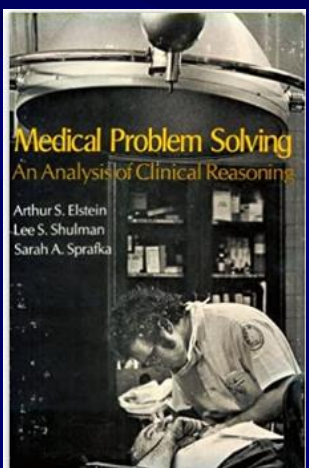
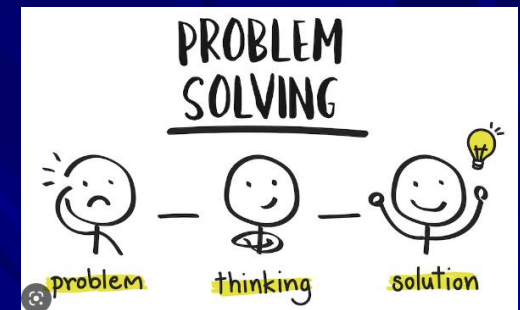
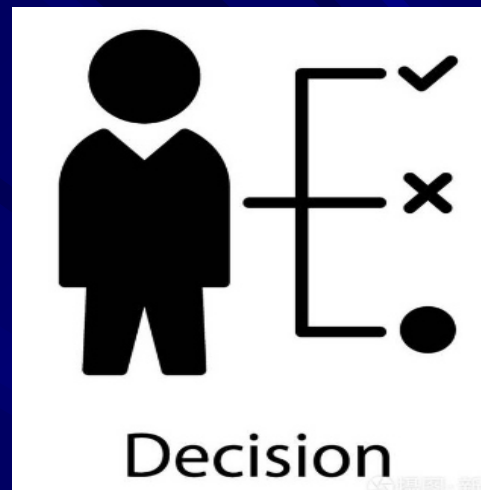




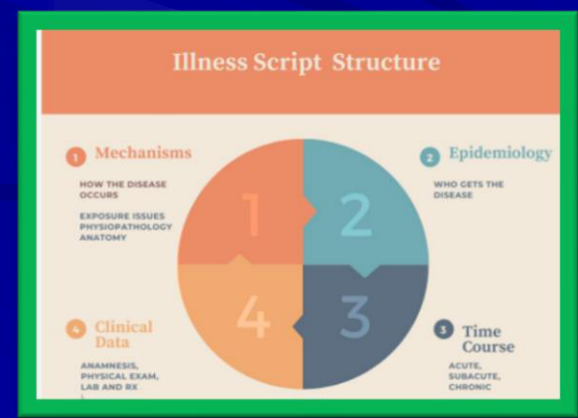
Clinical Reasoning

加強臨床推理的教育訓練-2.0 (2024)

Cheng-Yi WANG

2024.09.27.

Case study
Learning from the patients
Clinical reasoning –Dx. evidence
Discussion, group study
Instruction by Expert clinicians
Illness script formation



Back to the future

回憶過去及回到未來

生命史上最重要的兩件大事:
MD 得到DM以後
CV 反串 GI

MD-→DM
GI +CV

I.	II	III	IV	V
醫五- 1963	住院醫師 1966-1970	兼任VS 1971-1972	VS 1973-2005	Retired 2005-2024 2024-2044
小兵立大功 renal TB	Lead poisoning Methyl alcohol Adult celiac disease VCG ,SCPK GI or CV	Cholera	GI endoscopy Mallory-Weiss CRC screening Medical ethics BME engineering	RRSOAP Clinical reasoning Lecture>1,000 Case conferences -----

2005.01.退休後的主要工作

- 保持在台大醫院原有的工作.
- 門診.內視鏡檢查.參加學術活動,演講
- 相關學會的業務
 - TSIBD:從成立到各項業務的開展
 - GI及Endoscopy學會的各項討論
 - 內科醫學會倫理委員會有關醫學倫理的討論
 - 醫工學會臨床工程師的法律定位
- 醫院評鑑(until 2015)
- 在各大醫院臨床教學.特別重視病歷紀錄
推動POMR-從SOAP-->RSOAP→RRSOAP

醫學系醫五學生問題重重

- 1. 沒有深入瞭解病情: 未用心詢問.
- 2. 沒有真正作Physical examination, 但寫的病歷, 洋洋灑灑但不可靠--主治要確實查核.
- 3. 不會寫Problem and Problem list
 - 1). Problem要有時間
 - 2). Problems的敘述---RRSOAP
- 4. Clinical information不完全
 - Lab. data and image interpretation: 不正確.
- 5. 推理能力不足. (DD診斷病名太多)->
Clinical reasoning 教育訓練需要再增進
- 6. 各種教學活動中, 老師與學生的互動不夠

2024 的重點

- Clinical reasoning
- Case discussion—common Gi problem.
 - acute pancreatitis
 - acute liver failure
 - upper gi bleeding
 - Colon cancer screening program
 - Gall stone and acute cholecystitis
 - Swallowing problem-odynophagia
 - Alcoholic liver diseases

Clinical reasoning.

Clinical reasoning is the collection of cognitive processes by which a clinician hypothesizes the possible diagnoses an individual patient may have, selects appropriate tests to confirm or refute their hypothesis, and develops treatment strategies for the diagnosis under consideration.

臨床推理是臨床醫師、護理師和其他醫療保健專業人員在分析患者狀況、尋找正確的診斷和治療計劃時所採用的認知過程。

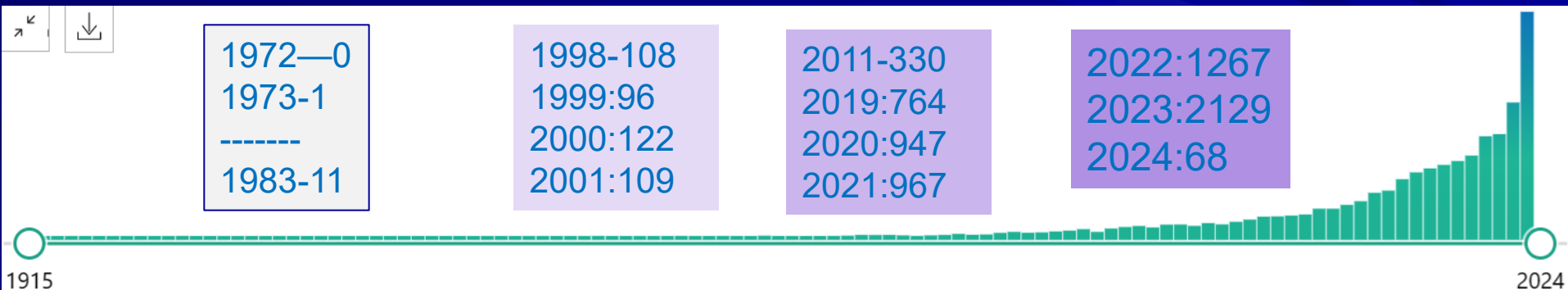
簡單來說，臨床推理是指護理師或臨床醫師如何**有效地利用他們的臨床知識**，了解當地的文化和醫學倫理，以評估患者的健康狀況並採取行動。有時，臨床推理可以與批判性思維、**臨床判斷**、**解決問題**和**決策**等短語互換使用。

1. Clinical thinking processes
2. Clinical information
3. Searching possible diagnosis
- 4. Select appropriate tests to confirm or refute the diagnosis**
- 5. Treatment → action**
6. Response— and changes of plan.

臨床推理是醫學教育中的重心

- 針對**Problems of the patients**.作出判斷
- 這是醫學教育中的重點, 重中之重,
- 也是臨床處置的基礎
- 從一般內科到各專門領域都具備.

Clinical reasoning at Pub Med. (2015-2024.01.10)



Problems of a patient 病情,要全般性瞭- problems solving

- 1. Clarifying a health **problem** of a patient,
===History taking and clinical workup.
- 2. predicting and discussing the problem for **decision making** for intervention.
===management (Plan) , knowledge and experience
- 3. Some patients have **more than one problem.** ==(same condition or different etiologies)
- 4. Is treatment effective or not?
■ ==therapeutic response—**assessment**
- 5. Awareness of **critical clinical situation and warning**

Case 1,

■ Case 1, sudden onset of dyspnea

- One night 53yo woman came to the ER of a city hospital. [Present Illness] One night she went to bed but dyspnea woke her up after a while. Then she felt like having orthopnea. She sometimes felt slight dyspnea but has never had such a severe dyspnea

外觀很重要: 安適的樣子還是很衰弱,
看病人的第一印象
小心,病情嚴重,要有心理準備

Flow of Medical Interview and Physical Examination

Dr: What brought you here today?

Chief complaint

Pt: I felt difficulty in breathing while sleeping... This is the worst symptom I have ever had.

Dr: Can you describe how you felt?

Pt: I felt uneasy while sleeping and sat up on the bed. Previously while sitting up it became better but it did not become better tonight.

If the patient does not talk about the details the physician has to ask questions

Dr: You look stuffy. Have you consult with your doctor?

Past history is important information

Pt: No, not yet.

問清楚狀況+PE--→

外觀 **stuffy**衰弱憔悴--→疾病的影響
值得注意

病人講太少→醫師就要多問一些。
特別是**PH**. 很重要,不可忽略

外觀: general appearance

- 一般外觀包括：個案的衣著、打扮、儀容、姿態、身體特徵、視覺之接觸,心理的表徵(高興,愉悅,憤怒,煩惱,哀怨,情緒低落)等均屬之

喜
怒
哀
樂



Dyspnea原因很多個

- Heart problem?
- Lung– pulmonary embolism?
- pneumonia---
- Asthma,
- Psychogenic

為什麼會喘？
需要關心的問題，
也需要解決。

-
- Most cases of dyspnea result from **asthma, heart failure and myocardial ischemia, chronic obstructive pulmonary disease, interstitial lung disease, pneumonia, or psychogenic disorders.**
 - --→到底是那一個？

Difference between cardiac asthma and bronchial asthma

CARDIAC ASTHMA BRONCHIAL ASTHMA

FEATURES	CARDIAC ASTHMA	BRONCHIAL ASTHMA
1. History	» Hypertension, IHD, valvular disease » Family history of hypertension	» History of previous attack of asthma, allergy or rhinitis » Family history of asthma or allergy
2. Age	Usually elderly	Young, but may be any age
3. Symptoms	» Dyspnea » Cough with frothy sputum, often mixed with blood » Wheeze – rare » Sweating – common	» Dyspnea » Cough with little mucoid sputum » Wheeze – common » Sweating – less
4. Signs	» Pulse—pulsus alternans » BP—high (if hypertensive) » Heart— – Cardiomegaly (apex is shifted) – Gallop rhythm may be present – Primary cause (mitral or aortic valvular disease) may be present » Lungs— – Bilateral basal crepitations. In severe case, extensive crepitations – No or little rhonchi	» Pulse—may be pulsus paradoxus » BP—Normal, low in severe case » Heart— – Absent – No – No » Lungs— – Plenty of rhonchi all over the lungs – No or little crepitations
5. CXR	» Pulmonary edema – perihilar opacities (Bat's wing appearance) » Cardiomegaly	» Relatively clear, evidence of infection may be present
6. ECG	Left ventricular hypertrophy, MI, arrhythmia	Normal, only tachycardia may be present

[Dr.Amar](#),2022

MEDizzy

Accessed on 2023.06.18

1. History
2. Previous attack
3. Bloody sputum
4. Wheezing, Sweating
5. Age (risk factors)
6. Wheezing (rhonchi) or basal crepitations (PE)

Problems → A: Dx and D.D.

Differential Dxs and Their Key Information



Dx	History	Physical Signs
Heart Failure	Exercise limitation, orthopnea, weight gain	Oedema, fine/coarse crackle, Low SpO ₂
Bronchial asthma	Orthopnea, wheezing @@	Wheeze, prolonged expiration
Panic disorder (Hyper-ventilation)	Panic attack, agora-phobia, palpitation, numbness	Normal vital signs
COPD	Smoking Hx, dyspnea...	Bony appearance, low lung sound...
Interstitial pneumonia		fine crackle

Agora-phobia
廣場恐懼症

Only some information is routinely asked but others are asked by the trigger of differential dxs.

→ Differential Dxs will guide for history and physical.

Panic : Agora-phobia

	<i>n</i>	Mean	SD
心理健康結果			
抑鬱症 (PHQ-9)	10 850	7.05	6.43
社交焦慮症 (自旋)	11 137	15.36	13.89
廣場恐懼症 (MI)	11 218	2.90	1.13
偏執狂 (R-GPTS)	10 974	2.29	5.37
創傷後應激障礙症狀 (PCL-5)	10 640	14.61	15.01
恐慌症狀 (PDSS)	11 046	1.82	4.12

The questionnaire explained significant variance in **depression (45.8%), social anxiety (37.3%), agoraphobia (23.2%), paranoia (27.3%), post-traumatic stress disorder (57.1%), and panic disorder (31.4%).**

L694. Catastrophic cognitions about coronavirus: the Oxford psychological investigation of coronavirus questionnaire [TOPIC-Q] 牛津冠狀病毒心理調查問卷 . [Laina Rosebrock](#)^{1,2}, et al Psychol Med. 2021 Jan 22;1-10.

- 很多不同的原因? 有的嚴重,比較單純,
- 解決的方法也也不一樣.
- 這些都要好好地判定,然後可以快速的解決.
- 這就是臨床推理的應用.
- ---有效,而且是針對問題.

換一個角度看.

找出原因就可以解決問題--→

找原因可不簡單----有時候病人是知道的.

很多時候病人並不知道

大家一起猜吧

猜食物的謎語

■ 1. 外國人洗澡。



謎底：涮羊肉

■ 2. 老太婆電頭髮。



謎底：銀絲捲

■ 3. 狼來了。



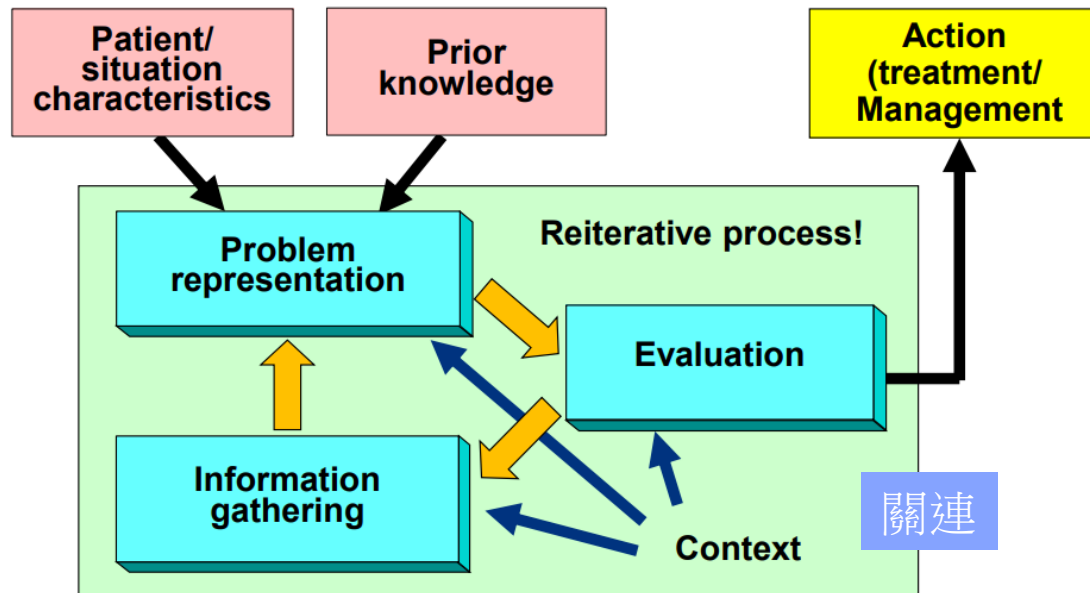
謎底：楊桃（羊逃

）

Process of clinical reasoning

臨床推理的過程

Process Model for Clinical (Diagnostic) Reasoning



(Gruppen & Frohna. Clinical reasoning.
In: International handbook of research in medical education. 2002)

Presentation—
problem(s)

Understanding.
Evaluation- ex. tests
Decision making

Dx.

Severity
Mx. (management)

Action—orders

Communication
Assessment-

response

? Any change

Records.

推理重點: 最重要的事: Problem--RRSOAP

推理
重點



Roots
Risk

■ Clinical health problems確認

- {Prior illness + most recent **cause** of disease}
- (previous health + **risk factors**)

■ Presentation by the patients (history and PE)

S.O.

- Information and data collection-----

■ Further evaluation— Lab. And medical images

O

- + Specific tests.

■ Diagnosis (Disease, causes, risk factors, severity)

Assess

■ Actions (plans, orders, and actions.)

P:

(management)

■ Response--- prognosis and changes of plans,

A-response
change plan

從SOAP→RSOAP→RRSOAP

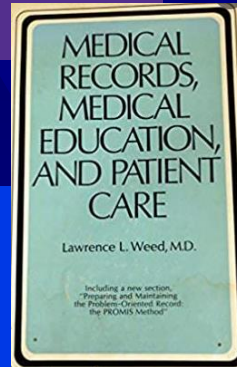
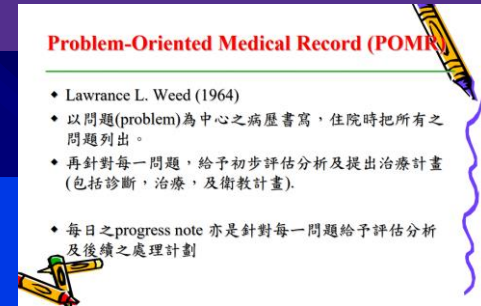
■ Problem solving--SOAP

■ RSOAP—2005, 從端午節猛吃粽子發生 acute pancreatitis--case conference, CMUH—roots of the disease-

■ RRSOAP-2017,提醒學生risk factor的重要性

■ 1. UC with massive gi bleeding after taking plavix for coronary intervention.

■ 2. Upper Gi bleeding activated after aspirin for prevention of stroke



Direction of Clinical Reasoning

- Knowledge—text book. Learning,
- **Experience**—clinical practice, VS round,
- case conference,

- **Clinical evaluation**—History taking



- PE
- Lab. Data
- Images—endoscopy, CT, MR
- and radiography

- **Conclusions**—Dx. DD, risk factors

Different outcome

- Management— medical or surgical

- Response —observation and judgement



Dx. And DD.

- Symptoms and physical findings : correlation.
- 多思考,選出最恰當的診斷1-3.
- 重點是要寫出診斷依據
- 沒有寫診斷依據的習慣.

要多加訓練

Case 2, 有較複雜的臨床表現

- Case 2,
- A 69 year old man
- Has had constipation and abdominal discomfort for about 6 months.
- He suddenly noticed severe abdominal pain at LLQ, which made him consult our ER.

■ Many causes related to constipation → needs evaluation

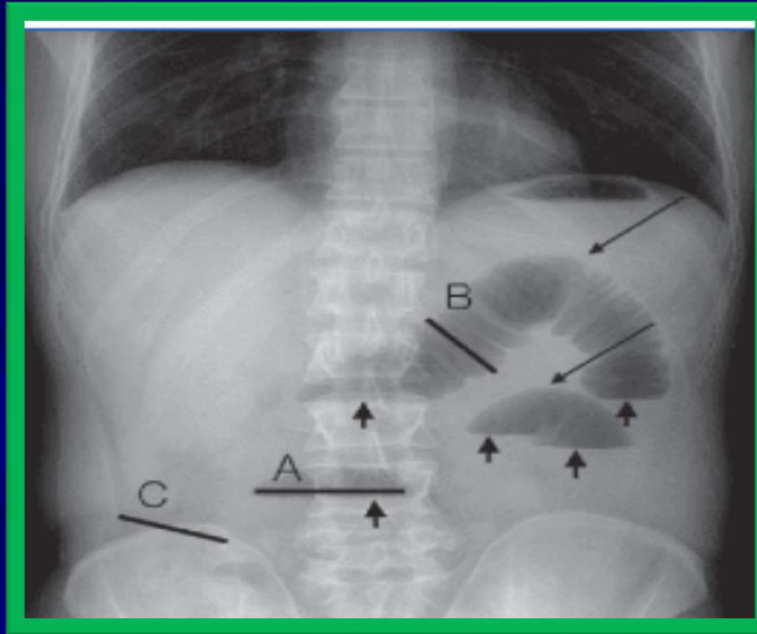
1. Cancer ,IBS, or ileus
2. Different outcomes
3. Surgery/medical treatment / lifestyle modification

有慢性的問題,又有急性的問題

1. 69歲
2. constipation for 6 months
3. Sudden onset of severe abdominal pain

- 1. 有無anemia之症狀及証據(Hb, MCV)
- 2. PE: any abdominal mass felt, bowel sound, tachycardia
- 3. Check Fecal OB— simple lab.
 - CEA-----tumor markers
 - CRP—to exclude IBS
- 4. PH : colon polyp? Operation?
- 5. FH: cancer and hereditary cancer trait,
- 6. Images—ileus by radiography
- --→Colonoscopy ?

Radiography: air fluid level + small bowel dilatation



Accuracy of Plain Abdominal Radiography in the Differentiation between Small Bowel Obstruction and Small Bowel Ileus in Acute Abdomen Presenting to Emergency Department

• [Sh Kim](#), [KN Park](#), [H. Park](#)

- Published 1 March 2011
- Hong Kong Journal of Emergency Medicine

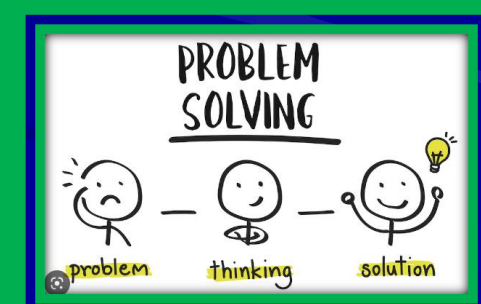
- In 1978, Elstein et al. published that both medical students and physicians gather information of signs and symptoms determined by diagnostic hypotheses. Numbers of dx hypotheses: 4 ± 1 for both med students and physicians. Most basic theory of clinical reasoning.

(Elstein A et al. Medical problem solving: an analysis of clinical reasoning. Cambridge, Harvard University Press, 1978.)

(L634)

Problem solving 就是 clinical reasoning

Arthur S. Elstein 博士：懷疑論者、學者、
教師和導師



How do physicians make decisions? and How can we help them make better ones?

- Arthur S. Elstein 博士 曾表示，在整個職業生涯中，他一直致力於解決兩個研究問題：醫生如何做出決定？以及我們如何幫助他們做出更好的結果？他使用心理學家的工具解決了這些問題，但他在醫學認知、醫學推理和判斷方面的研究結果對醫學教育和未來醫生的教育方式產生了持久影響。
- 此外，通過教學和指導，他培養了第二代醫學教育研究人員和領導者；也許最重要的是，通過他的懷疑主義和學術榜樣，他教會了專業教育者必須做什麼才能在醫學教育中取得成功

• L694. [William A. Anderson](#) & [Ilene B. Harris](#)

■ Arthur S. Elstein, Ph.D.: *Skeptic, Scholar, Teacher and Mentor*

■ [Advances in Health Sciences Education](#) volume 8, pages 173–182 (2003)

From problem solving to Diagnostic thinking, 1978-2009

Adv in Health Sci Educ (2009) 14:7–18
DOI 10.1007/s10459-009-9184-0

ORIGINAL PAPER

Thinking about diagnostic thinking: a 30-year perspective

Arthur S. Elstein

(L636)



Age 88
/ Jul 1935

診斷錯誤是難以完全消除的。

Human reasoning is not perfect. Patients did not tell us whole stories, accurately.

Conclusion

Diagnostic errors can never be entirely eliminated (Graber et al. 2002). Human reasoning is not perfect, and so mistakes in interpretation and inference will be made. Sooner or later, situations will be encountered where one's knowledge will be incomplete. Feedback in the clinical setting is spotty. Second, even if our knowledge were complete and our inference processes were perfect, clinical evidence is not. Patients may not tell entirely accurate histories, physical findings and laboratory tests do not perfectly distinguish between diseased and disease-free populations. The sensitivity and specificity of every diagnostic test are typically <1.0 . We can and should try to reduce the error rate, but some errors are no-fault products of the deficiencies identified. The benefit of more widely disseminated knowledge of the psychology of diagnostic reasoning may be to facilitate humility and attitude change.

Many years ago, I heard Ken Hammond attribute a maxim to La Rochefoucauld: "Everyone complains about his memory and no one complains about his judgment." Perhaps the research reviewed here will demonstrate why we should be concerned.

Diagnostic errors → Clinical reasoning

- Diagnostic error may be the largest unaddressed patient safety concern in the United States, responsible for an estimated 40,000-80,000 deaths annually.
- 診斷錯誤可能是美國最大的未解決的患者安全問題，估計每年導致40,000-80,000人死亡
- [Mark L Graber](#)¹, [Colene Byrne](#)², [Doug Johnston](#)²
- **The impact of electronic health records on diagnosis**
- (Diagnosis (Berl). 2017 Nov 27;4(4):211-223. doi: 10.1515/dx-2017-0012.)(L824)

108起發生在日本急診室的醫療事故索賠案件中，我們發現68.5%的案件是由於診斷錯誤造成的。具體而言，初次就診時相對常見的情況，如上呼吸道感染、非出血性胃腸道疾病和原發性頭痛診斷，屬於嚴重疾病並導致醫療訴訟

[Taiju Miyagami](#)¹, [Takashi Watari](#)^{2,3}, [Taku Harada](#)^{4,5}, [Toshio Naito](#)¹

Medical Malpractice and Diagnostic Errors in Japanese Emergency

Departments West J Emerg Med. 2023 Feb 20;24(2):340-347.

doi: 10.5811/westjem.2022.11.55738. (L826)

three major categories

Diagnostic errors in Medicine

- "No-fault errors" occur when the disease is **silent**,
- presents atypically, or
- **mimics something more common**

(Graber et al, 2002)

L821, Reducing diagnostic errors in medicine: what's the goal?

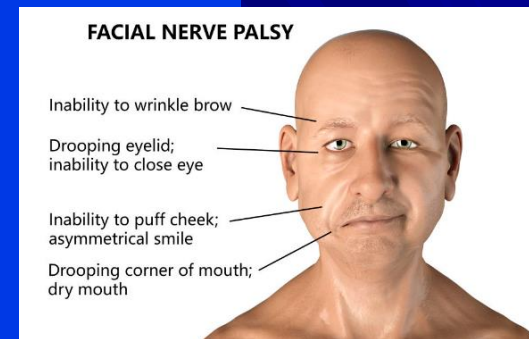
Acad Med. 2002 Oct;77(10):981-92.

由於醫療保健系統的潛在缺陷而導致診斷延遲或遺漏時，“系統錯誤”會發揮作用。這些錯誤可以通過系統改進來減少，但永遠無法消除，因為這些改進會隨著時間的推移而滯後和降級，並且每個新的修復都會為新錯誤創造機會。權衡還保證了當資源剛剛轉移時，系統錯誤將持續存在。“**認知錯誤**”反映了錯誤的數據收集或解釋、有缺陷的推理或不完整的知識造成的誤診。人工處理的局限性和使用啟發式方法的固有偏見保證了這些錯誤將持續存在。

mimics something more common (Bell's Palsy)

Prof. Huang

- GR 2023.06.28 Neurolymphomatosis
- //peripheral type facial palsy.
- 7th –facial palsy (common disease)
- 5th-numbness of face,
- 8th- hearing loss
- 12th-tongue deviation, brain stem involvement



Fever
Weight loss
CSF change-
protein: 364
sugar : 13

Prof. Her

Motor function of the tongue is controlled by the hypoglossal nucleus (the lower motor neuron) and its supranuclear innervation (the upper motor neuron) [1]. Tongue deviation due to muscle weakness on one side is a common symptom resulting from a stroke in the brain stem and is usually associated with dysarthria and dysphagia that decrease the patient's quality of life.

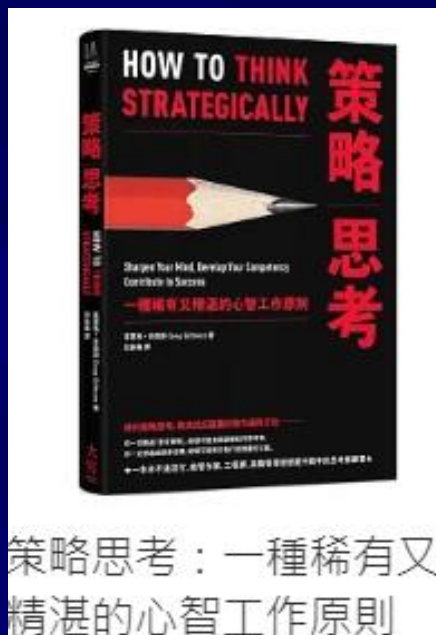
Contralateral Tongue Deviation Due to Paramedian Pontine Infarction: A Brief Review of Cortico-Hypoglossal Projections
[Chenxuan Zhou](#) and [Mengyao Cheng](#) *Am J Case Rep.* 2022; 23: e936511-1 – e936511-4

- 通過採用系統層面的改變
- （例如，第二意見、決策支持系統、增加對專家的接觸）
- 在提高認知或認知意識的培訓，
- 改善診斷的認知。
- 診斷錯誤可以大大減少，但永遠無法根除

Graber et al (2002)(L821)

[Taro Shimizu](#)¹, [Mark Graber](#) : How **insight** contributes to **diagnostic excellence** 洞察力如何促進卓越診斷 · [Diagnosis \(Berl\)](#). 2022 Jun 8;9(3):311-315 如何優化臨床推理及增強洞察力 （L822）

策略思考：一種稀有又精湛的心智工作原則



How to think strategically

作者：葛雷格·吉森斯

追蹤作者



原文作者：Greg Githens

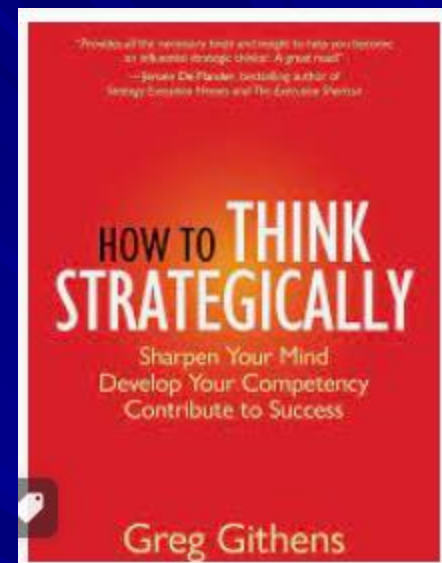
譯者：田詠綸

出版社：大寫出版

訂閱出版社新書快訊

出版日期：2021/11/22

語言：繁體中文



所謂的策略，白話文就是，「為了達成目標，深思熟慮後的突破性做法。」擁有策略思考能力的人，會思考做這件事情的真正目的是什麼，並且運用優勢、產生綜效，因此往往能以更有效率的方式完成工作。此外，他們也會設法把公司的優先要務、目標，甚至是願景，與自己在做的事產生關連。

The 4 rules of strategic thinking

Strategic thinking

seeks hard, fact-based, logical information

questions everyone's unquestioned assumptions

is characterized by an all-pervasive unwillingness to expend resources

is usually indirect and unexpected rather than head-on and predictable

悅智全球顧問公司總經理 游森楨(EMBA雜誌437期
2022.12.28

EMBA雜誌

<https://www.emba.com.tw>

Accessed on 2024.01.10

基本上洞察力,策略思考,臨床推理 是3位一體

■ **Insight (洞察力)**



To think strategically (策略思考)



**Clinical reasoning
(臨床推理)**

Clinical reasoning

來自二個過程

■ 1. 直覺: Intuitive thinking

無法避免的,但不必立即判定.

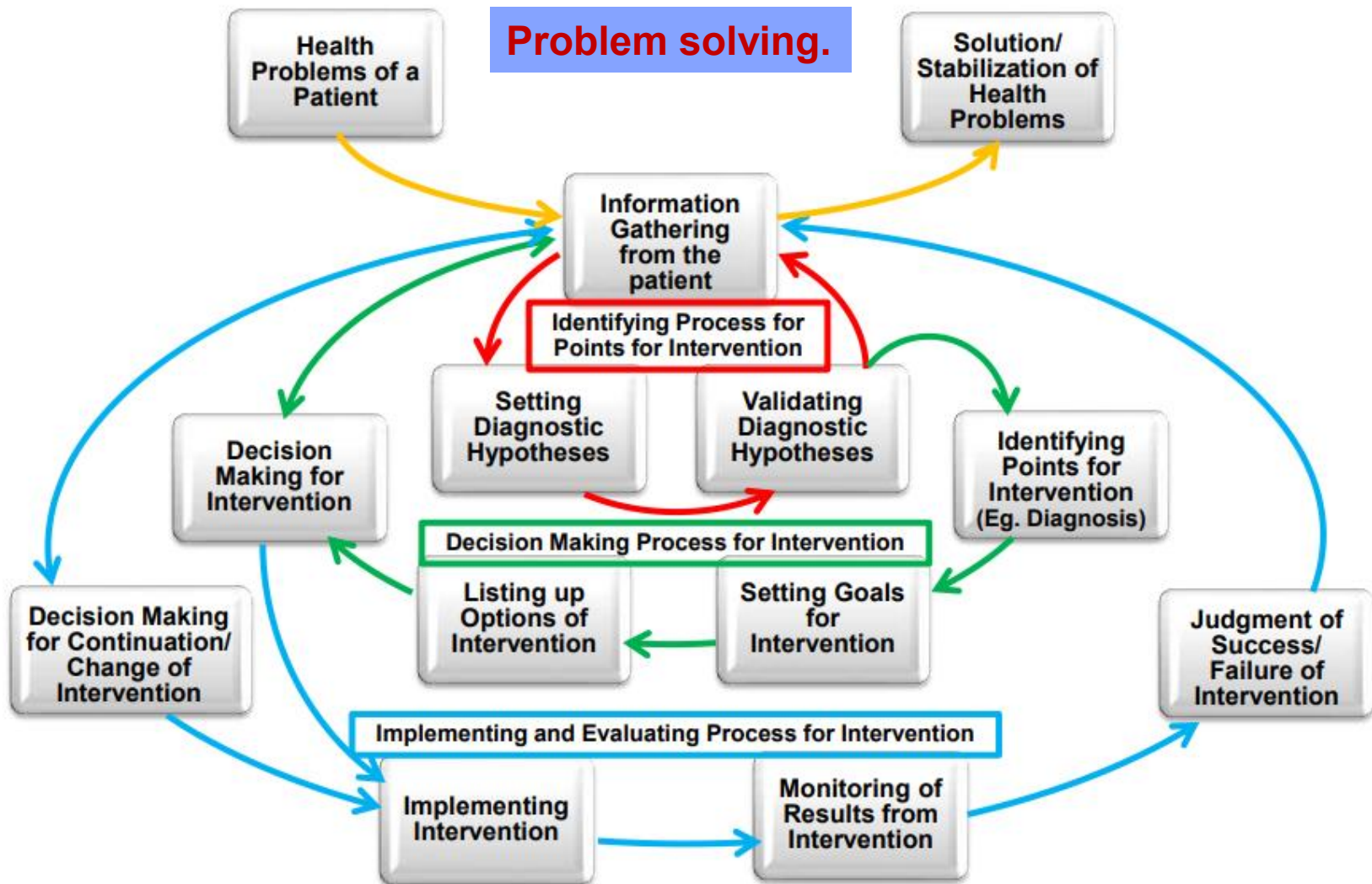
->要加上知識為基礎之分析,

■ 2. 理性之分析 Analytic thinking

■ 知識為基礎+加上經驗。

@ Manifestation of case :History, PE, LaB,. And Images,

多層次之分析及改變



Clinical reasoning的過程

1. 先瞭解問題, History taking-CC symptoms (sites)+pathological changes (roots)

- Chief complaint is the key!
- Symptoms: systemic or local
 - Local: anatomical + pathological (Ex: Abd pain = abdomen x pain)
 - Anatomical: Location of the pain tells you the etiology (Some exceptions are also important; myocardial infarction ← abd pain)
 - Pathological: Onset and time course are keys (abrupt – ischemia or haemorrhage; a few days – infection; months – tumour; and years – degenerative diseases)

2. Analytic Thinking—step by step.

- **思考程序** (safety first—life saving first)
- 1: 有無生命危險—emergency?
- 2. 排除癌症
- 3. **非傳染病**---
- 4. 是否家庭中多見的問題.
- 5. 個人單獨的問題.



6. 解析問題的發生、嚴重性,可能的病源(diseases)
相關證據指標以及處理的方式 (RRSOAP)

3.從證據醫學之觀點

- 1.先想最可能的病源(原因) 1-3 個
- Ex. (1)Constipation – habitual,(IBS)
 - due to inadequate water intake and exercise
- (2) Related to medications : Imodium, codeine
- (3) Colon cancer,
- 2.Previous lab data/images: Hb : 10.5 gm/dl.
 - chest x-ray :O.K. ECG : Normal
 - How to interpretate low Hgb. In this case
- 3. **ADD tests** to rule out other possibilities : Stool OB, CBC, CEA,
- **CRP and colonoscopy--→Colon cancer**

@要收齊clinical information-- 要下工夫

How to Gather Information

- Flow: History → Physical → Labo/Imaging
 - Order may differ depending on the settings → Ex) In ER nurses take vital signs during history taking)
- Ward: thorough information is preferred.
 - Each hospital has format on medical record.
- OPD: focused information is sufficient.
 - Time frame is highly limited.
 - Novice should start from thorough info gathering and gradually focused inquiry is mastered.

Tachycardia? Why? Anemia or heart problem
or hyperthyroidism or hypovolemia

Take complete
history
Time of onset
Symptoms
Lab tests before
and after
symptoms onset
OPD/ES
Ward.
Most recent data
after admission.

BW:
Anemia (pallor)
Health feeling?
subjectively
strength?
Physical signs

Symptoms due to different categories

- Fever- infections, acute or chronic (TBc)
- abscess
- malignancy
- collagen diseases.
- Anemia – hemorrhage (GI, GU--)
- hypoplastic marrow
- Poor iron intake
- Hemolysis

Malaise:原因好多

■ General malaise:

- Advanced stage of chronic diseases, diabetes,
- anemia,
- nutritional problem,
- **hypothyroidism,**
- **depression...**

- What is malaise?
- Malaise is described as any of the following:
 - a feeling of overall weakness
 - a feeling of discomfort
 - a feeling like you have an illness
 - simply not feeling well



4. Problem analysis-RRSOAP

- **Roots (causes)** 很多症狀及徵象可能有不同的原因造成如何查出或確定是那一個原因,是需要好好思維.
- **Risks** :每一個人都有一些危險因素,表現出(manifest) 或隱藏著. 端看您有沒有好好看(Ex. Jaundice, anemia ecchymosis--) 或有沒有注意問(FH, PH)有沒有檢查(Lab.)
- 完整的臨床資訊可以增加臨床推理的正確性/減少錯誤.

@學習:是那一種疾病? 那一項可以直接判斷問題

■ Books. Lectures.

誰教我?

■ Conference----->

■ Case discussion

■ Experience?

■ Internet?

■ AI?

■ VS round –recommends one or two tests or manifestations, to confirm specific disease---最快推理能力

■ Grand Round on
2023.07.19

■ Serum amylase and lipase

■ 診斷 acute pancreatitis

■ Serum Ig G4

■ 診斷 autoimmune pancreatitis (Type 1)

■ Medical images(CT)

■ Diffuse swelling or localized mass

■ Well responded to steroid therapy within 2 weeks.

提升臨床推理能力的方法:1.

Ward round to check accuracy of students' performance of physical examination

Ex) Medical students were told to perform head-to-toe physical exam but no one checked their skills.

- Ward round is a valuable opportunity to check how medical students and resident perform physical examination.
- In Japan many residents complain that their physical exam results have never been checked.

您查出來的physical findings 有人checked 過嗎?

Ward round: attending work round

Work Round vs Attending Round/Conference

全病房
之迴診

	Attending Round/Conference	Work Round
No. of participants	5-10 members with a teacher. <u>Round</u> : Not threatening for patients. <u>Conference</u> : Easy to discuss.	All department members including a number of supervisors attend
Selection of cases	Select a few cases to focus on some specific learning issues.	All the cases of the department.
Physical examination	(only for round) Learners perform it. The supervisor gives a feedback.	The supervisor does/ shows it.
Presentation style	History only should be discussed before other information is added.	Time efficiency matters.
Time length	Sufficient time for learners to understand is important.	Time efficiency matters.

病房迴診的傳統

-insufficient information

- 指導者很少責怪: 未好好問詢病史以及 physical findings.
- R./Clerk : hide insufficient part of case presentation → This may lead to insufficient sharing of information with a preceptor.
- CR:要指出來,糾正.

提升臨床推理能力的方法-2

加強對學習者的評估



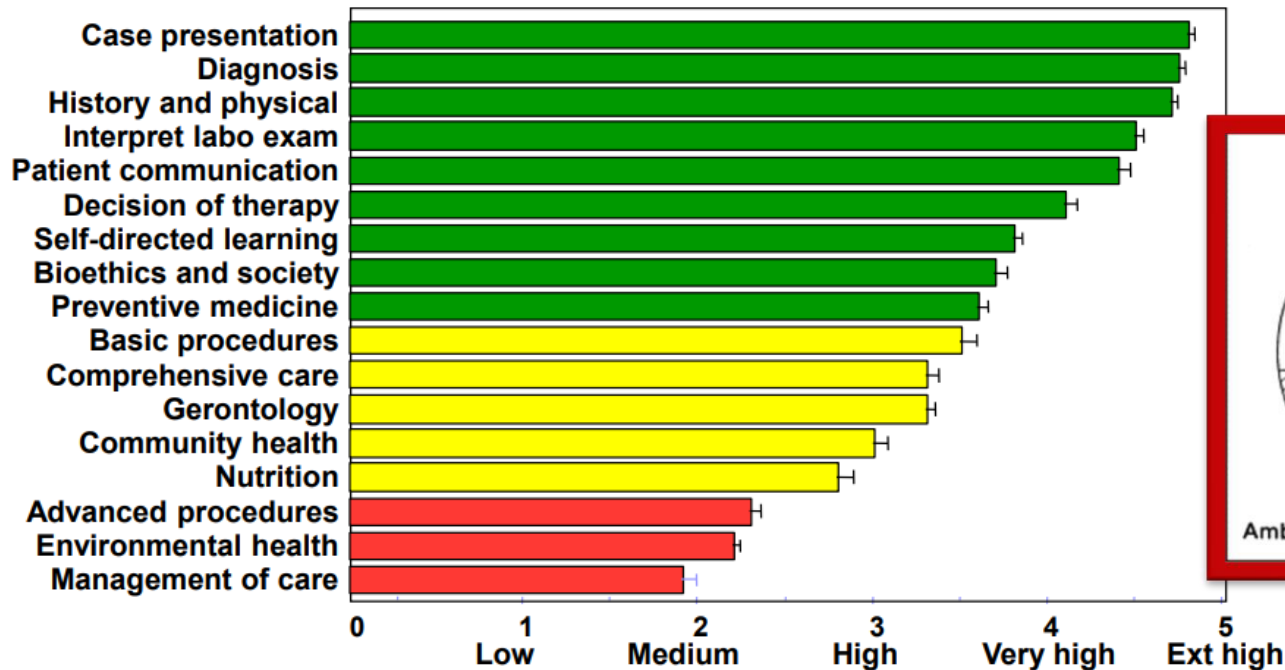
How To Assess Clinical Reasoning Ability

- For medical students
 - Solving case-based problem for a diagnosis?
- For residents
 - Listening to several case presentations?

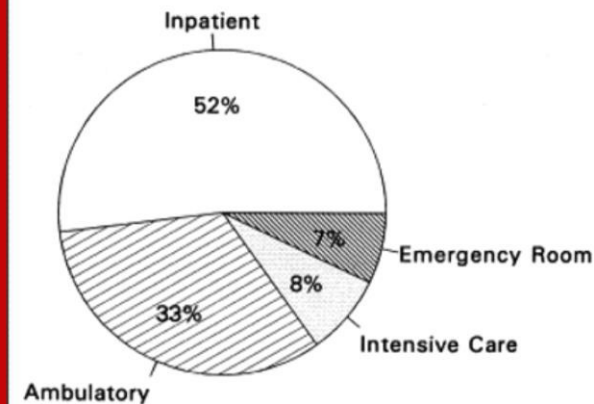
3. 醫學核心見習應具備的能力的調查—— 注意重點

Important Competency Area by Internal Medicine Directors

(Am J Med 1997;102:564)



Clerkship directors



L656: [E B Bass](#)¹, [A H Fortin](#) 4th, [G Morrison](#), [S Wills](#), [L M Mumford](#), [A H Goroll](#) Am J Med. 1997 Jun;102(6):564-71.

National survey of Clerkship Directors in Internal Medicine on the competencies that should be addressed in the medicine core clerkship

One presentation

psychological stress in the company

FH(+), 上班走路才痛

Patient is 41yo male, whose chief complaint was chest pain. He is working for a company of textile. His father was suffering from cardiac infarction and died at the age of 45. The patient is thinking that he will die by the same disease of his father. His symptom, chest pain in the deep area of sternum, was the same as his father's symptom. He likes driving a car. He does not have pain during driving but has pain when walking especially in the morning.

@@

I think his problem is psychological one because he does not have any pain when he is driving and has pain when commuting. I asked him about the psychological stress in the company.



Second presentation- psychosocial problem (ECG: normal)



Patient is 41yo male, whose chief complaint was chest pain. Location of the pain is behind sternum. Pain is oppressive and very severe. Pain is often felt in the morning and during some exercise such as walking to the station. When he climbs up a staircase, the pain occurs more easily. When he has chest pain, he also feels pain on left shoulder and left teeth. He does not have hypertension or diabetes but has hyperlipidemia. His father died of cardiac infarction when he was 45 years old. He smokes 1 pack a day. ECG did not show any problem. I thought this patient has psychosocial problem.

The third presentation

angina attack?

活動會痛, 休息痛會好

Patient is 41yo male, whose chief complaint was chest pain. The sternum pain gets worse on exercise in the morning but not related with the meal. He does not have heart burn. The severe pain on the chest always stops him walking. I think he has heart problem because the characteristics of the pain are similar to angina pectoris. Angina should not be misdiagnosed because it is quite a fatal disease.



同一個病人、三種不同的看法

- 不同程度的認識與瞭解
- 不同階段不同時間有=beginning or advanced stage
- 不同的presenters-- Clerk/PGY/R/VS
- 不同的心境 OPD/ES/in patients
- 不同的經驗: (rare or common)

關鍵點是認知不同了解病人的程度不相同。

每一個人的背景:學習經歷以及醫學知識會影響判斷

由有經驗的教師指導之後可以恍然大悟臨床推理的原則與技巧

如何找到**診斷依據**→注意病史,PE,lab及影像之特點

1,總是先想一些常見的-

雖然很多較罕見的病、我都經驗了

- Common, HCC, IBD, CRC, IBS, bleeding duodenal ulcer -----
- Relatively : (uncommon) : lead poisoning, cholera, Mallory-Weiss Tear
- Rare: adult celiac disease (primary malabsorption syndrome)
- R1—adult celiac disease, dx after small bowel biopsy(Crosby biopsy capsule)
- R1. Lead poisoning, lead colic and lead encephalopathy
- V2 :Cholera(1972)
- V8. Mallory-Weiss syndrome (1978)

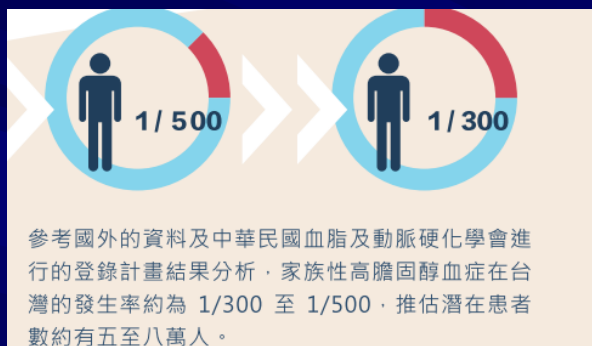
Case: RHD(MS+MI)+AF+CHF

- R1, (1966) 42 year old woman.
- Under supervision of our cardiologist Prof.
- Admission for aggravation of heart failure.
- (1) stroke— AF with embolic attack
- (2) AMI-Precordial pain + low progress of
R wave by ECG—**coronary embolism**
- (3) Dyspnea and hemosputum—Pulmonary infarct
- Autopsy confirmed generalized atherosclerosis,
- Why? (hereditary problem?)

- **Familial hypercholesterolemia (FH) is a genetic disorder that affects about 1 in 250 people and increases the likelihood of having coronary heart disease at a younger age.**

- **CDC(US).**

Familial hypercholesterolemia



How do you know if you have FH?

Signs of FH include:



LDL-cholesterol levels over 190 mg/dL in adults



Family health history of early heart attacks or heart disease



Swollen or painful Achilles tendons



Bumps around the knuckles, elbows, or knees

Talk to your doctor if you think you could have FH

2.無論Common or rare diseases 要好好思考證據

- # **Typical presentation**,容易分析
- Evidence based— get positive findings
- Check lab. And specific tests and findings
- More cautious about rare diseases.
- Histological evidence : Adult celiac disease
- Clinical manifestation: lead line, target RBC, occupational history,
- Simple urinalysis - **Renal TBC (clerk)**
- 教師要提供他的經驗 (**VS round and case conference**)

4. 講究有效的教學-臨床專家的職責 -more impressive

How to Teach Clinical Reasoning

- Each physician has a different process to diagnose patients
 - Unable to teach the best method
- Modify each clinician's reasoning process into better way.
 - It is important to disclose how the clinician think about the case without hiding some information. "No blame" culture is a key.

1. How to think about the case.
2. 每人都有不同的思維方式
→ 求取證據
3. 方式不同、所得必異.
4. 指導他
而不是責怪他

5. Clinical teaching之原則

Clinical Teaching

- In clinical settings
- Case-based
- In small group
- Timeliness 合適的時間
- Ask questions
- Avoid medical accident
- Responsibility brings motivation



作好clinical teaching 很難

-知識與應用是兩回事



Why Is Clinical Teaching Difficult?

- Teachers are too busy
- Students/residents are difficult to use knowledge in real setting
- Teachers cannot explain how they obtained the skills to solve problems
- Some teachers are used to lectures
- Ward round and conferences also work as administrative activities

- 1.熱誠
- 2.用心
- 3.有時間,一定有
- 4.有經驗
- 5.個人體驗
- 6.知道方法
- 7.事先準備
- 8.工具/技巧

@@方式:小組教學

- □ The size should be 5-10 for discussion
- □ The facilitator should **motivate every member to participate** in the discussion
- □ More than one facilitator might argue with each other in case conference
- □ Monitoring each small group is important to maintain the quality of teaching
- @@好好選Cases

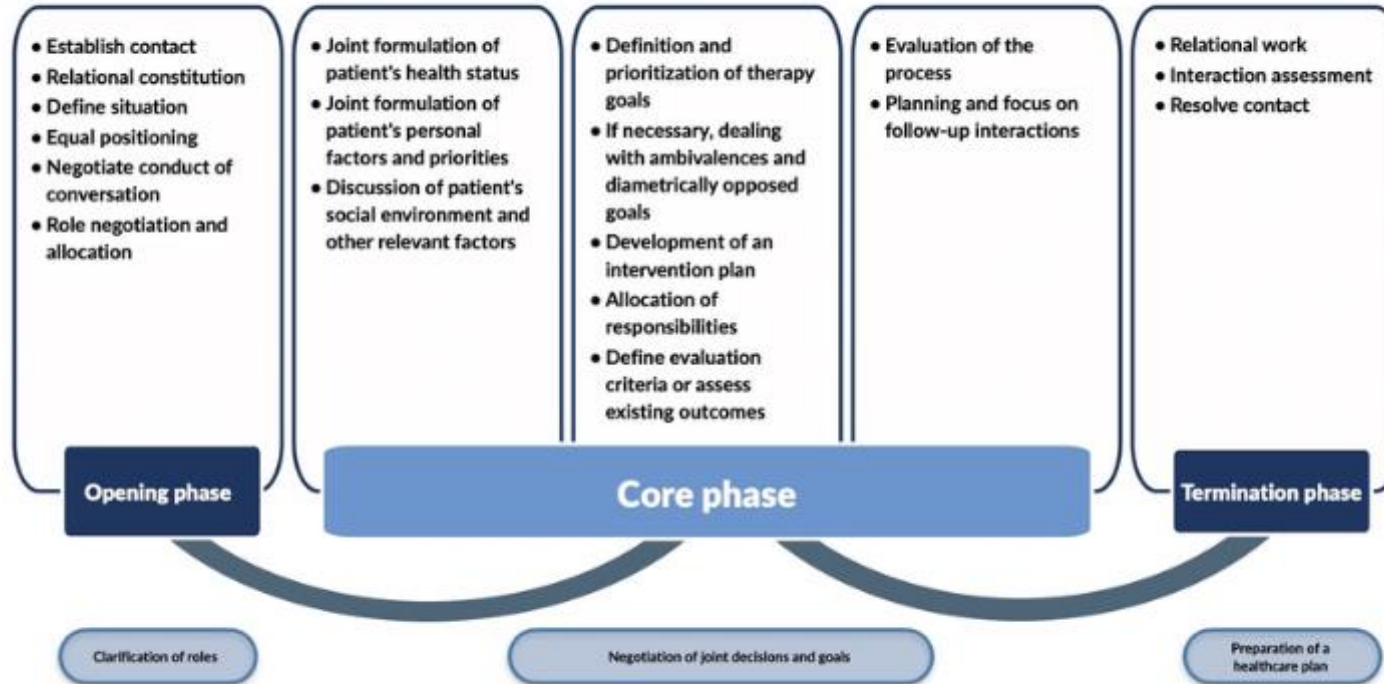
Case conference是教師提示 clinical reasoning的機會

老師要指出/學生要思考:

- 1. Symptoms-signs的想法
- 2. Lab. Data 代表的意義
- 3. Medical images是否顯示出病變的位置, 大小及擴散狀況.
- 4. 綜合判斷
- 5. Therapeutic response 間接代表診斷及處置是否正確
- 6. 從臨床之變化clinical progress, 確認那一些(個) 是可靠的
- 指標(assessment parameters)



Framework for interprofessional case conversations



Structure of an interprofessional case conference (Posenau/Handgraaf, own presentation).

A. Posenau and M. Handgraaf : GMS Journal for Medical Education. 2021, Vol. 38(3)

L691)

核心内容 Core :

1. problem formulation(joint)
2. Personal factors—risk factors and roots of the problem,.
3. Social and environmental factors.
4. **Define therapeutic goal/interventional plan, evaluation criteria**
-assessment parameters
5. Clinical course evaluation and follow up intervention (CYW: 2023.02.17)

6. 評估學生的能力, → 提升臨床推理的正確性

How to assess clinical reasoning ability?

■ For medical students –ad hoc evaluation

- Solving case-based problem for a diagnosis?

■ For residents (CCC evaluation)

- □ Listening to several case presentations?
-

■ □ **High-stake test:** graduation, certificate...

■ 高階的

評估學生學習的績效/ /間接督促教師有改良的教學方式

- To assess clinical reasoning ability.
- To improve ability

學生學習的績效呈現在病人的瞭解及處置上/以及治療的成績上

What are patient's problems.

---changing of problems.

Problem descriptions --內容,是否:完整、各項是否確實,分析是否深入

R.R

S.

O.

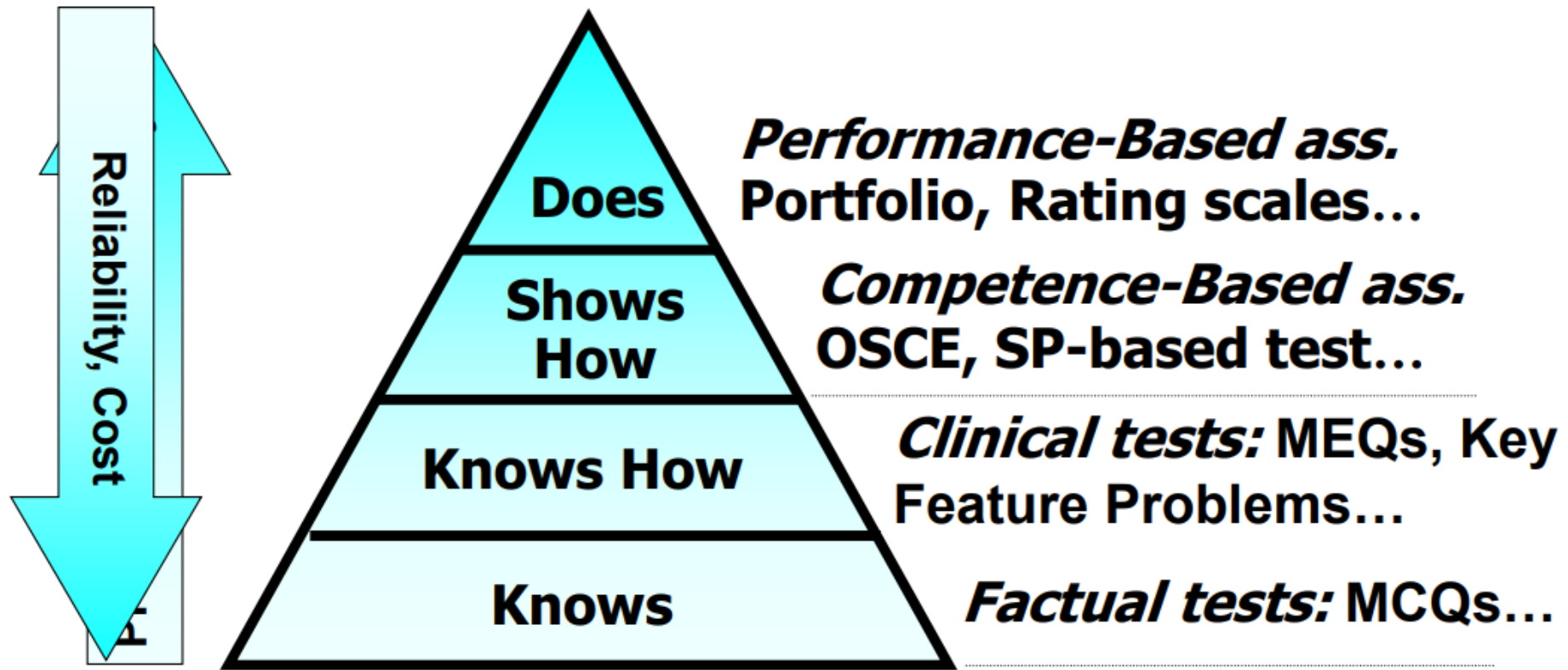
A.

P.

@@

好好查看病歷

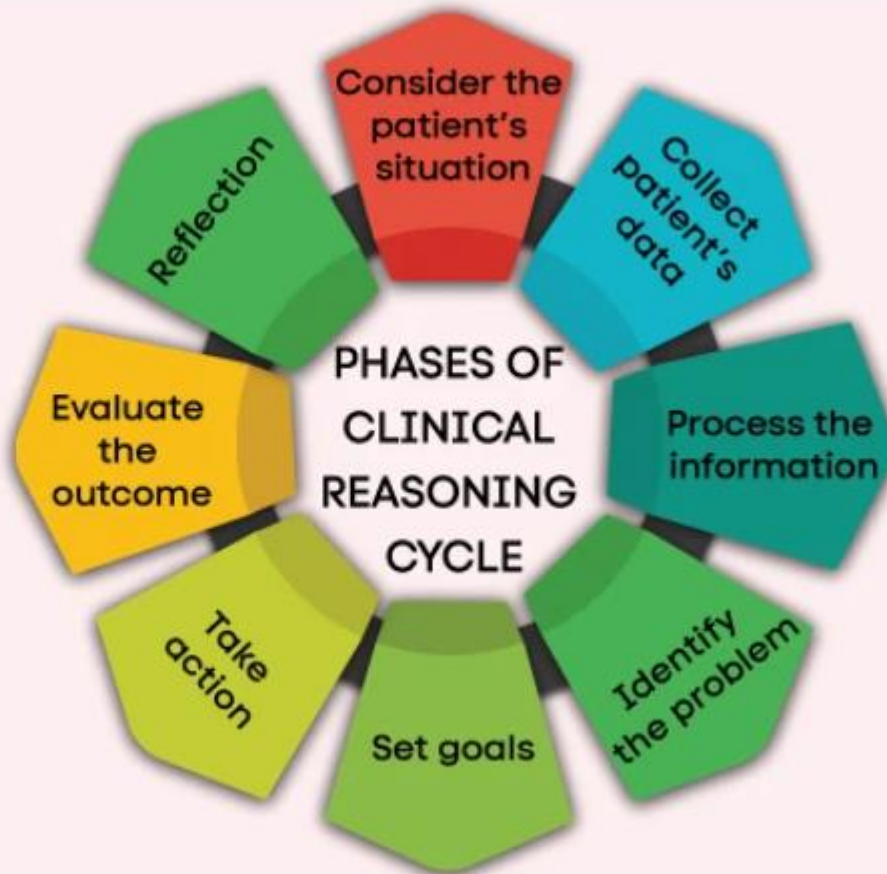
Validity: Level of Clinical Competence and Assessment



(Miller GE. Acad Med 1990; 65: S63-7.)

L682)

8 Phases of Clinical Reasoning Cycle (L632)



1. 考慮患者的情況
2. 收集患者數據
3. 處理信息
4. 確定問題 problems.
5. 設立目標 Goals
6. 採取行動
7. 評估結果 (response) (outcome)
8. 反射 (reflection)

醫學教育的目的-培養Expert Clinicians

- 無論是診所醫師或醫學中心的專科醫師,都應該是臨床專家.
- 要去判斷病人的病(問題),
- 要去**解決**,
- 要拯救他的健康
- 要拯救他的生命.

@@@

要如何培養出臨床專家?

是每一個醫學院的老師,每一個醫學中心的主治醫師的職責

Professional Development of Expert Clinicians

- 不同領域有不同看法.
- 不同之角色也有不同的方式
- 對疾病,甚至單一症狀也有不同的目標
- 但不外乎疾病的原因,基本的病生理的機轉
- 疾病會有不同的變化不同的後果.要儘快處理
- 患者發現和臨床概念之間如何形成聯繫.
- 經驗增多,開始發展,“疾病腳本”—disease patterns就越完全--基本臨床模式+不同之變體.
- 培養專業的思考能力—evidence based

1. Jones M (1994) Clinical Reasoning in Orthopedic Manual Therapy in Physical Therapy of the Cervical and Thoracic Spine, 2nd ed. Churchill Livingstone

2. Angela M. Benfield, Mark V. Johnston Initial development of a measure of evidence-informed professional thinking.

Australian Occupational Therapy 2020A, 67:309- 319

3. Jean-Damien Ricard¹ et al: Use of nasal high flow oxygen during acute respiratory failure. Aust Occup Ther J 2020 Dec;46(12):2238-2247.

4. Hypoglycemia and diabetes: a report of a workgroup of the American Diabetes Association and the Endocrine Society. Seaquist ER, et al American Diabetes Association; Endocrine Society. J Clin Endocrinol Metab. 2013 May;98(5):1845-59.

Illness Scripts 疾病腳本內容

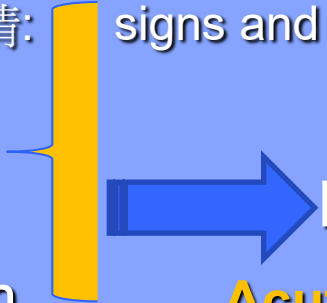
- Epidemiology
- Pathogenesis—roots
- Risk factors
- Clinical manifestation-History-symptoms
- Signs (Physical findings)
- Complementary examinations
 - Laboratory findings
 - Medical images and special test.

- Diagnosis,
- Evidence
- Severity
- Outcome parameters.
- Treatment-response and changing plans.
- Hospital course
- Discharge
- Home care

Epidemiology

Roots (patient and illness) Risk
Clinical manifestation

*(病情: signs and symptoms)
Lab. Data
Images.
Other exam.



Diagnosis
Acute pancreatitis

treatment

Medical, ----- Surgery

DEATH
悲劇

Deterioration

RELAPSE

Healing

Healed and discharged
喜劇收場

- I. 基本的腳本
(Dx 依據)
- II. 依劇情需要變動
- Benign—heal
- Worse-complicated
fatal , warning signs
- Relapse-
- (Assessment
parameters)
- (Treatment plan-
changing)

每一個老師在自己的領域上建立 一部疾病腳本

- 1. 一個病的Illness Scripts疾病腳本
- 2. 不同的結局
- 3. 關鍵時刻的關鍵表現及處置
- 4. Dx. Criteria--診斷證據
- 5. Assessment parameters=
 - Diseases activity.—specific and non-specific,
 - subjective and objective parameters
- 6. Case list.
- 7. Clinical Instruction for the patients

已完成了疾病劇本的模式

-提供大家在案例討論會次第添寫完成

■ 簡單疾病劇本

■ 完整的疾病劇本

我會將同學們提出的報告,敘述比較完整的疾病劇本放在今年7到8月出版的臨床推理以及疾病劇本這本書的裡邊.

■ An integrated pre-clerkship curriculum to build cognitive medical schema: It's not just about the content

■ [Renée J LeClair](#)¹, [Jennifer L Cleveland](#)¹, [Kristin Eden](#)¹, [Andrew P Binks](#)¹

- ¹Department of Basic Science Education, Virginia Tech Carilion School of Medicine, Roanoke, VA, United States.

■ [Front Physiology](#) 2023 Mar 16;14:1148916.

■ 開發一個沒有學科界限的見習前課程（類似於醫生的疾病腳本）

- Our goal was to develop a pre-clerkship curriculum devoid of disciplinary boundaries (akin to the physician's illness script) and enhance learners' clerkship and early clinical performance. As well as developing curricular content, the model considered non-content design elements such as learner characteristics and values, faculty and resources and the impact of curricular and pedagogical changes. The goals of the trans-disciplinary integration were to develop deep learning behaviors through, 1) developing of integrated, cognitive schema to support the transition to expert-level thinking, 2) authentic, contextualization to promote knowledge transfer to the clinical realm 3) allowing autonomous, independent learning, and 4) harnessing the benefits of social learning. The final curricular model was a case-based approach with independent learning of basic concepts, differential diagnosis and illness scripting writing, and concept mapping.

##臨床推理中的錯誤

醫生通常必須迅速做出決定。然而，做出正確決定的最大障礙很少是時間不足，而是信息收集和吸收方式的扭曲和偏見(Klein, 2005)(L648)。

- 1. 框架錯誤：形成問題的錯誤。
■ Framing Errors: initial concept of the problem: wrong
- 2. 初始概念：未能產生合理的假設。
■ Failure to generate plausible hypothesis
- 3. 假設之檢驗不充分。 Inadequate testing of hypothesis
- 4. 過早接受假設。 Premature acceptance of the hypothesis
- 5. 未能注意及找尋缺失之證據。 Failure to attend to features that are missing
- 6. 過分強調支持“最喜歡”的假設 Over-emphasis on features which support the “favorite” hypothesis

Ways to Overcome Errors -Klein, J

- 培養對用於臨床決策的認知.處理.之能力.---加強教育訓練
- 了解常見的臨床推理錯誤.
- 試著理解為什麼你的推理可能是錯誤的.
- 始終在檢視問題、身體篩查和測試中.包含會反駁您的假設的措施.--改變想法的企機
- 了解各種情況的發生率，(決策錯誤之案例之分析)
- Klein J : Five pitfalls in decisions about diagnosis and prescribing. BMJ. 2005;330-7: (L680)

Seeing What Others Don't,

-Gary Klein (1944-)



Klein 提出，卓越的決策可以用一個簡單的通用公式來描述：↵

$$P=\downarrow+\uparrow P=\downarrow+\uparrow \leftarrow$$

其中 P 是卓越的性能，通過優化專業知識和做“所有正確的事情”來正確做事並避免錯誤（向下箭頭，表示錯誤最小化），並結合稍後的見解（向上箭頭）

[1]。洞察力是指在稍後某個時間點自發出現的想法、決策和問題解決方案的潛意識出現。↵

什麼是洞察力？

History taking
Physical exam.
Lab. Interpretation
Images findings

Clinical decision making

像達爾文對進化實際運作方式的理解，以及沃森和克里克關於DNA結構的突破性發現，這些見解可以改變世界。我們還需要深入瞭解使我們感到沮喪和困惑的日常事物，以便我們能夠更有效地解決問題並完成任務。然而，我們對洞察何時、為何或如何形成知之甚少，或者是什麼阻礙了它們。在《看到別人看不到的**Seeing What Others**

Don't》一書中，著名認知心理學家加里·克萊因（Gary Klein）揭開了這個謎團。克萊因敏銳地觀察自然環境中的人——科學家、商人、消防員、員警、士兵、家人、朋友、他自己——並使用各種各樣的奇妙故事來闡明他對什麼是**洞察力**以及它們如何發生的研究。

1.培養用於臨床決策的認知.處理能力

- 舉辦研討會– **clinical reasoning** 工作坊
- 每年至少有3個小時的正式課程
- **落實 VS Round** 之指導
- **Case conference** 提**clinical reasoning** 之關鍵點、由**senior instructors** 擔任主席
- **收集決策錯誤之案例**並作分析.
- **關心 初學者之orders, 及愛用藥品之習慣.**
- **完成疾病劇本**

2. 了解常見的臨床推理錯誤.

- 大多數來自比較年輕醫師
- **History taking** 不用心, 只知個大概.
- PE : 不確實、花太少時間
- 不知Lab data的Normal range, abnormal 代表的意義.
- 會查書textbook, up to date但不會活用.
- 重視書上知識/無法解釋病情/未深入思考/
- 只想追求病名, 尚未列出證據

3. 試著理解為什麼你的推理可能是錯誤的 - 錯在何處?

- 我的判斷是錯的嗎? -- 列出**證據**, 才知太薄弱
- 先把這個預想中的診斷病名所有**證據**全列出來. — strong, or weak.
- Subjective evidence
- Objective evidence 有其他可能嗎?
- New data (Lab, image, and clinical events) 符合這個診斷嗎?
- 其他人的想法相同嗎? 病歷上寫出您的看法(D x. Evidence)

先提出作此診斷之依據、證據不充分, 診斷就可能是錯的

4,始終在檢視問題之正確性,包括詢問病情、身體檢查和各種各項之測試

要有懷疑心

■ 我的想法對嗎？

小心病情是會變的

■ 病情加劇嗎？

■ Physical findings有那一些不是這個病引起的.

■ Lab tests. Medical images 符合嗎？

■ Treatment 有效嗎、效果不佳、是診斷錯嗎？

5. 了解各種臨床推理會產生錯誤之原因及發生率-1

■ L640. L638.

- 1. 認知偏差會影響決策
- 2. 是常見的病嗎?
- 3. 可能性可能被高估.

■ 醫療環境中，一項研究要求醫生判斷內科住院患者患有菌血症的可能性。當醫生有最近照顧菌血症患者的經驗時，這種可能性被判斷為明顯更高。¹⁰另一個例子是醫生在開阿片類止痛藥以緩解疼痛時高估成癮風險的記錄傾向，結果是對嚴重疼痛的治療不足。¹¹⁻¹³ w8-w11 當患者接受阿片類藥物（特別是控釋製劑）治療疼痛時，成癮風險實際上很低，^{14,15}但阿片成癮往往會受到高度宣傳，因此 - 通過可用性啟發式結論 - 它的可能性可能被高估。

4. 考慮數據是否真正相關，而不僅僅是顯著的

- 尋找你的決定可能是錯誤的原因，並接受替代假設
- 提出會反駁而不是證實您當前假設的問題。記住，你錯的次數比你想像
- 的要多

了解各種臨床推理會產生錯誤之 原因2, @@過度自信

- 陷阱三：過度自信(L638)
- 為了有效地使用我們的知識，我們必須意識到它的局限性。不幸的是，我們中的大多數人都不善於評估我們知識的差距，往往會高估我們知道的數量和我們知道的可靠性。研究表明，我們幾乎所有人都對自己的判斷比應有的更有信心。**由於醫學診斷通常涉及一些不確定性**，我們知道幾乎所有醫生在診斷中犯的錯誤都比他們認為的要多。當醫生評價他們的臨床技能時，過度自信也會發揮作用。Larue 等人發現，初級保健醫生和內科腫瘤學家都高度評價他們控制疼痛的能力，儘管他們實際上在對疼痛控制的態度和知識方面存在嚴重缺陷。¹⁶
- 過度自信的危險是顯而易見的。高估自己對病情管理的醫生可能會繼續開出次優的治療方案，而沒有意識到他們的管理可以得到改善。此外，當需要進一步測試時，對診斷能力的過度自信可能會導致過於草率的診斷。因此，了解您知識的局限性並確保知識保持最新是至關重要的。意識到自己的缺點使您更有可能收集更多信息。養成徵求同事意見的習慣也很有幫助。¹⁷

了解各種臨床推理會產生錯誤之原因-3

@@確認偏差-先人為主的觀念

- 陷阱 4：確認性偏差
- 確認性偏見是尋找、注意和記住符合我們預先存在的期望的信息的傾向。同樣，與這些期望相矛盾的信息可能會被忽略或認為不重要而被忽略。^{1,2} 確認性偏差已被證明會影響同行評審員對手稿的評估。馬奧尼向審稿人發送了方法相同但結果不同的虛構手稿。¹⁸ 當結果支持他們先前存在的信念時，審稿人對方法部分的評分要高得多。
- 再一次，醫生不能倖免於確認性偏見。在獲取病史時，醫生經常會提出問題，以徵求確認早期判斷的信息。更糟糕的是，**他們可能會因為提前得出結論而停止提問**，從而無法挖掘關鍵數據。更一般地說，對在醫學檢查結束時獲得的信息的解釋可能會受到早期判斷的影響。¹⁹
- 確認性偏倚也可能導致治療錯誤。很自然地期望您將要服用的藥物是正確的藥物。明顯表明您服用了錯誤藥物的明顯信息（例如，標籤上標有麻黃鹼而不是預期的腎上腺素）可能會被忽略或曲解，以確認您對藥物正確的預期。

了解各種臨床推理會產生錯誤之原因4， @@錯覺相關性:而實際上它們之間的聯繫 是巧合甚至不存在

- 陷阱 5：虛幻相關(L638)
- 錯覺相關性是傾向於將兩個事件視為因果關係，而實際上它們之間的聯繫是巧合甚至不存在。（當注意到與先前存在的想法相符的原因時，它與確認性偏差有一些重疊。）順勢療法提供了一個錯覺相關性的極好例子。順勢療法醫生通常會注意到患者在接受順勢療法治療後病情好轉，並聲稱這是順勢療法有效的證據。然而，沒有令人信服的證據表明順勢療法是有效的。^{w12 w13}錯覺相關性可能在起作用：順勢療法醫生可能會記得他們的患者在治療後有所改善的情況。
- 成為錯覺相關性的犧牲品會強化不正確的信念，這反過來又會導致次優實踐的持續存在。問問自己是否有任何實例不符合您假設的相關性。一個直接的方法就是保留您認為相關的事件的書面記錄，確保所有相關實例都被記錄下來。

了解各種臨床推理會產生錯誤之原因5, 做出正確決定的最大障礙是 信息收集和吸取方式的扭曲和偏見(L638 結論)

- 醫生通常必須迅速做出決定。然而，做出正確決定的最大障礙很少是時間不足，而是信息收集和吸收方式的扭曲和偏見。
- 意識到決策可能存在偏見是克服這些偏見的重要的第一步。當然，在現實生活中，偏見不一定完全符合我上面描述的任何一種類別，而是可能是不同因素複雜相互作用的結果。這進一步增加了錯誤決策的可能性。
- 好消息是，可以訓練自己對這些錯誤保持警惕，從而改進決策（方框）。

Jill G Klein¹ Five pitfalls in decisions about diagnosis and pres
BMJ. 2005 Apr 2;330(7494):781-3.

人類思維並不理性：

談心理學3種認知偏誤-

- 1. 抬高自己（或自己的身分群組）貶低他人（或他人的身分群組）的思想及行為傾向在心理學上叫自利性偏誤（self-serving bias）
- 2. 基本歸因偏誤（fundamental attribution error, FAE.）傾向將別人身上發生的事（尤其是壞事）的原因歸究於那個人的內在特質。所以你失敗是因為你蠢
- 3. 雙重標準？行動者 - 觀察者偏誤（actor-observer bias）我成功是因為我的能力，你成功是因為你的運氣；我失敗是因為我的運氣，你失敗是因為你的能力。

行動者 - 觀察者偏誤--對自己/對別人是不同的 (actor-observer bias) 。

- 你會把自己的失敗歸因於外在不能控制的
因素 (external attribution)
- 傾向把別人的失敗歸因於他的內在因素。這種分
別我們稱為行動者 - 觀察者偏誤 (actor-
observer bias) 。
- 作為行動者，你會將自己的成功歸因於自己的能
幹（內在因素），但當作為觀察者，你會將別人
的成功歸因於他的幸運和得到貴人相助（外在因
素）。

How can we **debias** ourselves.

E D O'Sullivan¹, S J Schofield² Cognitive bias in clinical medicine

J R Coll Physicians Edinb 2018; 48: 225 – 232 (L689)

- 1. Bias-specific teaching **sessions**.
- 2. Slowing down.
- 3. **Metacognition** and considering alternatives
- 4. **Checklists**. Checklists are a debiasing strategy that challenges 'structure' of thought, attempting to force our cognition onto certain topics even if they were not previously considered.
- 5. Teaching statistical principles
- 6. Novel methods.

Conclusion

Undoubtedly cognitive bias is a major contributor to medical error and is underrepresented in education and neglected in clinical practice.

Cognitive biases and moral characteristics of healthcare workers and their treatment approach for persons with **advanced dementia** in acute care settings

- [Meira Erel](#), [Esther-Lee Marcus](#), [Freda DeKeyser Ganz](#) (Isreal)
- [Front Med \(Lausanne\)](#). 2023; 10: 1145142. Published online 2023 Jun 22.

1. Three hundred fifteen HCWs participated in this study: 159 physicians and 156 nurses from medical and surgical wards in two hospitals.
2. The following questionnaires were administered: a socio-demographic questionnaire; the Moral Sensitivity Questionnaire; the Professional Moral Courage Scale;
3. a case scenario of a person with AD presenting with pneumonia, with six possible interventions ranging from PC to aggressive care (referring to life-prolonging interventions), each given a score from (-1) (palliative) to 3 (aggressive),
4. In a multivariate analysis, the predictors of the care approach were: guilt feelings about the death of a patient, apprehension regarding senior-level response, and PC appropriateness for dementia.

在多變數分析中，醫療方法的預測因素是：對患者死亡的內疚感，對高齡者反應的擔憂以及 Palliative care 對失智的適宜性。 **結論：**認知偏差與急性疾病中AD患者的醫療決策有關。這些發現提供了對認知偏差對臨床決策的潛在影響的見解，這可能解釋了治療指南之間的差異與該人群姑息治療實施的缺陷。 @@考慮AD患者的急性健康問題時，醫護人員的認知偏差與治療方法。然而，這些偏見的主要來源似乎是**AD患者對PC的知識**，培訓和技能有限。因此，應開展醫學教育活動，使醫護人員熟悉認知偏差的思維過程和常見原因。

Clinical handover 臨床交接

-ISBAR

- 臨床交接是患者就診過程中最關鍵的步驟之一，也是需要向衛生專業學生和初級臨床醫生傳授的核心技能。
- 世界衛生組織認可的 **ISBAR**（介紹、情況、背景、評估、建議）框架提供了一種標準化的溝通方法。

- **1. Introduction**
- **2. Status**
- **3. Background**
- **4. Assessment**
- **5. Recommendation**
- **(L649, L650)**

有效的臨床交接是安全患者護理的重要組成部分，可確保減少錯誤、患者傷害並提高護理的連續性。隨著醫療保健人員工作模式的快速變化，卓越的臨床交接變得越來越重要。來自各個衛生學科的醫療保健領導者和專業人員必須共同努力，以確保制定和維持良好的臨床交接實踐。受保護的教學時間和資源對於支持教職員工和學生的這些努力至關重要。雖然已經開發了許多工具來改進交接，但我們發現經過充分研究的 **ISBAR** 是用於有效臨床交接的理想工具。

- **Teaching:** Teaching clinical handover with ISBAR, [Annette Burgess](#)^{1,2}, [Christie van Diggele](#)^{3,4}, [Chris Roberts](#)^{5,3}, [Craig Mellis](#); BMC Med Educ. 2020 Dec 3;20(Suppl 2):459.(雪梨大學)(L650)

從值班交班學會臨床處置 Handover(換班了):ISBAR

ISBAR

The ISBAR framework consists of five elements focused on communication, which include:

Introduction

今晚由我值班,我是 xxx

Who you are, your role, where you are and why you are communicating?

Situation 病況,、診斷、主要問患是什麼,如何處理中,---

What is happening at the moment?

Background 問題的根源,已控制了嗎?

What are the issues that led up to this situation?

Assessment 病人的處置是否妥當?反應好壞,是否改變?

What do you believe the problem is?

Recommendation 今後要怎麼辦?有何建議?

What should be done to correct this situation?

Key tips for preparing for ISBAR

- Preparation is vital, with the reason of the referral being made absolutely clear
- Having written, prepared questions will assist
- It is important to gather all patient information before handover e.g. charts, ECG, CXR
- Take notes and record any instructions
- ISBAR works best when both parties are using the same framework

您交班是怎麼做的?--要好好學習

■ 學習交班

■ 先觀察,再Practice.

■ 醫五值班: 應每週一次,5 pm-10pm

- evening round 6:30-8:00

- discussion 8:00-8:30

- off duty at 10:00 pm

■ 醫六值班:每週2次 5pm-6am

- evening round 6:30-8:00

- discussion 8:00-8:30

- duty for problem solving under instruction

- off duty at 6 :00 am

在臨床交接期間和之後,確保患者信息和照顧之連續性的關鍵要素

Logistic factors	Sufficient & relevant information	Following handover
• Cross-over of shifts • Dedicated time for handover • Clear leadership identified • Adequate technological support	• Clinically unstable patients clearly identified to senior clinicians • Junior staff briefed adequately, with concerns highlighted • Incomplete tasks identified and explained to the incoming team	• Prioritisation of tasks • Plans for care carried out • Timely review of unstable patients

@@@

1. 信息要清晰且正確updated.
2. 接班者的能力---leadership**總值**的重要性,
3. 問題確認,立即處置、有多個問題時分優先次序
4. 團隊的執行力、
5. Review, response. And records.

9. OPD:也是很好的學習機會 要不要恢復門診實習

- 複診:
- 學生站在教授後面,看教授與病人的對話.如何找到臨床推理的關鍵資訊--如何處理---如何說明溝通.
- **+ One minute teaching:**那可是重點,
- **(一分鐘指導OMP)**

- 初診;
- 減少看診人數
- (2人/學生)
- 多出時間教學.
- 可考慮標準病人
- **最後5分鐘的結論可是永生難忘的教誨**

OPD:也是很好的學習機會

SNAPPS (2003)(L653)

SNAPPS: a learner-centered model for outpatient education

■ Terry M Wolpaw¹, Daniel R Wolpaw, Klara K Papp

■ Acad Med. 2003 Sep;78(9):893-8. (L653)

■ ¹Department of Medicine, University Hospitals of Cleveland, 11100 Euclid Avenue, Cleveland, OH 44106-5529, USA. txw34@po.cwru.edu

■ SNAPPS consisting of six steps:

■ (1) **S**ummarize briefly the history and findings; 1) 簡要總結歷史和發現；

■ (2) **N**arrow the differential to two or three relevant possibilities;

■ 將差異縮小到兩種或三種相關可能性；

■ (3) **A**nalyze the differential by comparing and contrasting the possibilities;

■ 通過比較和對比可能性來分析差異

■ (4) **P**robe the preceptor by asking questions about uncertainties, difficulties,

■ or alternative approaches;通過詢問有關不確定性、困難或替代方法的問題來探究指導者

■ (5) **P**lan management for the patient's medical issues;對患者的醫療問題進行管理

■ (6) **S**elect a case-related issue for self-directed learning.選擇與案例相關的問題進行

■ 自主學習。

用於臨床推理的一分鐘指導 (OMP) 和 SNAPPS

■ 用於臨床推理的一分鐘指導和 SNAPPS

- [Sabrine Teixeira Ferraz Grünewald¹](#), et al : Intern Med J. 2023 Jan 10. (L651)
- **Results:** Of the 1066 articles retrieved, 12 were included in the systematic review and 10 in the meta-analysis. The results showed a growing body of literature on the use of strategies for teaching clinical reasoning that consisted predominantly of low-quality quasi-experimental studies. When only randomized controlled trials were included, analyses showed effectiveness among both healthcare students and post-graduate trainees for a series of outcomes, including total presentation length, duration of discussion, number of basic attributes, number of justified diagnoses in differential diagnoses, and number of uncertainties expressed. Lastly, results for SNAPPS were better than for OMP relative to the control group.
- **Conclusion:** The strategies for teaching clinical reasoning improved the performance of healthcare students and professionals on this skill, promoting deeper discussion of clinical cases and a higher number of differential diagnoses. Further good quality trials are needed to corroborate these findings.

Outpatient practice :

多層次的學習、教學和支援 (MALTS)

1. [Sven Schulz](#)¹, [Miriam Hesse](#)¹, [Anni Matthes](#)¹, [Inga Petruschke](#)¹, [Jutta Bleidorn](#)¹

- **Outpatient teaching in specialist practices - a qualitative study with doctors about attitudes, influencing factors and specialist features.** GMS J Med Educ. 2022 Nov 15;39(5):Doc54. doi: 10.3205/zma001575. eCollection 2022 (L836)
- [Mitch Blair](#)¹, [Elizabeth Wortley](#)², [Kirsty McGuff](#)²
- **Placing education at the centre of the outpatient clinic improves learning and experiences for everyone using the multilevel attainment of learning, teaching and support (MALTS) approach.**
- Review Arch Dis Child Educ Pract Ed . 2020 Feb;105(1):2-6. (L835)
- 1.醫生和患者之間最頻繁的接觸是在門診環境
- 2.門診環境中的任務責任，學生被置於能夠應用和磨練以前獲得的理論知識和技能的環境中。學生在真實的實踐環境中培養專門提供門診的醫療能力。
- 3 學生對他們在常見疾病知識和以患者為中心的溝通方面的主觀收益給予了非常積極的評價

大流行期間，新冠病毒感染是認知偏見。

[Ritika Nangia](#)¹, [Chetna Arvind Sethi](#)², [Niharika Dhiman](#)³

Desaturation during the pandemic: Covid or cognitive bias? J. Family Med Primary Care
2022 Nov;11(11):7466-7468 (L832)

Covid專責醫院的產科病例呼吸系統不適和血氧飽和度下降,疑似 2019 年冠狀病毒病 (Covid-19) 感染，後來被診斷為其他疾病。

1. 21 歲的女性,疑似 Covid-19 感染，咳嗽和發熱 4 天和呼吸困難 1 天后飽和度下降，她從**非 Covid 設施轉診**。----RT-PCR 報告陰性並重新考慮后，推定診斷為重度先兆子癇引起的**肺水腫**，並相應地改變治療方案。她的一般狀況得到了顯著改善。
2. 27 歲的 primigravida 甲狀腺功能減退症（治療中）在 29+5 周時轉診入病，伴有高熱和不適 15 天，伴有嚴重頭痛和嘔吐就診后 2 小時內，患者主訴頭暈，隨後出現幻覺和感覺改變。，她的vital signs 為 PR-110/min、BP-120/80 mmHg、RR-19/min 和室內空氣中的 SpO2-91%。疑似Covid-19伴有腦膜炎/腦瘧疾/肝性腦病，開始了適當的經驗性治療。**連續兩次 RT-PCR 結果為陰性后，排除了 Covid-19 感染**。入院第 2 天進行的腦脊液檢查和磁共振成像提示**結核性腦膜炎**-----

10.寫好病歷

- 從臨床推理到確定診斷到病人之處置 (management) 到判定效果(response) 整個臨床經過都要儲存到病歷紀錄上。
- 仔細審閱紀錄,要求完整清晰的敘述也是訓練臨床推理最重要的方式。
- 而不只是醫師的法律責任
- 教師是應該多花些時間看年輕,學者的病歷.
- 可是:有多少人作到,有多少人關心病歷是不是寫的很確實。

Covid-19：人類生活中的道德困境

Covid-19: Ethical Dilemmas in Human Lives' (May 07, 2020)

哥倫比亞大學全球中心舉辦了一場關於 COVID-19 大流行期間道德困境的在線國際研討會。哲學家和 Covid 醫療專業人員之間的這種跨學科參與報告了道德準則與現實之間的挑戰和差異。

- 1.關注責任、公平、尊嚴和尊重死亡的問題，疫情以特別鮮明的方式提出了關於配給/優先順序設定以及公共利益與個人權利之間潛在衝突的問題。
- 2. 這些「困境」將在後疫情時代消失，但導致它們的根本問題——導致這場大流行性人道主義災難的經濟、科學、政治和社會機制——仍然存在。
- 3.如何找到這些問題的持久解決方案的討論--仍在進行中。

COVID 19: Ethical dilemmas in human lives

Smadar Bustan PhD, Mirco Nacoti MD, Professor Mylene Botbol-Baum PhD, Katherine Fischkoff MD, Professor Rita Charon MD, PhD, et al, J Eval Clin Pract. 2021 Jun; 27(3): Pages 716-73

Michael Loughlin, and Samantha Marie Copeland, Humans, machines and decisions: Clinical reasoning in the age of artificial intelligence, evidence-based medicine and Covid-19. J Eval Clin Pract. 2021 Jun; 27(3): 475–477. Published online 2021 Apr 23

Ethical dilemmas in COVID-19 times: how to decide who lives and who dies? Nedy M B C Neves Flávia B C S N Bitencourt², Almir G V Bitencourt³ 2020 Sep 21;66Suppl 2(Suppl 2):106-111.

臨床推理是CanMEDS 2025的關鍵概念

- 為了將臨床推理等龐大而複雜的概念轉化為可以在醫學教育中教授、評估或研究，必須決定在每個背景或專業中什麼構成**有效的臨床推理**。根據確定的有效推理，臨床推理過程的不同組成部分、各類變數或臨床推理的不同結果脫穎。¹
- 有效的推理可以用速度來表徵，¹⁹準確性²⁰成本影響，²¹平衡患者的願望與臨床建議（即共同決策），¹⁰平衡測試與對確定性的渴望，²²識別和適應變數，²³有效調整管理計劃，²⁴並有效管理工作記憶限制內的認知負荷。¹²有效推理的這些特徵成為評估、學習和教學的目標，這些目標取決於相關人群的專業水平、專業背景和照護環境（即緊急照護與社區照護）。

學習EC 針對複雜臨床病例的臨床推理策略。

■ 耶魯大學所發表的論文

■ [Joseph H Donroe¹ et al.](#)

■ **Clinical Reasoning: Perspectives of Expert Clinicians on Reasoning Through Complex Clinical Cases.** Cureus. 2024 Jan 5;16(1):e51696. doi: 10.7759/cureus.51696. eCollection 2024 Jan.

14名臨床專家所提出的臨床推理策略: 他們可以很快的提出一些臨床上的可能性—作為假設之診斷. 事實上他們分成幾個階段完成的.

(1)將臨床推理與患者背景連結起來; --重視正確的完整的病史 以及相關的身體變化—依據過去的經驗以及知識思考最具可能性的一些疾病.

臨床表現是獨立的,再來看待會出現的數據及影像變化.這需要耐心 以及有平衡觀點的人, 會審視數據、審視患者, 能夠考慮許多不同的 因素, 並將數據與患者的背景和患者的情況同化。可以解決病人的問題「這是一門藝術: 了解患者真正需要什麼. 了解患者的優先事項並相應地調整診斷, 檢查和處置.

暗示病人的處置是有彈性的

(2) 先接受不確定性然後逐次減少→假設性的診斷也慢慢縮小內容,這是一項重要的挑戰. 要取修改自己鎖定的診斷

(3) 回到患者身邊重新做連結. 確認主要的問題以及相關的判斷---診斷疾病 病史和身體檢查的這些要素常常成為組織有效臨床推理的關鍵。

(4) 保持謙虛的態度隨時修正自己的錯誤. 最後臨床推理得到結論→診斷.

臨床推理是CanMEDS 2025的關鍵概念 ，修改CanMEDS教育框架1

1996-2005-2015-2025

The future of the CanMEDS physician competency framework

Brent Thoma, Cynthia Abbott, Linda Snell, Can Med Educ J. 2023 Mar; 14(1): 1–3.

2.5 (New) Synthesize the history, physical exam, and investigations to guide diagnosis and management, disease prevention, and health promotion

Effective clinical reasoning requires the synthesis of these components.

3.3 (Revised): Prioritize a procedure or therapy, considering clinical urgency, available resources, and the relevant clinical context

The correct procedure or therapy needs to consider the clinical context.

5.3 (New): Seek out performance data, feedback, and coaching from colleagues and other members of the health care team to support practice improvement

Improving clinical reasoning and patient care requires external input.

5.4 (New): Recognize periods of high cognitive load during clinical care and demonstrate strategies to manage this load, including safely deprioritizing and/or delegating task-irrelevant activities

Physicians must be able to manage cognitive load imposed by various elements such as task complexity, distractors, and affective factors (e.g., emotion, stress, uncertainty) during clinical work.

醫學專家

2.5 (新增) 綜合病史、體格檢查、檢查、指導診療、疾病預防、健康促進

有效的臨床推理需要合成這些成分。

3.3 (修訂版)：優先考慮手術或治療，考慮臨床緊迫性、可用資源和相關臨床背景

正確的程式或治療需要考慮臨床背景。

Expert clinicians臨床大師

專家臨床醫師所使用的精選臨床推理策略

臨床推理策略	來源
擴展知識和經驗	Mylopoulos 等人，2012 [6]
掌握病史採集和身體檢查的臨床技能	Mylopoulos 等人，2012 [6]
熟練操控疾病腳本	庫馬爾等人，2021 [9]
將臨床知識與患者的故事結合	Mylopoulos 等人，2012 [6]
在遭遇的早期產生診斷假設	Brush 等人，2017 [3]
將臨床推理與患者背景連結起來	Donroe 等人，2024 (L1231)
擁抱不確定性，然後透過協調數據來減少不確定性	Donroe 等人，2024(L1231)
回到患者床邊	Donroe 等人，2024 (L1231)
保持謙虛以限制診斷錯誤	Donroe 等人，2024 (L1231)

[Joseph H Donroe](#) et al

Clinical Reasoning: Perspectives of Expert Clinicians on Reasoning Through Complex Clinical Cases, Cureus. 2024 Jan 5;16(1):e51696 (L1231)

Lecture and case discussion

Q AND A . 臨床推理與病人處置
PRACTICE



臨床推理與病人處置

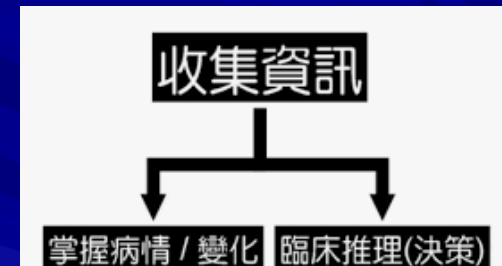
Clinical reasoning and Medical management-2 (2023)

Problems related to digestive disorders

- 2. constipation,
- 3. GI bleeding, 4. jaundice,
- 5. alcoholic diseases 6. Cirrhosis and HCC,
- 7. Hereditary colon cancers,



Cheng-Yi WANG
2023.04.21.
(TCHL)



病人處置

ACTION

表八 問取病史之技術要訣

- 要訣 1 確認病史重要性，絕不偷工減料
- 要訣 2 必須確知發病之時間及徵象(onset of disease/symptoms)
- 要訣 3 以時間順序排列發生之各個症狀(Chronological order)
- 要訣 4 思考各個症狀間有無關聯性，建立病人症狀發展的思路地圖(Map of diseases)
- 要訣 5 先思考直接相關、相連。若連不起來，再另開一條路。兩條路線平行進行，或許發展下去就會相交
- 要訣 6 好好想像怎樣發展下去才會相交，像劇作家一樣想像劇情的發展出人意料之外突然出現的人物、突然天氣變動、突發地震，出乎想像的問題
- 要訣 7 嚴格接受考驗，不同的症狀以及發展，符不符合你的想像
- 要訣 8 再一次詢問病人，你得到了連結線
- 要訣 9 病史的發展具有挑戰性、富含戲劇性，很有趣。好好掌握他原來就是這樣。問病史跟發展企業一樣，一路發

摘自王正一 病歷紀錄之是與非(16)

王正一: 病歷紀錄之是與非, 2012.11.12中國醫藥大學醫院演講.

王正一, 賴寧生等: 加強醫學生基本臨床技術教育, 減少不該有的缺失- 病史紀錄學例
大林專科護理師進階教育中心 2021論文集 pp8-25, 2021.05.20

熟練疾病腳本的教學方法

- 熟練疾病腳本的教學方法
- 提出固定的疾病腳本方案給學生做參考
- 在案例討論會中要求學生完成疾病腳本
- 告訴學生重點在哪裡,要好好去找文獻/請教老師
- 1. Local epidemiology– local report.
- 2. Symptoms manifestation(both history and PE)
- 3. What are diagnostic evidence知道診斷的關鍵點一條件
- 4. Therapeutic choice—知道各種治療方法之優缺點以及決定採用之關鍵條件
- 5. 確實明白造成疾病的發生因素以及危險因素—precipitating events and risk factors,

表 2.4

基於疾病腳本形成的臨床前學生臨床推理發展的有效學與教策略

有效的學與教策略

學習和 小組活動

教學環 境

- 每組 4-5 名學生 [26]
- 由主持人為討論和反饋提供指導 [1,4,10,23,26]
- 有足夠的時間廣泛討論所有相關的臨床病例[10]

學與教 內容

- 臨床病例
 - 患者病例按其通常順序（病史、體格檢查、鑒別診斷、診斷性檢查和管理）涵蓋臨床就診的所有階段[10]
 - 與學生目前在其他班級學習的內容相關 [26]
 - 一次重複應用多個案例，以鼓勵疾病腳本開發[10]
 - 通過真實或類比患者呈現臨床病例，提高真實性[4,7,22,25,26]
 - 從全案方法（混合方法）過渡到向學生展示患者數據的串行提示方法[7]

學與教 方法

- 綜合教學
 - 專注於生物醫學和臨床知識的整合[1,4,10,22-26]
 - 強調基礎科學在臨床病例中的應用，而不是獲取新知識[10,26]
 - 提供一個結構化的框架，使臨床推理過程正式化，以整合生物醫學和臨床知識，而不是非正式培訓[4,22]
 - 使用工作表的直接疾病腳本教學方法;通過幫助學生開發正確的問題表徵並將數據組織到疾病腳本工作表中，直接教授疾病腳本[1,23]
 - 當疾病具有相似的病理生理過程且不熟悉或複雜時，側重於病理生理機制的自我解釋[24]
 - 通過大聲思考方法提供詳細及時的反饋 [1,23,25,27]
 - 逐步接觸臨床實踐;在傳統的臨床見習之前，提供臨床推理培訓機會，無需績效壓力或正式評分[25]

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Strategies for developing pre-clinical medical students' clinical reasoning based on illness script formation: a systematic review

Korean J Med Educ. 2022

Mar;34(1):49-61. Epub 2022 Mar 1

Keywords: Clinical reasoning; Illness script; Medical education; Pre-clinical; Teaching strategies



至聖先師的大道理

551BC-
479BC

論語：學而時習之，不亦說乎：

- 學了問病史的道理，在適當的時候驗證練習，心裡會很高興--因為已成為您專有的心得。
- **學而不思則罔**--不反省學習的內容--枉然
- 學些什麼
- 五經六藝
- **思而不學則殆**--
- 學習/反省後要打開書本→看書

- 五經History taking
- Physical examination
- Lab. Interpretation
- Image reading
- Clinical reasoning

六大核心能力



結論

- 臨床推理是醫生的核心臨床技能，儘管在培訓期間強調臨床推理，但大多數醫生並沒有達到 EC 的臨床推理技能。在本文中，我們將重點放在 EC 針對**複雜臨床病例**優先考慮的臨床推理策略。將這些策略識別並整合到醫療培訓和臨床醫生教育實踐中可能會促進臨床推理技能的發展並減少診斷錯誤。增加早期醫生對 EC 的接觸、對 EC 所使用的**臨床推理策略進行角色建模**以及在醫療培訓計劃中**創建謙遜文化**(creating a culture of humility within medical training programs)可能是改善臨床推理並值得進一步研究的重要策略。

今後的醫師-Expert clinicians

Chapter 1: Clinicians are seeking balance

Chapter 2: Technology and AI are empowering clinicians

Chapter 3: Knowledge and technology are transforming the clinician–patient relationship

Chapter 4: Clinicians imagine a value-based future

Conclusion

Clinician
of the
Future
2023

Today's clinicians are enthusiastic about their roles, but many are acutely aware of the challenges facing healthcare, including staff shortages. They are keen to balance this and can see the potential of technological solutions, including artificial intelligence (AI), to ease their work burden. These are all drivers of change, helping shape tomorrow's healthcare landscape – one in which the clinician of the future will work. Elsevier Health developed the inaugural Clinician of the Future report in 2022; this 2023 survey explores the latest trends in clinicians' perspectives. This new report takes a snapshot of clinician behavior and opinion that shows progress – or not – toward the possible futures we envisioned in the Clinician of the Future Report 2022. Through an online survey; 2,607 clinicians around the world shared their experiences and views. This report focuses on four themes that emerged strongly from the results.

Clinicians are seeking balance : 緊湊的忙碌的工作下求得平衡.

Technology and AI: 新技術及AI的挑戰讓工作更加複雜,醫療資訊公開,知識膨脹,醫病關係也會改變

Clinicians imagine a value-based future: 醫療價值觀也面臨改變,或許預防更加重要

結論 (2024.09.27.)

- **Clinical reasoning** 是醫學教育中的重點
- **Clinical reasoning**是應用醫師的知識及經驗針對病人的問題作出決策.以解決病人的問題
- 問清楚病人之問題是確定診斷之第一要務
Thorough information of patient's problems.
- 加強**clinical reasoning**學習必須多方面進行包括演繹、工作坊之學習方式、以及主治醫師迴診、案例討論等項.討論會之後完成疾病劇本也是一個很有效的教學方式
- **Clinical reasoning**有很多常見的錯誤,必須一一克服,這也是教學的重點.