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FACULTY OF HEALTH


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MWM AND CLINICAL REASONING: A PERFECT MATCH!

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3 May 2009


Is clinical reasoning relevant to MWM?



NEVER ASSUME!

2

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EBMedicine: paradigm shift?

3


Increasing public accountability and decreasing public funds has led to the need for assurance of quality health care through evidence substantiated decisions

However, health practitioners have always attempted to base their **decisions** and actions on the best available evidence
(Jones & Higgs 2000; Sackett et al 1997)

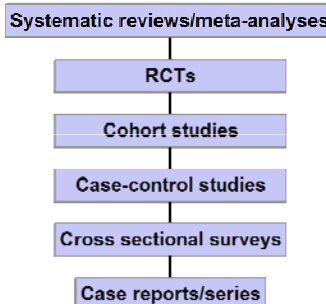
"...the conscientious, explicit and judicious use of current best evidence in **making decisions** about the care of individual patients"
(Sackett et al 1997)

A systematic approach to the use of research data to assist in optimal and unbiased **clinical decision-making**
(Belanger 2002)

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Hierarchy of Evidence (Sackett et al 1997; Guyatt et al 1999)



Need different methods to overcome RCT limitations eg case reports

4

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EBPractice: limitations

5

There is a human and contextual element to practice which cannot simply be reduced to quantifiable terms: evidence should **inform** but not dominate clinical reasoning


EBP should **not** be a cost-cutting exercise or a search for the absolute truth
(Belanger 2002; Jones & Higgs 2000)

Results from RCTs and meta-analyses can at best provide only broad **guidelines**
(Jones & Higgs 2000)

It should be combined with other information about **individual patients'** specific needs and preferences
(Herbert et al 2001)

Tendency to take research findings as 'textbook' prescriptions or **recipes** for best practice...

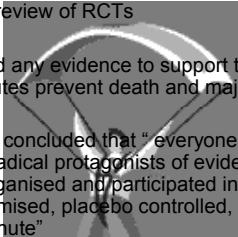
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Parachutes!


6

- Systematic review of RCTs
- Failed to find any evidence to support the assumption that parachutes prevent death and major trauma
- The authors concluded that "everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute"



(Smith & Pell 2003, BMJ 327, p.1459)

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Mature Organism Model

7

The diagram illustrates the Mature Organism Model. It features a central profile of a human head with a brain. Above the brain, two boxes define dimensions: 'Pain perception plus altered thoughts = cognitive dimension' and 'Pain perception plus altered feelings = affective dimension'. Below the brain, a box labeled 'Sensitization' points to the brain. To the left, a flowchart shows 'Gives value to experience' leading to 'Further alters', which leads to 'Output: Altered behaviour Altered physiology'. Below the head, 'Environment' and 'Tissue' are shown with bidirectional arrows connecting them to the brain and each other. A feedback loop arrow goes from 'Output' back to 'Gives value to experience'.

Even given the same extent of tissue injury or illness, no two people will have exactly the same presentation, since the way in which they manifest their pain or illness is shaped in part by who they are

(Gifford 1998; Jones & Rivett 2004)

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EBP and clinical reasoning

8

External evidence can **inform** but never replace clinical expertise

Most patient problems are **multifactorial** and RCT results are unlikely to match a given patient presentation sufficiently to use in a prescriptive manner
(Jones & Higgs 2000)

"Without clinical expertise, practice risks becoming **tyrannized** by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient"
(Sackett 1997)

Estimate of the effect of therapy can be adjusted up or down based on what **clinical intuition** says about how more or less likely the particular patient is to respond
(Herbert et al 2001)

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Clinical reasoning: definition

9

Thinking and decision-making processes associated with clinical practice and central to professional autonomy

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Clinical expertise

10

Depends on:

- technical proficiency
- communication skill
- knowledge base
- but especially...*
- clinical reasoning skill

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Clinical reasoning: models

11

- Clinical reasoning process in clinical practice is both hypothesis oriented and collaborative
- Two main processes:
 1. Hypothetico-deductive reasoning
 2. Pattern recognition

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Hypothetico-deductive reasoning

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Involves the **generation** of hypotheses based on clinical data and knowledge, and **testing** of these hypotheses through further inquiry
(Elstein et al 1978)

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Hypothesis categories

13

Category
Activity and participation capabilities / restrictions
Patient's perspectives & beliefs / psychosocial factors
Pathobiological mechanisms
Physical impairments & associated structure / tissue sources
Contributing factors
Precautions & contraindications
Management & treatment
Prognosis

(Jones & Rivett, 2004)

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Interpretive reasoning strategies

14

Reasoning strategy	Brief description
Collaborative	Cooperative goal setting and decision-making regarding management
Ethical	Consideration of ethical dilemmas within decision-making and management
Interactive	Social interaction as a means of developing rapport & enhanced understanding of client perspective
Narrative	Interprets the complexity of the client's personal perspective of their problems via story telling
Predictive	Predicting implications of management options within decision-making
Procedural	Relating to treatment / management procedures
Teaching	Client education towards further understanding of the person and their problems

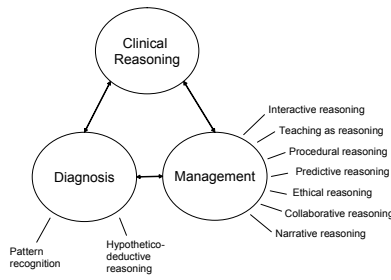
(Edwards et al 2005; Edwards & Jones 2007; Higgs & Jones 2000)

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Reasoning strategies within diagnosis and management

15



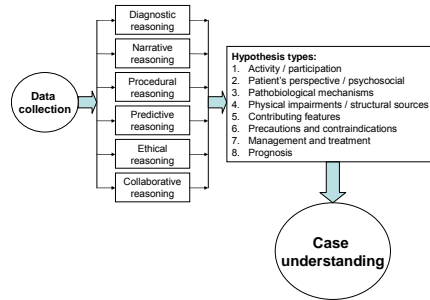
(based on Edwards & Jones 2007)

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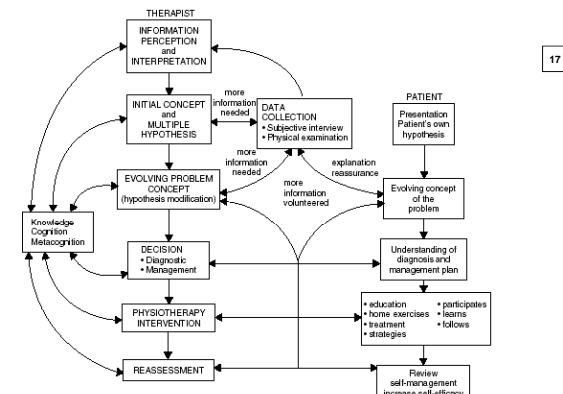
Hypothesis categories & reasoning types

16



(based on Edwards & Jones 2007)

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(Jones & Rivett 2004)

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Metacognition

18

Being **aware** of one's cognitive processes and exerting control over these processes, and the cognitive skills that are necessary for the management of knowledge and other cognitive skills

(Higgs & Jones 2000)

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Clinical experts

- Excel mainly in their own domain
- Are faster than novices at performing the skills of their domain, and solve problems with greater accuracy and less effort
- Have strong self-monitoring/metacognitive skills
- See and represent a problem in their domain at a deeper and more principled level than novices
- Perceive large meaningful **patterns** in their domain, i.e. recognised prototypes of frequently experienced situations

(Jones & Rivett 2004)

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- Mulligan
- Sahrmann
- Maitland
- Jull
- McKenzie
- Kaltenborn
- Lee
- Vleeming
- Hodges
- Rocabado
- Butler
- Magee
- McConnell
- Paris

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Mobilisation With Movement: Evidence in Practice

by Vicenzino, Hall, Hing & Rivett

Case studies
Bisset
Edmondston
Mulligan
O'Brien
Oliver
Reid
Robinson
Teys

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Pattern recognition

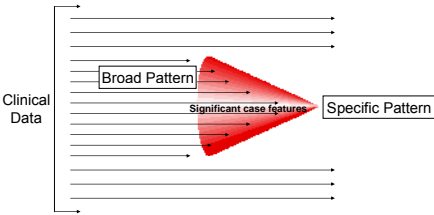
- Direct **automatic retrieval** of information from a well-structured knowledge base
- Characteristic of **experts** as it is fast and efficient – ‘if→then’ associations
- Clinical reasoning that is **reflective** will lead to recognition of patterns hidden within the ambiguity of the presentation or to the acquisition of new patterns

(Groen & Patel 1985; Jones et al 2000)


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Input of clinical data into patterns




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Common elements of pattern recognition

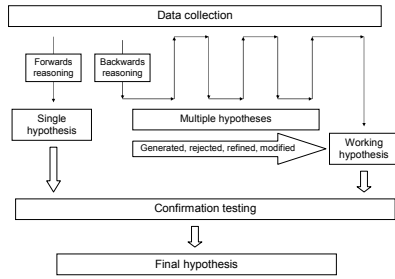
Element	Description	Research articles
Timing	Immediate / almost instantaneous	Coderre et al, 2003 Doody & McAteer, 2002
Result	Hypothesis formation	Coderre et al, 2003 Doody & McAteer, 2002
Reliance	Organised knowledge from prior experience	Gale & Marsden, 1982 Ridderikhoff, 1985
Utilises	Significant case features	Coderre et al, 2003 Groves et al, 2002
Basis	Highly organised knowledge Prototype of single patient Prototype of abstract model	Ridderikhoff, 1985 Roberts, 1996
Direction	Forwards reasoning strategy	Noli et al, 2001 Patel et al, 1990

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Forwards and backwards reasoning models

25



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Knowledge

26

Research investigating the nature and development of expertise across a range of professions (chess, engineering, mathematics, medicine, physics, statistics) has consistently shown that it is not the command of any generic problem solving strategies or how much knowledge is possessed which is critical, rather, it is how that knowledge is **organised**

Humans store knowledge in **chunks or patterns**. Therefore one can think of therapists' organisation of knowledge as the breadth and depth of their understandings and beliefs, held together in patterns acquired through both formal academia and personal experience

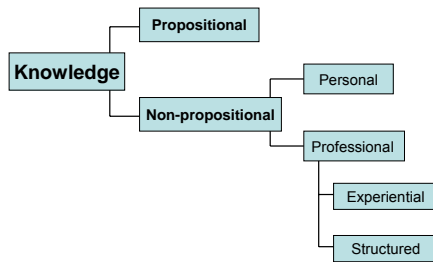
(Jones & Rivett 2004)

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Knowledge types

27



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Clinical reasoning errors

28

Component	Example
Information collection	<ul style="list-style-type: none"> Neglecting or misinterpreting relevant information Insufficient data sampling / premature decision-making Not recognising data inconsistencies
Hypothesis formation	<ul style="list-style-type: none"> Confirmation bias: overemphasis on supporting features and neglecting negating features of a hypothesis Limited hypothesis generation or category use Not testing competing hypotheses
Identifying flags	<ul style="list-style-type: none"> Missing data indicative of red (serious pathology) or yellow (psychosocial barriers) flags
Diagnosis	<ul style="list-style-type: none"> Presumption that a relationship between symptoms confirms cause and effect and thus diagnosis
Treatment	<ul style="list-style-type: none"> Use of recipe treatments and not clinically reasoned management strategies Lack of involvement of patient in decision-making

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Patient-centred collaborative reasoning

29

In this model, clinical reasoning is seen as a process of reflective inquiry comprising three core elements - cognition, metacognition, and knowledge - carried out in a **collaborative** framework with the relevant parties (e.g. the patient, carers, other health care providers)

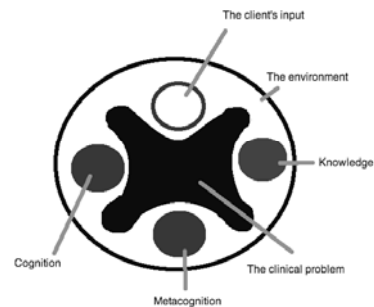
(Jones & Rivett 2004)

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Patient-centred clinical reasoning

30



(Higgs & Jones 2000)

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Patient-centred clinical reasoning

31

(Higgs & Jones 2000)

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Pattern recognition in manual therapy?

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- A real clinical case with a diagnosis of high grade lumbar spine spondylolisthesis was simulated using a trained actor
- The expert group comprised 10 musculoskeletal physiotherapists with a minimum of 10 years overall clinical experience and greater than 2 years experience following the completion of postgraduate study
- The novice group included 9 physiotherapists in their first year of clinical practice following completion of an undergraduate degree
- Data collection methods included observation of the participant taking a patient history of the simulated client and a simulated retrospective recall interview with the participant

(Miller, Rivett & Isles 2009)

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Pattern recognition use and accuracy

33

		Pattern recognition		Pattern recognition	
		No	Yes	No	Yes
Accuracy	No	6	1	8	1
	Yes	0	3	0	0

Experts Novices

PR more likely to produce an accurate diagnosis than HDR (p=0.01)

(Miller, Rivett & Isles 2009)

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(Miller, Rivett & Isles 2009)

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Developing reasoning skills

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- An increased **awareness** of reasoning processes and reasoning errors
- Using a **broadened perspective** beyond diagnostic reasoning
- Care in identifying **relevant cues** and their significance at beginning of patient encounter, thus facilitating accuracy in hypothesis generation and maximal benefit from related inquiry strategies

(Jones & Rivett 2004)

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Developing reasoning skills


36


- Improving the depth and **organization** of knowledge (e.g. hypothesis categories)
- Effective use of inquiry strategies to prove or disprove hypotheses (i.e. hypothesis **testing**)
- Regularly **reflecting** about clinical experiences
- **Reassessment** either provides support for the hypotheses reached and chosen course of action OR signals the need for hypothesis modification or further data collection

(Jones & Rivett 2004)


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**DOES MWM PROMOTE
'RECIPE' THERAPY
OR
SKILLED
CLINICAL REASONING?**






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MWM promotes *patient-centred reasoning*


- ✓ Collaborative reasoning
 - patient actively participates in management
 - **PILL** facilitates compliance and changes beliefs
- ✓ Effective communication pivotal – **CROCKS**
- ✓ Individuality of patient and uniqueness of presentation central – **CSOM** (functional comparable sign)
- ✓ Hypotheses tested
 - structures immediately implicated
 - prognosis potentially expedited

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MWM promotes *knowledge organisation*

- ✓ Growing **evidence** base guides reasoning: biological and empirical
- ✓ **Integrates** physical
 - active/function
 - passive movement
- ✓ **Pattern** acquisition facilitates immediate feedback and linked to 'if → then' associations
- ✓ Facilitates **metacognitive** skills through continual adaption




Care to avoid reasoning errors of bias...

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THANK YOU



QUESTIONS?

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