

ord

Topics

A.Introduction

B.Expert Vs Novice

- 1.Knowledge
- 2.Critical Thinking
- 3.Reflective learning
- 4.Decision making

C.Clinical decision making

1. Information gathering
2. Hypothesis generation
3. Hypothesis testing
4. Reflection
5. When things go wrong

A. Introduction

–In the USA, it has been estimated that **44,000–98,000 patients die each year** through **medical error**, and in the Harvard Medical Practice Study, **diagnostic errors** accounted for **17%** of all adverse events.

-Logical reasoning and good decision-making skills are key factors in reducing such errors.



Introduction

- ▶ The work of the physician is the **decision-making process** on the ward round.
- ▶ Thinking, clinical reasoning and judgment making is core to the work the physician



B.Expert vs Novice

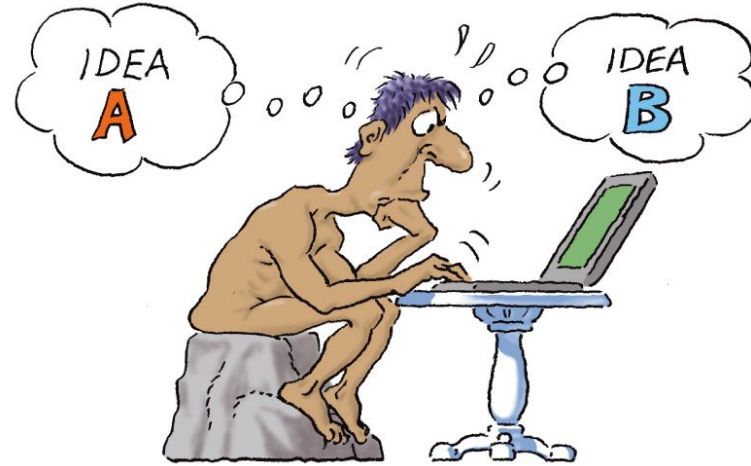
1.Knowledge

*** Organization of knowledge is more important than content of knowledge [Christenson et al 2002)

2.Critical thinking and Clinical reasoning

3.Reflective Learning

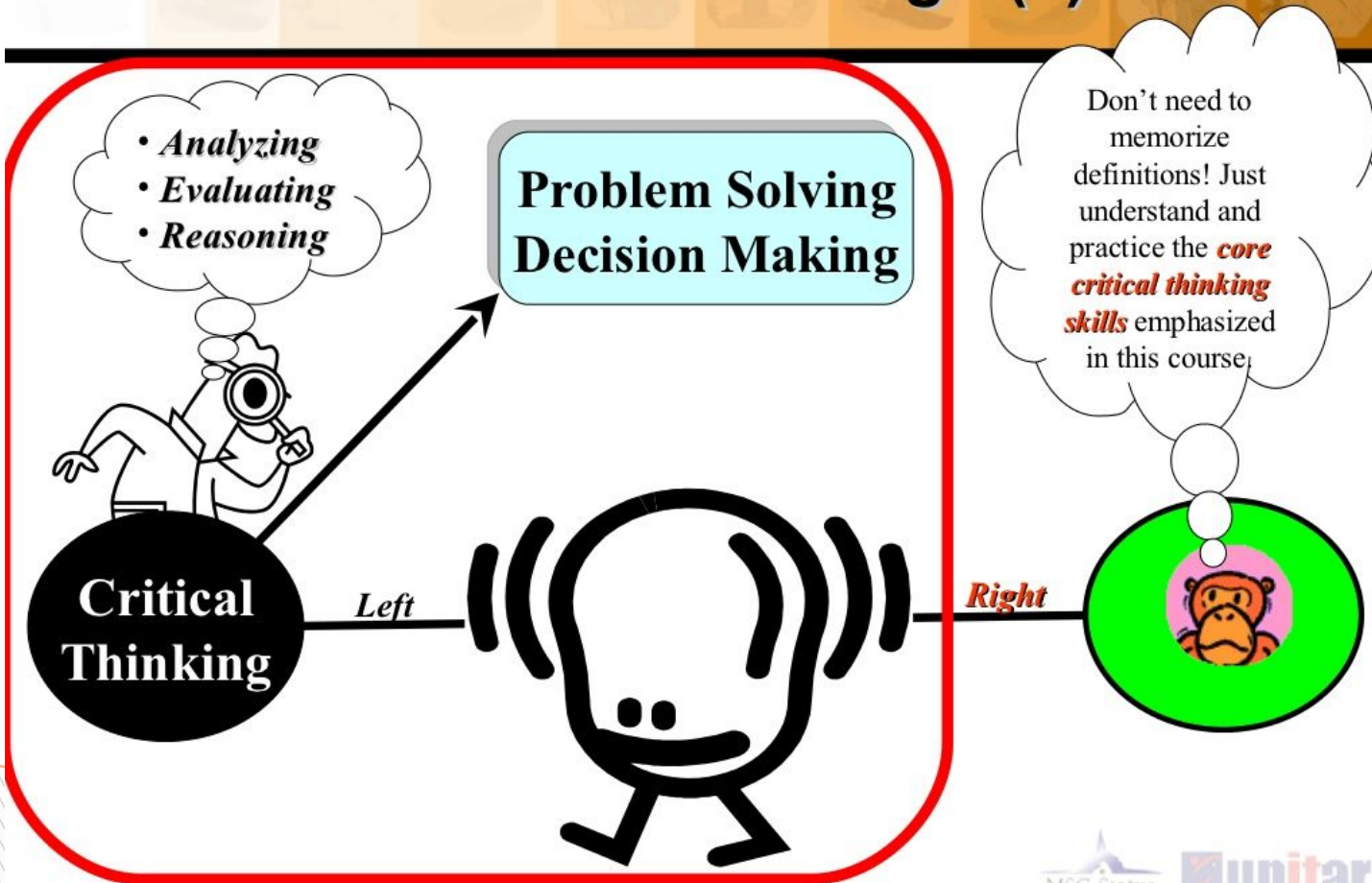
A reflective practitioner can gain 10 years of clinical experience in 1 year. [David Butler]

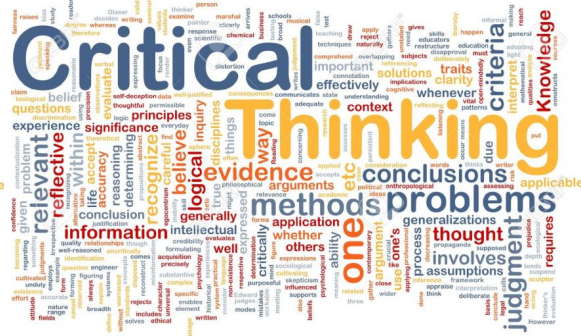


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1. Critical Thinking

1.3 What is Critical Thinking? (4)





- အဖြစ်အပျက်တစ်ခု အကြောင်းအရာတစ်ခု ကို ကြည့်ပြီး အတွေးတွေ အများကြီးဖြန့်ကျက်လို့ရပါတယ်
- Analytical thinking, conceptual thinking, critical thinking,
- strategic thinking, lateral thinking
- Critical thinking skills = အကြောင်းအကျိုးကျကျ စဉ်းစားတွေးခေါ်ဆင်ခြင်
| ယုတ္တိကျကျ စဉ်းစားဝေဖန် သုံးသပ်
ဉာဏ်နဲ့ ယှဉ်ပြီးတော့ တွေးနည်း

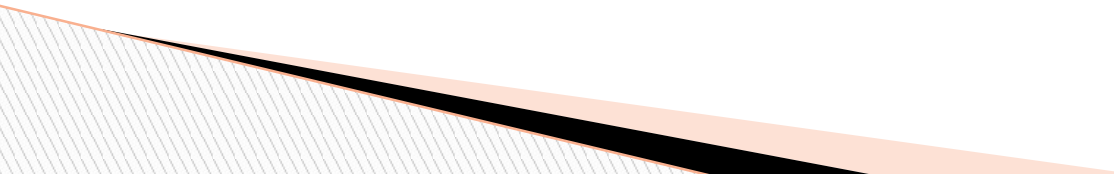
ဗုဒ္ဓက

- သတင်းစကားကို ကြားရုံမျှဖြင့် နားမယောင်နှင့်
- အစဉ်အလာဖြစ်ပေသည် ဟူ၍လည်း လက်မခံနှင့်
- လူပြော သူပြော တဆင့် စကားကိုလည်း မယုံလေနှင့်
- ဘာသာရေးကျမ်းကြီးများကို ကိုးကားပြော၍လည်း မှန်လှပြီ မထင်လေနှင့်
- တက္ကနည်းနှင့် ဆင်ခြင်ကြံဆ ယူရုံမျှကိုလည်း နားမယောင်လေနှင့်
- ပုံပန်းအမြင် သဏ္ဌာန်ကြည့်၍လည်း မဆုံးဖြတ်နှင့်
- ရော်ရမ်းမှန်းဆ ယူရသော သဘောထင်မြင်ချက်ကိုလည်း အမှန်ဟု အမှတ်မယူနှင့်
- ဖြစ်နိုင်ကောင်း၏ဟု ထင်မြင်ရုံဖြင့်လည်း မယုံကြည် လေနှင့်
- အသင်တို့ ကိုးကွယ်ဆည်းကပ်ရာ ဆရာသမားဖြစ်ပေသည် ဟူသော သဘောကြောင့်လည်း မှန်လှပြီဟု တထစ်ချ မမှတ်ကြလေနှင့် လို့မိန့်ကြားခဲ့ပါတယ်။

- ▶ ညအခါ
- ▶ လသာသာ
- ▶ ကစားမလား
- ▶ နားမလား



Nursing Exam [Critical thinking]

- ▶ Which instruction is most important to a patient who has splenomegaly ?
 - ▶ A. Take frequent rest
 - ▶ B. Do not lift heavy objects
 - ▶ C. Eat nutritious meals
 - ▶ D. Avoid unnecessary stress
- 

Critical thinking Question

- (၁) မြေအောက်ရေမြောင်း၏ လူဝင်ပေါက် manhole သံပြားအဖုံးများကို မည်သည့်အကြောင်းကြောင့် အပိုင်းပုံစံများသာ သုံးသနည်း။
- (၂) နယူးယောက်မှ လန်ဒန်သို့ လေယာဉ်ဖြင့် အသွားအပြန်စီးလျှင် အသွားခရီးနှင့် အပြန်ခရီး အကွာအဝေးမိုင် အတူတူ ဖြစ်သော်လည်း ယှဉ်သန်းချိန် တူညီပါသလား။ အကျိုးအကြောင်း ရှင်းပြပါ။
- (၃) လူများ လေ့ကားအတက်အဆင်း လုပ်ရာမှာ တိုကျိုမြို့တွင် လေ့ကား၏ လက်ဝဲဖက်မှ ကပ်၍၊ အိုဆာကာတွင် လက်ယာဖက်မှ ကပ်ပြီး ဆင်းတက်သည်မှာ အဘယ်ကြောင့်နည်း။

၂၀၁၂ ခုနှစ်၊ ကျန်းမာရေးဦးစီးဌာန၊ လက်ထောက်ဆရာဝန်ရာထူး ရေးဖြေစာမေးပွဲမေးခွန်း

- (၁) နိုင်ငံတော်သမ္မတ ဦးသိန်းစိန်၏ ဒုတိယအကြိမ် စီမံကိန်းကော်မရှင် အစည်းအဝေး အဖွင့်အမှာစကားပါ အချက်များကို ဖြေဆိုပါ။
- (၂) ဒုတိယသမ္မတ ဒေါက်တာ စိုင်းမောက်ခမ်း၏ ပြည်ထောင်စု ငြိမ်းချမ်းရေးဖော်ဆောင်ရေး လုပ်ငန်းကော်မတီတွင် ပြောကြားသော အမှာစကားပါ အချက်များကို ဖြေဆိုပါ။

25 Microsoft Questions and Answers:

1 :: Microsoft Interview Questions List

Mike has \$20 more than Todd. How much does each have given that combined they have \$21 between them. You can't use fractions in the answer. (Hint: This is a trick question, pay close attention to the condition)

There are four dogs, each at the counter of a large square. Each of the dogs begins chasing the dog clockwise from it. All of the dogs run at the same speed. All continuously adjust their direction so that they are always heading straight towards their clockwise neighbor. How long does it take for the dogs to catch each other? Where does this happen? (Hint: Dog's are moving in a symmetrical fashion, not along the edges of the square).

If you had an infinite supply of water and a 5 quart and 3 quart pail, how would you measure exactly 4 quarts?

If you are on a boat and you throw out a suitcase, will the level of water increase?

On an average, how many times would you have to open the Seattle phone book to find a specific name?

There are 3 ants at 3 corners of a triangle, they randomly start moving towards another corner. What is the probability that they don't collide?

If you look at a clock and the time is 3:15, what is the angle between the hour and the minute hands? (The answer to this is not zero!)

What new feature would you add to MSWORD if you were hired?

Why did you pick the school you graduated from?

Why do you want to work for Microsoft?

How many Gas stations are there in the US?

How would you weigh a plane without using scales?

How would you move Mt. Everest?

Two MIT math graduates bump into each other at Fairway on the upper west side. They hadn't seen each other in over 20 years.

The first grad says to the second: "how have you been?"

Second: "Great! I got married and I have three daughters now"

First: "Really? how old are they?"



7Day News Journal

19 Apr at 8:30p.m. • 📶

လာမယ့် တက္ကသိုလ်ဝင်စာမေးပွဲမှာ အလွတ်ကျက်
မေးခွန်းပုံစံအစား
စဉ်းစားတွေးခေါ်မှုကို အားပေးတဲ့ မေးခွန်းပုံစံ
ပြောင်းမေးမယ်လို့
ပညာရေးဝန်ကြီးက ဆိုပါတယ်။
သတင်းအပြည့်အစုံ.... [http://www.7daydaily.com/
story/124656](http://www.7daydaily.com/story/124656)



2. Knowledge စာက်ကုမ့်လုံလား ???

...can analyze and
...the mix of activities
...performed in terms of the
...a **knowledge** base
...proprietary knowledge
...peers as a means of
...standing competition



**Reflective
practice**

3. Reflective Learning





Credit – Dr Kyaw Thu Yaa FB

အားလုံးပူးပေါင်းအဖြေရှာပြီး အကောင်းဘက် သို့အရွေ့
(change အပြောင်းအလဲ) တစ်ခုဆီသို့

ယနေ့ hot topics ဆေးမလုံ လောက်မှု သို့ ပိုလျှံနေမှု ကို Reflective learning
လုပ်ကြည့်ခြင်း

1. ဖြစ်စဉ် (description)
2. ဖြစ်စဉ်အပေါ်ခံစားချက် (feelings)
3. အားသာချက်, အားနည်းချက်, အခွင့်အလမ်း,
အတားအဆီး (SWOT analysis)
4. ရှေ့ဘာလုပ်သင့်လဲ (ဆုံးဖြတ်ချက်) (Way forward)

DECISION MAKING



4. Decision Making

5 DAILY DECISIONS

ETV



Save

Would You
Rather...

be a bird
or
a bat?

Would You
Rather...

explore space or
the ocean?

Would You
Rather...

live on Mars or
live on the moon?

Would You
Rather...

have many good
friends or one
very best friend?

Would You
Rather...

go without TV or
junk food the
rest of your life?

Would You
Rather...

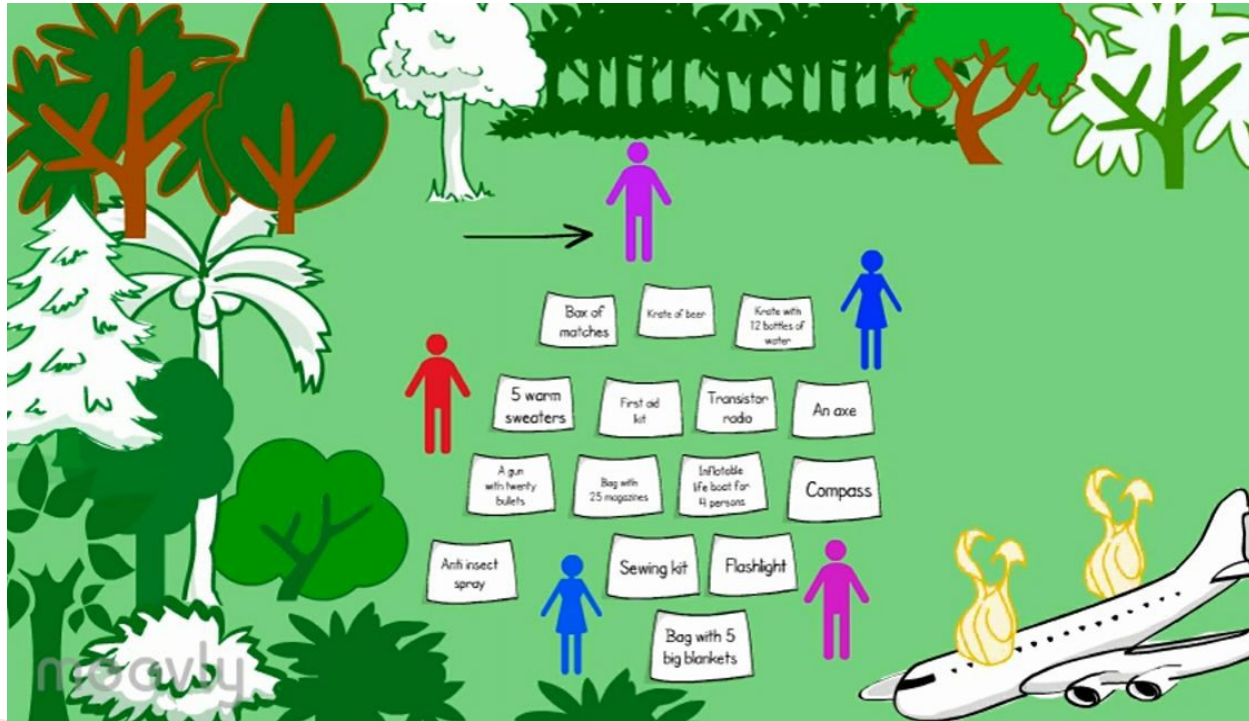
be able to breathe
underwater or fly
in the air?

When you answer a question, you have to choose one or the other, you can't pick a third option.

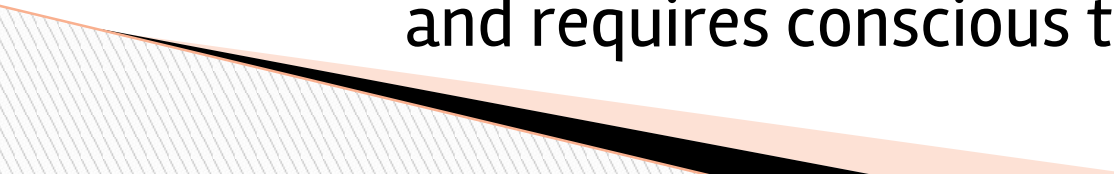
You can always ask questions to get more information about the scenario to help you make a decision.

3 Decisions in 7 minutes

- 1.Box of matches
- 2.5 warm sweaters
- 3.Gun with twenty bullets
- 4.Insect spray
- 5.First aid kit
- 6.Bag with 25 magazines
- 7.Sewing Kit
- 8.Bag with 5 big blankets
- 9.Flashlight
- 10.Compass
- 11.An axe
- 12.Transistor radio
- 13.Inflatable life boat
for 4 persons
14. 12 bottles of water
15. 5 bottles of beer



Thinking and Decision making

- ▶ System 1 --- fast, automatic, emotional, stereotypic, used frequently and operates subconsciously.
 - ▶ System 2 --- slow, effortful, logical, calculating, used infrequently and requires conscious thought.
- 

System 1



Fast



Unconscious



Automatic



Everyday
Decisions



Error prone

System 2



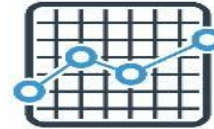
Slow



Conscious



Effortful



Complex
Decisions



Reliable

Behavioral Frameworks Can Help

Dual Process Theory: Intuition and Reasoning



System 1: Intuition

Controlled largely by instincts and drives, system 1 thinking is:

- Fast
- Emotional (hot)
- Impulsive
- High-capacity

System 2: Reasoning

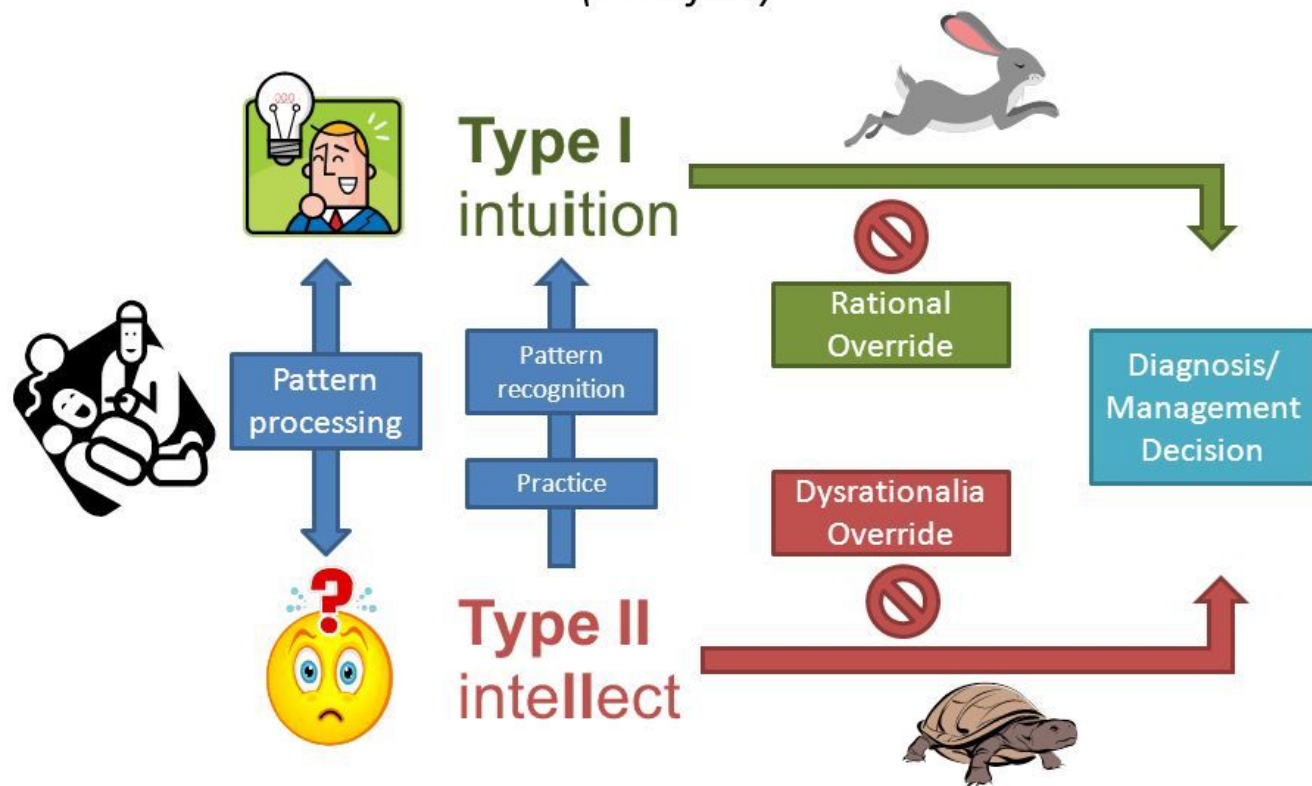
Controlled more by logic, system 1 thinking is:

- Slow
- Reflective (cool)
- Problem Solving
- Low-capacity



Systems 1 and 2 are not opposed, they often work together and complement each other in the same decision making process.

Croskerry's Dual-Process Model for Diagnostic Thinking (modified)



7 STEPS TO EFFECTIVE DECISION MAKING

Decision making is the process of making choices by identifying a decision, gathering information, and assessing alternative resolutions.

Using a step-by-step decision-making process can help you make more deliberate, thoughtful decisions by organizing relevant information and defining alternatives. This approach increases the chances that you will choose the most satisfying alternative possible.

①

**IDENTIFY
THE DECISION**

②

**GATHER
INFORMATION**

③

**IDENTIFY
ALTERNATIVES**

④

**WEIGH THE
EVIDENCE**

⑤

**CHOOSE
AMONG
ALTERNATIVES**

⑥

TAKE ACTION

⑦

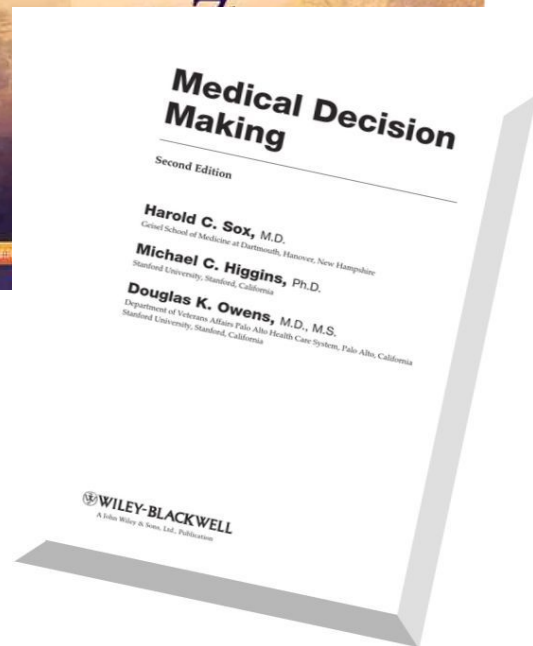
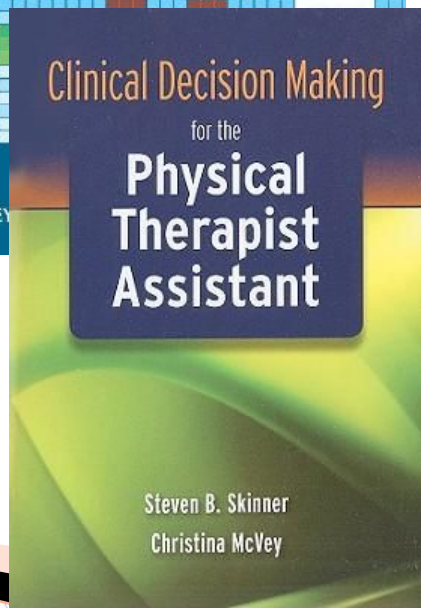
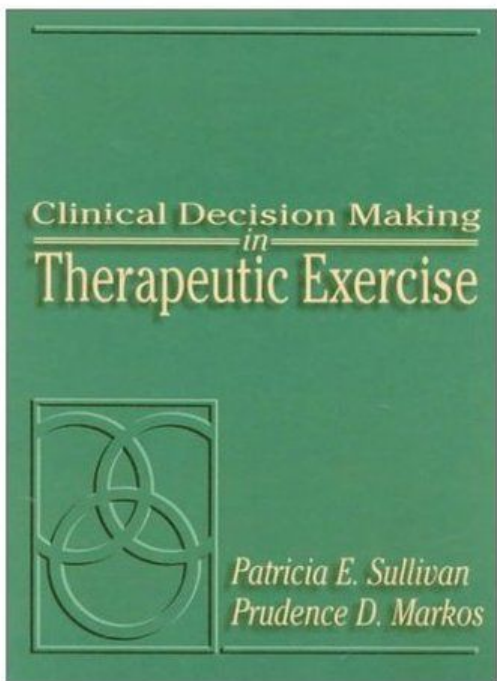
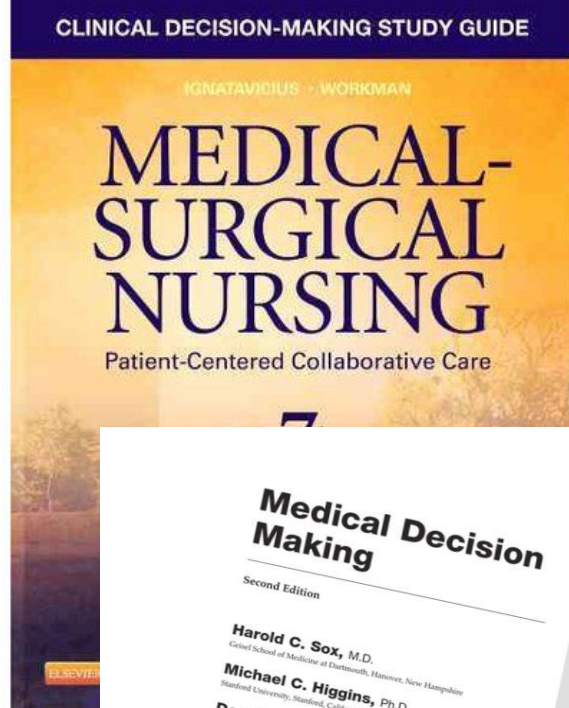
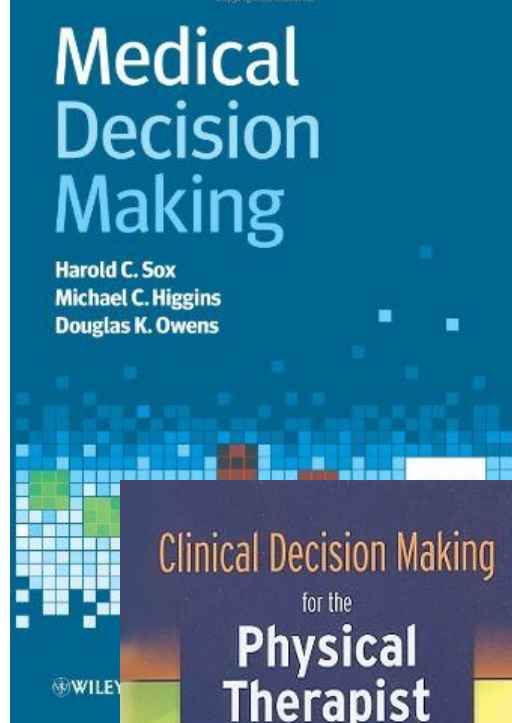
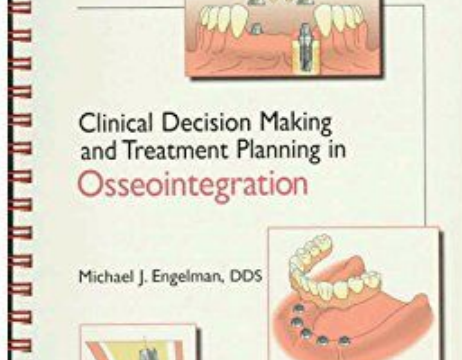
**REVIEW YOUR
DECISION**

C. Clinical decision Making



C.Clinical decision making.

- ▶ Clinicians must integrate a huge variety of clinical data while facing conflicting pressures to decrease diagnostic uncertainty, risks to patients, and costs.
- ▶ Deciding what information to gather, which tests to order, how to interpret and integrate this information to draw diagnostic conclusions, and which treatments to give is known as **clinical decision making**.



How do we make clinical decisions?

1. Information gathering
2. Hypothesis generation
3. Hypothesis testing
4. Reflection.

Often the term

'hypothetico-deductive'

is used to describe this process.

Deduction is reasoning from the general to the particular:

- ▶ > All the marbles in the jar are white.
- > These marbles are from the jar.
- > Therefore these marbles must be white.

Induction is reasoning from the particular to the general:

- ▶ > These marbles have come from the jar.
- > These marbles are white.
- > Therefore the marbles in the jar are white.

Deductive Logic

Lead *down*



Conclusion is
guaranteed true

Inductive Logic

Lead *into*



Conclusion is
probably true

Clinical Decision Making

1. Information gathering

- It is a capital mistake to theorise before one has data.
- As with the history, we must pay attention as we examine the patient.

SEE ???

OBSERVE ???



**AS ALWAYS JOHN,
YOU SEE BUT YOU
DON'T OBSERVE.**

- SHERLOCK HOLMES



Clinical Decision Making

2. Hypothesis generation

A. Pattern recognition

- ▶ Neck stiffness + photophobia + Fever = Meningitis
- ▶ Thunderclap onset Headache + Neck stiffness = SAH

B. Rule out worst case scenarios

- ▶ This approach focuses on risk management but can often leave our diagnostic question unanswered.

C. Casablanca strategy

Casablanca strategy is to 'round up the usual suspects'.

It represents the lazy application of a standard battery of tests for a given symptom and is somewhat akin

Clinical Decision Making

2. Hypothesis generation

- ▶ If the pattern is incomplete ???
- ▶ if the pattern is unfamiliar???

Structured, quantitative, analytical methodology may be a better approach to decision making.

Analytic methods may include application of the principles of evidence-based medicine, use of clinical guidelines, and use of various specific quantitative techniques.

3. Hypothesis testing and reflection

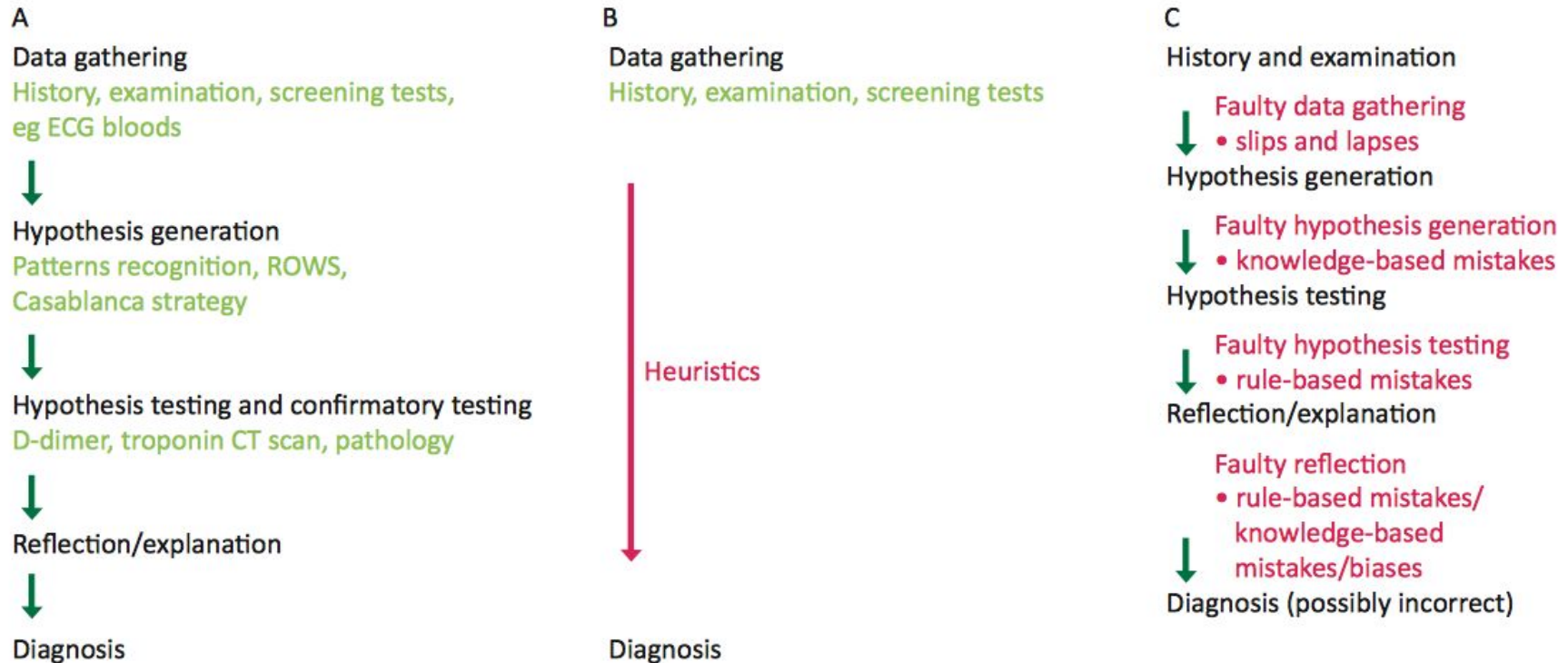
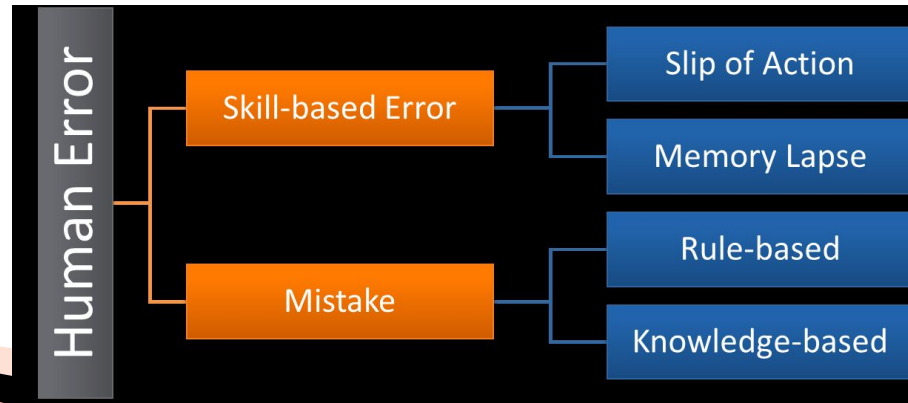


Fig 1. The process of medical decision making. A – diagnostic process; B – heuristic thinking bypasses reasoned thought; C – errors are possible at each stage of the process.

Where thinking goes wrong

- ▶ Psychologist James Reason identifies three basic error types:
 1. Skill-based (slips and lapses)
 2. Rule-based
 3. Knowledge-based.



Where thinking goes wrong

1- Skills Based :

Occurs during performance of a well known routine task.

Skill-based error

- ❖ Involve routine tasks in familiar situations.
- ❖ May cause by inattention or over attention.
- ❖ Two categories – slips and lapses



- ▶ Prevention – Minimising interruption
- ▶ Checklists, SOP

Where thinking goes wrong

2. Rule-based mistakes include the misapplication of a good rule or the application of a bad rule.

Occam's razor, which states that 'entities must not be multiplied beyond necessity'. LOW , AF , CNS \$ -- Thy

However, one must not ruthlessly discount valid alternatives; to apply another rule, 'patients can have as many diseases as they damn well please' (**Hickam's dictum**).

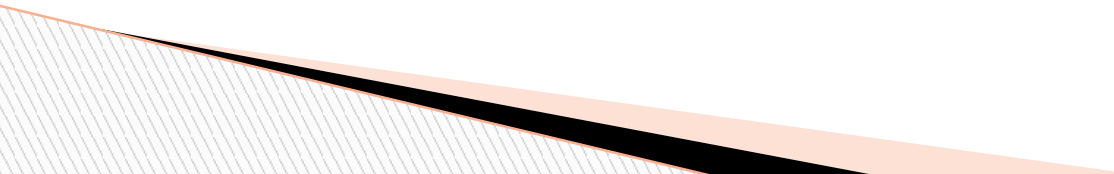
*** Common d/s = seen together in one person [GS , DM , CA]

*** Rare d/s = can't be present in one person



Where thinking goes wrong

3. Knowledge-based mistakes can include lack of appropriate information, but can also arise through a lack of understanding of the principles of logic.



Bias and cognitive disposition to respond

- ▶ Errors can arise when we allow biases to distort our thoughts.
- ▶ Eg ---
- ▶ **Order effects** --- In receiving information, we pay more attention at the beginning and end of a story; meaningful detail in the middle can get lost.
- ▶ **Anchoring** --- means that we lock into salient features too early.
Once a label is attached, it becomes increasingly sticky.
- ▶ **Confirmation bias** --- look for evidence to support our initial diagnosis. This all results in premature closure (accepting a diagnosis before it has been verified) and can miss co-pathology.
- ▶ **Personal factors** --- Overconfidence, time, energy and ego.

D.Applying Evidence to Clinical Decision



Clinical Decision Making

2. Hypothesis generation

- ▶ If the pattern is incomplete ???
- ▶ if the pattern is unfamiliar???

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Analytic methods may include application of the principles of evidence-based medicine, use of clinical guidelines, and use of various specific quantitative techniques.



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 What is the **National Guideline Clearinghouse™**? The Agency for Healthcare Research and Quality's **National Guideline Clearinghouse™** (NGC) is a publicly available database of evidence-based clinical practice **guidelines** and related documents.

ACP Journal Club | Archives

www.acpjournals.org ▾
ACP Journal Club Archives is a collection of articles and editorials from **ACP Journal Club** published between January 1991 and April 2008 when it was a bimonthly stand-alone journal.

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ACP Journal Club - American College of Physicians

www.acponline.org › ... › **Journals & Publications**
ACP Journal Club summarizes the best new clinical evidence for internal medicine from over 130 clinical journals.

Problem ---

- ▶ 61 year old woman is admitted for cellulitis at the site of a recent left mastectomy incision. In addition, she reports a 4 day history of nonproductive cough, SOB, pleuritis chest pain and transient left calf pain. She denies lower extremity redness, warmth and edema. She has no known cardiac or pulmonary disease.
- ▶ PMH --- Bilateral breast cancer

Examination

- ▶ Erythema and tenderness overlying the left mastectomy scar.
- ▶ CVS , Resp – Normal. SPO2 = 85%
- ▶ In Vx – Hb – 10.8 g/dl.
- ▶ U & E , CXR , ECG = Normal
- ▶ BUN , HSG = Normal

Clinical Decision

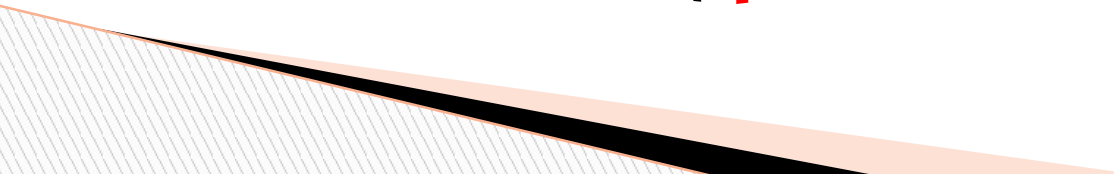
Making the Diagnosis

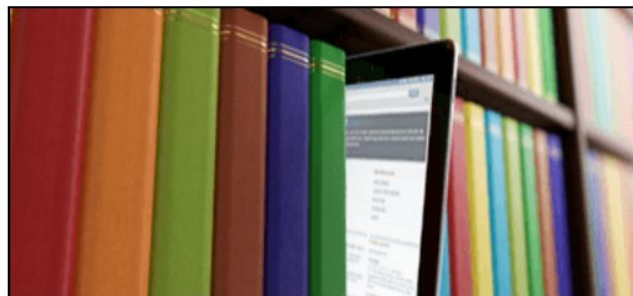
- ▶ ? Pulmonary Embolism ????
- ▶ Is negative Doppler USG sufficient to exclude the diagnosis of PE.

I. Framing the Clinical Question

- ▶ 1st Q – Suspected PE ???
- ▶ 2nd Q – InVx Duplex compression USG ?
- ▶ 3rd Q – Comparison In Vx Pulmonary Angiogram ?

The Application of EBM to practice require

1. Ability to define focus **clinical question**
 2. Competently and efficiently search the **medical literature**
 3. **Critically appraise** relevant articles
 4. Consideration of **patient's** value and preference
- 



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Clinical Study Categories

Category

Scope

Etiology

✓ Diagnosis

Therapy

Prognosis

Clinical prediction guides

Results: 0 of 0

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Medical Genetics

Topic:

All



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pulmonary embolism and compression ultrasonography

Search

Clinical Study Categories

Category:
Scope:

Results: 5 of 60

Diagnostic accuracy of focused cardiac and venous ultrasound examinations in patients with shock and suspected pulmonary embolism.

Nazerian P, Voipicelli G, Gigli C, Lamorte A, Grifoni S, Vanni S.
Intern Emerg Med. 2017 May 24; . Epub 2017 May 24.

Diagnostic characteristics of lower limb venous compression ultrasonography in suspected pulmonary embolism: a meta-analysis.

Diagnostic characteristics of lower limb venous compression ultrasonography in suspected pulmonary embolism: a meta-analysis.

Da Costa Rodrigues J, Alzuphar S, Combescure C, Le Gal G, Perrier A.
J Thromb Haemost. 2016 Sep; 14(9):1765-72. Epub 2016 Aug 17.

Management of Venous Thromboembolisms: Part I. The Consensus for Deep Vein Thrombosis.

Wang KL, Chu PH, Lee CH, Pai PY, Lin PY, Shyu KG, Chang WT, Chiu KM, Huang CL, Lee CY, et al.
Acta Cardiol Sin. 2016 Jan; 32(1):1-22.

The performance of age-adjusted D-dimer cut-off in Chinese outpatients with suspected venous thromboembolism.

Han C, Zhao Y, Cheng W, Yang J, Yuan J, Zheng Y, Yu X, Zhu T.
Thromb Res. 2015 Oct; 136(4):739-43. Epub 2015 Jul 26.

Controversies in the diagnosis of venous thromboembolism.

Le Gal G, Righini M.
J Thromb Haemost. 2015 Jun; 13 Suppl 1:S259-65.

See all (25)

Systematic Reviews

Results: 5 of 25

Diagnostic characteristics of lower limb venous compression ultrasonography in suspected pulmonary embolism: a meta-analysis.

Da Costa Rodrigues J, Alzuphar S, Combescure C, Le Gal G, Perrier A.
J Thromb Haemost. 2016 Sep; 14(9):1765-72. Epub 2016 Aug 17.

Pulmonary Embolism As a Consequence of Ultrasonographic Examination of Extremities for Suspected Venous Thrombosis: A Systematic Review.

G20210A prothrombin mutation on the presence of residual vein obstruction after idiopathic deep-vein thrombosis of the lower limbs.

in diagnostic imaging of pulmonary embolism.

[35-year old patient with severe thromboembolism].

Kluge JG, Körner I, Kluge G, Froster U, Pfeiffer D. Internist (Berl). 2010 Dec; 51(12):1567-70.

Klippel-Trenaunay syndrome: current management.

Gloviczki P, Driscoll DJ.
Phlebology. 2007; 22(6):291-8.

See all (4)

This column displays citations pertaining to topics in medical genetics. See more [filter information](#).

Medical Genetics

Topic:

Results: 4 of 4

Clinical characteristics and course of plantar vein thrombosis: a series of 22 cases.

Czihal M, Röling J, Rademacher A, Schröttle A, Kuhlencordt P, Hoffmann U.
Phlebology. 2015 Dec; 30(10):714-8. Epub 2014 Oct 17.

The influence of factor V Leiden and G20210A prothrombin mutation on the presence of residual vein obstruction after

- ☐ [Diagnostic utility of ultrasonography of leg veins in patients suspected of having pulmonary embolism.](#)

Turkstra F, Kuijer PM, van Beek EJ, Brandjes DP, ten Cate JW, Büller HR.

Ann Intern Med. 1997 May 15;126(10):775-81.

PMID: 9148650

[Similar articles](#)

- ☐ [Upper-extremity deep vein thrombosis. Risk factors, diagnosis, and complications.](#)

Prandoni P, Polistena P, Bernardi E, Cogo A, Casara D, Verlato F, Angelini F, Simioni P, Signorini GP, Benedetti L, Girolami A.

Arch Intern Med. 1997 Jan 13;157(1):57-62.

PMID: 8996041

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- ☐ [\[Contribution of laboratory tests and venous investigations in the diagnosis of pulmonary embolism\].](#)

Perrier A, Bounameaux H.

Arch Mal Coeur Vaiss. 1995 Nov;88(11 Suppl):1699-707. Review. French.

PMID: 8815829



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Ann Intern Med. 1997 May 15;126(10):775-81.

Diagnostic utility of ultrasonography of leg veins in patients suspected of having pulmonary embolism.

Turkstra F¹, Kuijer PM, van Beek EJ, Brandjes DP, ten Cate JW, Büller HR.

+ Author information

Abstract

BACKGROUND: The standard diagnostic approach in patients suspected of having pulmonary embolism starts with perfusion-ventilation lung scanning. If the resulting scan is not diagnostic, pulmonary angiography should be done. The use of tests for deep venous thrombosis has been advocated as an adjunct to establishing the diagnosis of pulmonary embolism, but no prospective studies have provided adequate information about the value of these tests.

OBJECTIVE: To determine the accuracy and potential clinical utility of compression ultrasonography in the diagnosis of pulmonary embolism.

DESIGN: Prospective cohort study with blinded assessment of ultrasonographic results.

SETTING: Teaching hospital.

PATIENTS: 397 consecutive inpatients and outpatients in whom pulmonary embolism was clinically suspected.

MEASUREMENTS: Sensitivity and specificity of compression ultrasonography. Perfusion-ventilation scanning and angiography were the conjoint gold standard for determining the presence or absence of pulmonary embolism. Also calculated were the number of angiograms and lung scans avoided and the number of patients unnecessarily treated when compression ultrasonography was included in the diagnostic strategy.

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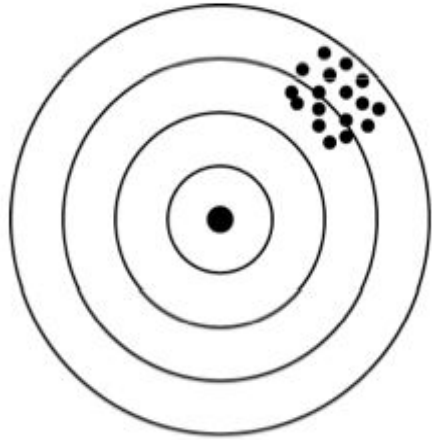
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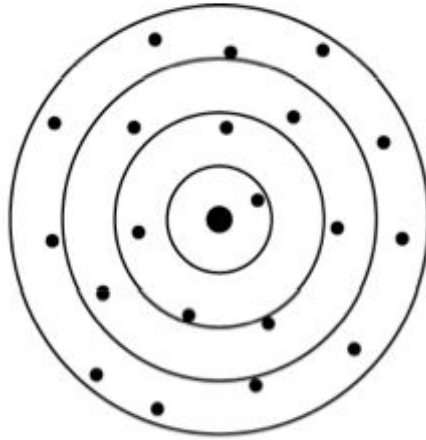
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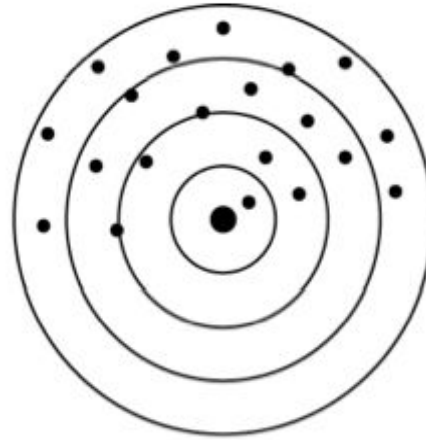
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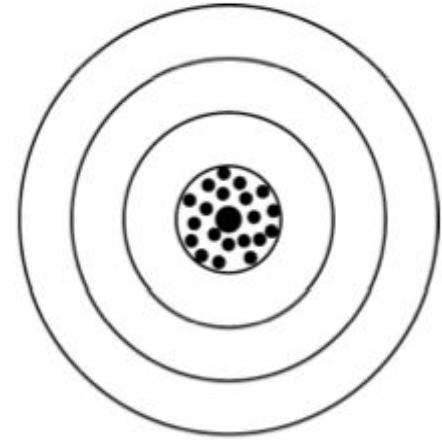
Reliable
Not valid



Valid
Not reliable



Not reliable
Not valid



Reliable
Valid

Validity and Reliability

- ▶ **Sensitivity** -- [Test positivity in the presence of disease]
- ▶ **Specificity** -- [Test negativity in the absence of disease]
- ▶ **likelihood ratios[LRs]** -- the odds that a given diagnostic test result would occur in a patient with a disease Vs a patient without a disease.

- ▶ **LR = 1** indicates that the posttest probability[suspicion of disease after a diagnostic test]is the same as the pretest probability.
- ▶ **LR > 1** increases the probability that a disease is present.
- ▶ **LR < 1** decrease the probability of disease.

		DISEASE	
		+	-
T E S T	+	True + (a)	False + (b)
	-	False - (c)	True - (d)
		Sensitivity $= a / a + c$ $= TP / TP + FN$	Specificity $= d / b + d$ $= TN / FP + TN$

Table 2. Results of Compression Ultrasonography for Detection of Venous Thrombosis of the Leg in 397 Consecutive Patients Clinically Suspected of Having PE

Variable	Study Patients (<i>n</i>)	Patients with Abnormal Results on Ultrasonography	
		<i>n</i>	% (95% CI)
PE proven			
All patients	149	43	29 (22–37)
High-probability lung scan	116	35	30 (21–38)
Nondiagnostic lung scan and abnormal angiogram	33	8	24 (11–42)
PE excluded*	178	5	3 (0.9–6.4)
PE uncertain†	30	4	13 (4–33)

CI = confidence interval; PE = pulmonary embolism. (Adapted with permission from Turkstra F, Kuijer PM, van Beek EJ, Brandjes DP, ten Cate JW, Buller HR. Diagnostic utility of ultrasonography of leg veins in patients suspected of having pulmonary embolism. *Ann Intern Med* 1997;126:775–81.)

*Patients with normal lung scan or angiogram.

†Patients with nondiagnostic lung scan and either no angiography performed or angiogram not interpretable.

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PE uncertain†	30	4	13 (4–33)

		Pulmonary Embolism		Total
		Present	Absent	
Compression Ultrasound	Positive	43	5	48
	Negative	106	173	279
Total		149	178	

$$\text{Sensitivity} = a \div (a + c) = 43/149 = 0.289 = 29\%$$
$$\text{Specificity} = d \div (b + d) = 173/178 = 0.972 = 97\%$$
$$\text{LR+} = \text{sensitivity} \div (1 - \text{specificity}) = 9.67$$

Clinical Decision support System





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Clinical decision support system

From Wikipedia, the free encyclopedia

A **clinical decision support system** (**CDSS**) is a [health information technology](#) system that is designed to provide [physicians](#) and other health professionals with **clinical decision support** (**CDS**), that is, assistance with clinical [decision-making](#) tasks. A working definition has been proposed by Robert Hayward of the Centre for Health Evidence: "Clinical decision support

Top Clinical Decision Support System (CDSS) Companies by Ambulatory, Inpatient Settings

A clinical decision support system is vital to mitigating patient harm and optimizing health outcomes and ambulatory and inpatient providers are taking to the technology.



5. Zynix Health

ort System Companies by Setting

Ambulatory CDS

1. First Databank
2. Medispan
3. Allscripts
4. Cerner
5. Elsevier

First Databank

As the number one clinical decision support system provider among physician practices, **First Databank** gives physicians informative messages through alerts within existing applications. Named the highest-rated drug database by KLAS, First Databank is currently in use at thousands of ambulatory care facilities worldwide. The vendor's clinical decision support technology specializes in installations of e-prescribing, EHR, EMAR, and CPOE systems and prioritizes delivering concise, immediate electronic messages to physicians offering up-to-date drug information for active clinical decision support.

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Medispan

Medispan offers clinical decision support at the point of care through time-efficient, real-time online and mobile applications to aid clinicians in ensuring patient safety and improved health outcomes. Medispan embeds drug reference knowledge into existing healthcare systems to support safe medication decisions while also meeting federal regulatory demands and market needs. The clinical decision support company's machine-readable solutions provide detailed medication classification surpassing mandated industry standards to reduce the potential for drug prescription errors.

Allscripts

Allscripts clinical solutions are designed to aid clinicians in streamlining clinic search for patient health records by ensuring efficient EHR transactions across continuum. Allscripts Core Clinical offers clinical decision support tools for various physician care units including acute, ambulatory, emergency and surgical care. Allsc adaptable solutions tailored to fit to any setting, including small practices, Allsc focuses on providing physicians with cost-effective, interoperable clinical decision support through nearly 800 clinician-reviewed Care Guides.

Cerner

Cerner clinical decision support software uses a nationally-vetted set of evidence-based standards and criteria to give clinicians reliable guidance to ensure patients receive the proper treatment for their specific needs. Cerner offers clinical decision support for a range of healthcare services from advanced imaging and radiology to mobility. Cerner provides clinicians with up-to-date information integrated into existing EHRs and clinical workflows to allow for accurate ordering and prescription leading to optimal patient care.

Elsevier

Elsevier, a worldwide publisher of scientific, technical, and medical information products and services, offers a suite of clinical decision support tools to aid clinicians at the point of care. Elsevier's evidence-based medicine and prescription information provides clinicians with answers to any clinical questions, as well as drug decision support, predictive data analysis, and online training. Elsevier equips providers with tools ranging from drug information to learning and competency management to improve patient outcomes for pharmacists, physicians, and nurses.

Truven Health Analytics

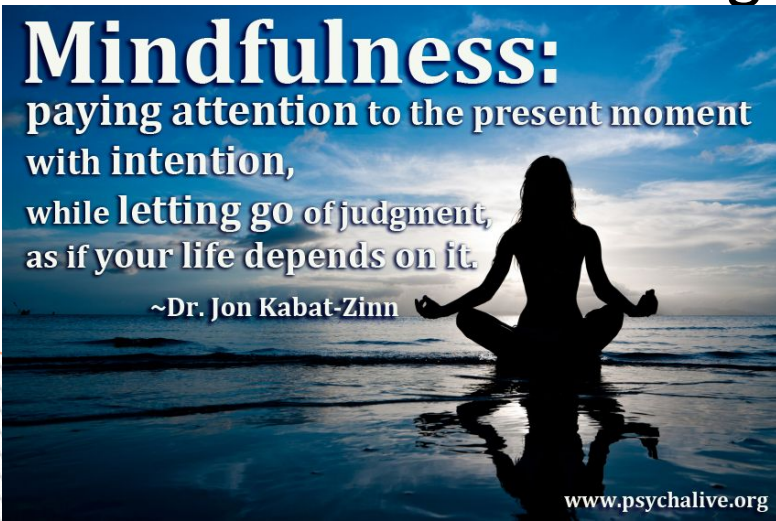
Truven Health Analytics offers hospitals evidence-based clinical decision support and patient education through Micromedex resources designed for seamless integration into existing hospital EHR systems through standardized application programming interfaces (APIs). Truven allows healthcare providers access to clinical decision support regarding medication, disease, and lab information from a single source from any hospital or facility. Truven Micromedex clinical decision support solutions are currently in use in over 3,500 hospitals.

Making better decisions

1.Focus

2.Mindfulness is a concept often associated with relaxation or stress management.

3.Must avoid working on autopilot, give our full
attention in turn .



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B.Expert Vs Novice

- 1.Knowledge
- 2.Critical Thinking
- 3.Reflective learning
- 4.Decision making

C.Clinical decision making

1. Information gathering
2. Hypothesis generation
3. Hypothesis testing
4. Reflection
5. When things go wrong

thank you thank
thank you thank
thank you
thank you

Casablanca - Wikipedia

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Casablanca was an important strategic port during World War II and hosted the **Casablanca** Conference in 1943, in which Churchill and Roosevelt discussed the progress of the war.

Casablanca was the site of a large American air base, which was the staging area for all American aircraft for the European Theater of Operations during World War II.