Contributing to Resiliency: Individual Level

- Individual wellness
- Role definition, cross-training, and informal networks
- Recognizing altered conditions
  - Cognitive bias and blindness- missing altered conditions
  - Questioning attitude
- Anticipatory thinking
Human Error

“Everyone is a human first – then an expert or a novice second.”

Jef Raskin, *The Humane Interface*

1. Attention
2. Perception
3. Bias
4. Cognition

Kathryn Schulz, *Being Wrong*, 2011
Cognitive Blindness
Our Brains Help Us by Compensating

Aoccdrnig to rscheearch at Cmabrigde Uinervtisy, it deosn't mttae in waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is taht the frist and lsat ltteer be at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.
The Biggest Mistake Doctors Make
Misdiagnoses are harmful and costly. But they’re often preventable.

A patient with abdominal pain dies from a ruptured appendix after a doctor fails to do a complete physical exam. A biopsy comes back positive for prostate cancer, but no one follows up when the lab result gets misplaced. A child’s fever and rash are diagnosed as a viral illness, but they turn out to be a much more serious case of bacterial meningitis.

Johns Hopkins study
- 160,000 patients permanently harmed each year
- Most common medical mistake
- A leading cause of malpractice claims
- 35% of $39 billion in losses for US 1986-2010
Dual Processing Theory (DPT)

Prevalent model of diagnostic reasoning

- **System 1 (Intuitive)**
  - Fast, automatic, effortless
  - High capacity and low reliability

- **System 2 (Analytical)**
  - Slow, resource intensive, effortful and controlled
  - Limited capacity but more highly reliable

- Optimal diagnostic reasoning likely a blend of the two modes in appropriate doses

Croskerry, *Academic Medicine*, 2009, 84:8; 1022-1028
Kahneman, D *Thinking Fast & Slow*, 2011
A bat and ball – sold together as a bundle - cost $1.10.

The bat costs a dollar more than the ball.

How much does the ball cost?
System 1: The Intuitive

Functions of System 1:
- Quickly assess the situation with little effort
- Deliver an impression or answer

Problems with System 1:
- Immediate issues in the environment (workload, interruptions, distractions)
- What you see is all there is (WYSIATI); System 1 doesn’t pay attention to what it doesn’t see or know

What’s the diagnosis?

With thanks to Kate Kovich, Advocate Health Care

Croskerry, *Academic Medicine*, 2009, 84:8; 1022-1028
Kahneman, D *Thinking Fast & Slow*, 2011
Selected Types of Bias

- **Anchoring**
  - The tendency to lock on to salient features in the patient’s initial presentation too early in the diagnostic process, and failing to adjust this initial impression in the light of later information

- **Availability**
  - The disposition to judge things as being more likely, or frequently occurring, if they come readily to mind. Recent experience with a disease may inflate the likelihood of its being diagnosed

- **Ascertaining (Attribution)**
  - Occurs when thinking is shaped by prior expectation; examples: stereotyping and gender bias

- **Confirmation**
  - The tendency to look for confirming evidence to support a diagnosis rather than look for disconfirming evidence to refute it

Tactics to Avoid Cognitive Errors

- Cognitive Debiasing
- Use of Checklists/ Other Prompts
  - Structured handovers
  - Visual and other prompts
- Thinking skills: QV & V
Cognitive Debiassing Strategies

- Learn about cognitive bias
  - Provide information about biases illustrating their adverse effects on decision-making and diagnosis formation

- Consider alternatives
  - Established forced consideration of alternative possibilities. Routinely ask: “What else might this be?”

- Metacognition
  - Train for a reflective approach to problem solving: stepping back from the immediate problem to examine and reflect on the thinking process

Thinking Skill: QV&V

Qualify the source
Validate the information
Verify the information

Apply QV&V to both:
1. Information used in judgments or decisions
2. Principles (rules) applied from memory or guidance

Questioning Attitude is not asking questions - it’s questioning the answers

QV&V was developed by Dr Chong Chiu of Failure Prevention Inc. (1994) as a tool for questioning attitude
Thinking Skill: QV&V

Toggle from System 1 to System 2 thinking by asking:

- What other explanations could there be for these problems?
- Which assumptions am I making that might be wrong?
- How might the treatment which I am considering be wrong?
- What might be prompting this patient to ask this question?

And:

- Think out loud (alone or with colleague) to force System 2 thinking
- Reassess or re-evaluate. It’s another way of slowing yourself down.
<table>
<thead>
<tr>
<th>Leadership Safety Values and Actions</th>
<th>Problem Identification and Resolution</th>
<th>Personal Accountability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaders demonstrate a commitment to safety in their decisions and behaviors.</td>
<td>Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.</td>
<td>All individuals take personal responsibility for safety.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Processes</th>
<th>Continuous Learning</th>
<th>Environment for Raising Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>The process of planning and controlling work activities is implemented so that safety is maintained.</td>
<td>Opportunities to learn about ways to ensure safety are sought out and implemented.</td>
<td>A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective Safety Communications</th>
<th>Respectful Work Environment</th>
<th>Questioning Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications maintain a focus on safety.</td>
<td>Trust and respect permeate the organization.</td>
<td>Individuals avoid complacency and continually challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.</td>
</tr>
</tbody>
</table>
Anticipatory Thinking

- The process of *recognizing and preparing* for difficult challenges, many of which may not be clearly understood until they are encountered.
  - A form of future-oriented sensemaking

- Anticipatory thinking is functional: it helps us prepare to respond, not just to predict
  - Prediction: guessing future states of the world
  - Directing our attention to monitor certain kinds of events and ignore/downplay others
  - Example: driving a car

Klein, G et.al.
Categories of Anticipatory Thinking

- **Pattern Matching**
  - Involves problem detection and provides an early warning system when we are about to run into trouble.
  - ‘The situation is A, this is likely to lead to B. So we need to do X’.

- **Trajectory Tracking**
  - More complex than pattern matching. It requires us to compare what is expected with what is observed.
  - ‘The situation is A, over time this is likely entail B, which is likely to lead to C, so we need to do X’.

- **Convergence**
  - Requires us to see the connections between events
  - We notice an ominous intersection of conditions, facts, and events.
  - ‘The situation involves A, B, and C. Taken together, D is likely. So we need to do X.’

Klein, G and McLennan, J et.al.
retrospective

prospective

cause analysis

lessons-learned

learning boards

metrics

debrief

rapid chain

system

daily check-in

safety huddle

watch standers

HEWS

unit

RRT

STEP

cross monitoring

team

situation awareness

individual

role change

wellness

questioning attitude

anticipatory thinking

HPI