Basics in Clinical Education (BICE) II
IIUM – 18 Feb 2022

TEACHING CLINICAL REASONING IN A BUSY PRACTICE

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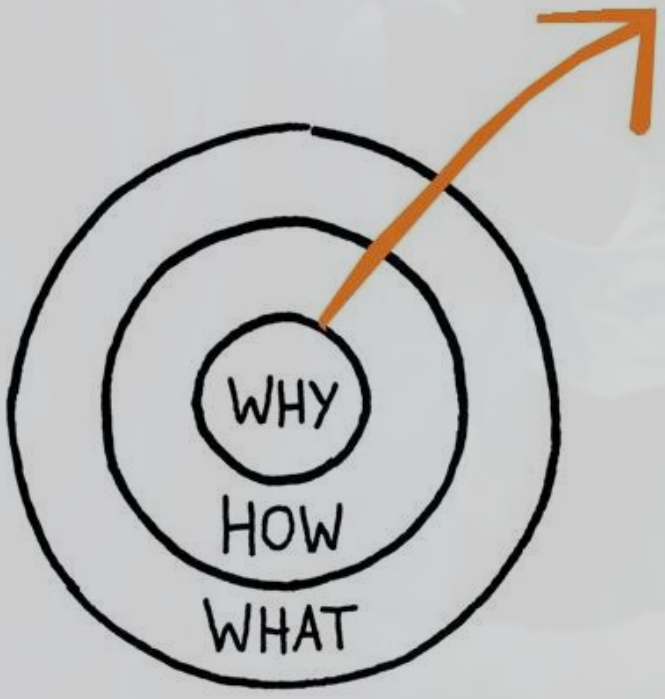
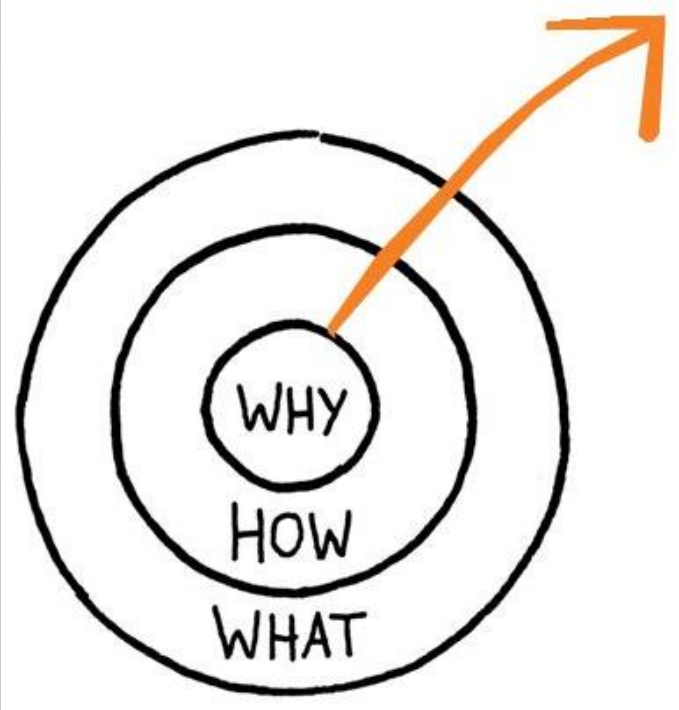
Faculty of Medicine UKM

The Questions



- What is Clinical Reasoning (CR)?
- WHY do we still have to teach clinical reasoning despite our busy clinical practice?
- HOW are we supposed to teach clinical reasoning to medical students & trainees?
- WHAT are the desired outcomes of our clinical teaching?

The Questions



- **What is Clinical Reasoning (CR)?**
- WHY do we still have to teach clinical reasoning despite our busy clinical practice?
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CLINICAL REASONING

Nuland, 1994 described Clinical Reasoning (CR) as :

`Every doctor's measures of his own abilities;

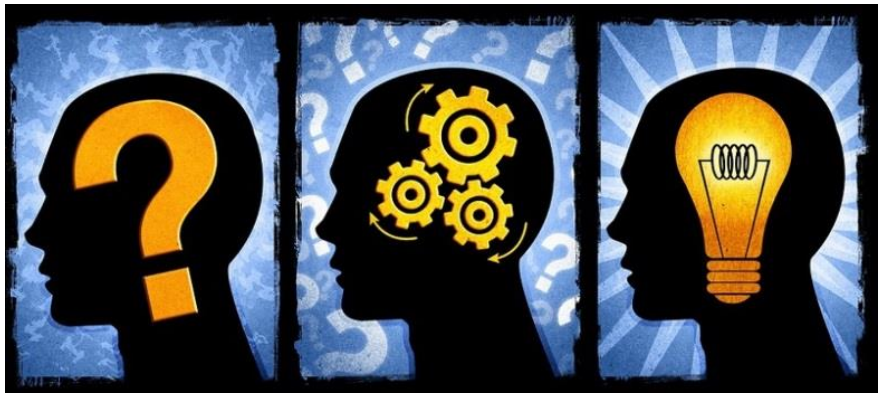
It is the most important ingredient in his professional self-image.'

NATIONAL POSTGRADUATE MEDICAL CURRICULUM

Thinking Like a DOCTOR

CLINICAL REASONING : Definition

*'The **thinking process** by which healthcare professionals **select, interpret, analyse and combine information** in order to **make decisions** and **take actions** about a patient in each clinical situation.'*

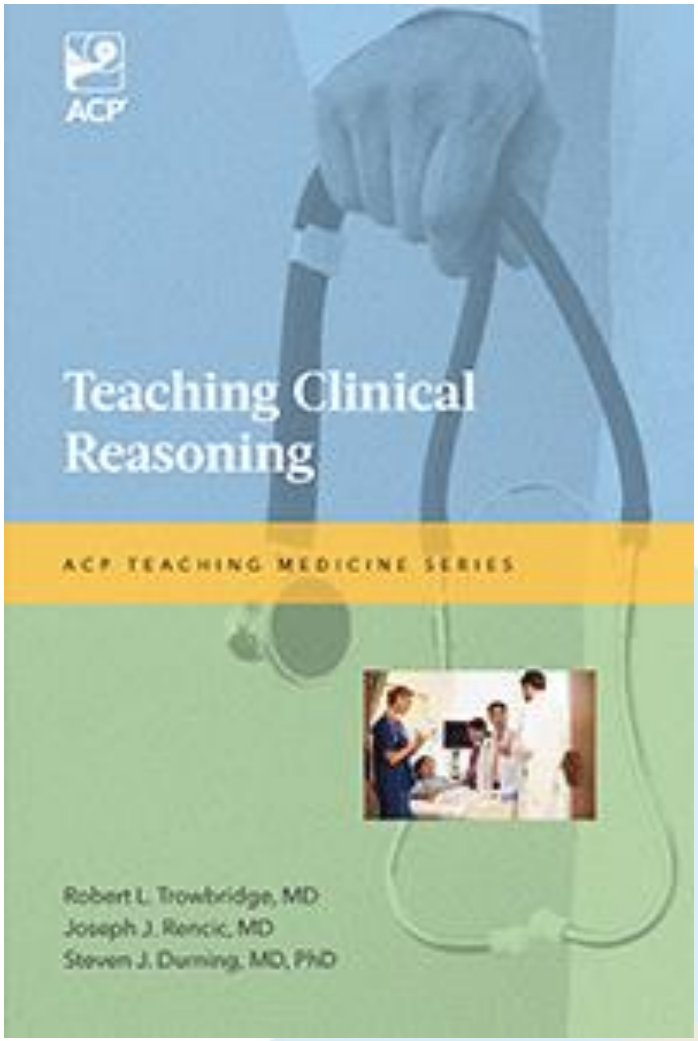


Da Silva et al BEME (2015)

CLINICAL REASONING : A working definition

The **cognitive & non-cognitive** process by which a healthcare professional **consciously and unconsciously** interacts with the **patient and environment** to **collect and interpret patient data, weigh the benefits and risks of actions, and understand patient preferences** to determine a **working diagnostic** and **therapeutic management plan** whose purpose is to improve a patient's well-being.

Trowbridge et al (2015)



CLINICAL REASONING

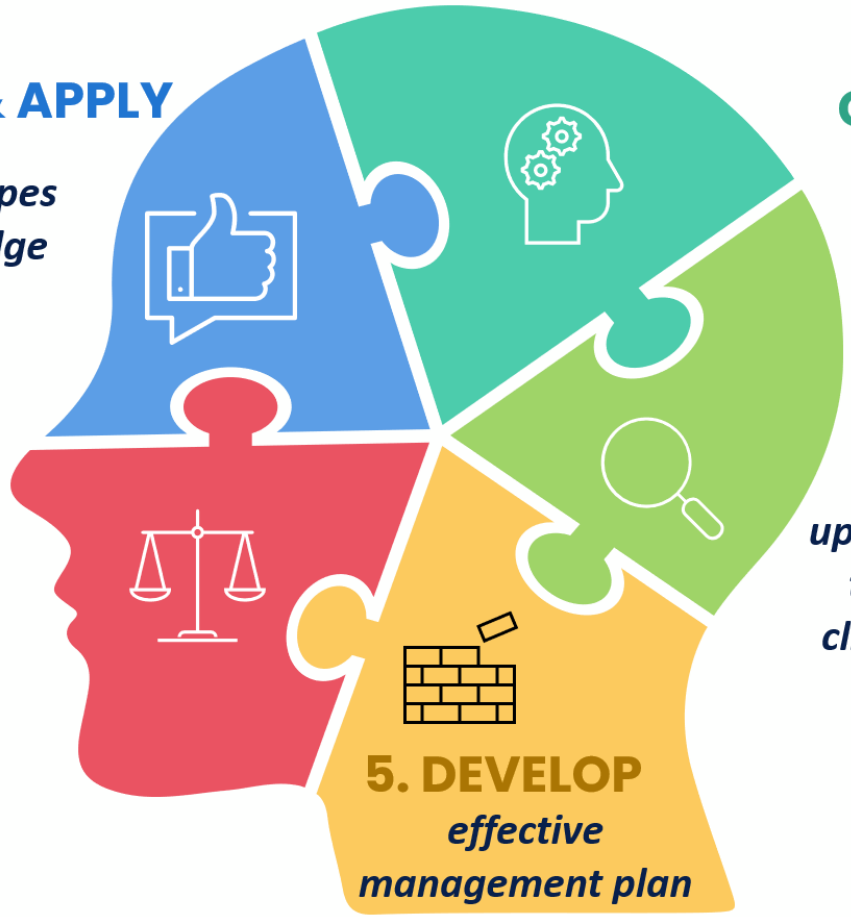
DEFINITION – Hurley Myers, 2015

1. INTEGRATE & APPLY

different types of knowledge

2. THINK CRITICALLY

about patient's data being collected.



3. WEIGH

evidences & findings

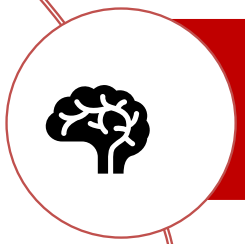
4. REFLECT

upon the process to formulate clinical decision (diagnosis)

5. DEVELOP

effective management plan

CLINICAL REASONING : Components



A form of thinking process

Present at all stages of clinical contact or cycle
(from data collection of relevant information right up to management, treatment and prognosis)

Leads to actions and decisions about patient care, specifically in context with the patient.

Best Evidence Medical Education (BEME) Collaboration systematic review protocol on Educational Interventions to Promote Clinical Reasoning (2015)

CLINICAL REASONING : Components

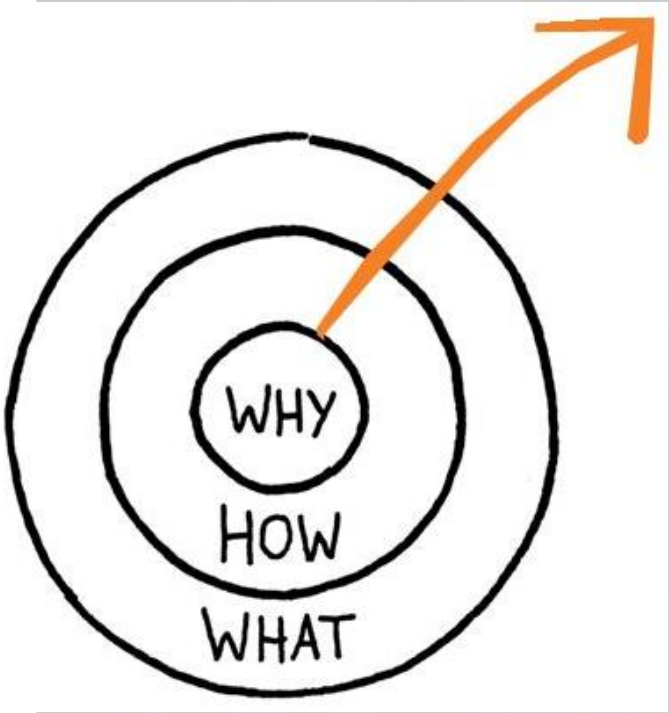
Able to integrate and involve multiple factors associated to patient and surrounding situation.

Susceptible to heuristics (mental shortcuts) and biases

Fundamental to holistic competency of healthcare.

Best Evidence Medical Education (BEME) Collaboration systematic review protocol on Educational Interventions to Promote Clinical Reasoning (2015)

The Questions



- **WHY do we still have to teach clinical reasoning despite our busy clinical practice?**
- HOW are we supposed to teach clinical reasoning?
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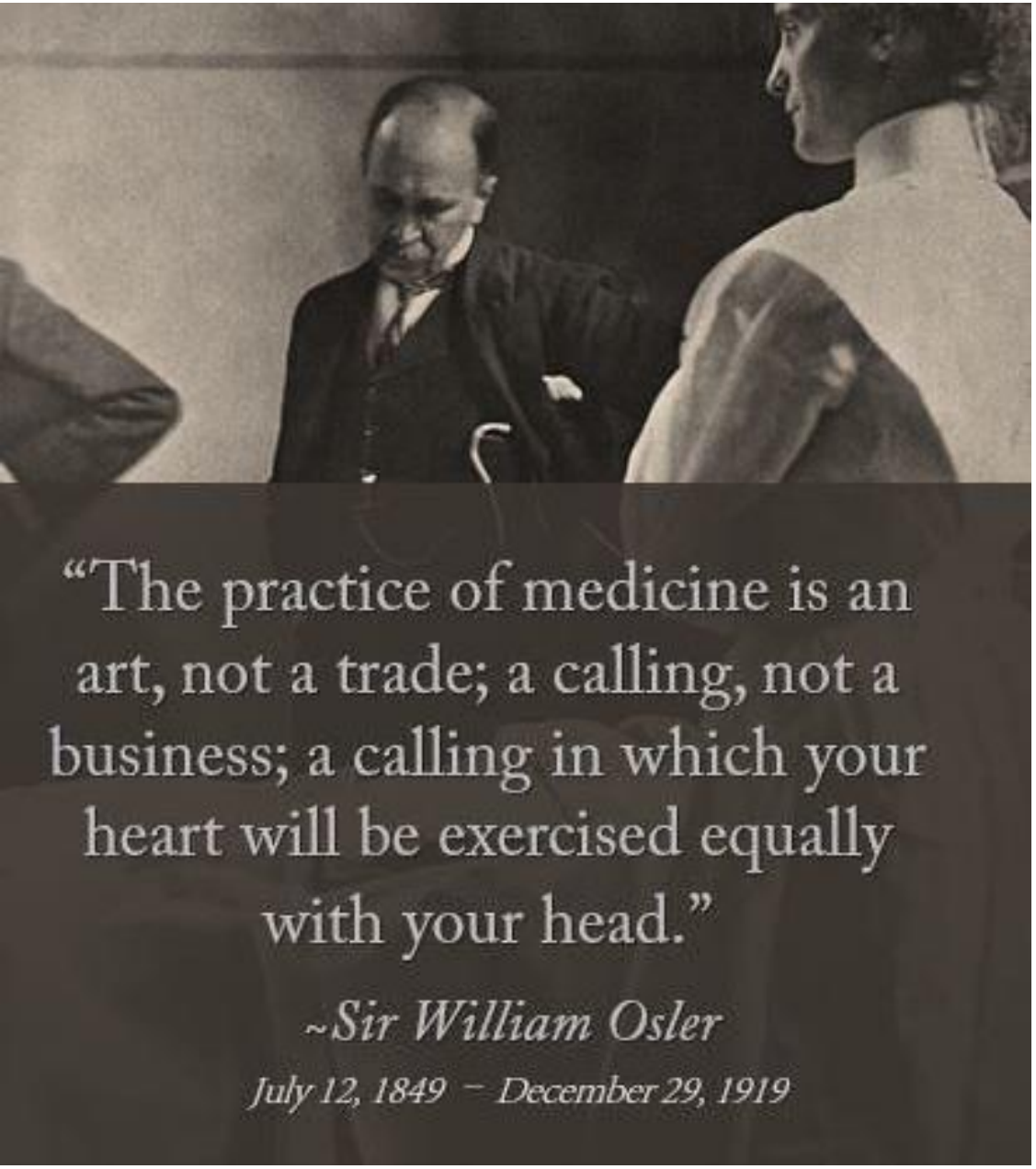
WHY do we still have to teach despite our busy clinical practice?

- The word 'doctor' is derived from the Latin `*docere* ' which means to teach.
- A professional obligation to teach :

`All doctors have a professional obligation to contribute to the education and training of other doctors, medical students and non-medical healthcare professionals on the team'

GMC (1999) *The doctor as teacher*.

GMC (2001) *Good medical practice*



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WHY DO clinicians have to teach?

Care more for the individual patient than for the special features of the disease. . . . Put yourself in his place . . . The kindly word, the cheerful greeting, the sympathetic look -- these the patient understands.

Sir William Osler

WHY do we still have to teach despite our busy clinical practice?

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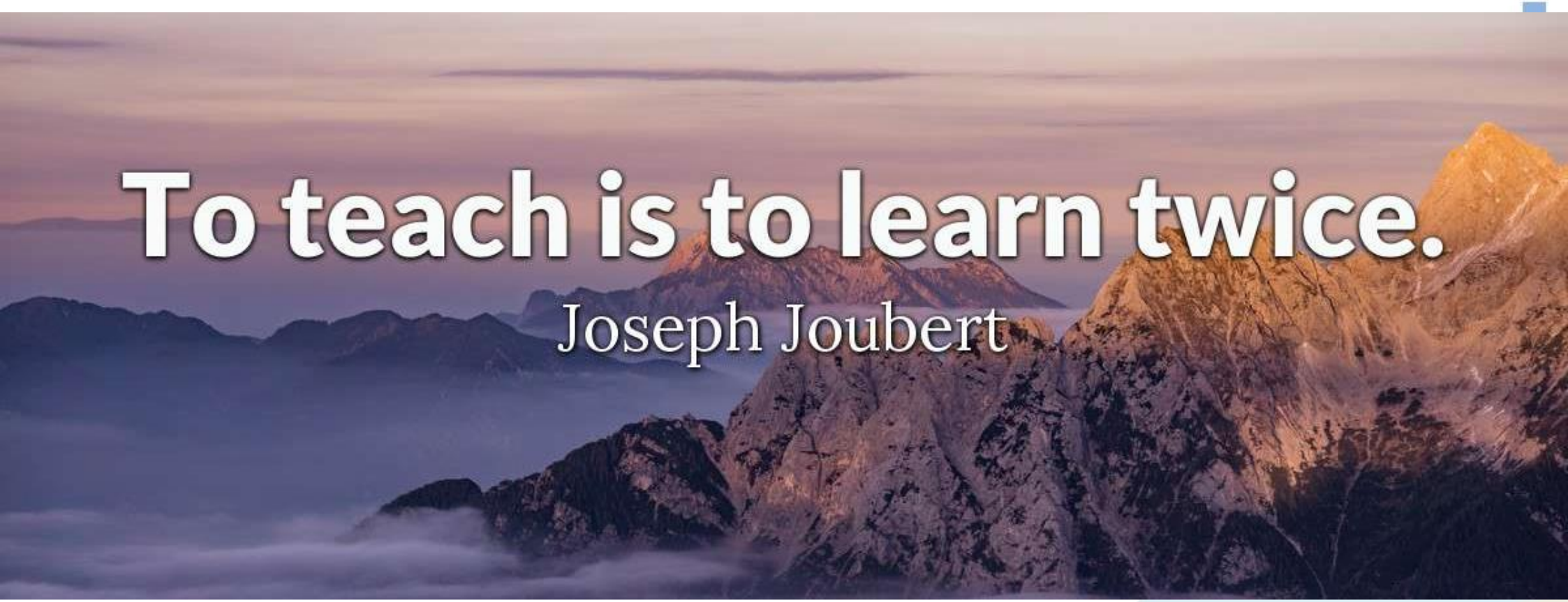

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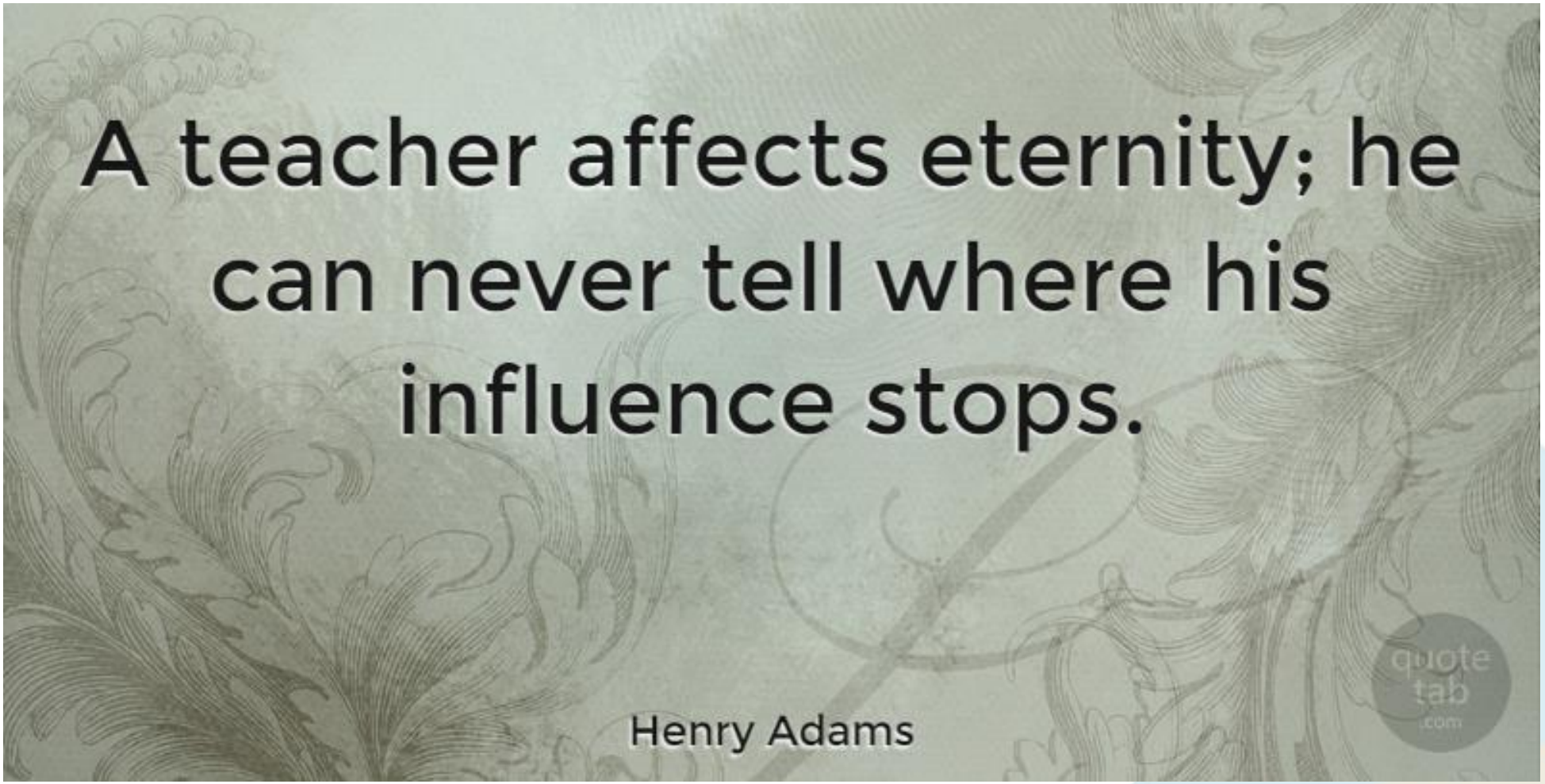
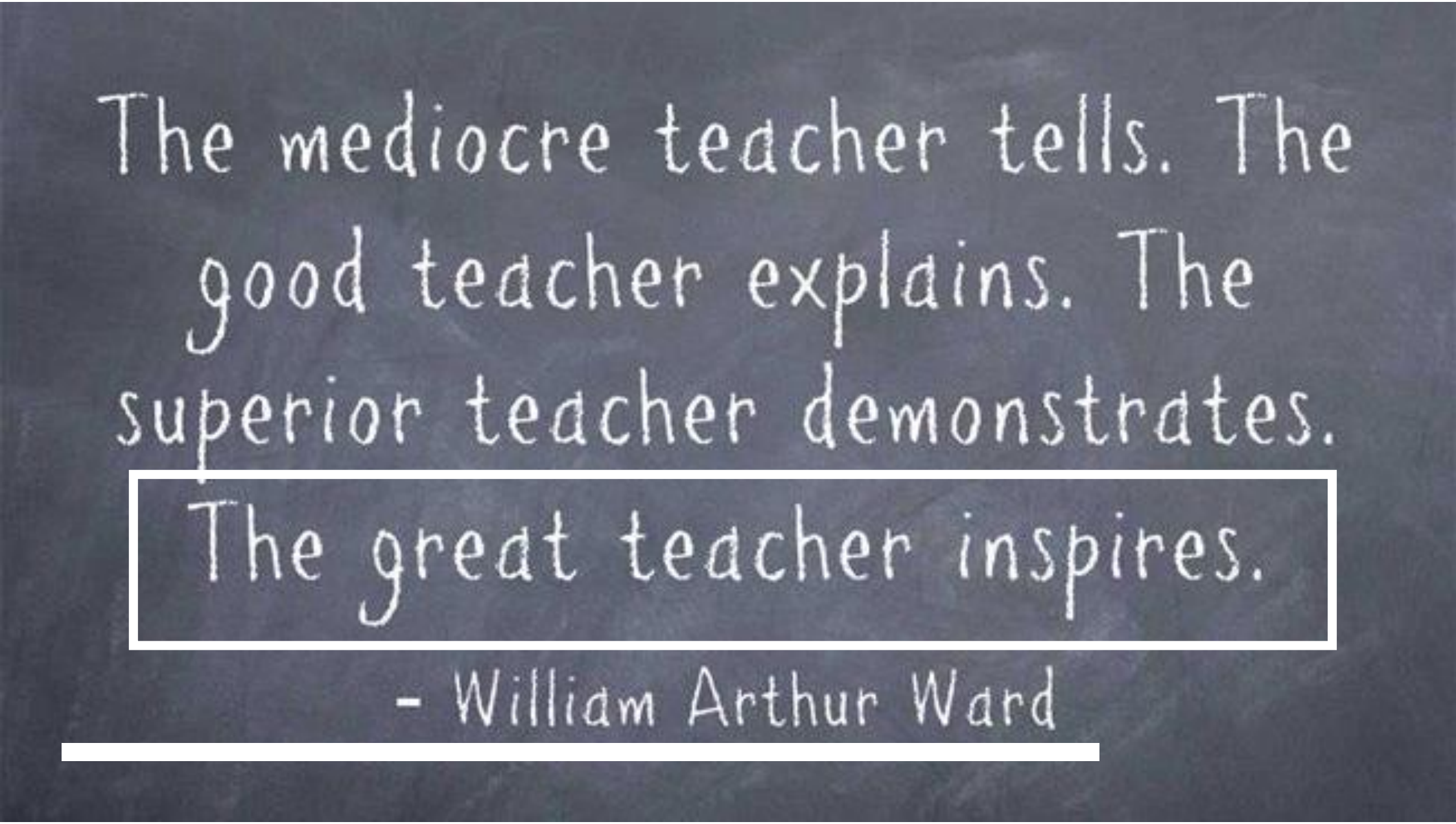
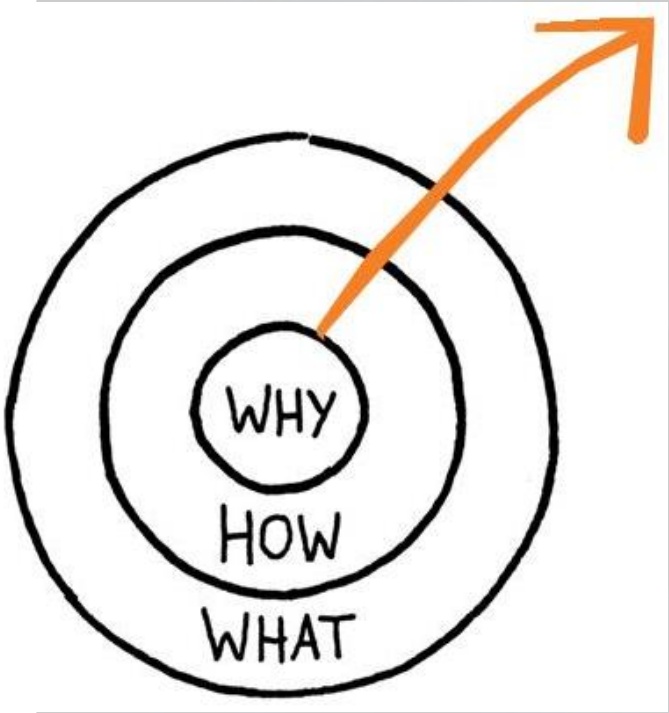



The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates.
The great teacher inspires.
- William Arthur Ward

The Questions



- WHY do we still have to teach despite our busy clinical practice?
- **HOW are we supposed to teach?**
  - **Who are we teaching?**
  - **What clinical aspects are we supposed to teach?**
  - **How do we assess the effectiveness of our teaching?**
- WHAT are the desired outcomes of our clinical teaching?

PRODUCTS OF CLINICAL REASONING : High Order Thinking Skills (HOTS)

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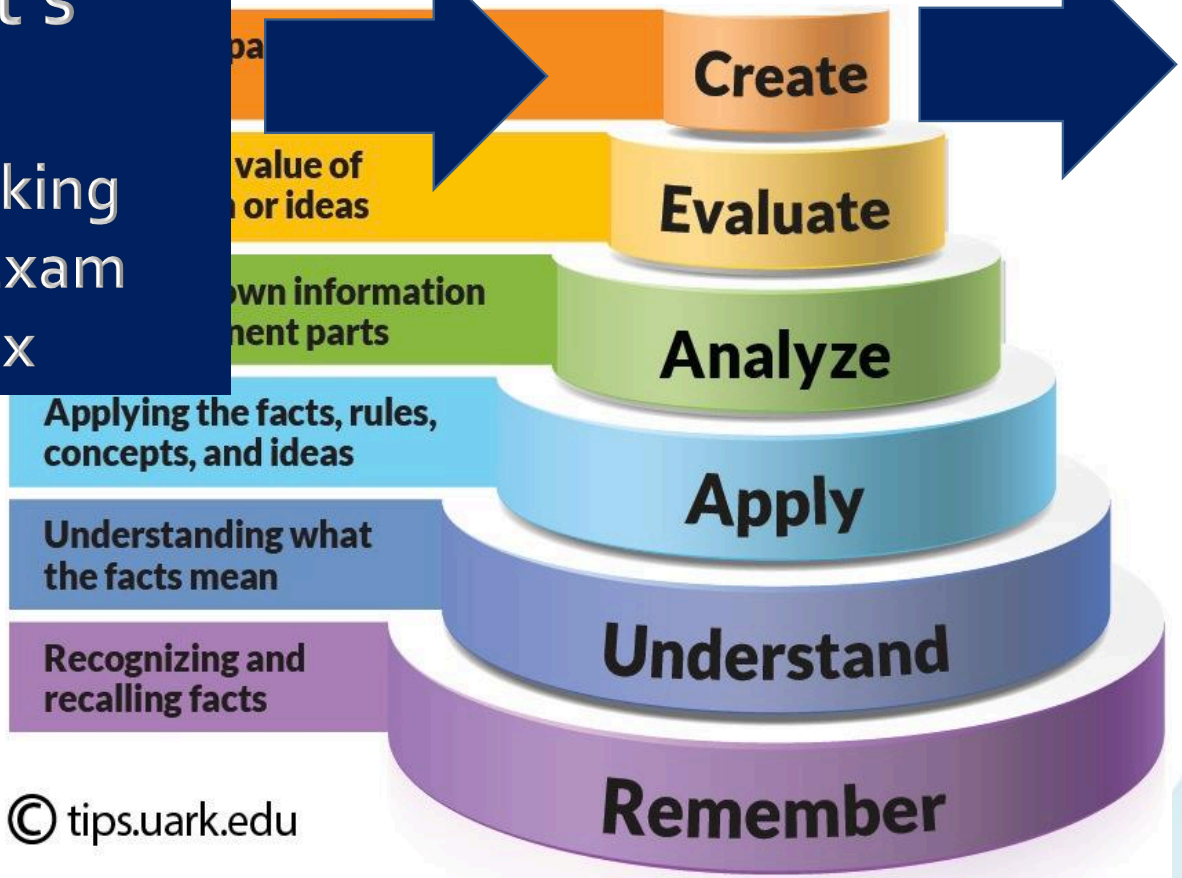
Patient's Data

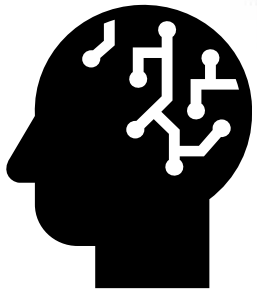
- History taking
- Physical Exam
- Relevant Ix

Bloom's Taxonomy



- **Diagnoses**
- **Treatment Plan**
- **Prognosis**

MAIN PRODUCTS
OF CLINICAL REASONING :



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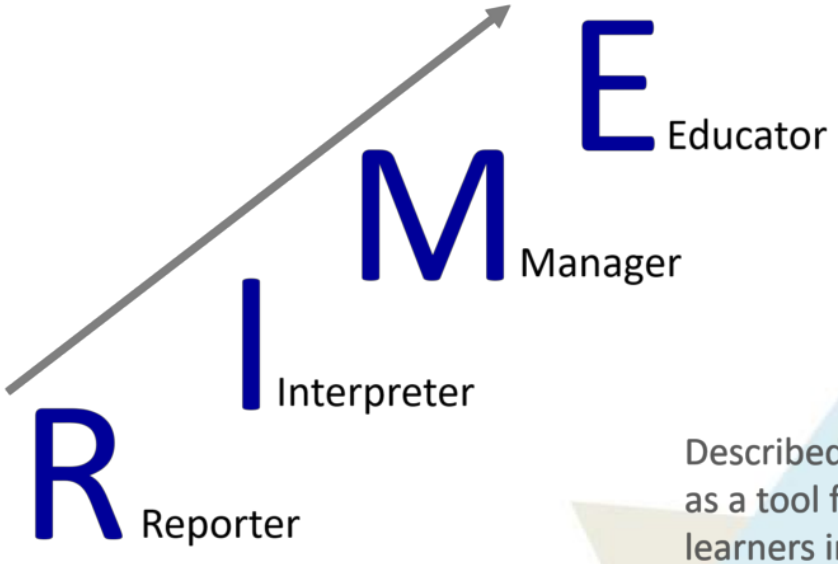
Diagnose

Management & Treatment Plan

Prognosi

How to Develop Clinical Reasoning Skills

- Aim to move the students from being ***collectors and reporters*** of information to being ***interpreters*** of information who can make diagnoses and ***managers who can construct appropriate management plans*** and achieve shared decision-making with patients.

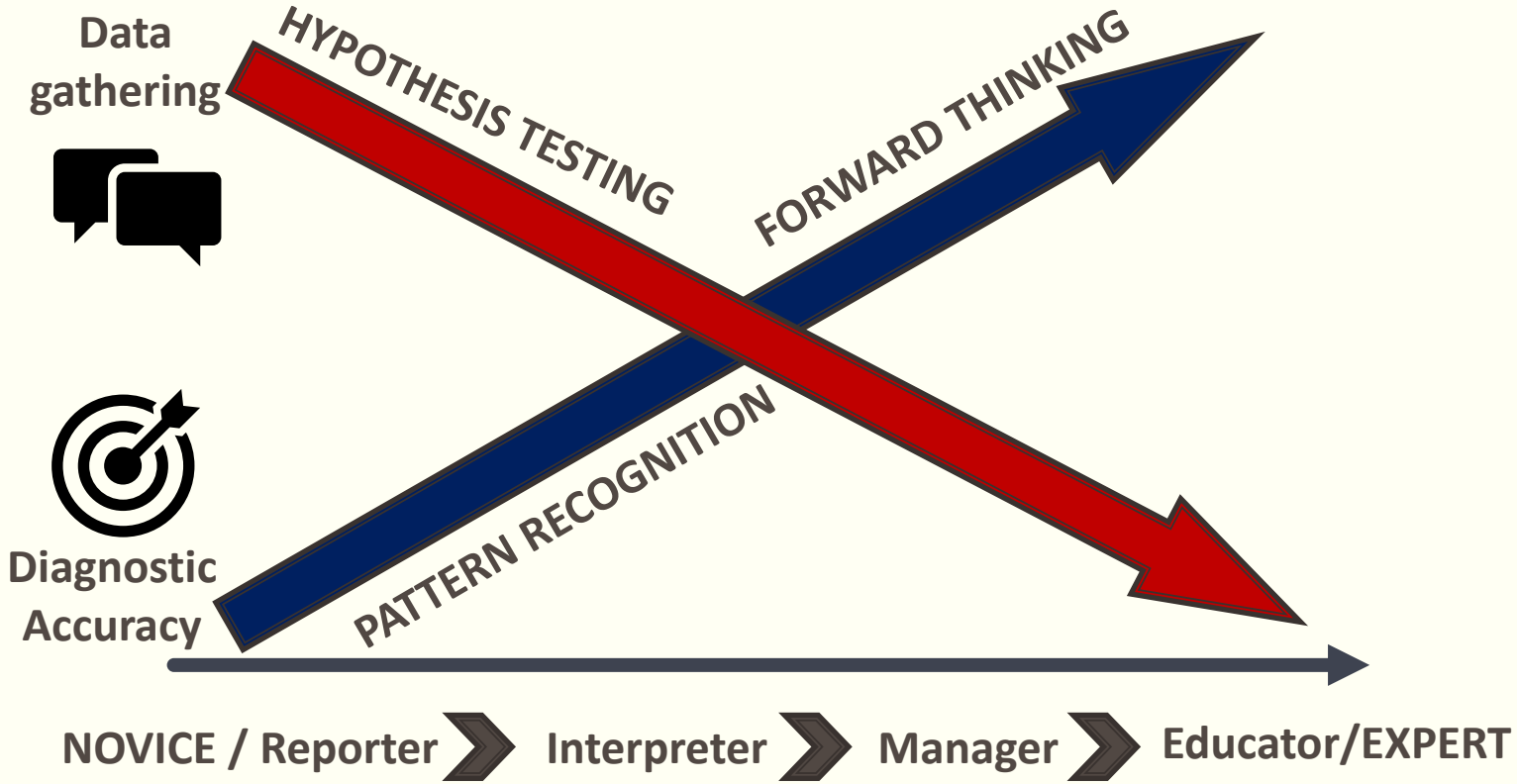


Described by Pangaro in 1993 as a tool for assessing learners in clinical settings

CLINICAL REASONING : Novice versus Expert

Maturation of Clinical Reasoning Process

R.I.M.E Clinical Competency Framework



https://www.slideshare.net/MuhammedElhadyMuhamm/facilitation-of-clinical-reasoning-during-bedside-teaching-workshop-for-clinical-preceptors

The RIME Model Provides a Context for Entrustable Professional Activities Across Undergraduate Medical Education

Eric G. Meyer, MD, William F. Kelly, MD, Paul A. Hemmer, MD, MPH, and Louis N. Pangaro, MD, Uniformed Services University of the Health Sciences

REPORTER

1. Gather a history and perform a physical examination.
2. Document a clinical encounter in the patient record.
3. Provide an oral presentation of a clinical encounter.

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INTEPRETER

1. Prioritize a differential diagnosis following a clinical encounter.
2. Interpret common diagnostic and screening tests.
3. Recognize a patient requiring urgent or emergent care.

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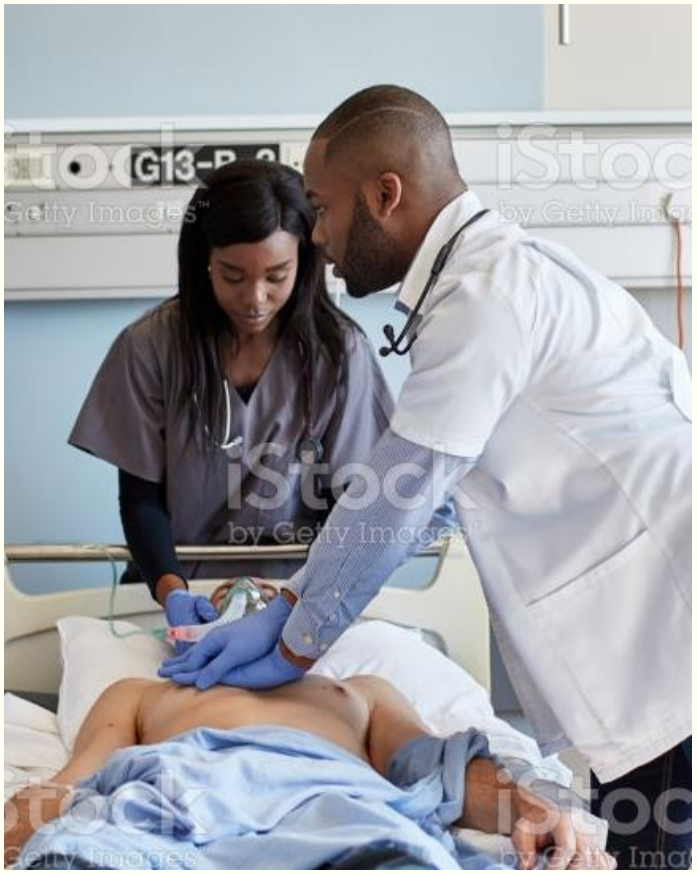
MANAGER

1. Recommend common diagnostic and screening tests.
2. Enter and discuss orders and prescriptions.
3. Give or receive a patient handover to transition care responsibility.
4. Initiate urgent or emergent care.
5. Obtain informed consent for tests and/or procedures.
6. Perform general procedures of a physician.



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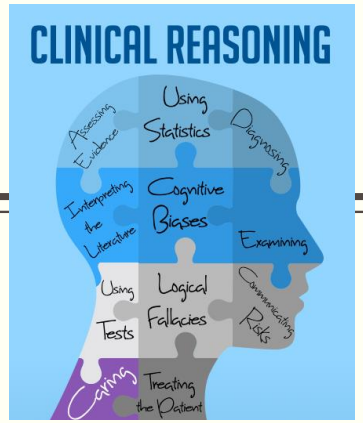
EXPERT & EDUCATOR

1. Collaborate as a member of an interprofessional team.
2. Form clinical questions and retrieve evidence to advance patient care.
3. Identify system failures and contribute to a culture of safety and improvement.



CLINICAL REASONING

- DIAGNOSTIC REASONING
- THERAPEUTIC REASONING

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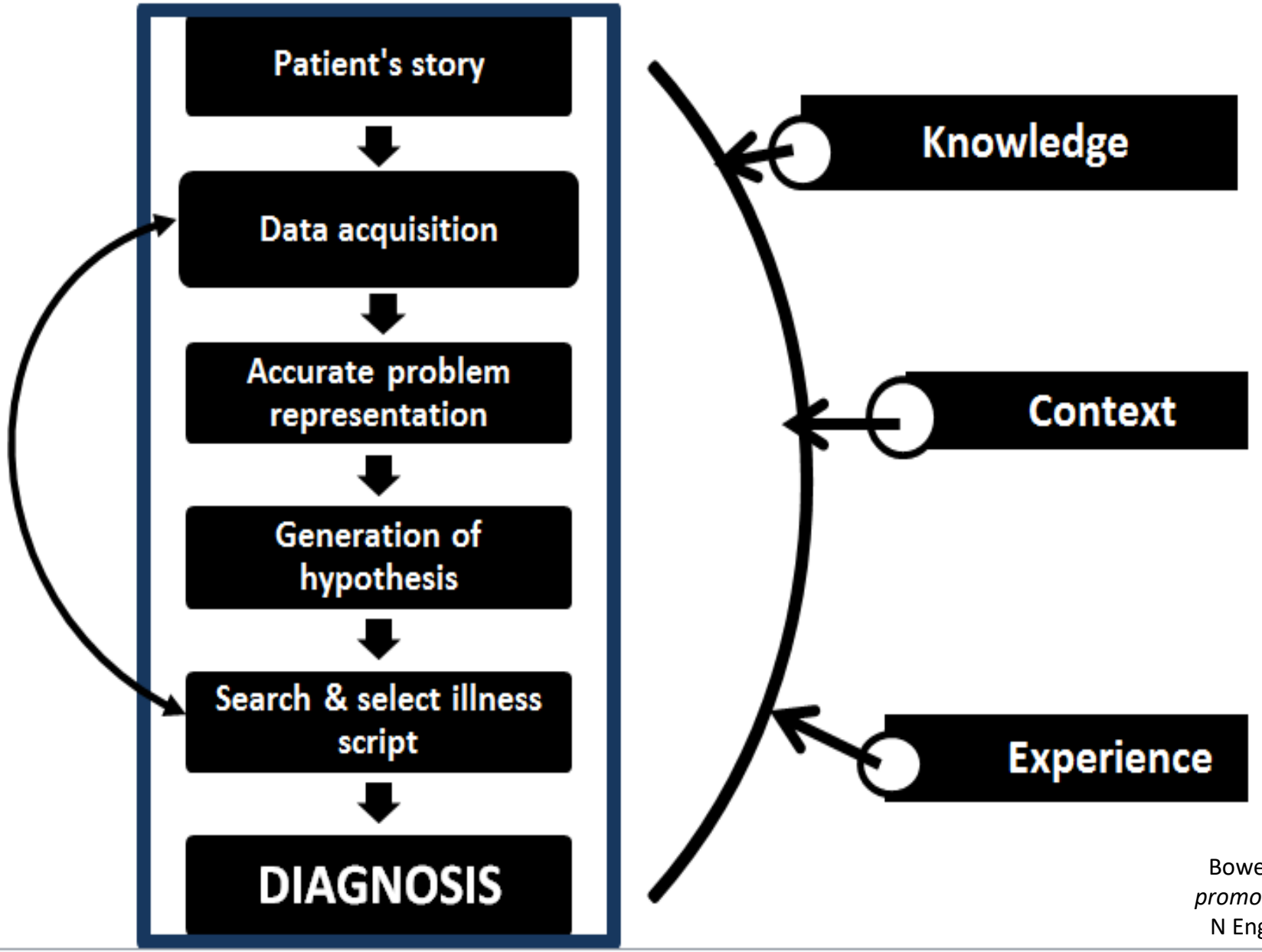
DIAGNOSTIC CLINICAL REASONING



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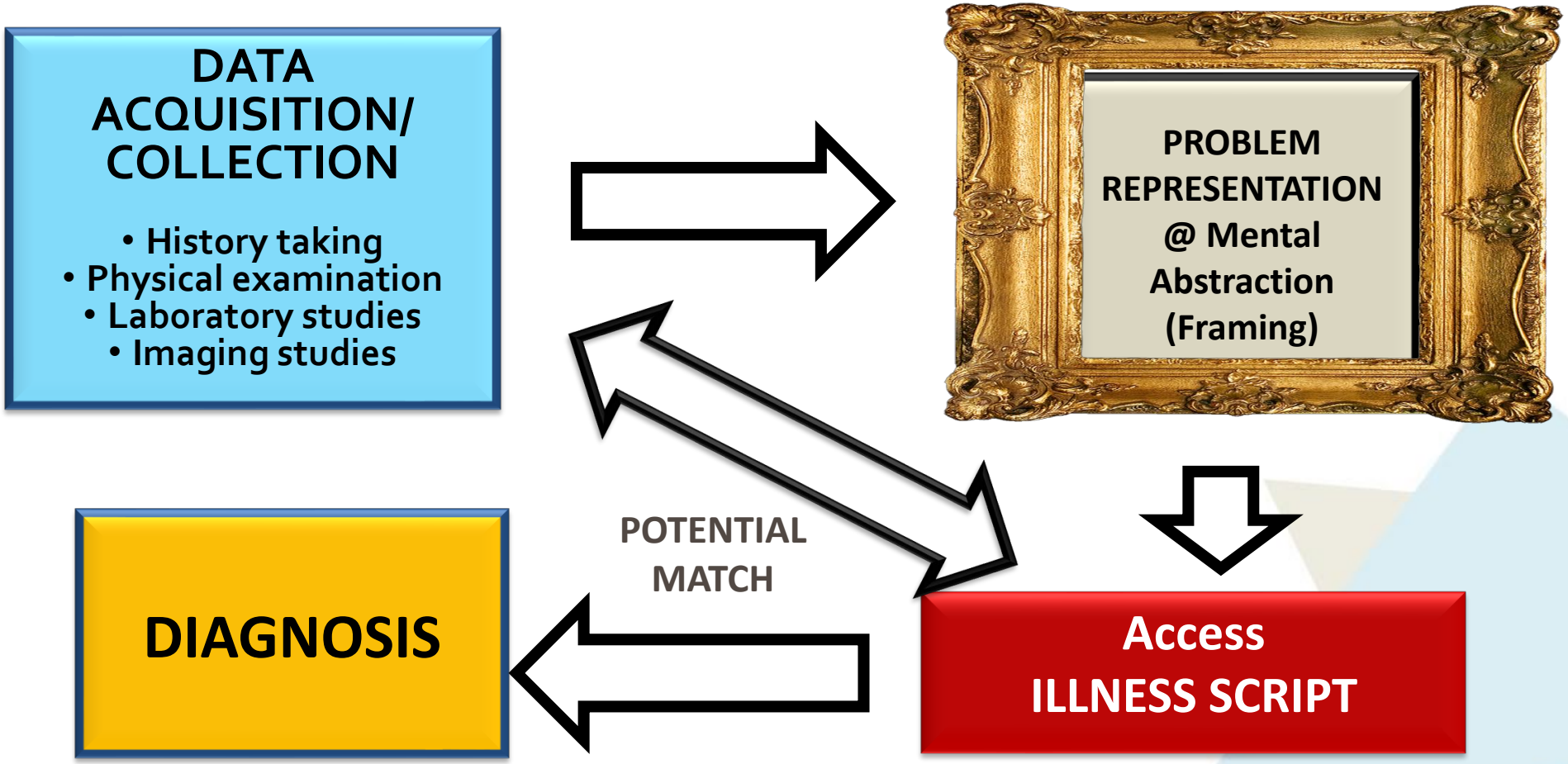
KEY ELEMENTS OF CLINICAL REASONING PROCESS

Bowen JL. *Educational strategies to promote clinical diagnostic reasoning*. N Eng J Med. 2006;355:2217-2225.

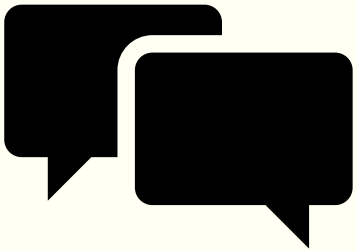
STEPS IN DIAGNOSTIC CLINICAL REASONING

(Trowbridge et al, 2015)



CLINICAL REASONING

STEP 1 : DATA ACQUISITION / COLLECTION



CLINICAL REASONING

Depends on information (DATA) from PATIENT!

Data collection tools in CR :

1.History taking

2.Physical examination

3.Relevant investigations (Laboratory/Imaging)

CLINICAL REASONING : DATA ACQUISITION

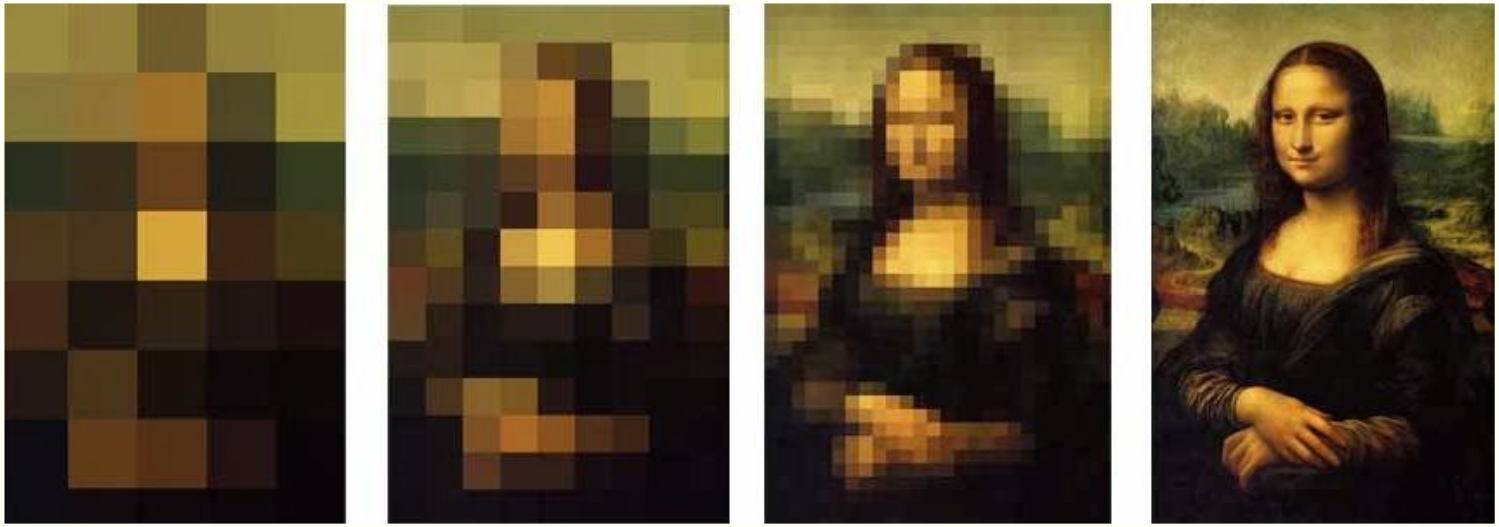
Analogy 1

Data = Pixels

More data, more pixels result in clearer, sharper image (HD – high definition/density)

CLINICAL REASONING : Data Acquisition

More patient's data – better representation of patient's illness




Novice :
Drown in a pool of data!

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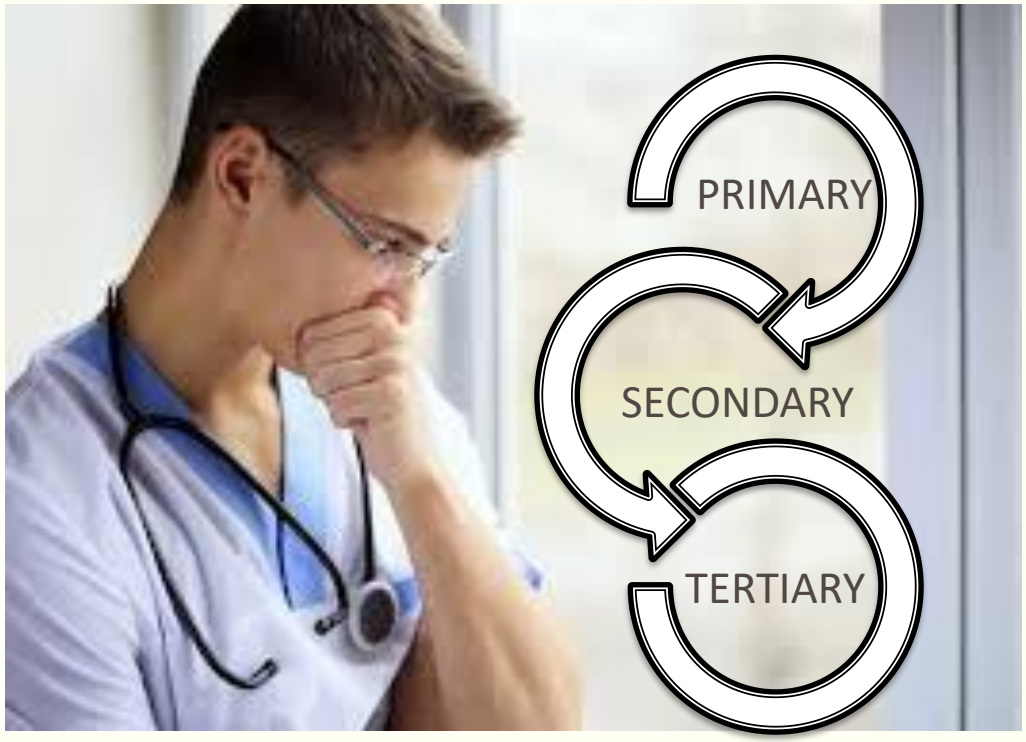


History

Physical findings

Lab results

Imaging techniques

Novice : Drown in a pool of data!

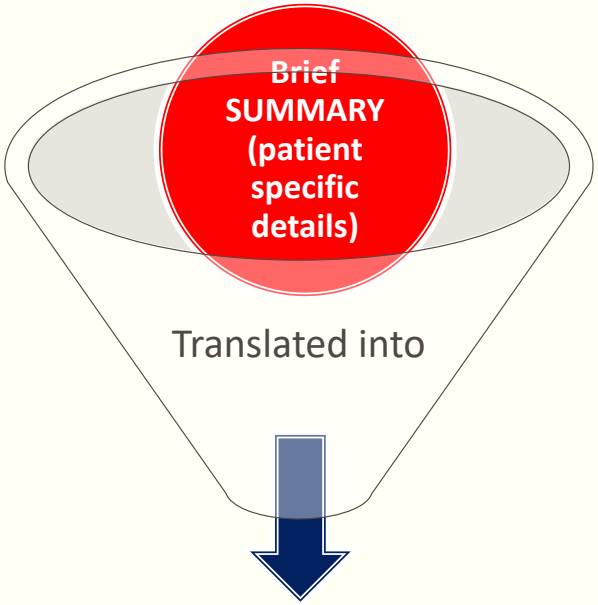
- Is this piece of data important or irrelevant?
- Does this piece of data make the hypothesis more or less likely?
- How does the data interrelate with the other data already gathered?
- Which data is the most critical (both positive and negative)?

CLINICAL REASONING

STEP 2 : PROBLEM REPRESENTATION
(ORGANIZING THE DATA)

CLINICAL REASONING:

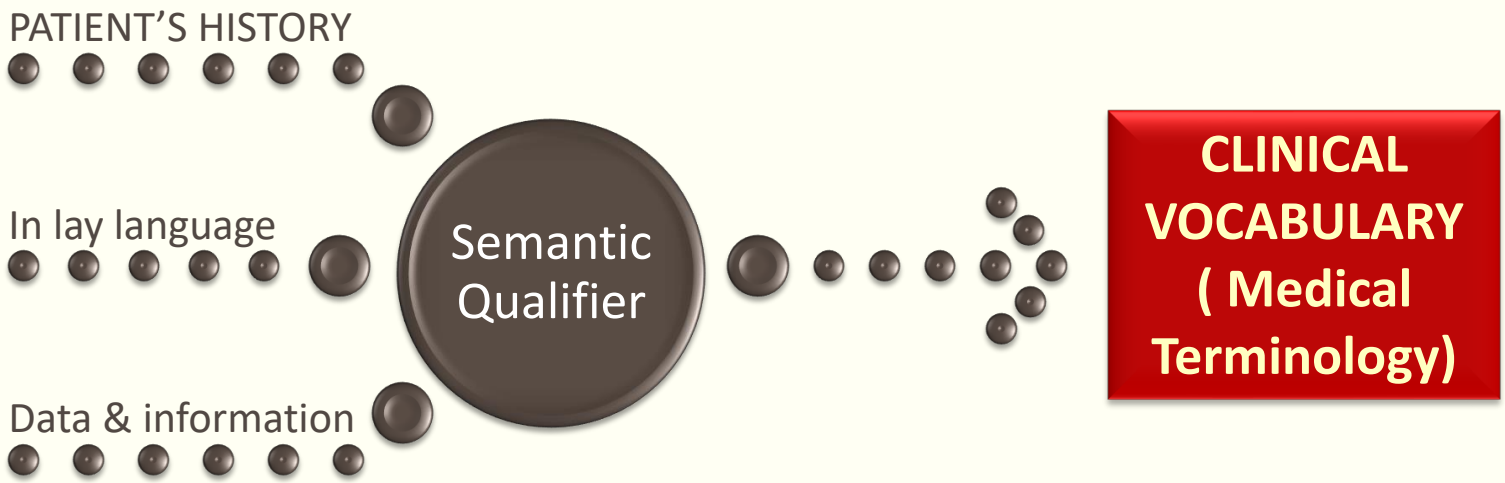
PROBLEM REPRESENTATION / MENTAL ABSTRACTION



- Translating the story into abstractions (problem representation with **semantic qualifiers**) fosters retrieval of relevant "**Illness scripts**"

CLINICAL REASONING:
PROBLEM REPRESENTATION / MENTAL ABSTRACTION

- Framing patient's history into medically – appropriate storyline.



CLINICAL REASONING : Semantic Qualifiers

- Paired opposing descriptors that can be used systematically to compare and contrast diagnostic considerations.

Problem Characteristics	
Ill-appearing/ Toxic	Well-appearing/ Non-toxic
Localized problem	Systemic problem
Acquired	Congenital
New problem	Recurrence of old problem

Symptoms	
Acute /subacute	Chronic
Localized	Diffuse
Single	Multiple
Static	Progressive
Constant	Intermittent
Single Episode	Recurrent
Abrupt	Gradual
Severe	Mild
Painful	Nonpainful
Bilious	Nonbilious
Sharp/Stabbing	Dull/Vague

OBSTETRICS PROBLEM REPRESENTATION

Pn ZL, a 39 year-old school teacher is expecting

A primigravida, in an advanced maternal age and history of 8 years subfertility, is accidentally detected to be pregnant (spontaneously, with no assisted reproductive techniques). She is however unsure of her dates, since her menstruation has been irregular since menarche.

abdominal exam when she complained of some abdominal pain two weeks ago.

CLINICAL REASONING

STEP 3 : ACCESS **ILLNESS SCRIPT**

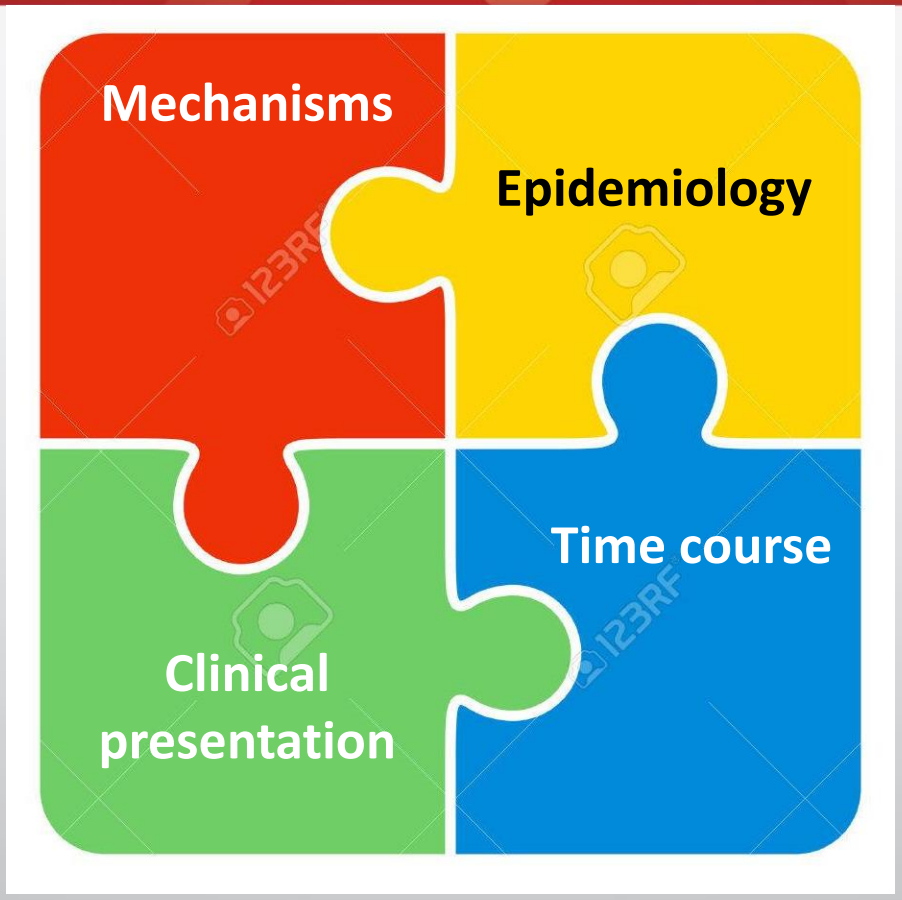
Illness Scripts

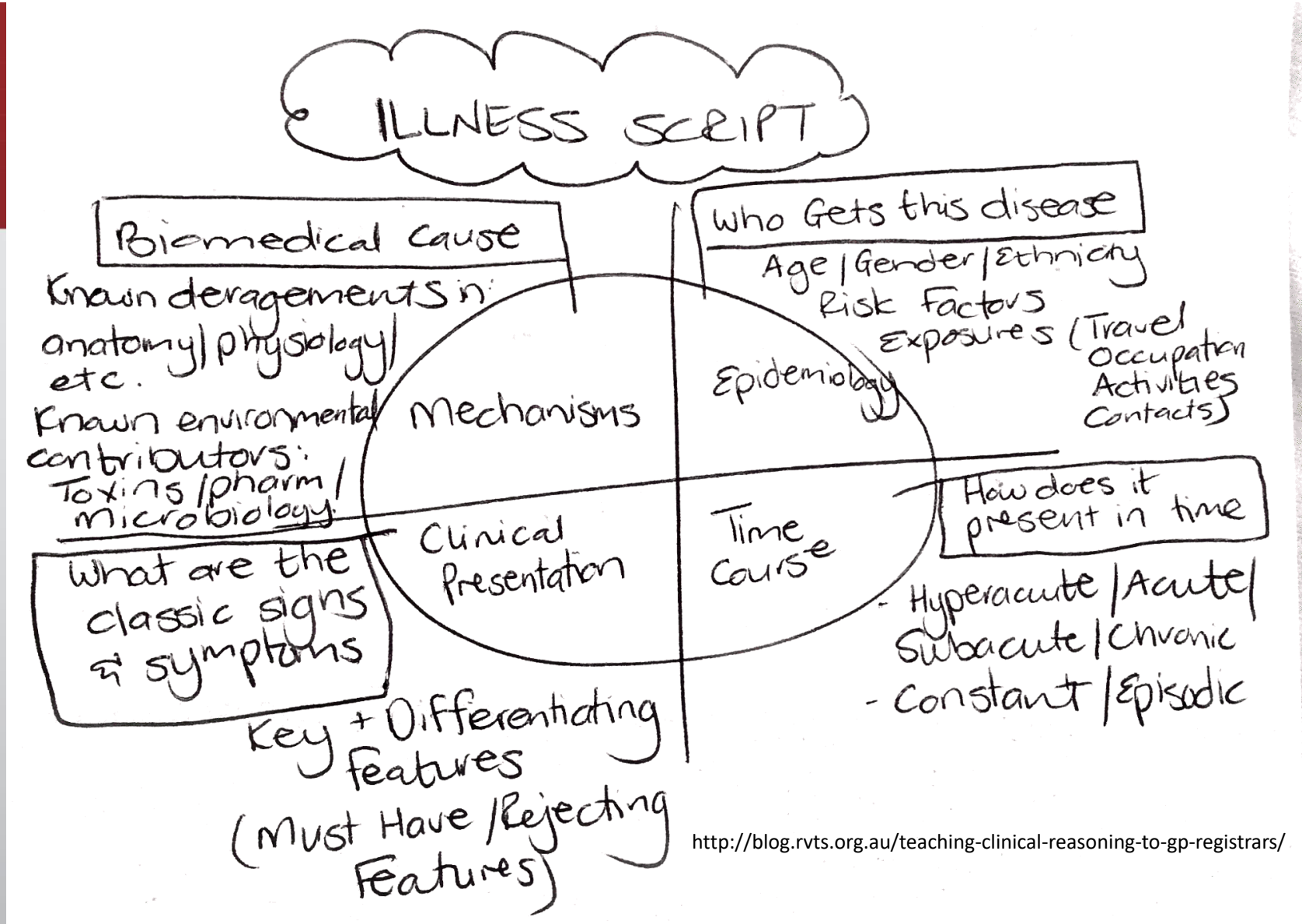
- An illness script is a structured mental summary of a provider's knowledge about a specific disease

- Illness scripts are ***unique*** to individual clinicians, but 3 main categories are generally included:
  - Risk factors for the disease
  - Pathophysiology
  - Clinical characteristics

Based on Jones B, Brzezinski WA, Estrada CA, Rodriguez M, Kraemer RR. A 22-year-old woman with abdominal pain J Gen Intern Med. 2014 Jul;29(7):1074-8' Created by R Geha, DM Connor, J Kohlwes, R Sedighi Manesh

ILLNESS SCRIPTS





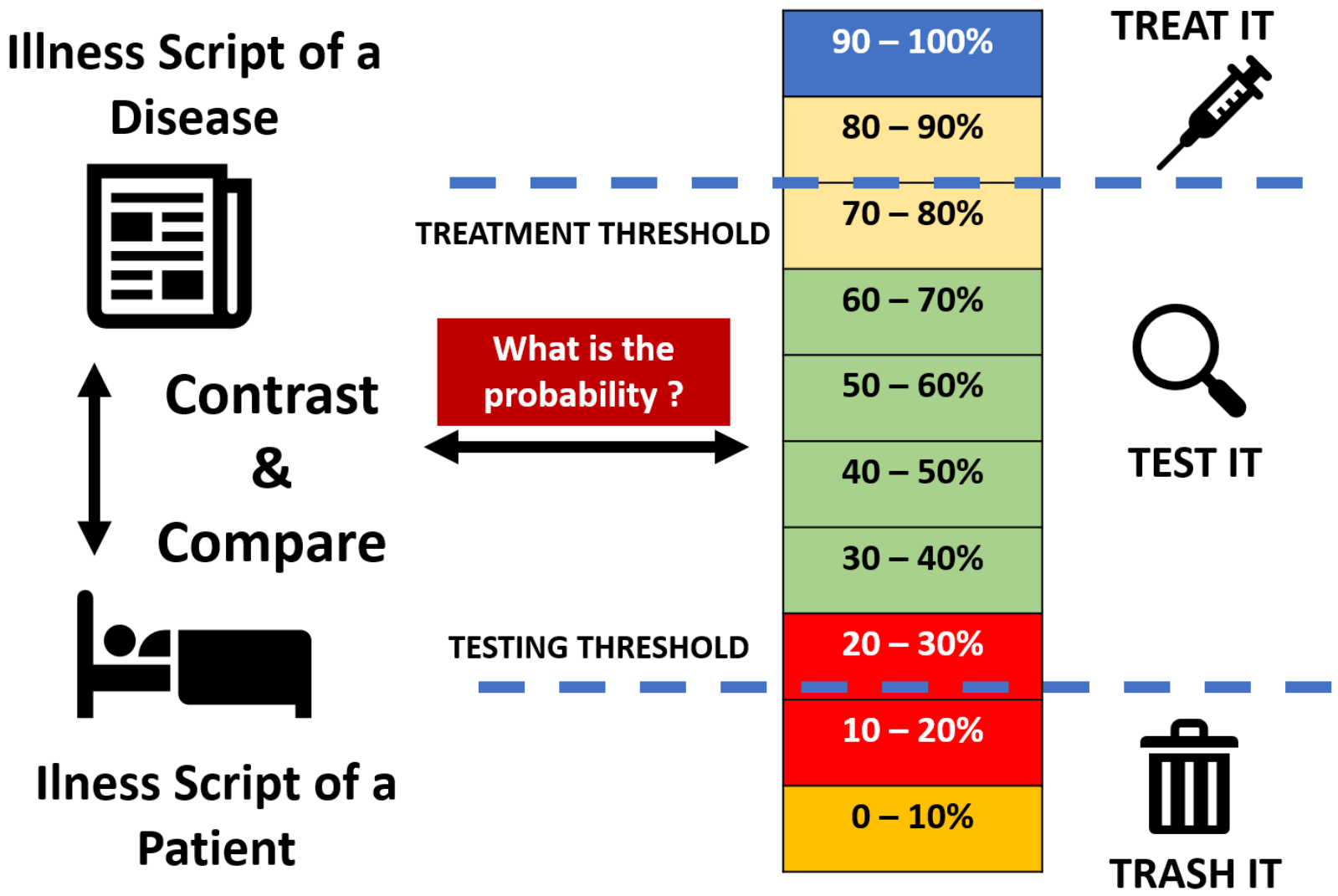
http://blog.rvts.org.au/teaching-clinical-reasoning-to-gp-registrars/

CONTRASTIVE LEARNING : Differential Diagnoses

Table 4.5 Contrasting competing illness scripts

	Example of a problem representation		
	A middle-aged female with a chronic, gradually progressive symmetrical oligoarticular process involving small joints characterized by moderate to severe morning stiffness		
Exemplar diagnosis		1- Osteoarthritis	2- Rheumatoid arthritis
Enabling conditions	Age, sex, race, ethnicity	Over 50 yrs.; either sex	30–60 years, F:M ratio 3:1
	Family history, genetics	+/− family history	+ family history; shared epitope, HLA-DRB1
	Habits, exposures, medications	None	Smoking
	Nested comorbidities	None	Coronary artery disease
Pathophysiological fault		Mechanical, degenerative; cartilage breakdown and subsequent bone hypertrophy	Inflammatory, immunologic; synovitis, pannus and subsequent erosion of juxta-articular bone

What is the probability of disease?



CLINICAL CONSULTATION

The clinical consultation is the **practical embodiment of the clinical reasoning** process by which data are gathered, considered, challenged and integrated to form a diagnosis that can lead to appropriate management

https://www.racgp.org.au/download/documents/AFP/2012/JanFeb/201201linn.pdf

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THERAPEUTIC CLINICAL REASONING : OBSTETRICS

OBS Long Case : *7 steps in obstetric management*

Clinical vignette / patient summary

Step (1)

Decide whether patient requires INPATIENT @ OUTPATIENT care

INPATIENT care	OUTPATIENT care
Go to Step (2)	• Fix next appointment date • Decide what to look for during next visit

OBS Long Case : *7 steps in obstetric management*

Step (2)

Assessment of :

2.1 Mother

- Thorough Hx & PE
- Establish diagnosis (severity & prognostication)
- Confirm Dx – investigation
- Decide on treatment modalities

2.2 Fetus

- Maturity
- Normality
- Growth
- Well-being

OBS Long Case : *7 steps in obstetric management*

Step (3)

Decide on further type of care – continue INPATIENT @ OUTPATIENT ?

INPATIENT care	OUTPATIENT care
• Justify prolonged hospitalization • Outline what to monitor closely during each round • When to call off expectant management / discharge	• Discharge • Fix next appointment date • Decide what to look for during next visit

OBS Long Case : *7 steps in obstetric management*

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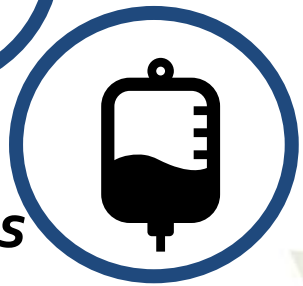
Step (4) : **Timing of delivery**

Step (5) : **Mode of delivery**

Step (6) : **Intrapartum care -**
Special instructions or precautions

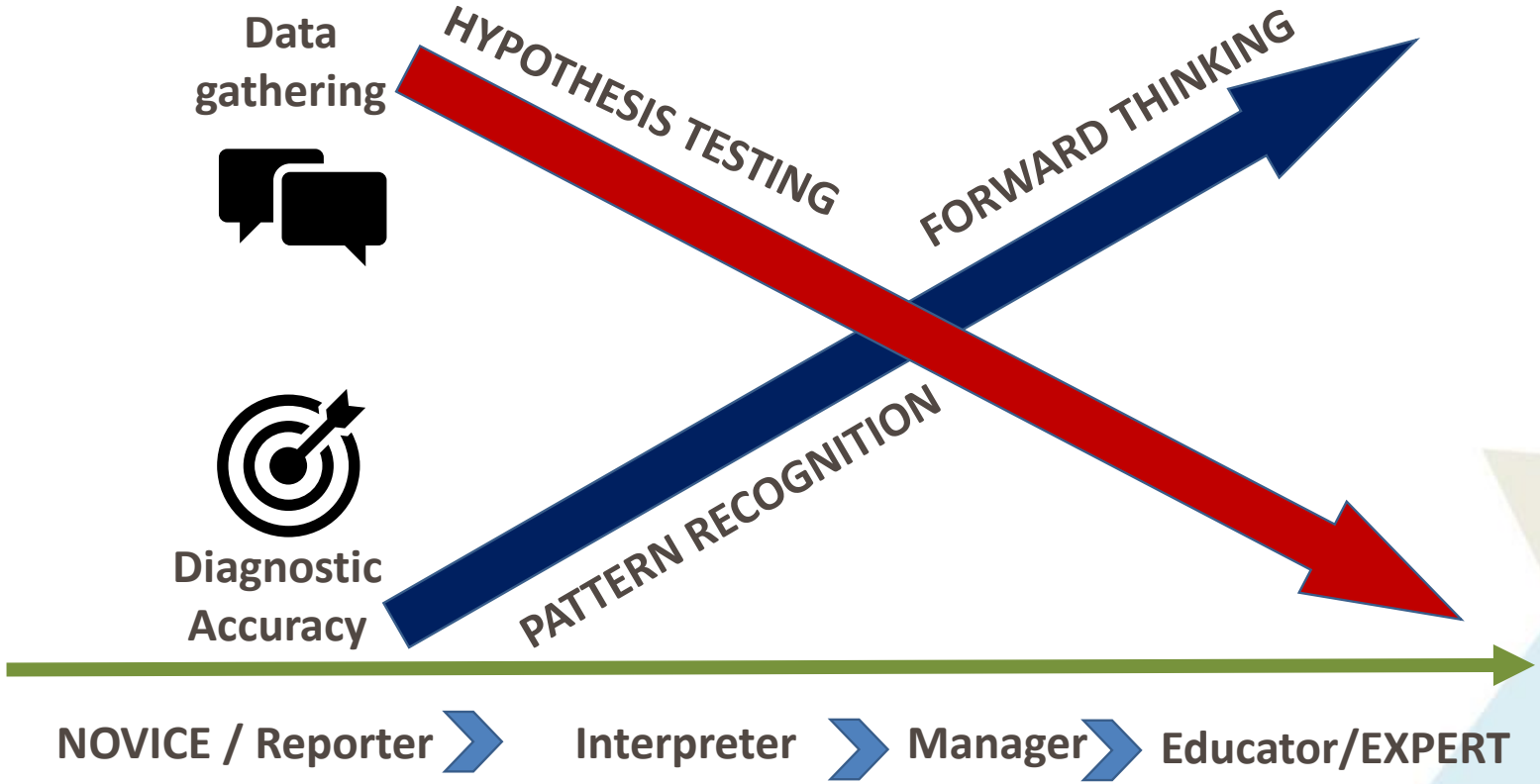


Step (7) : **Postnatal care –**
Medications , specific investigations & contraceptive choices

CLINICAL REASONING : Novice versus Expert

Maturation of Clinical Reasoning Process

R.I.M.E Clinical Competency Framework



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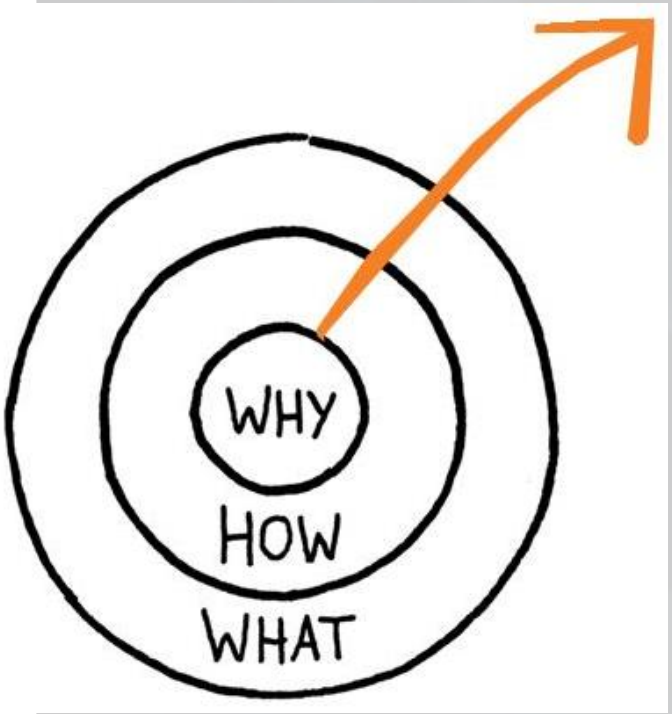

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FIVE-STAR MEDICAL DOCTOR & SPECIALIST

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References

- https://warwick.ac.uk/fac/sci/med/study/ugr/mbchb/societies/slime/products/teaching/doctors_as_teachers_bma_sept_06.pdf

- https://www.gmc-uk.org/-/media/documents/Developing_teachers_and_trainers_in_undergraduate_medical_education___guidance_0815.pdf_56440721.pdf