

Educational Strategies to Improve Diagnostic Reasoning

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Objectives

- Review theory of diagnostic reasoning
- Describe educational strategies for improving diagnostic reasoning

Theory of Diagnostic Reasoning

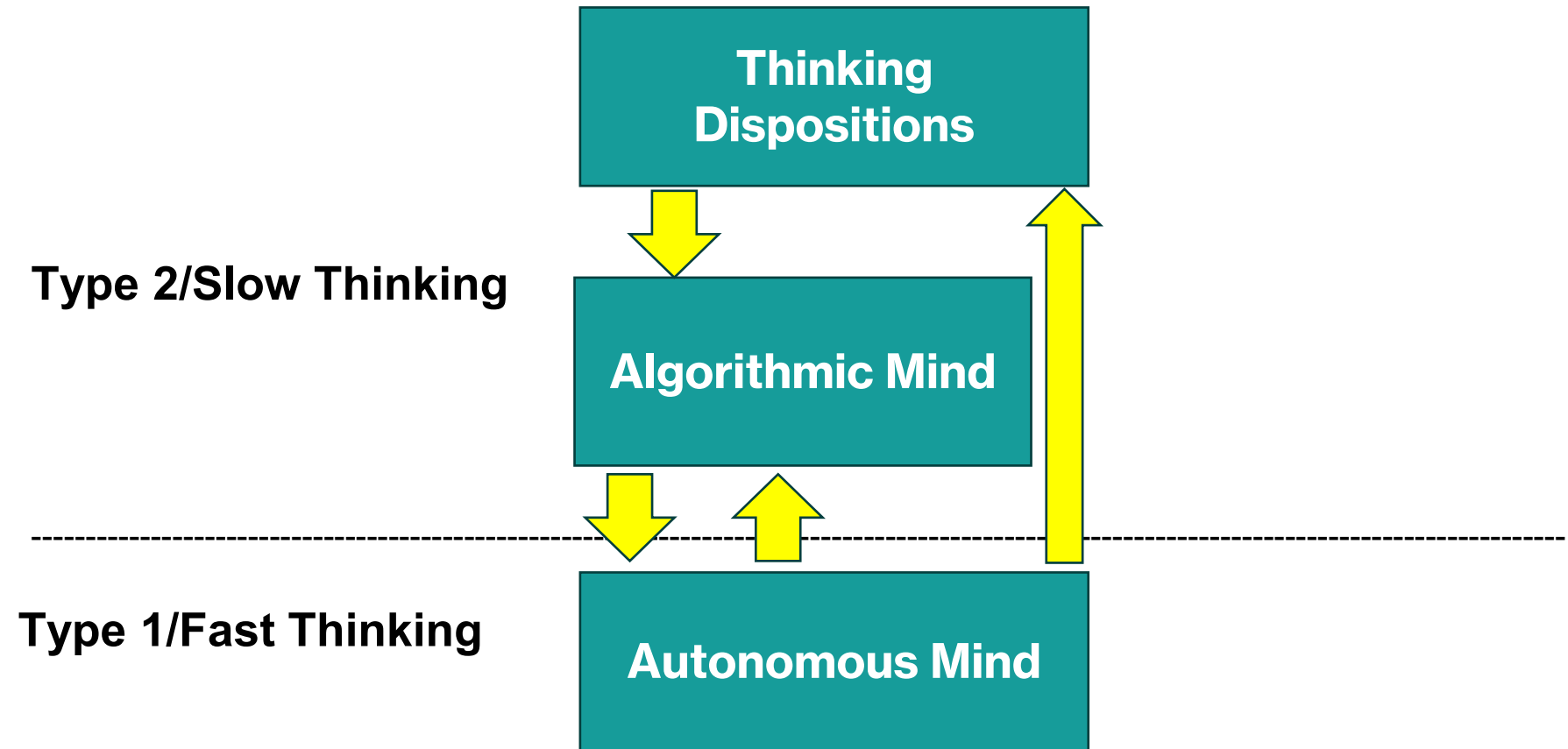
Knowledge Matters



Illness Scripts

Who?	When?	What?	How?
Epidemiology/ Risk factors	Temporal pattern	Clinical findings	Patho- physiology

Tripartite Model of Mind



Educational Strategies for Improving Diagnostic Reasoning

Key Instructional Strategies

Year 0-0.5

Key Concepts and Vocabulary

Year 0.5-2- Algorithmic Mind

Problem-based, Case-based, Whole Task Practice

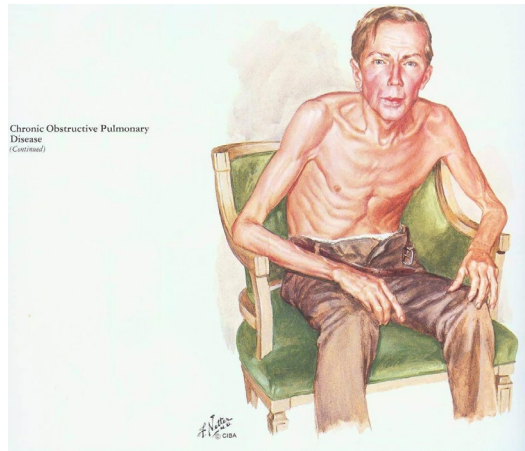
Part-task practice (e.g., clinical skills)

Year 3-4- Autonomous Mind

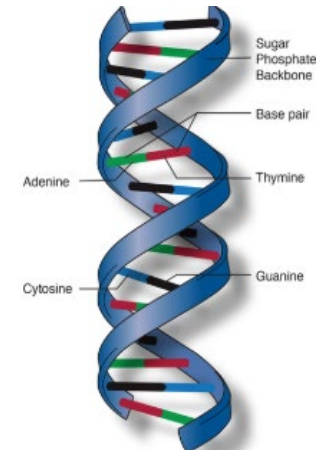
Clinical Experiences

Algorithmic Mind - Core Knowledge

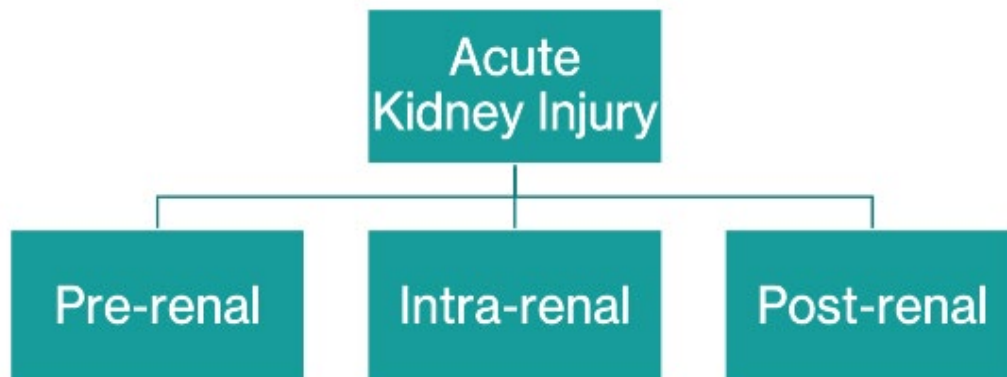
Disease Presentations



Basic Science



Diagnostic Frameworks



Diagnostic Reasoning Concepts

- Disease Probability
- Likelihood Ratios
- Problem Representation
- Bayesian Reasoning

Advanced Integration Module*

Timing

- End of second year

Instructional
method

- Team-based learning using real clinical cases
- Whole task practice
- Spaced repetition and interleaving

Content

- Problem based (chest pain)
- Specialty focused (Peds week)

*Pathophysiology course module to improve clinical reasoning education at Boston University Chobanian and Avedisian School of Medicine

Autonomous Mind - Deliberate Practice

- Key instructional method - clinical experiences
- Automization of illness scripts and schema/
Unconscious competence
- Building of digital diagnostic knowledge repository
- Challenges:
 - Randomness of clinical experience
 - Lack of **deliberate practice**



Overcoming Challenges to Deliberate Practice

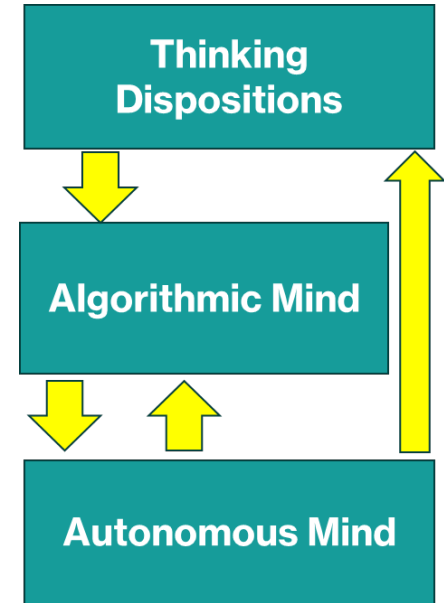
- Individualized learning plans
- Coaching
- Virtual patient practice (and assessment)



Thinking Dispositions

Improving process?

- Justification/Deliberate reflection on diagnosis
- Explanation
- Open-mindedness
- Curiosity



Summary

- Helping learners develop accurate and robust illness scripts should be the main focus of diagnostic reasoning teaching and assessment
- Educational strategies should target the algorithmic and autonomous mind (and perhaps thinking dispositions)

Thank you.