Clinical Reasoning in Health Education

Jamie Fox, MD, FAAP
Associate Professor of Pediatrics

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Disclosures

Financial and other important stuff…

NONE
System 1

“Thinking without thinking”

Subconscious

Intuition

Pattern recognition

LOW cognitive load

Fast

System 2

“Thinking about thinking”

Conscious

Metacognition

HIGH cognitive load

Deductive reasoning

Deliberate
DUAL-PROCESS THEORY

Context
Ambient conditions
Task difficulty
Task ambiguity
Affective state

Patient presentation

Pattern Processor

Pattern recognition

System 1

Rational override
Dysrationalia* override
Calibration

Diagnosis

INABILITY TO THINK AND BEHAVE RATIONALLY DESPITE ADEQUATE INTELLIGENCE
Broken lines indicate significant interaction between System 1 and System 2
What’s this have to do with Learning?
Feathered animals
Furry animals
Slimy animals
Scaled animals
Can swim
Can't fly
Tropical
Long-legged
Migrate
Feathered animals
- Can swim
- Can't fly
- Tropical
- Long-legged
- Migrate
Feathered animals

- Mallard duck
- Canadian goose
- Trumpeter swan
- Pelican
- Penguin

Can swim
Shortness of breath
Chest pain
Abd pain
Headache

Acute
Chronic
Intermittent
Mild
Immuno-compromised
Wheezing
Shortness of breath
Acute Fever
Asthma
Bronchiolitis
Foreign body
Myocarditis
Pneumonia
### Bronchiolitis

<table>
<thead>
<tr>
<th>Predisposing Factors</th>
<th>Pathophysiologic Insult</th>
<th>Clinical Consequences</th>
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<tbody>
<tr>
<td>• 6mos - 3yo</td>
<td>Virus (classically RSV, but many others) invades respiratory epithelium in bronchioles leading to inflammation, sloughing of epithelium into bronchioles, thereby impairing airflow</td>
<td>• Fever</td>
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<tr>
<td>• Sick contact</td>
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<td>• Nasal congestion</td>
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<td>• Upper respiratory tract infection</td>
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<td>• Cough</td>
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<tr>
<td>• Prematurity</td>
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<td>• Acute, progressive incr work of breathing</td>
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<td>• Chronic lung disease</td>
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<td>• Tachypnea</td>
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<td>• Hypoxia</td>
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<td></td>
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<td>• “Washing machine in chest”</td>
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<td></td>
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<td>• If mild, “happy wheezer”</td>
</tr>
</tbody>
</table>
DUAL-PROCESS THEORY

Context
Ambient conditions
Task difficulty
Task ambiguity
Affective state

Patient presentation

SOB

System 1
Pattern recognition
Rational override
Dysrationalia override
Calibration

System 2
Repetition

RECOGNIZED

NOT RECOGNIZED

Intellectual ability
Education
Training
Critical thinking
Logical competence
Rationality
Feedback

*Inability to think and behave rationally despite adequate intelligence
Broken lines indicate significant interaction between System 1 and System 2

Bronchiolitis
Our patient’s pneumonia is progressing to respiratory failure and sepsis. I’ll be right there.
SOB
Chest pain
SOB
Abd pain
Headache

Read about SIMILAR illnesses
SOB
Chest pain
SOB
Abd pain
Headache

STRUGGLE with the content
Ebbinghaus Forgetting Curve
SOB
Chest pain
SOB
Abd pain
Headache

STRUGGLE with the content
SOB
Chest pain
Abd pain
Headache

STRUGGLE with the content

Pneumonia | Asthma | Bronchiolitis
----------|--------|---------------
Predisposing conditions
Pathophysiologic insult
Clinical consequences
SOB
Chest pain
Abd pain
Headache

STRUGGLE with the content
Ebbinghaus Forgetting Curve

Retention of knowledge

Reviewed

Reviewed
Chest pain
SOB
Abd pain
Headache

Experienced Nurse
Expert Nurse
Experienced 

Occurs naturally

Expert

WARNING: HARD WORK AHEAD
Becoming an expert isn’t easy. No one is pretending that it is. But, it’s worth it!
HELLO
I AM...
AN EXPERT

More Cases!!

Mobile Classroom
HELLO
I AM...
AN EXPERT

More Cases!!

Life Hacks
Build/Organize Scripts

- Chest pain
- Shortness of breath
- Abd pain
- Headache

Battle Forgetting

Become Expert

HELLO
I AM...
AN EXPERT
Any questions