

# **Evidence-based-medicine Interactive eBook learning effect**

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# Background

- students learn the "evidence-based medicine" (EBM) often feel **boring**
- not catching an important **connotation** of the study
- as a starting point to design clinical **practical problems**

## Aims

stimulate **interest** in learning the EBM  
catching the important **connotation** of the case approach

# Methods

- in the **outpatient** period
- introduced in “**e-book**” interactive with the skills of EBM to the students
- to **solve** the question from the **real patient**
- practice **five steps** of EBM
  - to **search** and analysis of focus
  - determine the **level of evidence** they found the article
- e-book was designed via **adobe flash professional CS6**

- included an introduction to the
  - **basic concepts** of EBM
  - EBM **databases**
  - database literature **search skills**
  - **critical appraisal** methods
  - clinical **application**
  - effectiveness **evaluation**
- searched answers for the questions were discussed
- assessed by **questionnaires**, a five-point Likert item, both **before and after** the class.

# 實證醫學

刁茂盟製作

## 目錄

1. 實證醫學簡介	6. test 1
2. 實證五大步驟	7. test 2
3. 搜尋技巧	8. test 3
4. 隨機對照試驗	9. test 4
5. 系統性回顧	

步驟一：形成一個可以回答的臨床問題

對病人有幫助的問題？問題的重點為何？  
可以試著將問題分成四個部分(PICO)：

P: 病人或問題  
I: 介入：某種治療、檢查、危險因子...  
C: 比較：和P相比？  
O: 結果：您想要達成或避免什麼？

Q: 實證醫學五大步驟?

1	2	3
4	5	

應用證據 評讀 提問 搜尋 評估

Q: 實證醫學五大步驟?

1 提問	2	3
4 評估	5	

應用證據 評讀 搜尋

是否有足夠的確認和追蹤？  
幾%以上的人完成研究的結果，  
的研究才是可信的？

- 80% ✓
- 70% ✗
- 50%

Q: 探討statin是否可以減少蜘蛛膜下腔出血後的預後  
使用statin 100人中發生7人慢發性缺血傷害，對照組 100人中發生17人慢發性缺血傷害；慢發性缺血傷害的發生率(incidence of delayed ischemic deficits)

相對風險(RR)= 0.07 0.1 0.4  
0.17 9 10

絕對風險降低率(ARR)=           

number need to treat (NNT) =           

Q: 探討statin是否可以減少蜘蛛膜下腔出血後的預後  
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相對風險(RR)= 0.07 0.1 0.4  
0.17 9

絕對風險降低率(ARR)=           

number need to treat (NNT) = 10

Q: 同質性和異質性(heterogeneity)?

Heterogeneity:  $Chi^2=1.38, df=3 (P=0.71); I^2=0%$   
Test for overall effect:  $Z=3.55 (P=0.0004)$

Heterogeneity p=	<span style="background-color: red; color: black;">          </span>	<span style="border: 2px solid red; padding: 2px;">&lt;0.1 &gt;0.1</span>
Q=	<span style="background-color: red; color: black;">          </span>	<span style="border: 2px solid red; padding: 2px;">&gt;0.05</span>
Q/df=	<span style="background-color: red; color: black;">          </span>	<span style="border: 2px solid red; padding: 2px;">&lt; 1 &gt;1</span>
I <sup>2</sup> =	<span style="background-color: red; color: black;">0%</span>	<span style="border: 2px solid red; padding: 2px;">1.38 4%</span>
		<span style="border: 2px solid red; padding: 2px;">3.55</span>

# 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
<b>How common is the problem?</b>	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
<b>Is this diagnostic or monitoring test accurate?</b> (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
<b>What will happen if we do not add a therapy?</b> (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
<b>Does this intervention help?</b> (Treatment Benefits)	Systematic review of randomized trials or <i>n-of-1</i> trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
<b>What are the COMMON harms?</b> (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, <i>n-of-1</i> trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
<b>What are the RARE harms?</b> (Treatment Harms)	Systematic review of randomized trials or <i>n-of-1</i> trial	Randomized trial or (exceptionally) observational study with dramatic effect			
<b>Is this (early detection) test worthwhile?</b> (Screening)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

# Results

- **total of 30 students completed the questionnaire**
- **average **satisfaction score** of the students was 92.1 points**
  - **felt e-books interactive mode is interesting**
  - **could improve the learning effect**
- **database literature **search** skills scored from 3.0 to 4.3**
- **critical appraisal from 3.1 to 4.2.**

Student report

Q:  
P  
I  
C  
O

UpToDate

PubMed

\*Pubmed

討論：Q: Do obesity children has the increased prevalence of constipation and fecal soiling?

P: children

I: Overweight

C: normal body weight

O: Increased prevalence of constipation and fecal soiling

Key words: obesity, overweight, children, constipation, stool incontinence

Data base:

\*UpToDate

Title: Constipation in children: Etiology and diagnosis

Result: A lack of fiber was revealed as a potential contributor to

idiopathic constipation

cons

inve

chi

Nutr

obst

$NNT: 1/0.285 = 3.5 \approx 4$

NNT

Recommendation

Recommendation:

在便秘的小朋友中，若體重較重的人有較高機會產生大便失禁的情形，因此可以建議病人注意飲食習慣，多運動以達減重的目的。

BMC Gastroenterol. 2011 Apr 17;11:40. doi: 10.1186/1471-230X-11-40.

Title: Overweight and constipation in adolescents.

Costa ML, Oliveira JN, Tahan S, Morais MB.

Source Division of Pediatric Gastroenterology, Escola Paulista de

Medicina, Federal University of Sao Paulo, Sao Paulo, Brazil.

treatment with added dietary fiber or fiber supplements.

of

oes





# Limits

- time limited
- sometimes can not have a good answerable question immediately
  - Patient has no further question
  - No definite diagnosis at that time
  - Background question (ex. constipation has more allergy rhinitis?)
- no good evidence level journal searched

# Bottom line

- **e-books interactive mode integrated into the clinical case**
- **improve the skills of the students'**  
**interest** in learning
- **it is clinical useful**

**3<sup>rd</sup> International Society for  
Evidence-Based Health Care Conference 2014**

**Knowledge Translation and Decision Making for  
Better Health: Challenge of Glocalization**



# WELCOME TO TAIWAN

**Thanks for your attention**

*Taipei, Taiwan  
November 6-9, 2014*

## **Important dates**

Abstract submission from 15 Feb, 2014  
Very early registration by 31 March, 2014  
early registration by 30 June, 2014

**MORE INFORMATION, PLEASE SEE**

**[www.isehc2014.tw](http://www.isehc2014.tw)**

Host: *Taipei Medical University  
Taiwan Evidence-Based Medicine Association (TEBMA)*