Cognitive Biases in Clinical Decision Making

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Cognitive Biases

- Rate of diagnostic error in clinical medicine is approximately 15% (Berner and Garber 2008; Elstein 1995)
- The majority of errors are not due to technical mistakes or inadequate medical knowledge.
- They are due to flaws in clinical thinking: cognitive biases
  - Predictable pitfalls in how we make decisions
  - Cognitive biases also affect how we judge and manage others, and make strategic and financial decisions

Key Biases

- Overconfidence
- Framing
- Confirmatory Bias

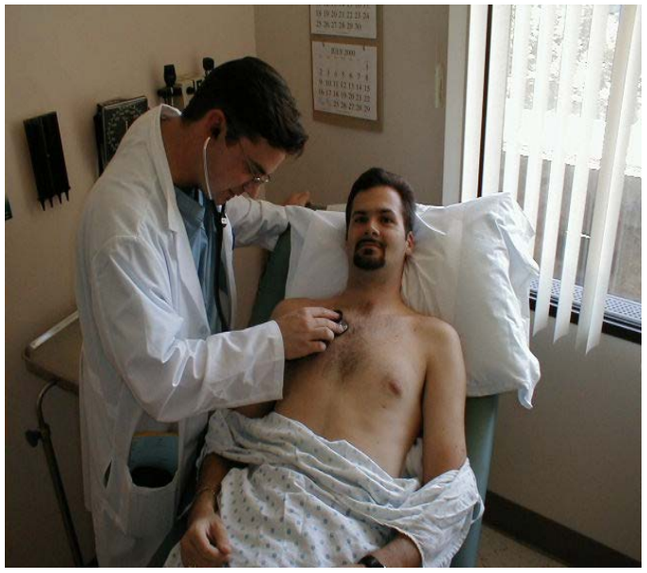
Overconfidence Bias:
Thinking you are more likely to be
right than you actually are

Overconfidence

82% of people say they are in the top 30% of safe drivers

86% of Harvard Business School MBA’ s say they are better looking than their classmates

Overconfidence



26% of doctors were definite in diagnosing cyanosis in patients who turned out to have normal oxygen levels

In project management, time is underestimated

Confidence and Accuracy

Tested accuracy of 95 board certified radiologists classifying x-rays as normal or abnormal

Top 20:
95% accurate

Bottom 20:
75% accurate

Highest confidence

Potchen EJ. Measuring observer performance in chest radiology: some experiences. *J Am Coll Radiol.* 2006;3:423–432.

There is very little correlation
between how confident a person is
(or how confident they appear to be)
and how right they are

Overconfidence: Remedies

- Get other opinions
- Entertain more than one diagnosis
  - Overconfidence goes down when you consider multiple options

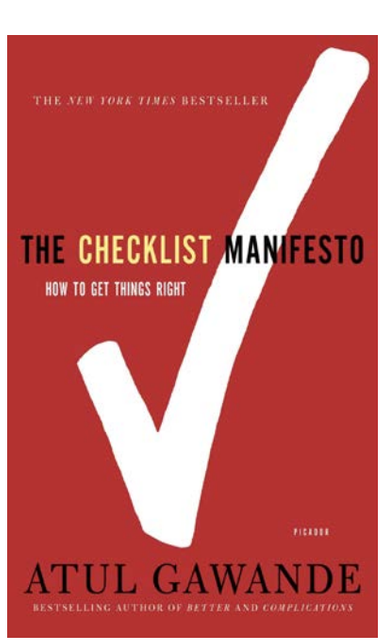
After discussing a medical error he said:

"I learned from this to always hold back, to make sure that even when I think I have the answer, to generate a short list of alternatives."

- Dr. Harrison Alter, emergency medicine

Overconfidence: Remedies

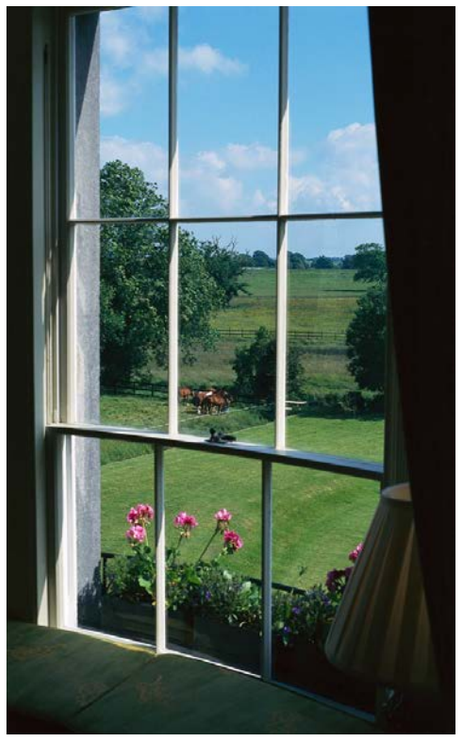
- Ask yourself "Why might I be wrong?" "What might I be missing?"
- Use a checklist



http://www.ted.com/talks/atul_gawande_how_do_we_heal_medicine

Framing Bias

Framing



Two sources:

- Frames draw attention to certain aspects of a problem, while leaving others in the shadows, hidden from our view

Mental Mindset: Past experience, culture, training, specialty

The way a problem is presented to you

- Known in medicine as a fixation bias – being fixated on one aspect of the patient, one symptom or set of symptoms

Framing Remedies:
Awareness of Your Own Frames

What issues does the frame address most?
What boundaries do I put on the problem? In particular, what aspects of the situation do I leave out of consideration?
What yardsticks and reference points do I use to measure success?
What metaphors, if any, do I use in thinking about this issue? (football, war, family)
Why do I think about this question this way? What training or experiences frame the way I view the world?
What does the frame emphasize or minimize?
Do other people in my profession think abut this problem differently? How? Why? Are their frames successful?

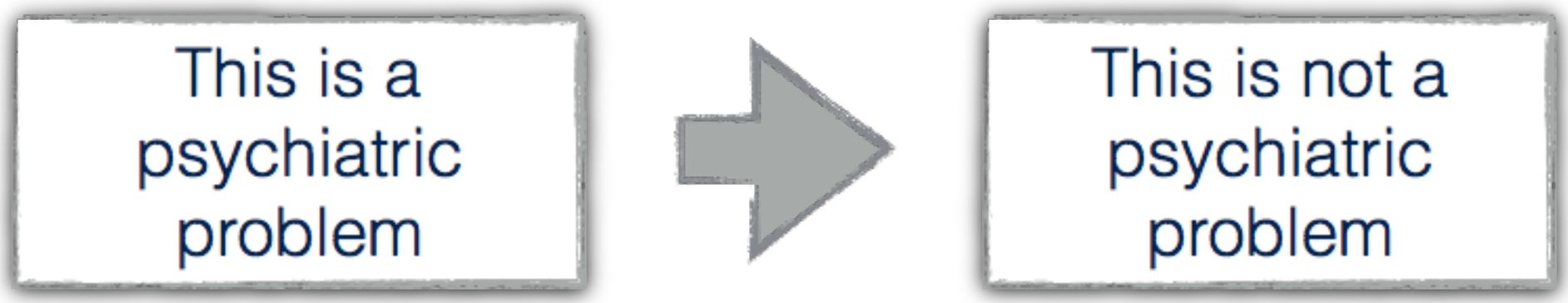
* "*Winning Decisions*," by Russo and Schoemaker (2002)

Framing Remedies:
Awareness of How a Problem is Framed for You

Has the wording of the problem created a frame? What is it overlooking?
Do the options create a frame?
Is there an alternative question that leads to a broader frame?

Framing Remedies

- Falsify your frame



Framing Remedies

- Talk to someone with a different frame
  - Different speciality
  - Other stakeholders (patients, other types of clinicians)
  - Someone you tend to disagree with
- Ask, “How do you see it? What am I missing?”

Confirmatory Bias

Confirmatory Bias

- Preference for information that is
  - Consistent with beliefs and expectations
  - Consistent with preference and desire

Confirmatory Bias

- Particularly an issue when information is being sought out and collected
  - Search for confirming information
  - Give more weight and credibility to confirmatory information
  - Remember confirmatory information better
  - Interpret ambiguous information as confirmatory

Confirmatory Bias Remedies

- Search for both confirming and disconfirming information
- Entertain multiple diagnoses
- Play devils advocate or appoint someone on the team to play this role
- Engage in a *Pre-Mortem*

General Remedies

- Are there any “don’t miss” diagnoses associated with these symptoms?
- What is the worst-case scenario?
- Is there anything that doesn’t quite match up?
- What else could it be?
- Is this an atypical presentation or could it be something else?
- Do I need more expertise to make this diagnosis?

Cognitive Bias Table		
What is it?	**Example**	**Remedies**

Overconfidence
Tendency to think we are right more often than we actually are. This leads us to fail to collect additional information or to consider alternative diagnoses.
	• Seeing a patient's symptoms as a classic presentation of a given illness, leading to a cursory physical exam where critical features are missed.	• Consider that you might be wrong and ask yourself what you might be missing
		• Assess whether you have considered multiple diagnoses, rather than the one or two that are most obvious
		• Get judgments from others (without biasing them with your own views—keep them independent!).
		• Ask yourself
		  • What am I missing?
		  • If the patient gets worse what would be the likely cause?

Framing Bias We view a problem too narrowly either because of our mental mindset (which comes from our training, specialty, culture, etc.) or because of how the problem is presented to us. This bias causes us to focus on some aspects of a patient's presentation while ignoring others.	• A specialist focuses on the bodily systems related to her specialty. • Referrals or communications from other team members focus on certain aspects of a patient's symptoms, but fail to highlight other symptoms.	• Identify your chronic frames: how do you tend to view problems; what do you focus on and what do you miss? • Expand your frame by considering other diagnostic options that might be outside your area of focus, such as other bodily systems, etc. • Flip your frame: adopt the opposing frame from the one that naturally occurs to you • When a patient or problem is presented to you, ask yourself what frame may have been put in place by the information that you receive • Consult with others, particularly those with different backgrounds
Confirmatory We seek out, believe and remember information that fits with what we expect or what we desire (or both). Further, ambiguous information is interpreted as being consistent with desires and expectations.	• A borderline test result is seen as consistent with an initial diagnosis. • A doctor asks questions of the patient that more readily solicits support, rather than a lack of support, for the doctor's initial diagnosis.	• Entertain multiple possible diagnoses • Search for both confirming and disconfirming information • Ask questions of patients and/or consider a test that will allow for answers that are the opposite of what you expect • When interpreting ambiguous information, force yourself to consider interpretations that go against what you want or expect