate.

Results: The overall median of HS was 7 days. Laparoscopy /FT 5 days, open /FT 6 days, laparoscopy /CC 9 days and open /CC 10 days ($p < 0.001$). In the regression model, laparoscopy/FT was the group with greater average reduction on HS ($p < 0.001$). When comparing laparoscopy/FT and laparoscopy/CC, a significant reduction of HS was shown ($p < 0.001$). The overall morbidity was 30.6%. The distribution by groups was: laparoscopy/FT 22%; open/FT 30.1%; laparoscopy/CC 30.4% and open/CC 40.4% ($p = 0.009$). In the regression analysis the reduction of the risk of complications in group laparoscopy / FT respect to open /CC was 53% ($p = 0.009$). There were no differences in reoperation rate.

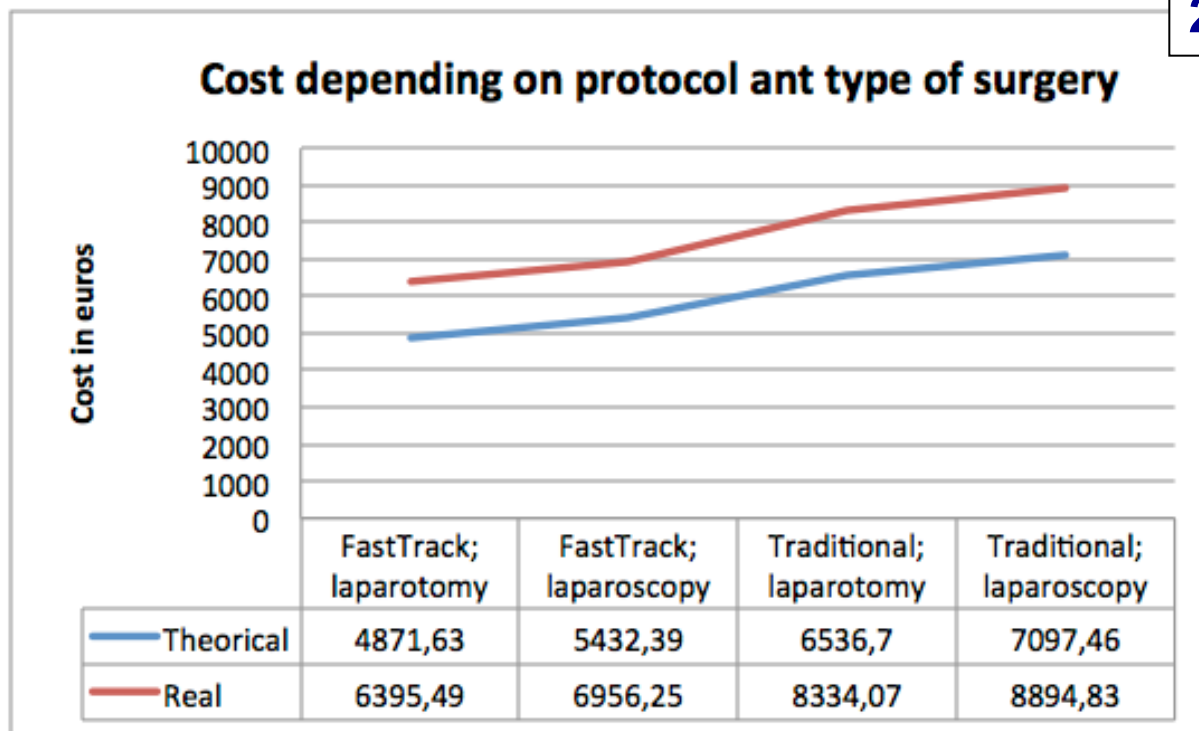
Conclusion: Patients with colorectal cancer who underwent laparoscopic surgery within a multimodal rehabilitation protocol obtained the best results in terms of hospital stay and morbidity.

<http://www.controlled-trials.com/ISRCTN16397735>.

Cost study in colorectal surgery: Another advantage for fast track protocols

Royo, Ramírez, Arroyo, Cabezali, Gracia on Behalf of the Spanish Group (in press)

300 FT
280 Non-FT

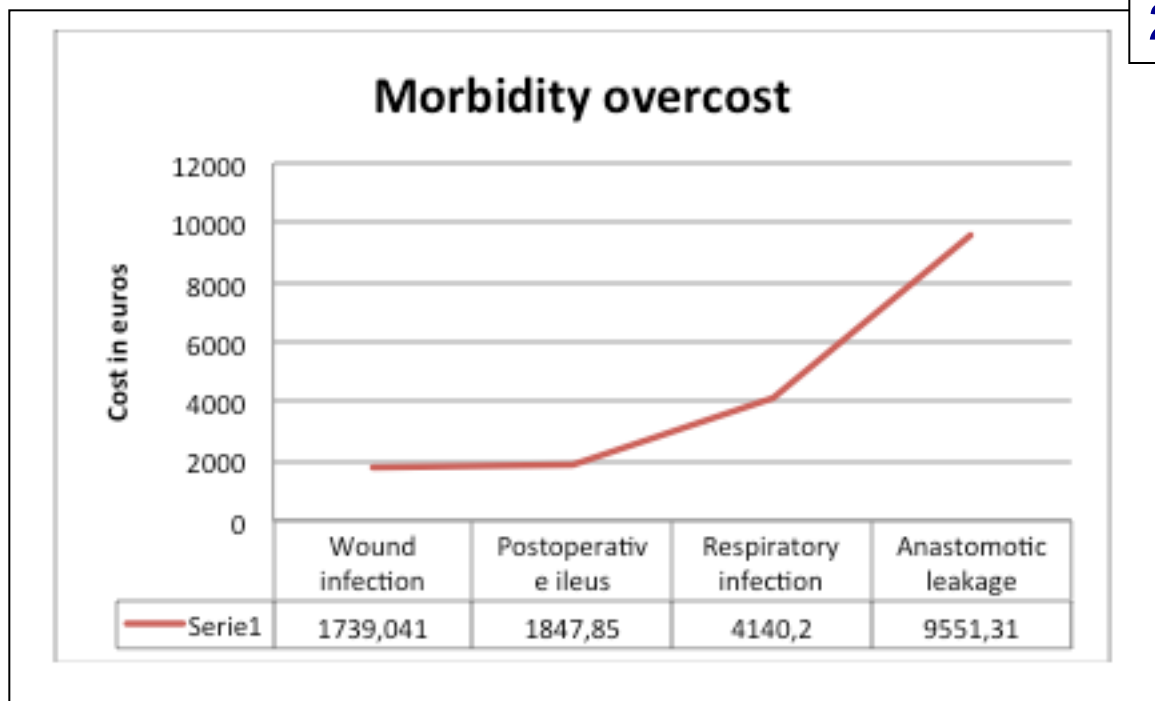


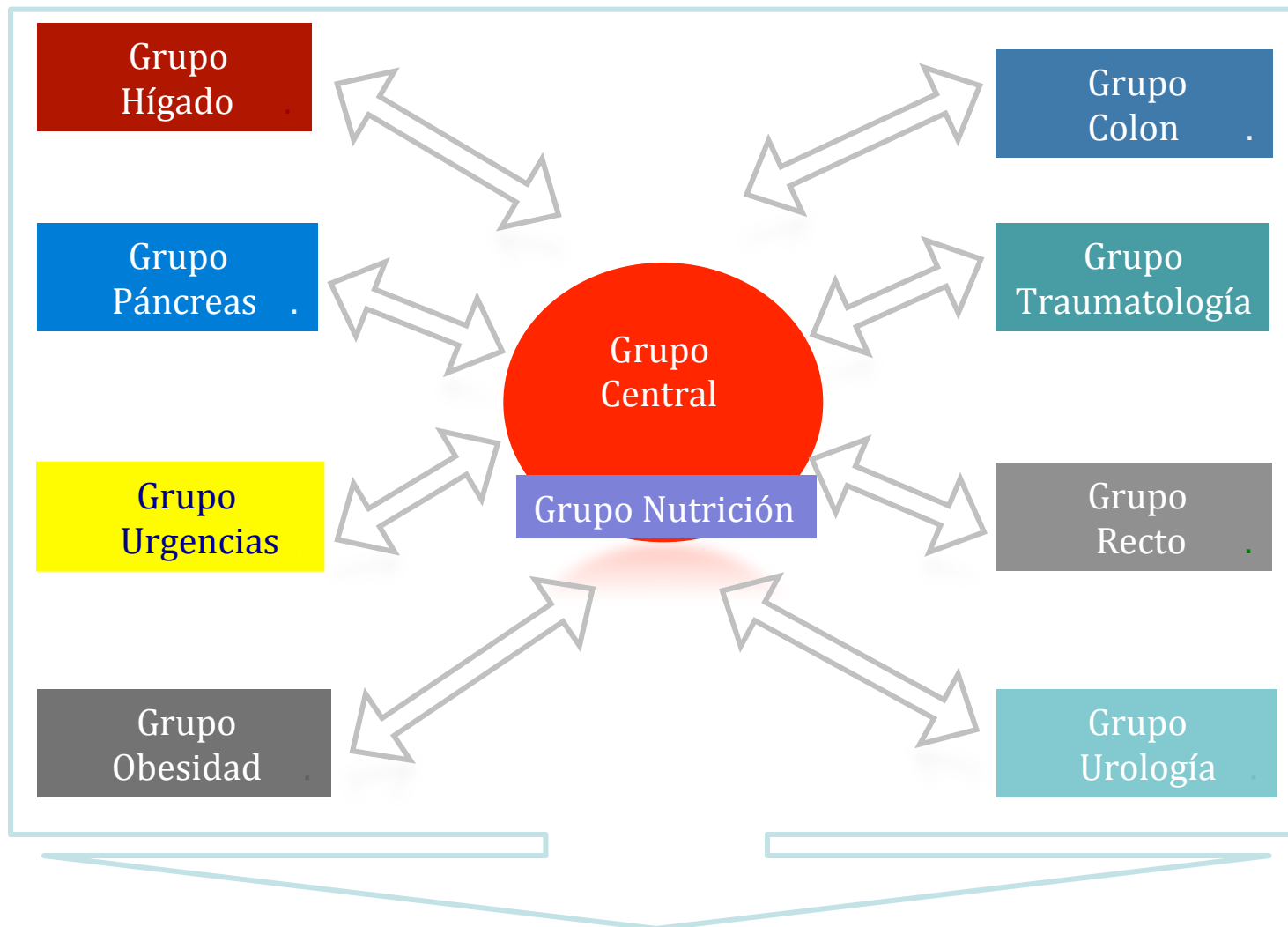
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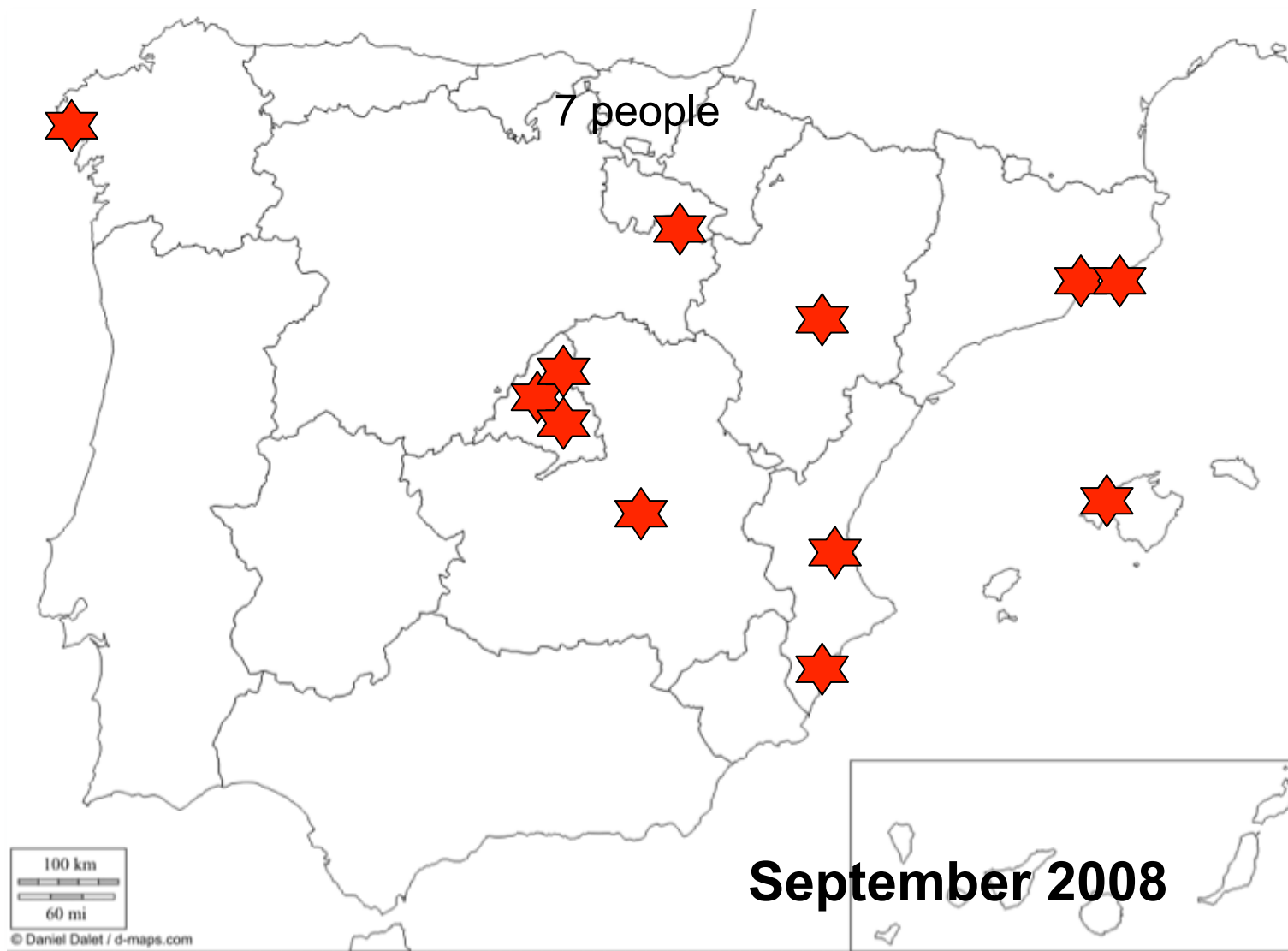


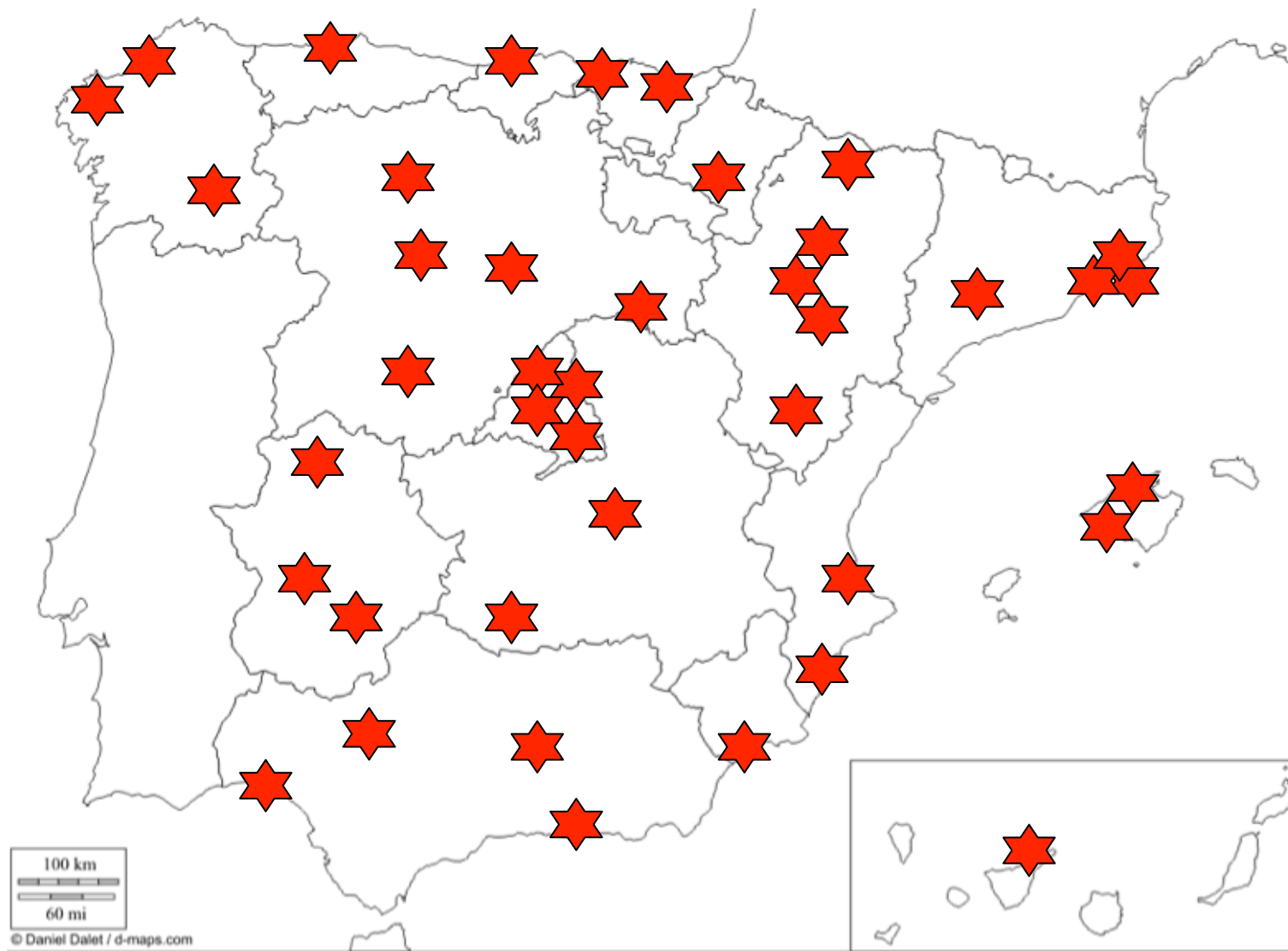
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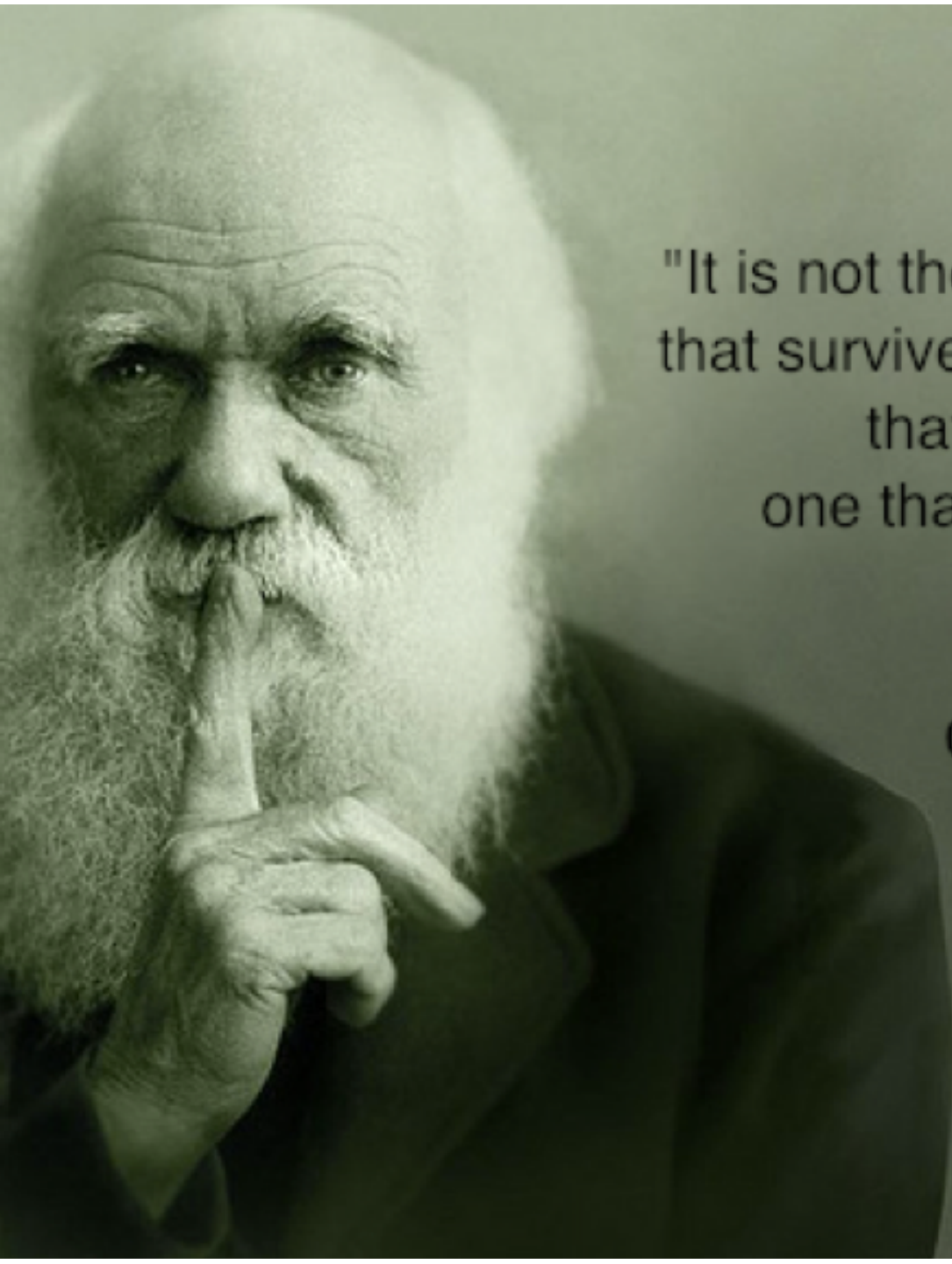
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Charles Darwin