

實證醫學病例討論報告

- 職級：麻醉科R2
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臨床場景 (clinical scenario)

- 1~病人基本資料及主訴
- 2~診斷 (包含理學檢查、實驗室檢查、影像學檢查)
- 3~治療方式及對治療的反應
- 4~後續治療計畫

Patient Profile (1)-General data

- Name: 劉弘
- Gender: male
- Age: 23 years old
- Chart number: 26019946
- Admission date: 99/6/3



- CC: Left knee pain and instability for 6 months
- PI:
 - ☞ This 26 y/o male suffered from injury of his left knee while playing basketball last November.
 - ☞ In the following months, he felt instability and frequent pain over the left knee.
 - ☞ He went to 三總 for help and the MRI showed left anterior cruciate ligament rupture, surgery to repair ACL was recommended.
 - ☞ He consulted Dr.周 OPD for second opinion, intact knee range of motion and muscle power were checked.
 - ☞ Microscopic ACL repair was arranged

Patient Profile (2)-Past history

- DM: denied
- HTN: denied
- HBV (+) according to the patient
- Surgery history: nil
- Cigarette Smoking : 0.5 PPD
- Alcohol : social use
- 兵役史：服役中



Physical Examination

- ❧ Consciousness: clear
- ❧ Vital sign: BP: 131 / 65 mmHg, PR: 63 bpm, RR: 18 cpm, BT: 36.7 °C
- ❧ Head: conjunctiva: not pale ; sclera: not icteric
- ❧ Neck: supple, no lymphadenopathy, no venous engorgement
- ❧ Chest: symmetric expansion
 - ❧ breathing sound: clear, no whizzing , no crackle
 - ❧ heart sound: regular heart beat
- ❧ Abdomen: soft and flat
 - ❧ tenderness(-), rebound pain(-), peritoneal sign(-)
 - ❧ bowel sound: normal active
- ❧ Extremity: freely movable, no pitting edema
 - ❧ Left knee:
 - ❧ Anterior drawer(Gr.I), Lachmann test(Gr.I), Pivot shift (-),
 - ❧ Posterior drawer(-), McMurray test(-)
 - ❧ Valgus/Varus(-/-) Locking sensation(-).



Lab data

Pre-OP	
WBC (10 ³ /ul)	6.2
RBC (10 ⁶ /ul)	4.58
Hgb (g/dl)	15.2
Hct (%)	44.8
PLT (10 ³ /ul)	175
Na (mEq/L)	139
K (mEq/L)	3.8

Pre-OP	
GOT (U/L)	18
GPT (U/L)	16
BUN (mg/dL)	12.7
Cr (mg/dL)	0.82
Glu (mg/dL)	94
PT(P/C)	10.7/10.9
INR	1.05
PTT(P/C)	28.3/27.5

- **Diagnosis:**

- ∞ Left knee anterior cruciate ligament rupture

- **Treatment :**

- ∞ Left knee anterior cruciate ligament reconstruction + scopic shaving



Anesthetic course

- Induction:
 - ☞ Propofol 150mg + 2% lidocaine 40mg iv
 - ☞ Patient complained pain during propofol injection
- Maintain:
 - ☞ Sevoflurane 2.4%-3.3%
- Post-OP pain control:
 - ☞ Morphine 2.5mg iv



提出 foreground questions

除了於Propofol之前給予2%Lidocaine外,是否有其它方式可以
避免Propofol之injection pain?

將問題寫成PICOT

P	Patient receive general anesthesia
I	2% lidocaine(1mg/kg) iv given prior to administration
C	Other regimen
O	Infusion pain rate



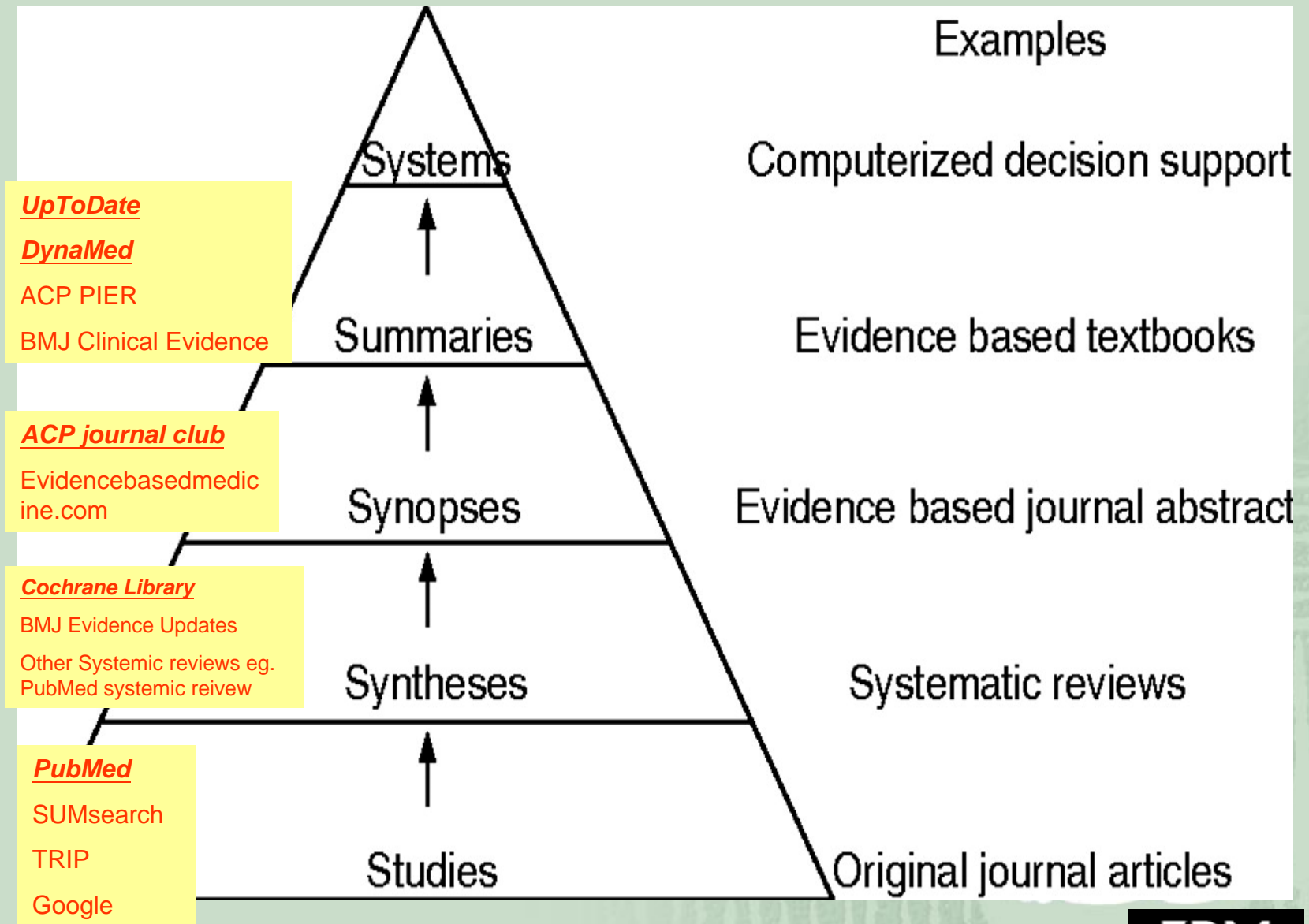
搜尋最有用的資料

先從已經過評讀的database開始找起
(system,synopses,synthesis)

最後再找尚未經過嚴格評讀的study

The "5S" levels of organisation of evidence from healthcare research

Brian Haynes, R Evid Based Med 2006;11:162-164



搜尋 Summaries



- Key word: propofol
- 搜尋到的文章標題:
- **Propofol: Drug information**



October 2009; *Updated* November 2009



搜尋到的文章內容

- To reduce pain associated with injection, use larger veins of forearm or antecubital fossa
- lidocaine I.V. (1 mL of a 1% solution) may also be used prior to administration or it may be added to propofol immediately before administration in a quantity not to exceed 20 mg lidocaine per 200 mg propofol.



搜尋 Synopses , ACP Journal Club

- Key word: propofol,injection,pain
- 搜尋到的文章標題: nil



搜尋 syntheses, Cochrane Central Register of Controlled Trials

- Key word: propofol, injection, pain
- 搜尋到的文章標題:



Results of your search: **propofol,injection,pain.mp.** [mp=title, original title, abstract, mesh headings, heading words, keyword]

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[Abstract](#) · [Complete Reference](#) · [圖書館館藏](#) · [西文期刊聯合目錄](#) · [圖書館電子期刊](#)

2. Huang YW, Buerkle H, Lee TH, Lu CY, Lin CR, Lin SH, Chou AK, Muhammad R, Yang LC **Effect of pretreatment with ketorolac on propofol injection pain.** [Clinical Trial. Journal Article. Randomized Controlled Trial] *Acta Anaesthesiologica Scandinavica*. 46(8):1021-4, 2002 Sep.

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3. Wajima Z, Yoshikawa T, Ogura A, Shiga T, Inoue T, Ogawa R **The effects of intravenous lignocaine on haemodynamics and seizure duration during electroconvulsive therapy.** [Clinical Trial. Journal Article. Randomized Controlled Trial] *Anaesthesia & Intensive Care*. 30(6):742-6, 2002 Dec.

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4. Davies AF, Vadodaria B, Hopwood B, Dexter T, Conn D **Efficacy of microfiltration in decreasing propofol-induced pain.** [Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial] *Anaesthesia*. 57(6):557-61, 2002 Jun.

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5. Memis D, Turan A, Karamanlioglu B, Kaya G, Pamukcu Z **The prevention of propofol injection pain by tramadol or ondansetron.** [Clinical Trial. Journal Article. Randomized Controlled Trial] *European Journal of Anaesthesiology*. 19(1):47-51, 2002 Jan.

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6. Yoshikawa T, Wajima Z, Inoue T, Ogura A, Ogawa R **Epidural anesthesia with lidocaine reduces propofol injection pain.** [Clinical Trial. Journal Article. Randomized Controlled Trial] *Canadian Journal of Anaesthesia*. 48(6):538-44, 2001 Jun.

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7. Nonaka A, Tamaki F, Suzuki M, Suzuki S, Kumazawa T **Effect of pre-mixed lidocaine with propofol on propofol injection pain in elderly patients.** [Japanese] [Clinical Trial. Journal Article. Randomized Controlled Trial] *Masui - Japanese Journal of Anesthesiology*. 49(11):1235-8, 2000 Nov.

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搜尋 Studies, Pubmed

- Key word:

(" propofol "[Mesh] AND "injection"[Mesh]
AND "pain "[Mesh])

搜尋到的文章標題:

- Prevention of Pain on Injection with Propofol: A Quantitative Systematic Review
∞ Anesth Analg 2000;90:963–9



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- [Preventing pain on injection of propofol: a comparison between peripheral ketamine pre-treatment and ketamine added to propofol.](#)

1. Hwang J, Park HP, Lim YJ, Do SH, Lee SC, Jeon YT.
Anaesth Intensive Care. 2009 Jul;37(4):584-7.
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- [\[Effects of granisetron/lidocaine combination on propofol injection-induced pain: a double-blind randomized clinical trial\]](#)

2. Ma YS, Lin XM, Zhou J.
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Masui. 2009 Jul;58(7):891-6. Japanese.
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- [Use of epidurally derived evoked potentials for quantification of caudal nociception in ponies.](#)

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Am J Vet Res. 2009 Jul;70(7):813-9.
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Anesth Analg. 2000 Apr;90(4):963-9.
PMID: 10735808 [PubMed - indexed for MEDLINE] **Free Article**
[Related citations](#)

Appraisal (嚴格評讀)

對找到的文章
進行critical appraisal

AAMPICOT

- **Answer:** Does this paper **answer** your question?

- ☞ Yes

- **Author:**

- ☞ Is the **author** an expert of the field?

- Yes

- ☞ Is there any conflict of interest?

- Not mentioned



Method



證據等級(針對PubMed這篇)

Level	與[治療/預防/病因/危害]有關的文獻
1a	用多篇RCT所做成的綜合性分析(SR of RCTs)
1b	單篇RCT(有較窄的信賴區間)
1c	All or none
2a	用多篇世代研究所做成的綜合性分析
2b	單篇cohort及低品質的RCT
2c	Outcome research / ecological studies
3a	SR of case-control studies
3b	Individual case-control studies
4	Case-series(poor quality :cohort / case-control studies)
5	沒有經過完整評讀醫學文獻的專家意見

PICOT:將文獻分析成PICOT

P	Patient receive propofol
I	Method for prevent injection pain
C	placebo or “no treatment”
O	number needed to treat (NNT)



P

- We analyzed data from 56 randomized, controlled trials (6264 patients)
- Average trial size was 111 patients (range, 28 to 368).





Randomized? **Yes.**
Representative? **Yes.**

I,C,O

Table 1. Prevention of Pain on Injection with Propofol: Efficacy Data

Active	Incidence of pain on injection (%)		Total Patients (n)		Patients without Pain (n)		RB	Lower 95%	Upper 95%	NNT	Lower 95%	Upper 95%	Trials (n)	References	
	Active	Control	Active	Control	Active	Control		CL	CL		CL	95% CI			
A. Lidocaine (mg) given before the injection of propofol															
10	54.8	69.4	301	297	136	91	1.50	1.29	1.74	6.9	4.5	15	6	30, 40, 53, 56, 60, 67	
20	29.4	54.3	68	70	48	32	1.54	1.15	2.07	4.0	2.5	11	2	50, 68	
40	76.7	100	30	30	7	0	n/a			4.3	2.6	12	1	42	
B. Lidocaine (mg) mixed with propofol 200 mg															
5-8	68.3	84.2	243	241	77	38	1.67	1.39	2.00	6.3	4.3	12	4	29, 41, 48, 65	
10-12	55.5	80.8	389	401	173	77	2.00	1.71	2.33	4.0	3.2	5.3	10	32, 39, 41, 43, 48, 59, 65, 67, 71, 74	
20-24	38.3	80.1	329	332	203	66	3.10	2.46	3.91	2.4	2.1	2.9	9	32, 35, 39, 41, 47, 48, 57, 61, 71	
30-40	52.1	79.6	219	201	105	41	3.13	2.36	4.15	3.6	2.8	5.3	6	32, 39, 49, 58, 71, 78	
C. Lidocaine (mg) with tourniquet															
20	23.9	76.6	46	47	35	11	3.26	1.89	5.60	1.9	1.4	2.8	2	25, 47	
40	15.5	71.7	97	99	82	28	2.99	2.16	4.15	1.8	1.5	2.2	4	47, 51, 52, 77	
60	11.4	74.3	35	35	31	9	3.44	1.94	6.12	1.6	1.2	2.2	1	23	
100	36.8	90.0	19	20	12	2	6.32	1.62	24.6	1.9	1.3	3.6	1	54	
D. Opioids															
Fentanyl 100 or 150 µg, or 2 µg/kg	38.5	66.4	148	149	91	50	1.84	1.44	2.35	3.6	2.6	5.9	5	23, 28, 31, 44, 49	
Alfentanil 1000 µg, 10 or 20 µg/kg	24.7	56.2	194	185	146	81	1.74	1.46	2.09	3.2	2.5	4.5	6	34, 36, 44, 58, 75, 77	
Meperidine 25 mg, before	34.6	63.8	52	47	34	17	1.81	1.18	2.77	3.4	2.1	9.7	1	53	
Meperidine 40 mg, tourniquet	22.7	75.4	66	65	51	16	3.14	2.01	4.90	1.9	1.5	2.6	2	23, 64	
E. Metoclopramide															
5 or 10 mg, before	22.2	59.3	135	135	105	55	1.91	1.53	2.39	2.7	2.1	4	3	30, 40, 51	
10 mg, tourniquet	30.7	76.0	75	75	52	18	2.89	1.88	4.44	2.2	1.7	3	2	51, 62	
F. Temperature															
Cold (4°C)	65.7	70.5	169	173	58	51	1.16	0.85	1.59	21	6.8	-20 ^a	6	29, 52, 55, 63, 65, 73	
Warm (37°C)	54.7	67.0	95	106	43	35	1.44	1.00	1.99	8.2	3.9	-84 ^a	3	37, 63, 73	

RB = relative benefit, NNT = number needed to treat, CL = confidence limit, before = injected into the same IV catheter before the injection of propofol, mix = added to propofol to a volume of 20 ml tourniquet = usually a rubber tourniquet on the forearm, 30-120 s before the injection of propofol.

^a The negative upper limit of the 95% CI of the NNT indicates lack of a statistically significant analgesic effect.

Other Interventions

- For **thiopentone** and **nitroglycerin** , the respective trials produced contradictory results.
- With **lidocaine tape** , pain of both insertion of IV lines and of injection of propofol was decreased.
- No meaningful conclusions
 - ❧ IV ondansetron, droperidol, ketamine, aspirin, ketorolac, prilocaine, or morphine
 - ❧ premedication with oral diazepam or IM ketorolac
 - ❧ dilution of propofol with homologous blood or dextrose
 - ❧ speed of injection of propofol
 - ❧ long chain triglycerides
 - ❧ Tourniquet
 - ❧ double or single lumen IV sets
 - ❧ site of injection.



- In 7 trials,
 - ☞ IV catheter “on the forearm” in the cephalic vein , or in both a vein on the back of the hand or the forearm
 - ☞ 261 of 385 controls (68%; range 24% to 80%) reported pain on injection with propofol.
- In 49 trials,
 - ☞ IV catheters were placed on the back of a hand
 - ☞ 1156 of 1674 controls (69%, range 10% to 100%) reported pain on injection.
- The difference between these two subgroups was **not statistically** significant, relative risk 1.02 (95% CI 0.94 to 1.10, $P > 0.05$).

- In 43 trials, the diameter of the catheter (median 21-gauge; range 17- to 23-gauge) was reported.
- In 45 trials, the speed of injection of propofol (average 0.6 mL/s; range 0.125 to 2.0 mL/s) was reported.
- Graphically, there was **no evidence** of any relationship between the size of the catheter or the speed of injection and the likelihood of pain on injection with propofol .



O

- Measurable: NO
- Blind? 部分有
- Objective ? NO





使用work sheet嚴格評讀

THERAPY WORKSHEET

P

所取樣本是否有臨床代表性，是否與我的病人差不多？	是
分組是否有隨機盲法分組	部分有
對照組和實驗組進入實驗時是否相似？	是
是否病人都被放在原來的組別中做分析？	是
是否醫師和病人對治療都不知情？	部分是
失去追蹤個案數是否過多？ 5/20% rule	否



I and C

I是否清楚描述並且是可行的	是
C是否清楚描述並且是可行的	是





是否選用客觀的測量結果	否
是否使用盲法(測量者與受試皆不知受試者被分在那一組)	部分有



T

測量結果的時間點是否合乎邏輯	是
追蹤是否夠久	是



使用 work sheet 嚴格評讀

Should these valid, potentially important results of a critical appraisal about a harmful treatment change the treatment of your patient?	
Can the study results be extrapolated to your patient?	Yes
What are your patient's preferences, concerns and expectations from this treatment?(病人的期望、喜好、關心)	病人不希望注射藥物時有疼痛的感覺
What alternative treatments are available?	given lidocaine 60mg with a tourniquet before propofol

The background features a repeating green pattern of stylized clouds or floral motifs. Overlaid on this is a large, white, three-dimensional sculpture of a lion's head, facing left. The lion has a detailed mane and a prominent nose.

Apply

結合醫學倫理方法

將study的結果應用在病人身上

醫療現況

2% lidocaine used prior to administration

病人意願

病人不希望注射藥物時有疼痛的感覺


生活品質

注射Propofol為麻醉誘導時注射藥物，短暫施打不致影響生活品質。

社會脈絡

處置方式並不需要病人負擔任何費用，故並無社會脈絡之顧慮。





Audit (自我評估)

在「提出臨床問題」方面的自我評估

- 我提出的問題是否具有臨床重要性？是，可以作為治療參考。
- 我是否明確的陳述了我的問題？
 - ☞ 我的foreground question 是否可以清楚的寫成PICO？可
 - ☞ 我的background question 是否包括what, when, how, who等字根？有，但未能包括全部
- 我是否清楚的知道自己問題的定位？（亦即可以定位自己的問題是屬於診斷上的、治療上的、預後上的或流行病學上的），並據以提出問題？知道，屬於治療範疇
- 對於無法立刻回答的問題，我是否有任何方式將問題紀錄起來以備將來有空時再找答案？有

在「搜尋最佳證據」方面的自我評估

- 我是否已盡全力搜尋？是
- 我是否知道我的問題的最佳證據來源？是
- 我是否從大量的資料庫來搜尋答案？是
- 我工作環境的軟硬體設備是否能支援我在遇到問題時進行立即的搜尋？是，學校買的版權資源非常便利
- 我是否在搜尋上愈來愈熟練了？是
- 我會使用「斷字」、布林邏輯、同義詞、MeSH term，限制 (limiters) 等方法來搜尋？部份會
- 我的搜尋比起圖書館人員或其他對於提供病人最新最好醫療有熱情的同事如何？普通程度

關於「嚴格評讀文獻」方面的自我評估

- 我是否盡全力做評讀了？盡力而為
- 我是否了解Number need to treat 的意義？了解
- 我是否了解Likelihood Ratios的意義？了解
- 我是否了解worksheet每一項的意義？了解
- 評讀後，我是否做出了結論？是



關於「應用到病人身上」的自我評估

- 我是否將搜尋到的最佳證據應用到我的臨床工作中？尚未實行
- 我是否能將搜尋到的結論如NNT, LR用病人聽得懂的方式解釋給病人聽？**盡力**
- 當搜尋到的最佳證據與實際臨床作為不同時，我如何解釋？**目前尚未實施在施打propofol前使用tourniquet, 但期有改進之日**



改變「醫療行為」的自我評估

- 當最佳證據顯示目前臨床策略需改變時，我是否遭遇任何阻止改變的阻力？有，需主管推動



效率評估

- 這篇報告，我總共花了多少時間？好幾天
- 我是否覺得這個進行實證醫學的過程是值得的？值得，學會了應用Mesh term搜尋文章，疑問得到解答，也更熟悉EBM的操作
- 我還有那些問題或建議？評讀paper的方法不甚熟練



Thanks for listening!!

