Evidence-Based Medicine

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Two fundamental questions…

- What is the purpose of medicine?
- How do I decide what to do?

You have to know where you're going before deciding how to get there…

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What is the purpose of medicine?

- Patient care
- Public health
- Research

➢ *Improving the quality of patients' lives…*

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What is "Evidence-Based Medicine?"

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Evidence based medicine is…
➢ Tracking down the best external evidence with which to answer our clinical questions…

Evidence-based medicine is the conscientious explicit and judicious use of current best evidence in making decisions about the care of individual patients.   J Trauma Acute Care Surg. 2013 Dec;75(6):927-35.
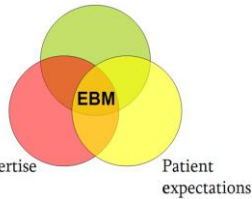
PROOF

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引用一位哈佛醫學院院長對畢業生的一段演講："恭喜各位同學順利畢業，但是我有二個壞消息要告訴大家：第一個是你們現在所學的知識，有三分之一在五年後會變成過時的，甚至是錯誤的；第二個是，到底是哪三分之一，需要靠大家去發現。

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Introduction Evidence Based Medicine

☐ Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values.　(Sackett et al., 2000)

✓ Evidence-based medicine, EBM
✓ Evidence-based nursing, EBN
✓ Evidence-based Health Care, EBHC
✓ Evidence-based ?, EB?

進撃のEBM

The core mechanisms in EBM include the following four steps

➤ Formulate a clear clinical question from a patient's problem.
➤ Search the literature for relevant clinical articles.
➤ Evaluate (critically appraise) the evidence for its validity and usefulness.
➤ Implement useful findings in clinical practice.

Clinics in Dermatology (2010) 28, 553–557

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How to ask clinical question you can answer？

	P.I.C.O. Model for Clinical Questions	
P	Patient, Population, or Problem	How would I describe a group of patients similar to mine?
I	Intervention, Prognostic Factor, or Exposure	Which main intervention, prognostic factor, or exposure am I considering?
C	Comparison or Intervention (if appropriate)	What is the main alternative to compare with the intervention?
O	Outcome you would like to measure or achieve	What can I hope to accomplish, measure, improve, or affect?
	What type of question are you asking?	Diagnosis, Etiology/Harm, Therapy, Prognosis, Prevention
	Type of study you want to find	What would be the best study design/methodology?

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100年

• 我有一位65歲的阿嬤最近要去美國看她剛剛出生沒多久的孫子，這是她第一次坐飛機長途飛行，因此她很緊張，到處詢問長途飛行的注意事項，她找到我諮詢上一篇有關的衛教，其中有提到穿彈性襪可以預防長途飛行會產生腳部靜脈栓塞，因此她打電話問我她要不要穿來穿？

101年度院內EBM競賽　　臨床情境2

25歲男性病人，沒有任何過去病史，昨天開始覺得上腹部不舒服，自行服用胃藥後症狀仍沒有緩解，隔天持續性右下腹疼痛、噁心、噁燒、沒有食慾，因而到急診求診。血液檢查白血球增加，會診一般外科醫師後，因高度懷疑急性闌尾炎(acute appendicitis)，建議開刀手術治療。
病人請求是否可以進一步做電腦斷層檢查以確診？再問因為一星期後他要結婚，擔心開刀恢復期較長，婚禮必須延期，詢問可否不要開刀或用內視鏡開刀以縮短復原期。
如果你(妳)是病人家屬，請問你的建議為何？

2015 HQLC Topic

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第十七屆醫療品質獎
實證醫學類文獻查證組評分項目

項目（權重）		給分				
PICO的實質量 10%	1.清楚描述病人(族群)及疾病	5	4	3	2	1
	2.清楚描述主要/其它的介入處置或暴露因素	5	4	3	2	1
	3.正確指出結果或成效的測量指標	5	4	3	2	1
文獻搜尋的方法與分析 30%	1.關鍵字使用合適	5	4	3	2	1
	2.清楚的敘述檢索策略	5	4	3	2	1
	3.利用各種檢索功能提昇搜尋效率	5	4	3	2	1
	4.清楚地描述挑選文獻的理由	5	4	3	2	1
嚴格的文獻評讀 35%	1.正確使用文獻評讀指南工具	5	4	3	2	1
	2.正確且嚴謹的評讀「效度」(validity)	5	4	3	2	1
	3.正確且嚴謹的評讀「效益」(importance)	5	4	3	2	1
	4.正確的整合及評估證據等級	5	4	3	2	1
證據之臨床應用 20%	1.是否能應用在本案例或類似的病人上	5	4	3	2	1
	2.是否考慮到成本效益	5	4	3	2	1
	3.描述不同臨床決策對醫療品質的影響	5	4	3	2	1
	4.有考量病人觀點	5	4	3	2	1
現場表現 5%	1.報告內容豐富分明、前後連貫	5	4	3	2	1
	2.圖表文字清晰簡明、易於瞭解	5	4	3	2	1
加分項目 2%	1.團隊的呈現手法有創新	2		1		0

Slide 1

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Slide 2

Search for the Best Evidence

Ann Intern Med.2009;151:JC3-2

Slide 3

Search for the Background

說明疾病
好發族群
常見病因與危險因子
目前治療方式

Slide 4

Search for the Best Evidence

Slide 5

Search for the Best Evidence

Slide 6

How to choose the right format for your research?

➢ Here are some tips to help you choose the right format for your research

✓ **Know** that the types of publications are different fields.
Example :
    -social sciences > Empirical study

✓ **Remember** that not all journals publish all types of articles.

✓ **Look** at the journal's author guidelines for details about the types of articles accepted.

✓ **Speak** to your supervisors or senior colleagues for advice.

Study Type of Evidence Level

Type of question	Suggested best type of study
Therapy	RCT＞Cohort＞case control＞case series
Diagnosis	Prospective, blind comparison to a gold standard
Etiology/Harm	Cohort＞case control＞case series
Prognosis	Cohort study＞case control＞case series
Prevention	RCT＞Cohort＞case control＞case series
Clinical Exam	Prospective, blind comparison to a gold standard
Cost	Economic analysis

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Definition of Cohort Study

✓ More clearly established temporal sequence between exposure and disease.

In prospective cohort studies conception, design, & enrollment occur before anyone develops the outcome.

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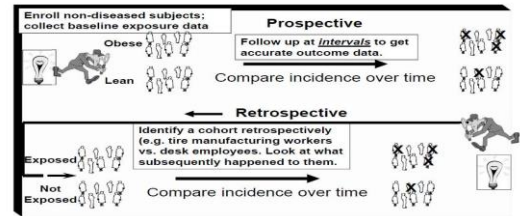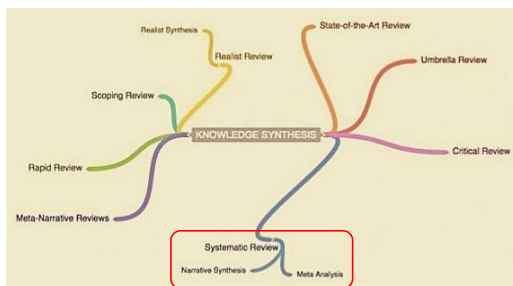
Type of review

Type of review articles-Systematic reviews
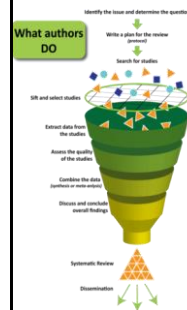
✓ Are more structured and rigorous than literature reviews.

✓ Address a clearly formulated question about the literature reviewed.

✓ Include reviews of published studies as well as gray literature (unpublished studies, reports, dissertations, conference papers and abstracts, governmental research, ongoing clinical trails...etc.

Definition of Meta-analysis

Meta-analysis is a quantitative approach for systematically combining results of previous research to arrive at conclusions about the body of research.

- Quantitative：numbers
- Systematic：methodical
- Combining：putting together
- Previous research：what's already done
- Conclusions：new knowledge

In a Meta-analysis, each study becomes a subject in the new study. Therefore, the mean of study one becomes the score for subject one and so on.

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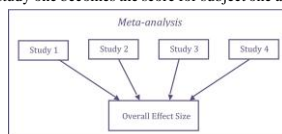
Narrative reviews, systematic reviews and Meta-Analysis

✓ Narrative Reviews : traditional expert review subjective, no formal rules in selecting studies, no standard statistical methods for combing studies.

✓ Systematic Review : review in which there is a comprehensive search for relevant studies on a specific topic and those identified are then appraised and synthesized according to a predetermined and explicit method

✓ Meta-Analysis : systematic review that employs statistical methods (a quantitative summary) to combine and summarize the results of several studies.

Definition of Randomized controlled trial

RCT are quantitative, comparative, controlled experiments in which investigators study two or more interventions in a series of individuals who receive them in random order.


BMJ. 2010; 340: c332.
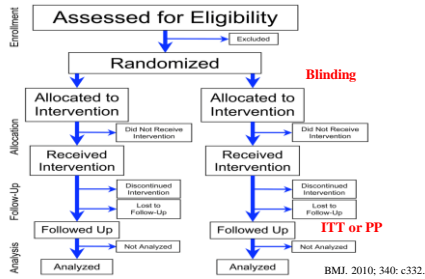
The RCT is one of the simplest and most powerful tools in clinical research.

What is a blinded study?

➢ This approach avoids bias because when people know what they are taking, it might change the way they react.

- In a single blinded study, the patient does not know which arm of the protocol they have been assigned to.

- Double blinded studies are those studies where neither the patient or the research physician know whether the patient is receiving the actual study drug or standard drug.
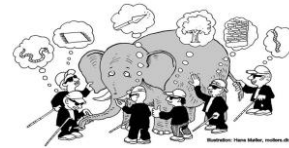
What is Bias?

Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.   Last, 2001

A process at any state of inference tending to produce results that depart systematically from the true values.   Fletcher et al, 1988

Systematic error in design or conduct of a study.   Szklo et al, 2000

Bias

✓ Selection bias

✓ Performance bias

✓ Attrition bias

✓ Detection bias

Intention to treat (ITT) analysis and Per-protocol (PP) analysis
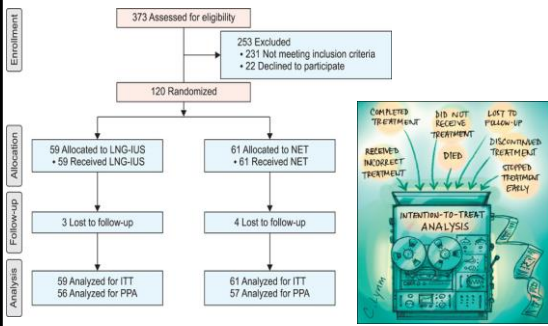
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Critically Appraise the Evidence

牛津實證醫學中心經據等級表 2011 (翻譯 by EGRD Office)

Teammate

For further reading and referents…

Characteristics of Clinical Trail

➢ Usually medical or clinical studies on human volunteers, these investigations follow a pre-determined research protocol.

Can be of two broad types :
-**Observational** (investigators observe the participants)
-**Interventional** (participants receive specific treatments or interventions)