



Current concept and evolution of Enhanced Recovery After Surgery(ERAS)

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- ❖ What is the ERAS?
- ❖ Main goal of ERAS
- ❖ Is ERAS needed?
- ❖ Main elements of ERAS
- ❖ ERAS in HBP surgery
- ❖ Severance Experience
- ❖ Summary

What is the ERAS

- ❖ Aiming to streamline perioperative care pathways to **maximize effectiveness** and **minimize costs**.



Sir David Cuthbertson (1900-1986)

- ❖ Fast tract surgery
- ❖ Early recovery after surgery
- ❖ Enhanced recovery after surgery

British Journal of Anaesthesia 1997; 78: 606–617

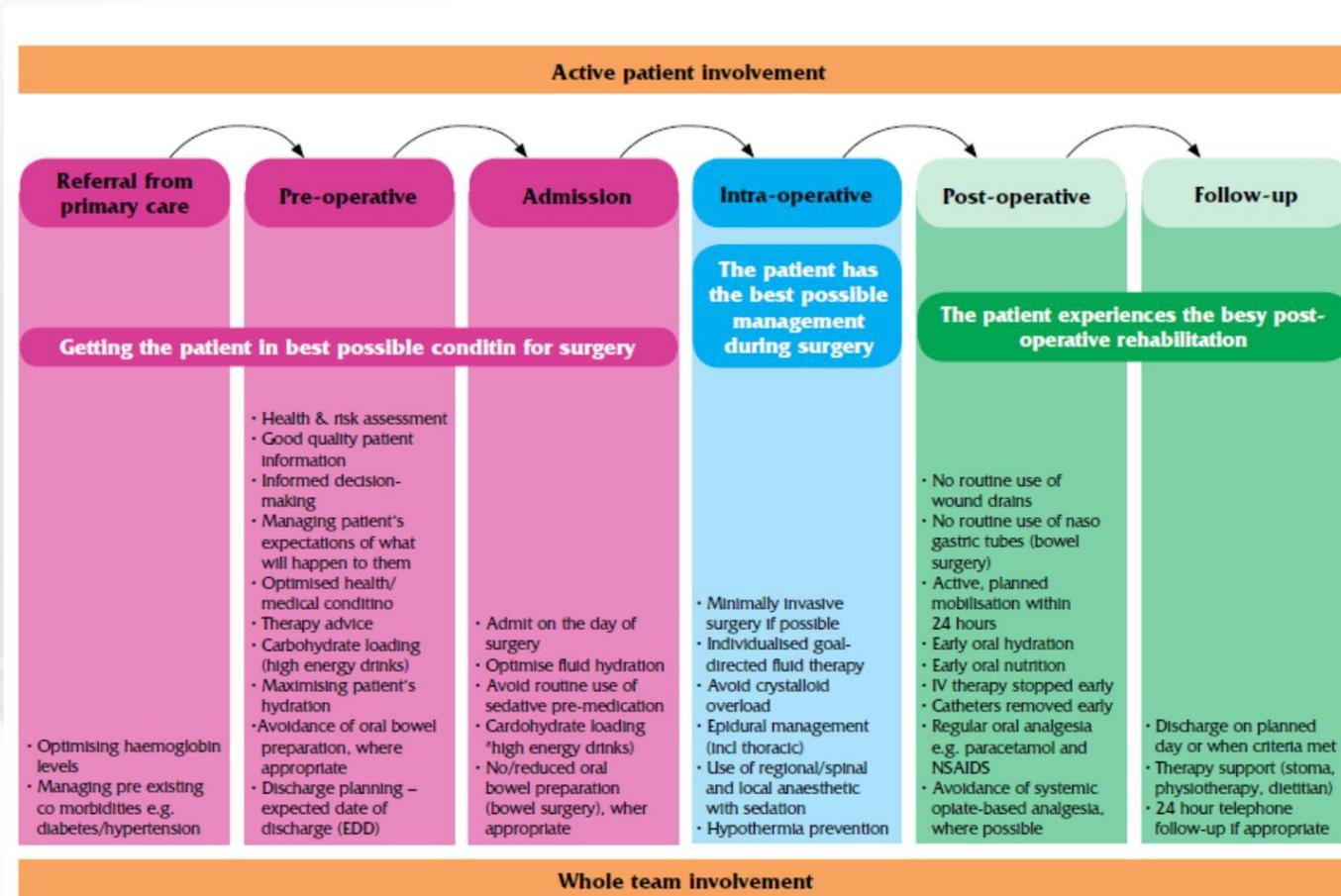
Multimodal approach to control postoperative pathophysiology and rehabilitation

H. KEHLET

The generic term of '**enhanced recovery**' is centrally concerned with helping patients to **get better sooner** following surgery by minimizing the physical assault on the body and seeking to decrease the human physiological stress response.

Main goal of ERAS

- ❖ reduction of the metabolic stress to surgery will allow the patient to **recovery faster**.





ERAS is needed?

홈 > 뉴스 > 보험·제도



보험·제도

진영 내정자, DRG 확대 필요..의사 증원은 유보적

서면답변서 통해 미리 본 진영 내정자 인사청문회 건보재정 효율화 위해 과잉진료 불필요한 수요 억제

기사입력시간 2013.03.05 14:33:34

의학신문 최승원 기자 | choisw@doctorsnews.co.kr



진영 보건복지부 장관 내정자

진영 보건복지부 내정자가 포괄수가제 확대했다. 의사 수 증원에 대해서는 전체 2 접근성을 높이는 방안을 마련하겠다고

김 내정자가 6일 인사청문회를 앞두고 질의에 5일 답변서를 보냈다.

서면답변서에 따르면 "현행 행위별수료 증가를 가져오는 등 한계점이 존재를 확보하고 보장성을 확대하기 위해 밝혔다.

특히 지난해 2월 OECD가 '한국 의료 포괄수가제를 확대하고 적절한 입퇴원 스 양과 강도 모니터링이 필요'하다고

었다.

김 내정자의 인식이 의료계와 거리감이 있다는 것을 읽을 수 있는 부분이다. OECD 보고서의 공정성에 의문을 제기했었으며 의료의 질 하락을 우려는 투정을 보였다.

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시작페이지 | 즐겨찾기추가 | 로그인 | 회원가입

뉴스 | **오피니언** | 헬스라이프 | 이미지뉴스 | 커뮤니티

검색

전체뉴스 | 보건정책 | 병·의원 | 학술·학회 | 제약·산업 | 개원가단신 | 포커스 | 뉴스인사이드 | 위클리뷰 | TOP기사바라보기

최종편집 : 2013.4.24 수 23:34

홈 > 뉴스 > 뉴스 > 보건정책

뒤로가기 >



건보공단 협금은 '육 먹은 값' 포함?

기사 보내기

트위터 | 미투데이 | 네이버 | 구글 | 페이스북 | 오픈 디그 | 알리시스 | 라이브

중병 DRG 확대, 사전 작업 한창

심평원, 종합병원 특수성 고려 관련 학회 의견 적극 수렴중

기사인기도

날짜별 기사 | 주요기사 | 의견쓰기 | 기자의 다른 기사 더 보기

2013년 04월 10일(수) 06:10:10

조성우 기자(aucuso1@naver.com)

“오는 7월 종합병원 대상 포괄수가제 확대 시행을 앞두고 현재 관련 학회들의 의견을 수렴하고 있다. 종합병원의 특수성을 고려해 최대한 의견을 수렴하고 검토하겠다.”

건강보험심사평가원(원장 강운구)이 오는 7월 종합병원 대상 7개 질병군 포괄수가제(DRG) 확대 시행을 앞두고 최근 관련 학회들의 의견을 적극 수렴하고 있어 주목된다.

심평원 포괄수가관리실 관계자는 “7월부터 포괄수가제가 종합병원까지 확대 시행된다. 현재 각 학회의 의견을 듣고 있다. 학회에서 요구하는 것들을 파악해 불합리한 점들을 보완할 생각이 다.”고 밝혔다.

이어 “아직 종합병원 포괄수가제 확대 시행과 관련해 정확한 매뉴얼이 나온 것은 없다. 종합병원의 특수성을 고려해 일차적으로 학회의 의견을 최대한 듣고 있다.”고 덧붙였다.

일간 | **주간** | 월간 많이 본 기사

- 1 의사들, 승무원 폭행 '내 일 같다'
- 2 건보공단 "의원협회 공문 정황 파악 중"
- 3 의사출신 국회의원 선탁진료제도 불직구
- 4 박원순표 도시보건소 첫 개소
- 5 면허 미신고자 유예없이 효력정지
- 6 건보공단, 3월만 880억원 계약 왜?
- 7 '한방은 엉터리 논리로 감성에만 호소하죠'
- 8 몰라도 안파는 편의정, 알고도 파는 약국
- 9 진영 장관, 의료분쟁 조정 참여 의무화 시사
- 10 각국 의료보장 방식 이렇게 다르다

포토박스 더보기





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Clinical Nutrition

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Original Article

The enhanced recovery after surgery (ERAS) pathway for patients undergoing major elective open colorectal surgery: A meta-analysis of randomized controlled trials[☆]

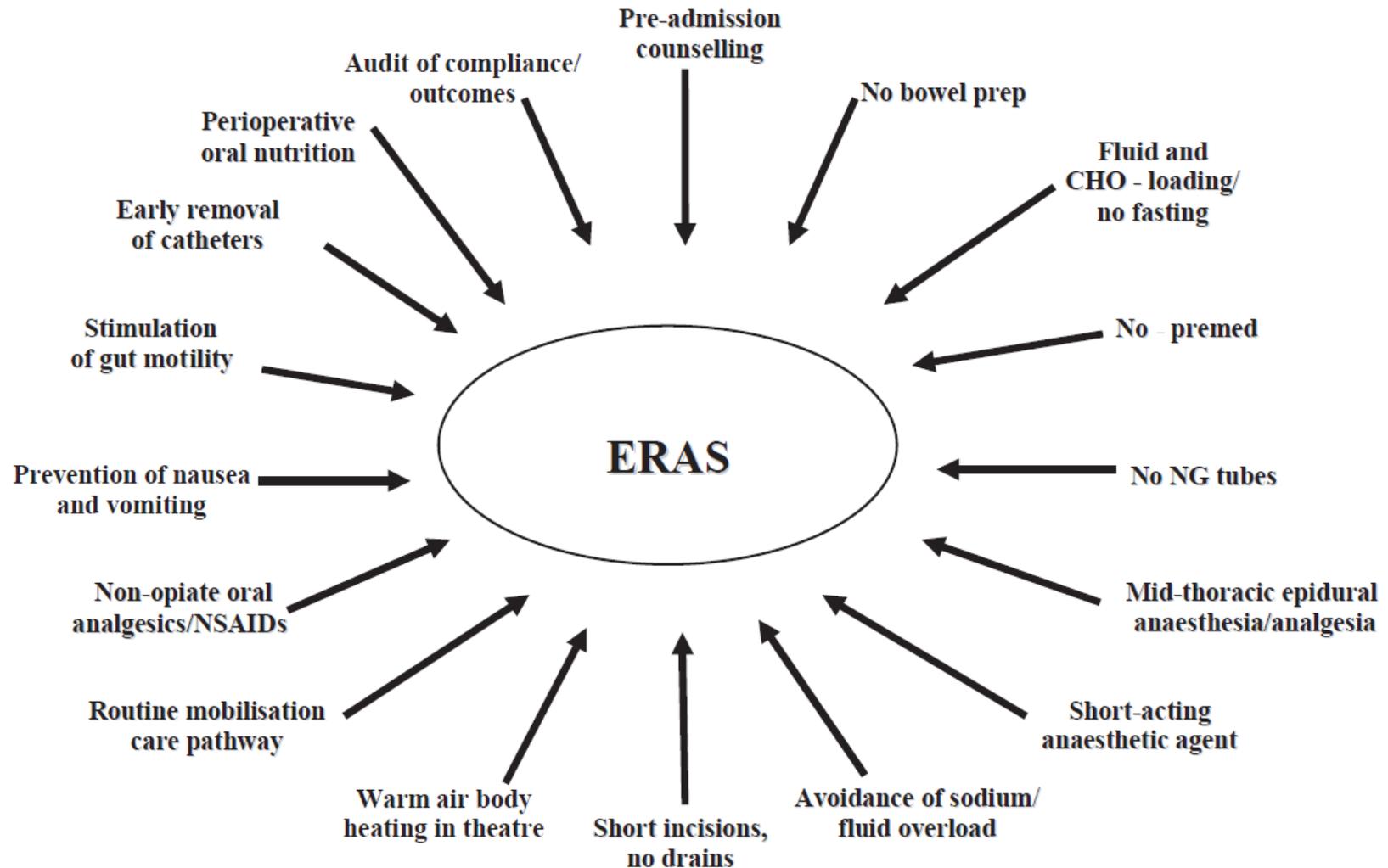
Krishna K. Varadhan^a, Keith R. Neal^b, Cornelius H.C. Dejong^c, Kenneth C.H. Fearon^d, Olle Ljungqvist^e, Dileep N. Lobo^{a,*}

- ❖ Six randomized controlled trials with 452 patients were included.
- ❖ The number of individual ERAS elements used ranged from 4 to 12, with a mean of 9.
- ❖ The length of hospital stay [weighted mean difference (95% confidence interval): 2.55 (3.24, 1.85)] and complication rates [relative risk (95% confidence interval): 0.53 (0.44, 0.64)] were significantly reduced in the enhanced recovery group.
- ❖ There was no statistically significant difference in readmission and mortality rates.



Main Elements of ERAS

Main elements of ERAS protocols



Active patient involvement

Referral from primary care

Pre-operative

Admission

Intra-operative

Post-operative

Follow-up

A crucial aspect for enhanced recovery is good quality patient information

- Optimal levels
- Managing pre-existing co-morbidities e.g. diabetes/hypertension

- Appropriate
- Discharge planning – expected date of discharge (EDD)

- No/reduced oral bowel preparation (bowel surgery), where appropriate

- Use of regional/spinal and local anaesthetic with sedation
- Hypothermia prevention

- NSAIDs
- Avoidance of systemic opiate-based analgesia, where possible

- Therapy support (stoma, physiotherapy, dietitian)
- 24 hour telephone follow-up if appropriate

Whole team involvement



ERAS in HBP surgery

Care plan for patients undergoing liver resection

Day before surgery

- Normal feeding until midnight
- No preanaesthetic medication

Day of surgery

- Mid-thoracic epidural analgesia (local anaesthetic and low-dose opioid)
- Short-acting anaesthetic agent
- No nasogastric tube (removed immediately after surgery, if used)
- Warm intravenous fluids and body warming device
- Avoidance of excessive intravenous fluids
- No routine drainage of peritoneal cavity
- Free oral intake of water/nutrition started immediately
- Patient out of bed for 2 h

Day 1 after surgery

- Patient mobilized
- Intravenous fluids discontinued
- Patient to drink at least 1 litre of fluid
- Normal diet
- Continue mid-thoracic epidural analgesia
- Paracetamol 1 g four times daily

Day 2 after surgery

- Continue mid-thoracic epidural analgesia
- Paracetamol 1 g four times daily
- Normal diet
- Patient mobilized

Day 3 after surgery

- Stop epidural
- Commence NSAIDs if appropriate
- Remove urinary catheter
- Encourage full oral intake and mobilization
- Review discharge criteria

Day 4 after surgery

- Encourage full oral intake and mobilization
- Review discharge criteria

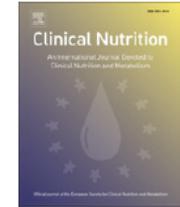
Hendry PO et al. Randomized clinical trial of laxatives and oral nutritional supplements within an enhanced recovery after surgery protocol following liver resection. Br J Surg. 2010;97(8):1198-206.

- ❖ **Methods:** **Seventy-four patients** undergoing liver resection were randomized in a two-by-two factorial design to receive either postoperative magnesium hydroxide as a laxative, preoperative carbohydrate loading and postoperative ONS, their combination or a control group. Patients were managed within an ERAS programme of care. The primary outcome measure was time to first passage of stool. Secondary outcome measures were gastric emptying, postoperative oral calorie intake, time to functional recovery and length of hospital stay.
- ❖ **Results:** **Sixty-eight patients completed the trial.** The **laxative group had a significantly reduced time to passage of stool:** median (interquartile range) 4 (3–5) *versus* 5 (4–6) days ($P = 0.034$). The ONS group showed a trend towards a shorter time to passage of stool ($P = 0.076$) but there was no evidence of interaction in patients randomized to the combination regimen. Median length of hospital stay was 6 (4–7) days. There were no differences in secondary outcomes between groups.
- ❖ **Conclusion:** Within an ERAS protocol for patients undergoing liver resection, **routine postoperative laxatives result in an earlier first passage of stool but the overall rate of recovery is unaltered**



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Guidelines for perioperative care for pancreaticoduodenectomy: Enhanced Recovery After Surgery (ERAS[®]) Society recommendations[☆]

Kristoffer Lassen^{a,b,*}, Marielle M.E. Coolsen^c, Karem Slim^d, Francesco Carli^e, José E. de Aguiar-Nascimento^f, Markus Schäfer^g, Rowan W. Parks^b, Kenneth C.H. Fearon^b, Dileep N. Lobo^h, Nicolas Demartines^g, Marco Bragaⁱ, Olle Ljungqvist^{j,k}, Cornelis H.C. Dejong^c on behalf of the ERAS[®] Society, the European Society for Clinical Nutrition and Metabolism and the International Association for Surgical Metabolism and Nutrition

❖ High evidence & strong recommendation grade

- Anti thrombotic prophylaxis
- Antimicrobial prophylaxis and skin preparation
- Avoiding hypothermia
- Perianastomotic drain
- Urinary drainage

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.

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.

Avoiding hypothermia

- ❖ Intraoperative hypothermia should be avoided by using cutaneous warming, i.e., forced-air or circulating-water garment systems.



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.

Urinary drainage

- ❖ Transurethral catheters can be removed safely on postoperative day 1 or 2 unless otherwise indicated.



Enhanced recovery programmes in hepatobiliary and pancreatic surgery: a systematic review

TC Hall, AR Dennison, DK Bilku, MS Metcalfe, G Garcea

University Hospitals of Leicester NHS Trust, UK

- ❖ A MEDLINE® literature search was undertaken using the keywords ‘enhanced recovery’, ‘fast-track’, ‘peri-operative’, ‘surgery’, ‘pancreas’ and ‘liver’ and their derivatives such as ‘pancreatic’ or ‘hepatic’.
- ❖ The primary endpoint was length of postoperative hospital stay.
- ❖ Secondary endpoints were morbidity, mortality and readmission rate.

Articles describing the ERAS in HBP surgery

Authors	Year	Surgery (liver / pancreas)	Study design	Surgery type (ERP cohort where applicable)	Patients in ERP	Significant study findings compared with historical control
Berberat <i>et al</i> ¹⁶	2007	Pancreas	Prospective historical comparison study	Pancreatic head resection 70.6%; distal 20%; total 5.9%; segmental 3.5%	255	
Balzano <i>et al</i> ¹⁷	2008	Pancreas	Prospective historical comparison study	PD	252	More rapid time to passing first stool (5 vs 6 days, $p<0.001$); shorter length of stay (13 vs 15 days, $p<0.001$); less morbidity (47.2% vs 58.7%, $p=0.014$) with no difference in readmission rate (7.1% vs 6.3%, $p=0.865$)
van Dam <i>et al</i> ¹⁸	2008	Liver	Prospective case series comparing with a historical control	Hemihepatectomy 33%; hemihepatectomy + metastasectomy 10%; extended hemihepatectomy 11%; multisegmental 28%; central resection 2%; metastasectomy 16%; repeat hepatectomy 11%	61	Reduced length of stay (6 vs 8 days, $p<0.001$); no significant difference in morbidity (41% vs 31%, $p=0.197$) or readmission rate (13% vs 10%, $p=0.61$)
MacKay <i>et al</i> ¹⁹	2008	Liver	Prospective case series	1 lobectomy; 2 trisegmentectomy; 3 bisegmentectomy; 6 segment	12	
Stoot <i>et al</i> ²⁰	2009	Liver	Prospective multicentre comparison study	Laparoscopic lateral resection, 1 segment IV	13	No significant reductions in length of stay (5 vs 7 days, $p=0.305$) or morbidity/mortality; significantly less intra-operative blood loss (50ml vs 250ml, $p=0.002$)
Koea <i>et al</i> ²¹	2009	Liver	Consecutive patients in an ERP comparing analgesia with single dose intrathecal morphine with gabapentin or continuous epidural analgesia	Hemihepatectomy 36%; extended hepatectomy 4%; multisegmentectomy 18%; monosegmentectomy 5%; metastasectomy 22%	50	
Hendry <i>et al</i> ²²	2010	Liver	Randomised controlled trial of laxatives and oral nutrition supplements within an ERP	Major resection 77.9%; minor resection 22.1%	68	
Montiel Casado <i>et al</i> ²³	2010	Pancreas	Retrospective historical comparison study	Classic PD	82	
di Sebastiano <i>et al</i> ²⁴	2011	Pancreas	Prospective historical comparison study	Pylorus preserving PD 62.1%; PD 2.7%; duodenum preserving pancreatic head resection 2.7%; distal pancreatectomy 13.8%; central pancreatectomy 2.1%; total pancreatectomy 6.9%; completion pancreatectomy 1.4%; other 8.3%	145	
Lin <i>et al</i> ²⁵	2011	Liver	Prospective comparison study at same site before and after introduction of ERP	Bisegmentectomy 30.4%; segmentectomy 23.2%; hemihepatectomy 16.1%; non-anatomical resection 12.5%; central resection 10.7%; extended hemihepatectomy 7.1%	61	Reduced length of stay (7 vs 11 days, $p<0.01$); no difference in morbidity (37.7% vs 37.5%, $p=0.982$), mortality (1.8% vs 1.6%, $p=0.706$) or readmission rate (7.1% vs 3.3%, $p=0.424$)

Liver resectional surgery

	van Dam <i>et al</i> ¹⁸	MacKay <i>et al</i> ¹⁹	Stoot <i>et al</i> ²⁰	Koea <i>et al</i> ²¹	Hendry <i>et al</i> ²²	Lin <i>et al</i> ²⁵
Pre-operatively	Oral nutrition until midnight; no premedication	Information given to patient about fast track rehabilitation	Information given to patient; no premedication; carbohydrate drink until 2h pre-operatively	Nil by mouth for 4h pre-operatively	Oral nutrition until midnight; no premedication	Information given to patient; no premedication or bowel preparation
Day 0	Thoracic epidural; remove NG post-operatively; no routine drains; oral fluids post-operatively; CVP <5mmHg	Oral fluids until 2h pre-operatively; no routine use of drains; oral fluids and supplementary drinks; PCA	Thoracic epidural catheter; no routine NG tube; oral liquid diet 6h post-operatively; laxatives and prokinetics; CVP <5mmHg	No routine use of NG tubes or surgical drains; liquid/light diet on waking	Thoracic epidural; remove NG post-operatively; no routine drains; free clear fluids post-operatively; out of bed for 2h	Thoracic epidural catheter; no routine drains or NG tube; oral liquid diet 6h post-operatively
Day 1	Mobilise; IV fluids stopped; normal diet; paracetamol and magnesium oxide	Diet if tolerated; small Gelofusine [®] boluses if hypovolaemic (stopped after 24h)	Mobilise; IV fluids stopped; normal diet; paracetamol and magnesium oxide	Remove arterial line and catheter; unrestricted diet; mobilise; routine blood tests	Mobilise; IV fluids stopped; normal diet; paracetamol	Mobilise >2h; reduce IV fluids; 1l liquid diet; catheter out
Day 2	As above	Remove PCA; step-down analgesia; remove catheter; mobilise	As above	Mobilise; continue diet; repeat blood tests	As above	Mobilise four times daily; epidural removed; NSAIDs
Day 3	Stop epidural; start NSAIDs; remove catheter; full oral intake	Mobilise; continue diet; repeat blood tests	Stop epidural; start NSAIDs; remove catheter; full oral intake	As above; first surgical dressing change	Stop epidural; start NSAIDs; remove catheter; full oral intake	Mobilise four times daily <6h; 2l light diet
Day 4	Review discharge criteria		Review discharge criteria	Review discharge criteria	Review discharge criteria	Oral medication; stop IV fluids; mobilise >6h
Day 5				Check blood tests; remove central venous line; discharge		Normal diet; give discharge instructions; mobilise four times daily >6h
		Discharged if pain control with oral analgesics and solid foods; adequate mobilisation	Discharge when normal or decreasing bilirubin, good pain control, normal diet tolerated and mobilising to pre-operative level			Discharge on day 6 when fully mobile, pain control adequate and normal organ function; follow-up in outpatients clinic on days 10, 15 and 30

Pancreatic resectional surgery

	Berberat <i>et al</i> ¹⁶	Balzano <i>et al</i> ¹⁷	Montiel Casado <i>et al</i> ²³	di Sebastiano <i>et al</i> ²⁴
Pre-operatively		Information given to patient about fast track rehabilitation	Information given to patient; LMWH	Oral nutrition until 10pm; no premedication
Day 0	LMWH; octreotide; NG tube and drains used routinely; ICU stay; epidural or PCA	Thoracic epidural (T7-9; bupivacaine 0.125% and fentanyl 2µg/ml) plus IV paracetamol and NSAIDs	Epidural analgesia; removal of NG tube after surgery; ICU stay; liquids; prokinetic and octreotide	Analgesia by elastomeric pump*; remove NG tube on extubation; warm IV fluids; ICU stay; CVP <5mmHg
Day 1	Metoclopramide, lactulose and magnesium until first stool; oral fluids within 6h post-operatively	Remove NG tube if draining <300ml; mobilise out of bed; IV fluids until adequate oral intake	Move to ward; moving patient to chair; inhalation; liquid diet	Move to ward; mobilise four times daily; clear oral fluids within 4h post-operatively; metoclopramide and paracetamol
Day 2	Stepwise reduction in analgesia to non-opioids	Enhanced mobilisation (>2h out of bed)		Light diet; continue as per day 1
Day 3	Removal of drains between days 1 and 3; gradual increase in diet	Enhanced mobilisation (>4h out of bed); clear free fluids	Remove epidural; semiliquid diet; remove Foley catheter	Stop elastomeric pump; start NSAIDs; remove catheter; soft diet
Day 4		Solid food intake	Soft diet	Normal diet
Day 5		Diet increased daily until 1,000kcal on day 8; remove drain (if <200 ml); remove epidural Discharged if no fever, pain control with oral analgesics, solid foods >1,000kcal/day; adequate mobilisation and willingness for discharge	Discharge if no fever; good pain control and tolerance of oral analgesics	Plan for discharge on day 7 if pain control with oral analgesics, no nausea, solid food; adequate mobilisation and willingness for discharge

Enhanced recovery programmes in hepatobiliary and pancreatic surgery: a systematic review

TC Hall, AR Dennison, DK Bilku, MS Metcalfe, G Garcea

University Hospitals of Leicester NHS Trust, UK

❖ CONCLUSIONS

- The introduction of an ERP in HPB surgery appears safe and feasible.
- Currently, many of the principles of the multimodal pathway are derived from the colorectal ERP and distinct differences exist, which may impede its implementation in HPB surgery.



Severance Hospital Experiences

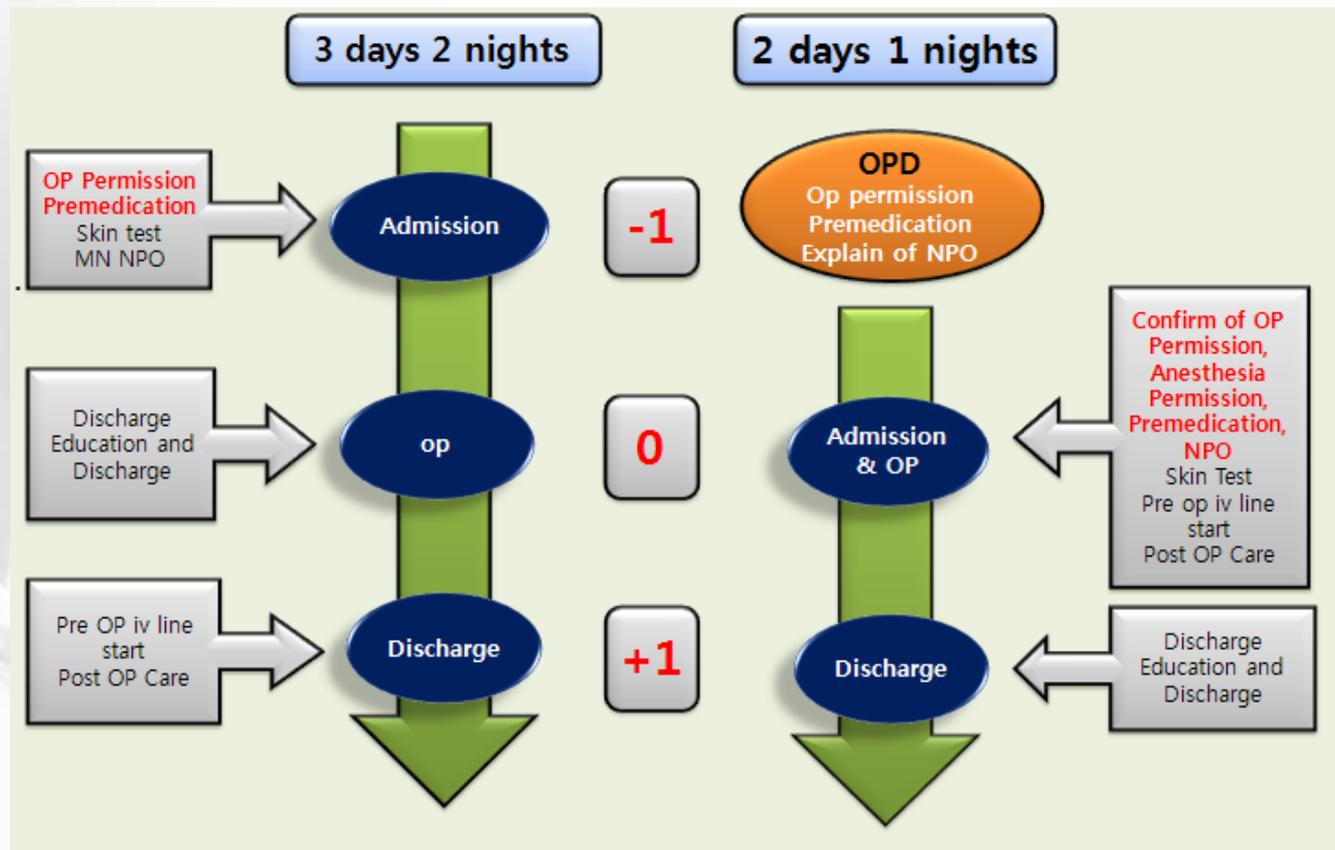
Well-defined responsibilities



The significance of Critical Pathway in Laparoscopic Cholecystectomy

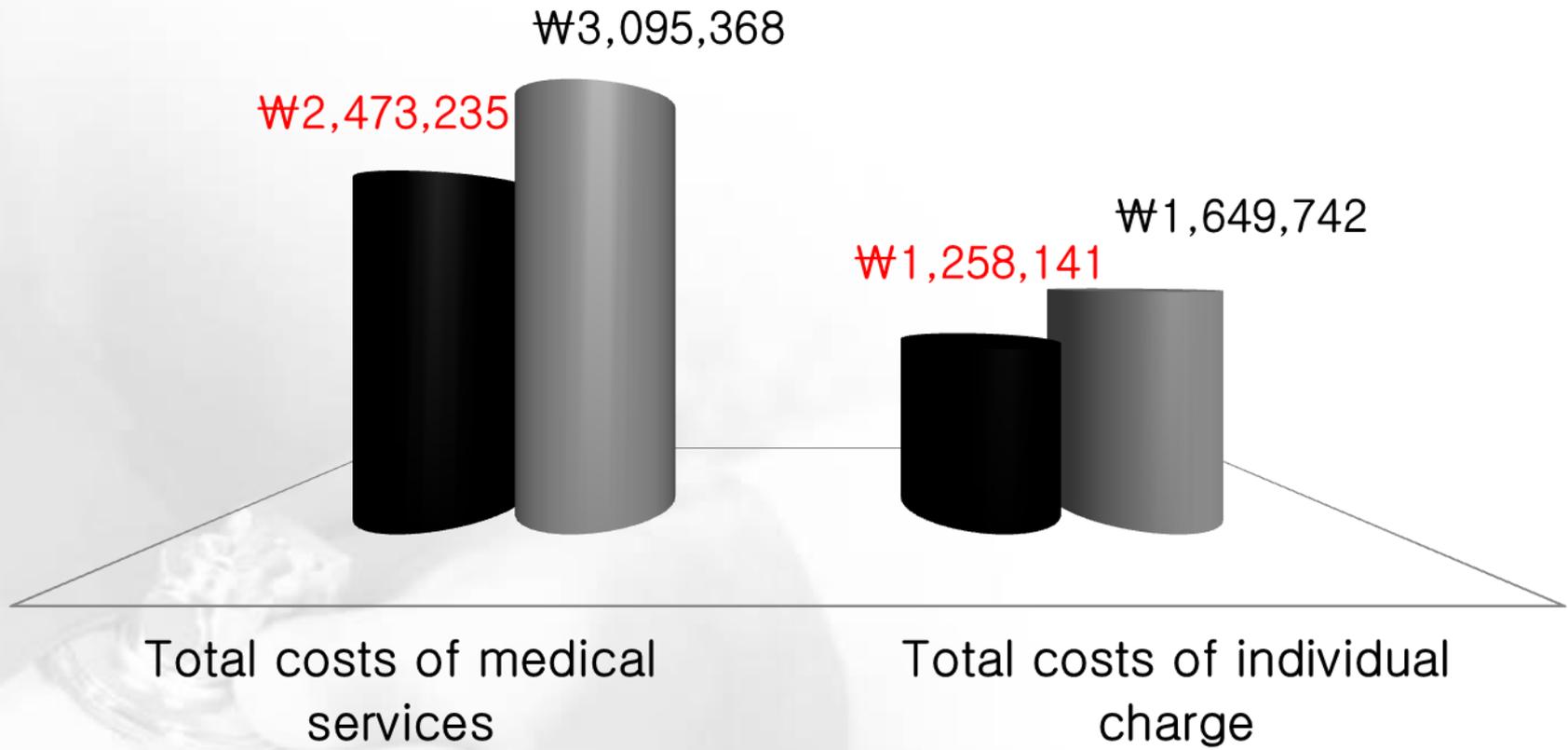
Gender and Age Distribution

	CP applied group (70)	Non-CP applied group (106)
Sex ratio M/F	34/36	16/90
Mean Age(years)	40.5	39.8



Comparison of Cost (Won)

■ CP ■ NON -CP

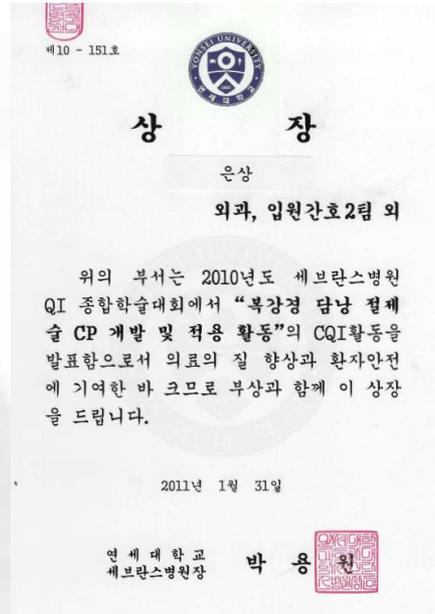


복강경 1막 2일 담낭절제술 설문지

- 수술직전 수술에 필요한 준비물 하부의 adequacy 있었습니까?
 전혀 없었다 그저 그렇다 잘 모르겠다 많았다 매우 많았다
- 수술 당일 내원하여 입원 수술할 하부의 adequacy 있었습니까?
 전혀 없었다 그저 그렇다 잘 모르겠다 많았다 매우 많았다
- 2-1. 불편하였다면 이유란?
 ()
- 의뢰진이 수술이 필요한 이유와 수술 처치, 마취 등에 대해 수술 전의 설명된 내용은 어떠했습니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 수술 후 생긴 수 있는 병이나 장 손상이 저하되길 합병증을 예방하기 위해 설명, 심호흡, 기침, 운동 등에 대해 수술 전의 설명된 내용에 대해 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 통증을 완화시키기 위해 의뢰진이 필요한 마취술 처방하길 부분에 대해서 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 당신에 대한 의사의 태도에 대해서 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 당신에 대한 간호사의 태도에 대하여 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 수술 효과에 만족하고 계십니까?
 만족한다 수술 전보다 낮다 변화 없다 악화되었다
- 수술 전 날 기대감을 10점을 하여 수술 후 만족도를 어떠했습니까?
 수술전 () 수술직후 () 퇴원 시 () 가정간호사 방문 시 () 퇴원 방문 시 ()
- 수술 전 날 상태를 10점으로 하여 수술 후 병의 상태는 어떠했습니까?
 수술전 () 수술직후 () 퇴원 시 () 가정간호사 방문 시 () 퇴원 방문 시 ()
- 의뢰진이 퇴원으로 인한 걱정을 덜어주도록 하고 잘 들어주었습니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 퇴원 후 위생, 식이, 일상생활에 대한 설명에 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 퇴원 후 의료기관, 부속 설명에 대해 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
- 퇴원 후 복통, 발열이 있는 경우 외래나 응급실로 오도록 설명해주었습니까?
 그렇다 아니다

- 퇴원 후 가정간호사와의 면담 및 치료에 대한 설명에 대해 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
 - 퇴원 후 수술과 관련된 건강 상식이 넓어진 것에 대하여 만족하십니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
 - 퇴원 후 가장 적절되는 것은 무엇이었습니까? (모두 표시하여 주십시오)
 없다 통증 수술부위가 잘못 될까봐 일상생활로의 복귀여부
 직장복귀 병의 재발 기타 ()
 - 입원 기간은 적당하였습니까?
 예 아니오
 - 1막 2일 담낭 절제술이 당신의 입원 생활과 일상 생활에 많은 도움이 되었습니까?
 매우 만족한다 만족한다 그저 그렇다 불만족한다 매우 불만족한다
 - 다른 수술 환자에게도 1막 2일 담낭 절제술을 추천하시겠습니까?
 예 아니오 잘 모르겠다
- "아니오"라면 20-1 복원이 좋았습니까? () 일)
 20-2 그 이유는 무엇입니까? ()

수고하셨습니다. 감사합니다.



HEPATOBIILIARY

Bile duct surgery	A	Antibiotic prophylaxis is recommended
Pancreatic surgery	B	Antibiotic prophylaxis is recommended
Liver surgery	B	Antibiotic prophylaxis is recommended
Gall bladder surgery (<i>open</i>)	A	Antibiotic prophylaxis is recommended
Gall bladder surgery (<i>laparoscopic</i>)	A	Antibiotic prophylaxis is not recommended
	<input checked="" type="checkbox"/>	Antibiotic prophylaxis should be considered in high risk* patients

High risk: intraoperative cholangiogram, bile spillage, conversion to laparotomy, acute cholecystitis/pancreatitis, jaundice, pregnancy, immunosuppression, insertion of prosthetic devices

The role of prophylactic antibiotics in elective LC

- ❖ **The study included 471 patients undergoing LC between Jan. 2009 through May 2012.**
 - **279 patients (Group 1) received 2nd generation cephalosporin 1g IV after induction of anesthesia**
 - **192 patients (Group 2) were not given prophylactic antibiotics.**

The role of prophylactic antibiotics in elective LC

❖ Results

- The overall rate of SSI was 1.48% for total 471 patients.
- The incidence of SSI was similar in two groups: ($\chi^2 = 0.013$; $p = 0.910$).
 - 3 of 279 patients (1.56%) in group 1
 - 4 of 192 patients (1.43%) in group 2
- But there was no organ space infection and all of these SSIs were categorized into the only superficial SSIs.
- All of patients occurring SSIs were well treated with conservative treatments without any sequelae.
- Diabetes mellitus ($p = 0.021$) and pre-operative albumin level ($p = 0.004$) contribute to SSI.

❖ Conclusion

- Prophylactic antibiotics are not necessary for elective LC.

Summary

Preassessment

- Physical fitness
- Anxiety
- Social, cultural and ethnic background

Communication

Information provision

- Psychological support
- Discharge planning
- Post discharge support



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