Mechanical bowel preparation for elective colorectal surgery: updated systematic review and meta-analysis

F. Cao & J. Li & F. Li

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Present by 陳秀鉛
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International journal of colorectal disease

Rank in Category: INTERNATIONAL JOURNAL OF COLORECTAL DISEASE

Journal Ranking

For **2013**, the journal **INTERNATIONAL JOURNAL OF COLORECTAL DISEASE** has an Impact Factor of **2.415**.

This table shows the ranking of this journal in its subject categories based on Impact Factor.

Category Name	Total Journals in Category	Journal Rank in Category	Quartile in Category
GASTROENTEROLOGY & HEPATOLOGY	74	37	Q3
SURGERY	202	47	Q1

臨床現況

手術種類	腸道準備
Anal surgery	E-vac enema
Trans anal excision	當天入院warm saline enema 前一天入院Fleet2包(早8AM+晚6PM)+enema
Colon :Rt Lt AR	Fleet or KP If obstruction不須做任何準備
LAR	Fleet + enema
APR	Fleet
If partial obstruction	Lactulose +/-Dulcolax Magvac+Dulcolax Fleet or KP

學名	商品名	中文商品名	圖片	作用
Sodium biphosphate Sodium phosphate	Evac Enema	意福		本品含Monosodium Phosphate及Disodium Phosphate，具緩瀉作用，可以直接並安全的在2至15分鐘內清除大腸內容物，不會引起腹部絞痛或痙攣，使之排出體外
Magnesium citrate	MAGVAC	鎂福內服液		檸檬酸鎂主要作用在小腸

學名	商品名	中文商品名	圖片	作用
Polyethylene glycol	Klean-Prep	刻見清		成分為PEG, Sodium Sulfate Anhydrous, Sodium Bicarbanate, Potassium Chloride, Sodium Chloride Aspartame. 腸道檢查、手術前淨腸
sodium phosphate	Fleet	佛利特護舒達		口服鹽類瀉劑，因其主要成份含磷酸鈉和二磷酸鈉，利用其高滲性作用，增加水份滯留於小腸而促進排便。 先天巨結腸症、限鈉飲食者、鬱血性心衰竭或腎衰竭病患不建議使用

Introduction

- 計畫性結直腸手病人，術前執行機械性腸道準備(Mechanical Bowel Preparation, MBP)為常規處置
  - 喝瀉劑 + 清潔灌腸
  - 病人身體不適

- 以往認為機械性的腸道準備可以減少糞便量，及減少腸道細菌量。
- 但越來越多的的研究顯示，機械性腸道準備並未有效減少術後合併症，不應常規執行

Critical Appraisal
[系統性文獻回顧 Systematic Review]

步驟 1：研究探討的問題為何？
Mechanical bowel preparation for elective colorectal surgery: updated systematic review and meta-analysis

研究族群 / 問題 (Problems)	Elective colorectal surgery
介入措施 (Intervention)	Mechanical bowel preparation
比較 (Comparison)	No Mechanical bowel preparation
結果 (Outcomes)	Primary outcomes • Overall anastomotic leakage Secondary outcomes • Overall SSI • Extra-abdominal septic complication • Wound infections • Reoperation • death

步驟 2：系統性文獻回顧的品質如何？ (FAITH)

良好的文獻搜尋至少應包括二個主要的資料庫，並且加上文獻引用檢索(參考文獻中相關研究、Web of Science, Scopus 或 Google Scholar)、試驗登錄資料等。文獻搜尋應不只限於英文，並且應同時使用 MeSH 字串及一般檢索詞彙(text words)。

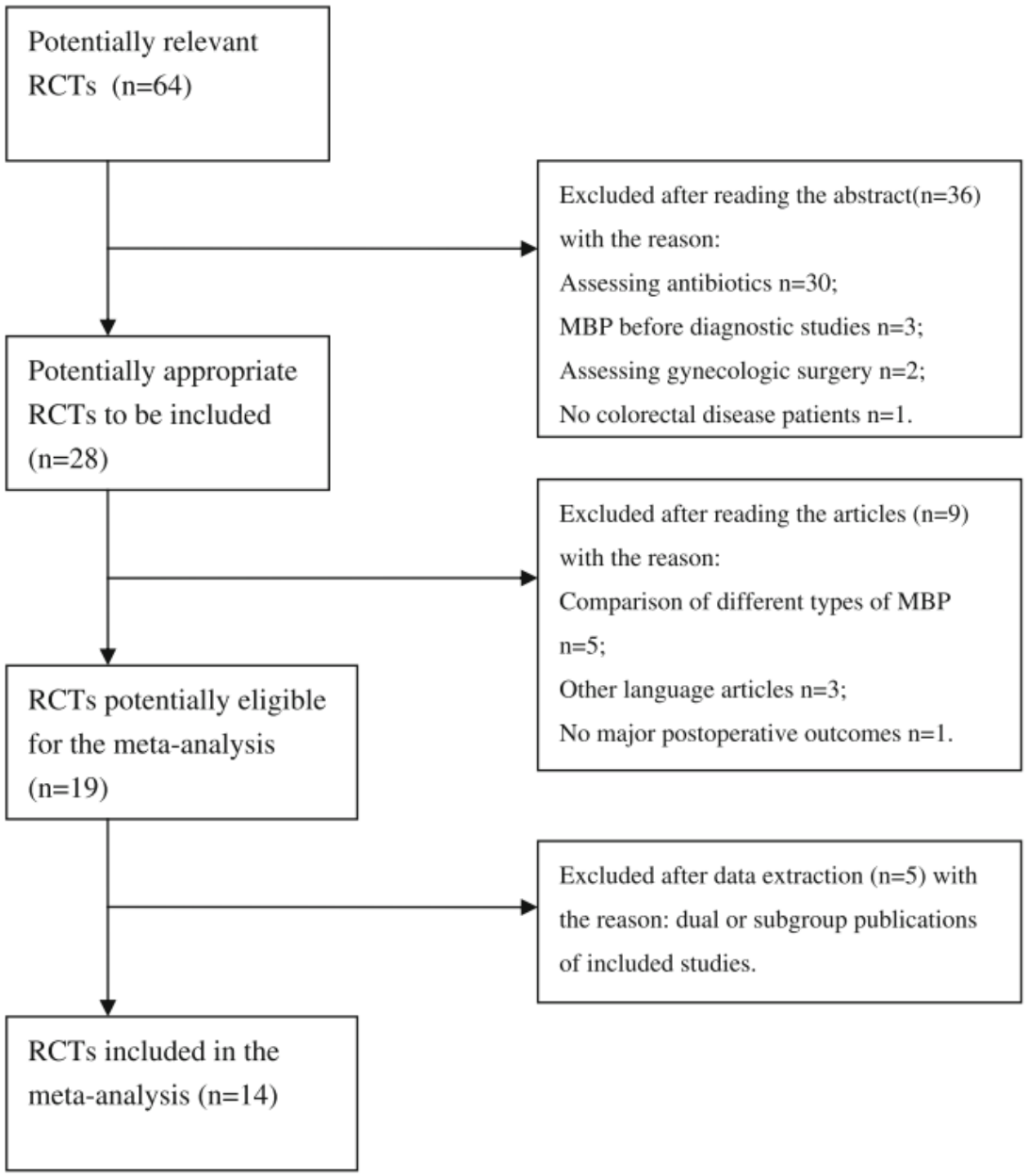
Methods

Search strategy and selection of trials

A computerized search was performed in May 2011 using the terms *bowel cleaning*, *bowel preparation*, *colorectal*, *and surgery*. The following electronic databases are included: Cochrane Library, EMBASE, and MEDLINE. In addition, a manual search was done on the last 12 issues of following 9 major surgical journals including American Journal of Surgery, Annals of Surgery, Archives of Surgery, American Journal of surgery pathology, British Journal of Surgery, Diseases of the Colon and Rectum, Journal of the American College of Surgery, Annals of surgical oncology and Surgery. The reference list in selected articles was also checked. The language of the origi
to English without any limitation to

評讀結果：■是 □否 □不清楚

Fig. 1 Flow diagram of trials evaluating the efficacy mechanical bowel preparation



A - 文獻是否經過嚴格評讀 (Appraisal)？

應根據不同臨床問題的文章類型，選擇適合的評讀工具，並說明每篇研究的品質(如針對治療型的臨床問題，選用隨機分配、盲法、及完整追蹤的研究類型)

- Briefly, the quality scale involved three items: randomization, double blinding, and withdrawals or dropout.
- The score ranges from 0 to 5:
  - 0–2 for randomization,
  - 0–2 for blinding, and
  - 0–1 for withdrawals or dropout.
- Since the patients do know their regimen, double blinding was not feasible and single blinding was considered appropriate.
- According to Moher et al. [20], the methodological quality of a trial is considered poor when the score is 2 or less.
- Data were collected independently by the two reviewers and cross checked

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評讀結果：■是 □否 □不清楚

A - 文獻是否經過嚴格評讀 (Appraisal) ?

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Table 1 Characteristics of included trials

Author	Publishe year	Qualit score	Grouping[a]	No. of malignancy[a]	Oral solution	Stapled anastomosis[a]	Anastomotic leaks[a]	Overall SSI[a]	Extra-abdominal septic complications[a]	Wound infections[a]	Reoperation or second intervention[a]	Death[a]
Scabini	2010	4	120/124	120/124	PEG	50/36	7/5	24/14	NA	11/6	NA	4/2
Bretagnal	2010	4	89/89	89/89	Senna	48/47	6/14	15/34	6/14	3/1	12/5	1/0
Pena	2008	4	65/64	50/51	PEG	30/23	4/2	19/11	NA	16/11	NA	3/4
Contant	2007	4	670/684	487/538	PEG or NaPh	207/208	32/37	135/165	110/121	90/96	58/58	20/26
Jung	2007	4	686/657	560/518	PEG or NaPh	228/238	13/17	82/83	54/45	54/42	30/35	6/6
Zorra	2006	4	120/129	81/98	PEG	107/117	5/3	15/17	NA	8/13	NA	NA
Bucher	2005	4	78/75	25/21	PEG	47/46	5/1	17/6	11/6	10/3	7/2	0/0
Ram	2005	2	164/165	81.5%[b]	NaPh	154/161	1/2	18/12	23/14	16/10	2/2	2/2
Fa-Si-Oen	2005	4	125/125	90/92	PEG	9/10	7/6	16/13	NA	9/7	13/11	NA
Zorra	2003	4	187/193	146/150	PEG	NA	7/4	19/17	10/18	12/11	NA	3/3
Miettinen	2000	4	138/129	63/71	PEG	83/80	5/3	13/10	12/12	5/3	7/3	NA
Santos	1994	4	72/77	35/33	Mannitol	NA	7/4	24/13	NA	17/9	NA	0/0
Burke	1994	3	82/87	70/63	NaPh	NA	3/4	7/7	8/9	4/3	NA	2/0
Brownson	1992	2	86/93	92%[b]	NaPh	NA	8/1	21/10	NA	5/7	NA	NA

PEG polyethylene glycol, *NaPh* sodium phosphate, *NA* not available

[a] MBP vs no MBP

[b] Percentage of malignancy

I - 是否只納入 (included) 具良好效度的文章？

僅進行文獻判讀是不足夠，系統性文獻回顧只納入至少要有一項研究結果是極小偏誤的試驗。

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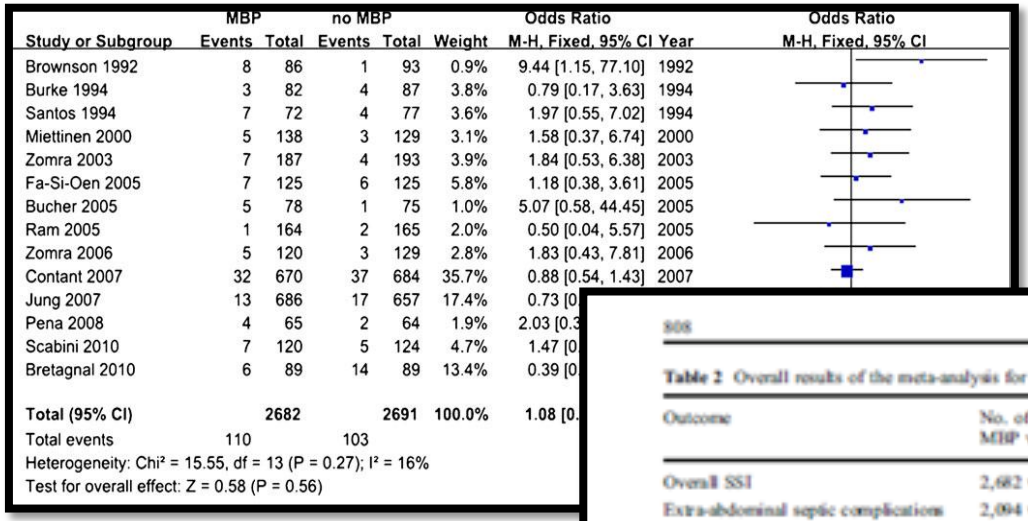
- Since the patients do know their regimen, double blinding was not feasible and single blinding was considered appropriate.
- the methodological quality of a trial is considered poor when the score is 2 or less.
- Data were collected independently by the two reviewers and cross checked.

評讀結果：■是 □否 □不清楚

T - 作者是否以表格和圖表「總結」(total up) 試驗結果？

應該用至少 1 個摘要表格呈現所納入的試驗結果。若結果相近，可針對結果進行統合分析(meta-analysis)，並以「森林圖」(forest plot)呈現研究結果，最好再加上異質性分析



Study or Subgroup	MBP Events	MBP Total	no MBP Events	no MBP Total	Weight	Odds Ratio M-H, Fixed, 95% CI	Year	Odds Ratio M-H, Fixed, 95% CI
Brownson 1992	8	86	1	93	0.9%	9.44 [1.15, 77.10]	1992	
Burke 1994	3	82	4	87	3.8%	0.79 [0.17, 3.63]	1994	
Santos 1994	7	72	4	77	3.6%	1.97 [0.55, 7.02]	1994	
Miettinen 2000	5	138	3	129	3.1%	1.58 [0.37, 6.74]	2000	
Zomra 2003	7	187	4	193	3.9%	1.84 [0.53, 6.38]	2003	
Fa-Si-Oen 2005	7	125	6	125	5.8%	1.18 [0.38, 3.61]	2005	
Bucher 2005	5	78	1	75	1.0%	5.07 [0.58, 44.45]	2005	
Ram 2005	1	164	2	165	2.0%	0.50 [0.04, 5.57]	2005	
Zomra 2006	5	120	3	129	2.8%	1.83 [0.43, 7.81]	2006	
Contant 2007	32	670	37	684	35.7%	0.88 [0.54, 1.43]	2007	
Jung 2007	13	686	17	657	17.4%	0.73 [0		
Pena 2008	4	65	2	64	1.9%	2.03 [0.3		
Scabini 2010	7	120	5	124	4.7%	1.47 [0		
Bretagnal 2010	6	89	14	89	13.4%	0.39 [0		
Total (95% CI)		**2682**		**2691**	**100.0%**	**1.08 [0.**		
Total events	110		103					

Heterogeneity: Chi² = 15.55, df = 13 (P = 0.27); I² = 16%
Test for overall effect: Z = 0.58 (P = 0.56)

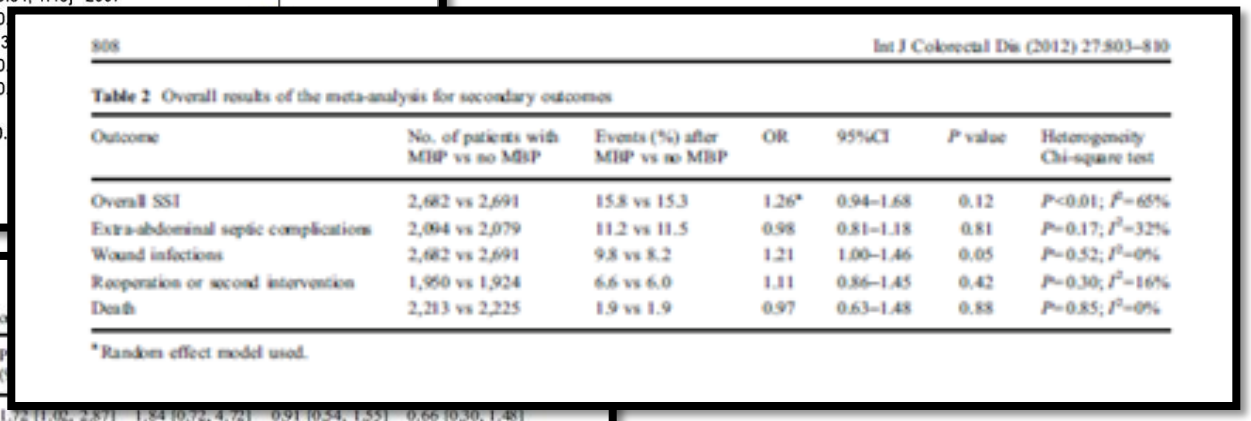


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Table 2 Overall results of the meta-analysis for secondary outcomes

Outcome	No. of patients with MBP vs no MBP	Events (%) after MBP vs no MBP	OR	95%CI	*P* value	Heterogeneity Chi-square test
Overall SSI	2,682 vs 2,691	15.8 vs 15.3	1.26*	0.94–1.68	0.12	$P<0.01$; $I^2=65\%$
Extra-abdominal septic complications	2,094 vs 2,079	11.2 vs 11.5	0.98	0.81–1.18	0.81	$P=0.17$; $I^2=32\%$
Wound infections	2,682 vs 2,691	9.8 vs 8.2	1.21	1.00–1.46	0.05	$P=0.52$; $I^2=0\%$
Reoperation or second intervention	1,950 vs 1,924	6.6 vs 6.0	1.11	0.86–1.45	0.42	$P=0.30$; $I^2=16\%$
Death	2,213 vs 2,225	1.9 vs 1.9	0.97	0.63–1.48	0.88	$P=0.85$; $I^2=0\%$

*Random effect model used.

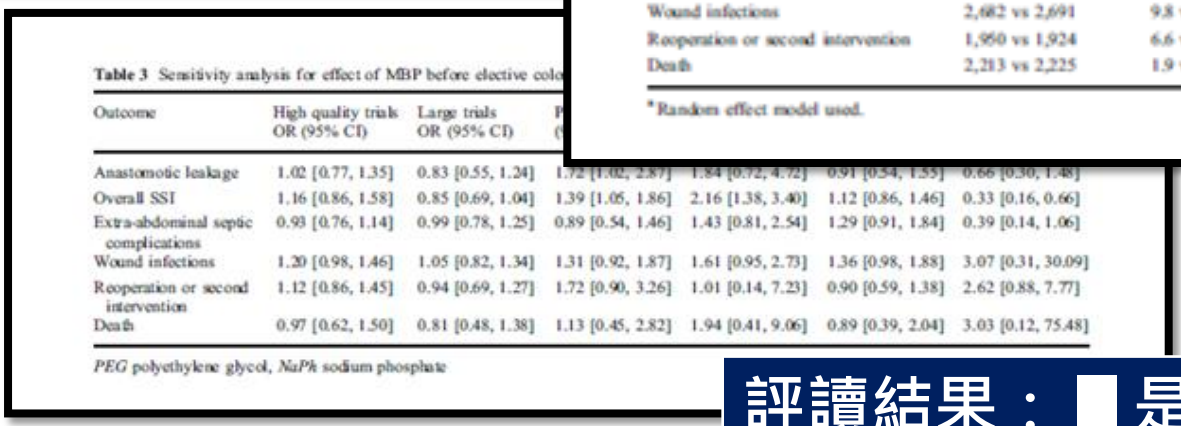


Table 3 Sensitivity analysis for effect of MBP before elective colo

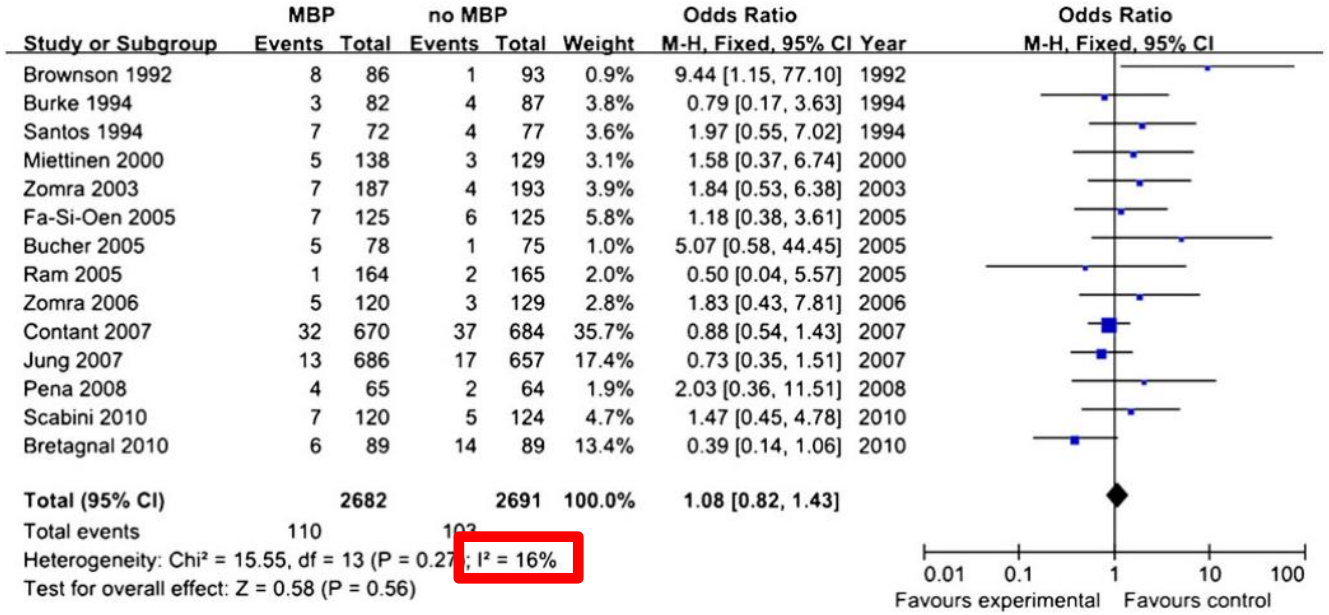
Outcome	High quality trials OR (95% CI)	Large trials OR (95% CI)				
Anastomotic leakage	1.02 [0.77, 1.35]	0.83 [0.55, 1.24]	1.72 [1.02, 2.87]	1.84 [0.72, 4.72]	0.91 [0.54, 1.55]	0.66 [0.30, 1.48]
Overall SSI	1.16 [0.86, 1.58]	0.85 [0.69, 1.04]	1.39 [1.05, 1.86]	2.16 [1.38, 3.40]	1.12 [0.86, 1.46]	0.33 [0.16, 0.66]
Extra-abdominal septic complications	0.93 [0.76, 1.14]	0.99 [0.78, 1.25]	0.89 [0.54, 1.46]	1.43 [0.81, 2.54]	1.29 [0.91, 1.84]	0.39 [0.14, 1.06]
Wound infections	1.20 [0.98, 1.46]	1.05 [0.82, 1.34]	1.31 [0.92, 1.87]	1.61 [0.95, 2.73]	1.36 [0.98, 1.88]	3.07 [0.31, 30.09]
Reoperation or second intervention	1.12 [0.86, 1.45]	0.94 [0.69, 1.27]	1.72 [0.90, 3.26]	1.01 [0.14, 7.23]	0.90 [0.59, 1.38]	2.62 [0.88, 7.77]
Death	0.97 [0.62, 1.50]	0.81 [0.48, 1.38]	1.13 [0.45, 2.82]	1.94 [0.41, 9.06]	0.89 [0.39, 2.04]	3.03 [0.12, 75.48]

PEG polyethylene glycol, *NaPh* sodium phosphate

評讀結果：■ 是 □ 否 □不清楚

H - 試驗的結果是否相近 - 異質性 (Heterogeneity)？

在理想情況下，各個試驗的結果應相近或具同質性，若具有異質性，作者應評估差異是否顯著(卡方檢定)。根據每篇個別研究中不同的PICO及研究方法，探討造成異質性的原因。



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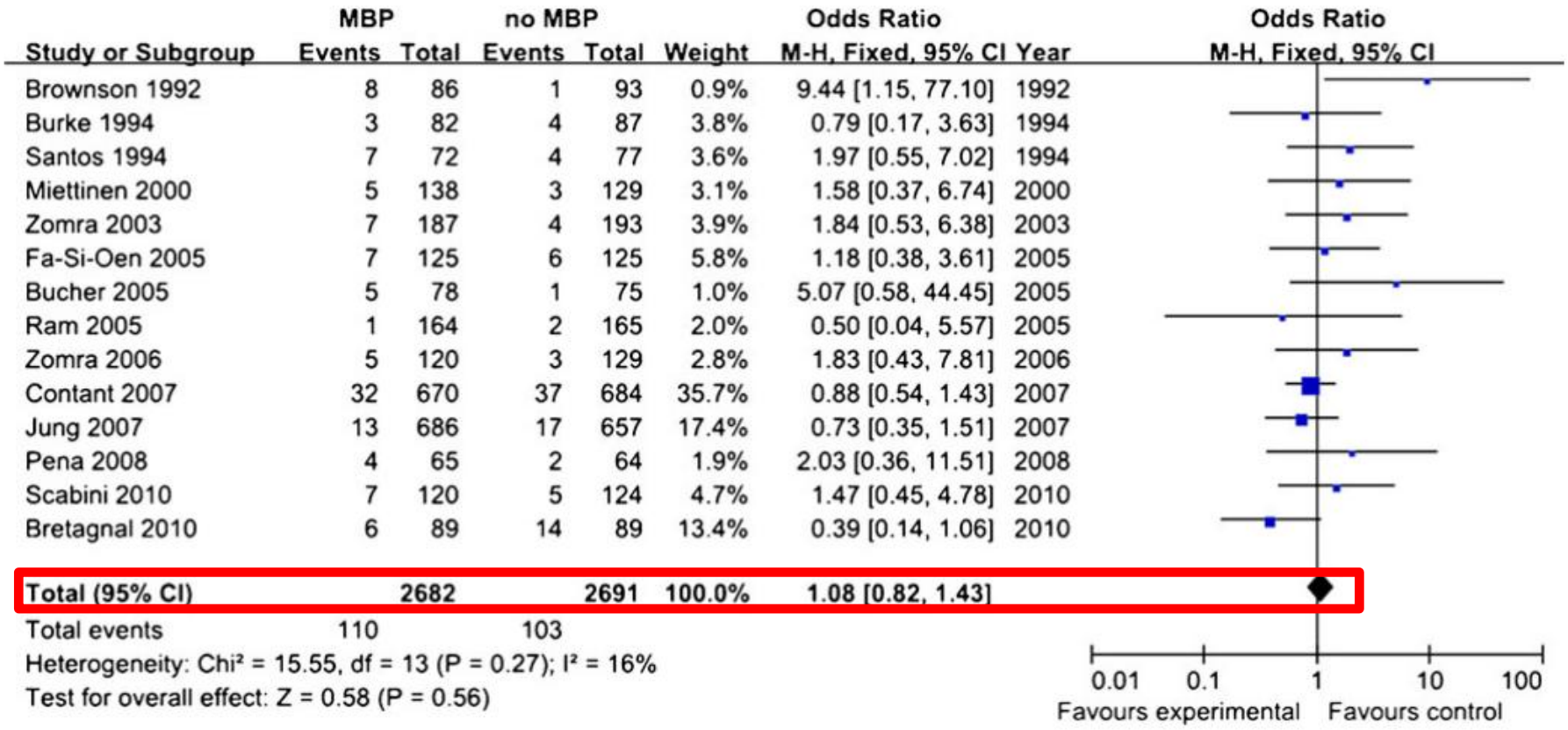
[illegible]	[illegible]	9.8 vs 8.2	1.21	1.00–1.46	0.05	$P=0.52$; $I^2=0\%$
		6.6 vs 6.0	1.11	0.86–1.45	0.42	$P=0.30$; $I^2=16\%$
		1.9 vs 1.9	0.97	0.63–1.48	0.88	$P=0.85$; $I^2=0\%$

評讀結果：■是 □否 □不清楚

Results - Primary outcome



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Test for overall effect: Z = 0.58 (P = 0.56)

Fig. 3 Meta-analysis for the primary outcome "anastomotic leakage" including14 trials shows no significant effect whether the patients had or not a MBP before elective colorectal surgery

- **Overall analyses showed that there was no statistically significant difference between the groups [OR 95% CI, 1.08 (0.82 – 1.43); P=0.56]**

Results - Secondary outcomes

- 是否執行腸道準備，在以下臨床結果上，並無統計上顯著的差異
  - 手術傷口感染 (Overall SSI)
    - (OR 95%CI,1.26(0.94-1.68);P=0.12)
  - 腹部外的化膿合併症 (Extra-abdominal septic complications)
    - (OR 95%CI,0.98(0.81-1.18);P=0.81)
  - 傷口感染 (Wound infections)
    - (OR 95%CI,1.21(1.00-1.46);P=0.05)
  - 再次手術或處置(Reoperation or second intervention)
    - (OR 95%CI,1.11(10.86-1.45);P=0.42)
  - 死亡率 (Death)
    - (OR 95%CI,0.97(0.63-1.48);P=0.88)

Conclusion

- No evidence was noted supporting the use of MBP in patients undergoing elective colorectal surgery.
- MBP should be omitted in routine clinical practice.
- However, the role of MBP in laparoscopic colorectal surgery should be further evaluated.

Discussion Point

- 研究證據顯示，機械性腸道準備對於結直腸手術後，腸吻合處滲漏、手術傷口感染、死亡率...等重大合併症並無統計學上的差異。
- 清腸藥物/ 措施
  - PEG需大量喝水(2000ml)，需考量病人對於飲水的耐受度
  - Fleet非常苦、且對BUN, Cr高的病人為禁忌症
  - Glycerin enema 要請病人，可能因位置不正確、造成傷害
- 不執行腸道清潔，可能造成手術室染污、手術及清潔時間延長(人力/成本)...等

討論

- 考慮MBP的利益與風險 納入病人的感受，作出最適當的醫護處置，簡化繁瑣的處置流程，提升照護品質。
- 接受下腸胃道手術的病人(非LAR, 無特殊腸轉移或合併症)，是否能簡化腸道準備流程?
  - ✓ 從術前三天開始低渣飲食，改為術前一天
  - ✓ 術前執行 Warm normal saline enema, 不須 cleansing enema?

同意:21人

懷疑:1人

不同意:0人


Thank
you!