


UNCONSCIOUS BIAS IN MEDICINE *Part 2 of 2*


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UNCONSCIOUS BIAS IN MEDICINE 2 *Learning Objectives*

Upon completion of this session, participants will improve their competence and performance by being able to:

- Describe why experiential memory is more effective than factual memory, but may be less accurate
- Recognize personal unconscious biases during interactions with patients and modify them as appropriate

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EXPERIENCE, REASON, & BEHAVIOR *Unconscious Bias is Natural, but Modifiable*

Initial experience

↓

Heuristic formation

↓

Repeat experience

↓

Emotion with somatic markers

↓

Unconscious bias


↓

Reason

↓

Behavior

- **Heuristic**
 - Mental shortcut based on experiences & associated emotion-tagged memories
- **Somatic markers**
 - Autonomic nervous system symptoms generated by emotions in response to repeat experiences processed through amygdala
- **Unconscious bias**
 - Gut feeling, intuition, or preconceived notion triggered by somatic markers via amygdala that may compel behavior
- **Reason**
 - Rational thought & awareness via prefrontal cortex triggered by gut feeling, incorporating factual memories


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MENTAL SHORTCUTS
Popular Science Perspectives

Malcolm Gladwell, 2005
Blink: The Power of Thinking without Thinking
 Mental shortcuts are a good thing

Daniel Kahneman, 2011
Thinking, Fast and Slow
 Mental shortcuts are a bad thing


Antonio R. Damasio, 1994
Descartes' Error: Emotion, Reason, and the Human Brain
 Mental shortcuts are a good thing—but need modification

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MEMORY DEFINITION
Includes Learning & Remembering


- Memory = recalling previously learned information or experiences
- Memory entails both:
 - Learning = *memory acquisition*
 - Remembering = *memory retrieval*

Unconscious bias is a natural product of memory. Understanding how the brain processes memory is essential to understanding unconscious bias.

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MEMORY & NEUROANATOMY
"It Takes a Village"

- Memory engages widely distributed, interconnected parts of the brain, including:
 - *Limbic system* – primitive, middle part of brain that processes memory and emotions (includes amygdala, hippocampus, thalamus, hypothalamus, basal ganglia, and cingulate gyrus)
 - *Cerebral cortex* – evolutionarily newest, outer layer of brain that processes higher-order cognitive function; stores acquired memory fragments; creates new memories via reasoning
 - *Basal ganglia and cerebellum* – primitive structures in middle of brain that control speed and coordination of motor function

After Elliott D. Ross. *Cortex* 2008;44:1010
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MEMORY TYPES & LOCATIONS

Unconscious Bias Involves 3 of 4

- **Factual memory** (= exteroceptive = declarative = semantic)
 - Acquired via external sensory stimuli (vision, hearing, touch)
 - Processing centers: **hippocampus & thalamus**
- **Experiential memory** (= interoceptive = emotional = episodic)
 - Acquired via experiences with attached emotions
 - Processing center: **amygdala**
- **Motor-skill memory** (= motor = procedural)
 - Acquired via repetitive movement
 - Processing centers: **motor cortex, basal ganglia, cerebellum**
- **Reasoning memory** (= executive = working)
 - Acquired via self-awareness, reflection, insight, foresight
 - Cognition across time; integrates other 3 memory types
 - Processing center: **prefrontal cortex**


Together, sometimes called **explicit memory**

Sometimes called **implicit memory**

After ED Ross. Cortex 2008;44:1010
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EXPERIENTIAL MEMORY


Most Effective Memory Type for Most People



<http://www.gettyimages.com/photos/collection/benjamin-franklin>

**Tell me and I forget.
Teach me and I remember.
Involve me and I learn.**

*Benjamin Franklin (1706-1790)
American politician, statesman,
inventor, & philosopher*



<https://www.istock.com/artist/154855-Will-Rogers-2>

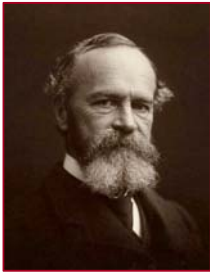
**There are three kinds of men.
The ones that learn by readin'.
The few who learn by observation.
The rest of them have to pee on the
electric fence for themselves.**

*Will Rogers (1879-1935)
Oklahoma actor, humorist,
& columnist*

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INSTINCTS AND EMOTIONS

“Instincts” = Unconscious Biases



https://en.wikipedia.org/wiki/William_James

Every object that excites an instinct excites an emotion as well.

*William James
1842-1910
American psychologist & philosopher*

Emotion = a conscious mental reaction ...subjectively experienced as strong feeling...and typically accompanied by physiological and behavioral changes in the body

Merriam-Webster Dictionary

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EMOTIONS CAUSE SOMATIC CHANGES *Via the Autonomic Nervous System*

- **The essence of feeling an emotion is the experience of somatic changes or “markers”** in juxtaposition to the mental images that initiated the cycle
- **Emotions cause a “gut feeling”** via:
 - Neural signals from viscera, muscles, joints, and neurotransmitter nuclei that reach subcortical nuclei and cerebral cortex
 - Release of hormones & peptides into the blood that reach the brain either through the blood-brain barrier (BBB) or through brain regions without a BBB (e.g., area postrema)

After Antonio R. Damasio. *Descartes’ Error*. 1994



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AUTONOMIC NERVOUS SYSTEM *Fight or Flight—or Reason*

- Symptoms generated by emotions via the autonomic nervous system (= **somatic markers**, feelings, or instincts) have two potential purposes:
 - **Survival (fight or flight)** – change in facial expression (display of anger to scare predator), vascular system, gut, & body position (to facilitate fighting or escape from a predator)
 - **Awareness (reason)** – facilitate modification of response (“flexibility of response based on the particular history of your interactions with the environment”)

After Antonio R. Damasio. *Descartes’ Error*. 1994



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EMOTIONS & THEIR CONSEQUENCES *Alarm Bells & Incentives*

- **“Somatic markers are...feelings generated from secondary emotions...connected, by learning [i.e., experience], to predicted future outcomes of certain scenarios.**
- **When a negative somatic marker is juxtaposed to a particular future outcome the combination functions as an **alarm bell**.**
- **When a positive somatic marker is juxtaposed instead, it becomes a beacon of **incentive**.**
- **Somatic markers do not deliberate for us. They assist the deliberation by **highlighting some options** (either dangerous or favorable), and eliminating them rapidly from subsequent consideration.**
- **...the number of scenarios under scrutiny is immense, and...somatic markers...assist the process of sifting through such a wealth of detail....”**

Antonio R. Damasio. *Descartes’ Error*. 1994



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MEMORY OPTIMIZATION

Integration of Three Main Structures

- **Hippocampus** processes memories of facts & information without emotional attachments—with fair memory retrieval
- **Amygdala** processes memories using experience with attached emotions, resulting in:
 - Effective memory retrieval—unrelated to rational thought
 - Creation of mental shortcuts (**heuristics**) with gut feelings (**unconscious biases**) that may either:
 - **Promote survival (alarm bell)**, i.e., be rational & incentivize appropriate behavior or
 - **Promote awareness (incentive)**, i.e., be irrational & warn you to reflect & edit your memory via the prefrontal cortex
- **Prefrontal cortex** creates new memories by editing & correlating factual & experiential memories



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THINKING, FAST AND SLOW

Daniel Kahneman's Perspective



"We can be blind to the obvious, and we are also blind to our blindness"

Thinking Systems

- **System 1:** Fast, automatic, frequent, emotional, stereotypic, subconscious (no voluntary control)
 - **Experiential memory**
 - **Amygdala**
 - **Heuristics & biases**
- **System 2:** Slow, effortful, infrequent, logical, calculating, conscious, requires attention (agency, choice, concentration)
 - **Reasoning memory**
 - **Prefrontal cortex**
 - **Awareness**

<http://www.thedailybeast.com/articles/2013/04/26/daniel-kahneman-s-grpe-with-behavioral-economics.html>

Daniel Kahneman 1934 – Israeli-American psychologist & Nobel Prize winner in Economics Thinking, Fast and Slow, 2011



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NEUROSOCIOLOGY & UNCONSCIOUS BIAS

The DLG Concept of "Groupophilia"

Groupophilia = the tendency or urge to be part of and accepted by a group of people

Groupophobia = fear or intolerance of groups other than one's own

Groupism = the belief that one group is superior to another group

- Individuals survive best within a group
- Evolution depends on survival of the fittest species and survival of the fittest groups within a species
- For this reason, the human brain is wired to promote "groupophilia" and "**groupophilia is the most potent of all unconscious biases**"
- Group membership fosters both intragroup camaraderie ("groupophilia") and intergroup antipathy ("groupophobia" & "groupism")
- "Belief groups" (religion & politics) are the most potent group associations
 - They are (1) consistent with blind-obedience heuristic & social-harmony bias, (2) activated by "conformity," (3) relatively resistant to change



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GROUPOPHILIA IN EVERYDAY LIFE

We Subconsciously Draw a Venn Diagram around People

Our brain subconsciously defines every person in terms of the multiple groups to which we perceive they belong.

Perceived group affiliations evoke emotion-tagged memories and resultant somatic markers and, thus, have the power to modify our behavior.

There are many more groups we use to define people, such as age, body mass index, nationality (patriotism), & socioeconomic status.

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GROUPOPHILIA IN THE POPULATION

Leaders & Psychopaths Are the Least Groupophilic

Most people have strong groupophilic tendencies, but the degree of groupophilia varies considerably from person to person (per Asch, there is a "marked variability in conformity")

GROUPOPHILIC TENDENCIES

DLG Hypothesis

Leader = a person with natural leadership skills, not necessarily a person in a leadership position

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GROUPOPHILIA EFFECT ON LEADERSHIP

Offerman's 6 Ways for Leaders to Avoid Being Misled by the Group

Like all human beings, leaders tend to be cognitive misers.

"Most people—including leaders—prefer conformity to controversy."

"Effective leaders can end up making poor decisions because able and well-meaning followers are united and persuasive about a course of action."

- Keep vision and values front and center
- **Make sure people disagree**
- **Cultivate truth tellers**
- Do as you would have done to you
- Honor your intuition
- Delegate, don't desert

Diverse perspectives increase the odds that group opinion = truth

Lynn R. Offerman, "When Followers Become Toxic," 2004

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DIVERSITY WITHIN GROUPS

"The Wisdom of Crowds"

- Diversity:
 - Adds different perspectives to the group AND
 - Makes it easier for individuals to say what they really think
- Independence of opinion is:
 - A crucial ingredient in collectively wise decisions
 - One of the hardest things to keep intact
- **Because diversity helps preserve independence of opinion, it's hard to have a collectively wise group without it**

James Surowiecki, *The Wisdom of Crowds*, 2004

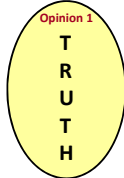


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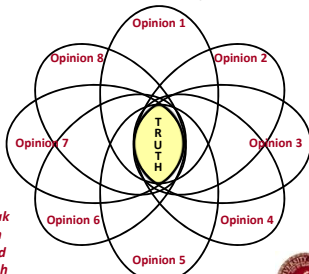
DIVERSITY WITHIN GROUPS

Enables More Accurate Perception of Truth

Perceived Truth of Group WITHOUT Diversity



Perceived Truth of Group WITH Diversity



Even one differing opinion can break the trance of "groupthink," spawn multiple differing perspectives, and alter the group's perception of truth



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DIVERSITY WITHIN GROUPS

The U.S. Founding Fathers & E Pluribus Unum

- "E pluribus unum" is Latin for "out of many, one"
- Originally referred to the Union formed by the separate states
- Adopted as a national motto of the U.S. in 1776
- Now found on Great Seal of the U.S. & U.S. currency
- **The U.S. founding fathers clearly valued diversity of opinion—even if their perception of diversity was far more limited than our own**

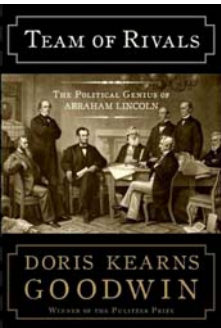


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DIVERSITY WITHIN GROUPS

Abraham Lincoln & His "Team of Rivals"

- The U.S. Cabinet is the group of presidential advisors & senior officers of the executive branch of the U.S. federal government
- The President selects & Congress confirms Cabinet members
- **Abraham Lincoln intentionally chose Cabinet members who he knew disagreed with him and with each other**
- Doris Kearns Goodwin described the selection and working of Lincoln's cabinet in "Team of Rivals: The Political Genius of Abraham Lincoln"




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ATTACKING BIAS & U.S. INTELLIGENCE

Red Teaming = Applied Critical Thinking

U.S. Intelligence = U.S. Military, CIA, FBI, etc.

- **Viewing a problem from perspective of an adversary**
- A form of "alternative analysis" with following goals:
 - > Search for one's own unconscious biases
 - > **Debias thinking**
 - > **Enhance decision making**
 - > **Improve effectiveness by acting as a devil's advocate**
- Publication of University of Foreign Military and Cultural Studies
 - > First 6 editions called Red Team Handbook
 - > 7th edition is The Applied Critical Thinking Handbook.7.0.2015

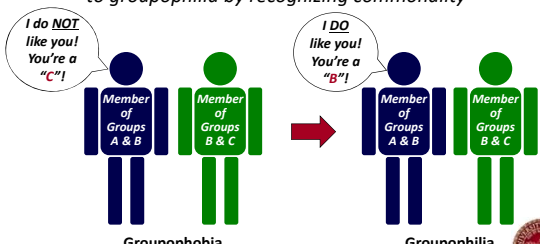


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APPRECIATING DIVERSITY

Use Prefrontal Cortex to Recognize Commonality

Appreciating diversity requires using your prefrontal cortex to **redefine the group**—consciously change groupophobia to groupophilia by recognizing commonality



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UNCONSCIOUS BIAS IN MEDICINE
We See Each Patient through Biased Eyeglasses

- All health professionals (HPs) are human beings
- All human beings are cognitive misers and use mental shortcuts (heuristics and unconscious biases)
- Thus, all HPs see patients from a biased perspective

HP Patient

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UNCONSCIOUS BIAS IN MEDICINE
Erase Bias to Improve Diagnostic Accuracy

Finding the truth (making an accurate assessment) is more likely if you:
 (1) recognize the somatic markers triggered by unconscious biases and
 (2) make a conscious effort to wash away the biases.

HP Patient

Wash away bias Return of bias

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REVIEW: THE AMYGDALA
Continuously Accumulates Unconscious Biases

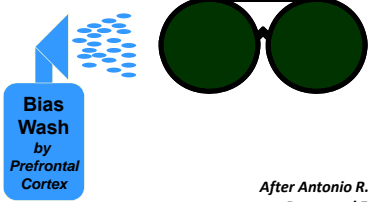
- Your **amygdala** records your experiences and emotions, resulting in the accumulation of mental shortcuts (heuristics) with resultant unconscious biases, including **groupophilia** and **groupophobia**

Over the years, you see the world through increasingly tinted (biased) glasses

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REVIEW: THE PREFRONTAL CORTEX
Has the Power to Alter Biases Consciously


■ Using your **prefrontal cortex**, you can be aware of your gut feelings (somatic markers) & consciously alter your biases and perceptions



After Antonio R. Damasio
Descartes' Error, 1994
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REVIEW: REWRITE THE PARADIGM
Recognize Somatic Marker, Think, Suppress Bias

Responding to gut feelings **WITHOUT** awareness & reason



Initial experience
 ↓
 Heuristic formation
 ↓
 Repeat experience
 ↓
 Emotion & somatic marker
 ↓
 Unconscious bias **EXPRESSION**
 ↓
 Behavior


Responding to gut feelings **WITH** awareness & reason



Initial experience
 ↓
 Heuristic formation
 ↓
 Repeat experience
 ↓
 Emotion & somatic marker
 ↓
 Unconscious bias **SUPPRESSION**
 ↓
 Behavior

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EXPERIENCE MAY BE MISLEADING
Don't Rely Only on Your Amygdala!



<http://www.benfranklin.com/quote/>
Collection Copyright Benjamin Franklin

Experience is the best teacher, but a fool learns from no other.

Benjamin Franklin
 1706-1790
 American politician, statesman, inventor, & philosopher



http://www.wedeming.com/who/Dr.W._Edwards_Deming.html


Experience itself teaches nothing

W. Edwards Deming
 1900-1993
 American engineer, statistician, management consultant, business professor, and champion of Quality Improvement and the PDCA Cycle

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UNCONSCIOUS BIASES
Summary

- Are **preconceived notions or prejudices** that occur as a result of normal **mental shortcuts (heuristics)** based on past experiences
- Occur in all human beings & are a part of normal human behavior
- Originate through **experiential memory** (via amygdala)
- Trigger **emotions/somatic markers** (via autonomic nervous system)
- Can be edited by **reasoning memory** (via prefrontal cortex)
- May have either **negative or positive consequences**
 - Negative Consequences**
 - Inaccurate generalizations & stereotyping
 - Inappropriate or unjust opinions or actions
 - Misdiagnosis & mismanagement by providers
 - Positive Consequences**
 - Increased efficiencies
 - Improved personal survival
 - Conscious modification of thoughts & behavior

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UNCONSCIOUS BIAS IN MEDICINE
Health Professional-Patient Relations


- In the broadest sense, the term “unconscious bias” refers to the **normal gut feeling, intuition, or preconceived notion** that may compel behavior
- Most studies of “unconscious bias,” however, refer to specific **social biases** that have their origin in groupophilia and affect interpersonal relations
- **All health providers have unconscious biases** that may interfere with their interpersonal relations and ability to diagnose & manage patients appropriately

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UNCONSCIOUS BIAS IN MEDICINE
Self-Awareness & Heuristics

The normal human brain uses mental shortcuts to enhance efficiency—use some & avoid others to improve communication


- **Framing heuristic** – being swayed by wording or the way information is presented
- **Anchoring heuristic** – sticking to first impressions
- **Availability heuristic** – generalizing based on personal knowledge or experience
- **Representative heuristic** – making assumptions & stereotyping
- **Confirmation bias** – interpreting information in a way that confirms preconceptions
- **Social harmony bias** – being influenced by others due to a need to conform & belong to a group (DLG’s “groupophilia”)

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UNCONSCIOUS BIAS IN MEDICINE
"Framing Heuristic" Has a Viral Effect

- Commonly used words & terms in medicine lead to inappropriate unconscious bias among health professionals
- **Conscious avoidance of these words & terms** lessens the likelihood of both personal bias & spreading bias to others:
 - Patient race
 - Patient is "obese"
 - Patient is "noncompliant"
 - Patient "denies"
 - Patient "refuses"
 - Drug or alcohol "abuse"
 - Patient or witness is a "poor historian"
 - "Outside hospital"
 - "Local doctor"
 - Brand names of drugs


Words have power!
 Use those that lead the listener accurately.
 Avoid those that spread bias inappropriately.

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UNCONSCIOUS BIAS IN MEDICINE
Bias Awareness Improves Communication

- ① **Intentionally lead listener** using "framing" & "anchoring" heuristics.
- ② **Avoid misleading listener** via "availability" (generalizing) & "representative" (stereotyping) heuristics or "confirmation" bias (confirming preconceptions).

HP Giving Information




FRAMING

Window of Misleading Biases


ANCHORING

HP Receiving Information



1. Build frame & anchor


2. Wash off misleading bias

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EMOTIONS, BIASES, & BEHAVIOR
Final Thoughts

(and biases)
 ↑
 All emotions are valid,
 but not all behavior is appropriate.
Psychology Maxim

"The key to our freedom lies in the knowledge of our fears and our unconscious emotional patterns."
Elsa Punset
 British & Spanish Philosopher
 & Expert on Emotional Intelligence

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Cognitive biases in health care

Issue:

Inconsistently reported and therefore challenging to quantify, cognitive biases are increasingly recognized as contributors to patient safety events. Cognitive biases are flaws or distortions in judgment and decision-making.

Within events reported to The Joint Commission, cognitive biases have been identified contributors to a number of sentinel events, from unintended retention of foreign objects (e.g., search satisficing), wrong site surgeries (e.g., confirmation bias), and patient falls (e.g., availability heuristic and ascertainment bias), to delays in treatment, particularly diagnostic errors which may result in a delay in treatment (e.g., anchoring, availability heuristic, framing effect and premature closure). According to literature, diagnostic errors are associated with 6-17 percent of adverse events in hospitals, and 28 percent of diagnostic errors have been attributed to cognitive error.¹

Two processes in thinking and decision-making help describe how cognitive biases manifest. The intuitive process, known as System I, is associated with unconscious, automatic, “fast” thinking, whereas the analytical process, known as System II, is deliberate, resource intensive, “slow” thinking.² Fast thinking responds to stimuli, recognizes patterns, creates first impressions, and is associated with intuitions. It is where heuristics (shortcuts or rules of thumb drawn from repeated experiences and learned associations) are deployed to expedite thinking without expending much, if any, attentional resources.

Much of life’s daily activities are performed using fast thinking, such as driving to work, recognizing facial expressions, and knowing that 2+2=4. These examples largely do not consume effort or draw from working memory. As such, fast thinking is often very useful, efficient and effective. However, it is imperfect and is predisposed to predictable pitfalls in judgment – cognitive biases. For instance, heuristics may be misapplied given incomplete information. They may cloud the ability to consider different alternatives or see other solutions, and can lead to inaccuracies regarding how common or how frequent occurrences are or how representative something is. This can, in turn, affect (or “set up”) the analytical process where reasoning and clinical decision-making occurs.

It is important for health care organizations to gain knowledge around cognitive biases and provide sociotechnical work systems that recognize and compensate for limitations in cognition, as well as promote conditions that facilitate decision-making.

Factors that can predispose or increase likelihood of cognitive biases:³⁻⁶

Person factors:

- Cognitive loading
- Fatigue
- Affective considerations (feelings)

Patient factors:

- Complex patient presentation, number of comorbidities
- Lack of complete history

System factors:

- Workflow design (e.g., task complexity, reliance on memory, numerous handoffs)
- Insufficient time to gather, integrate, interpret information
- Inadequate processes to acquire information (e.g., transfer from facility, care transitions)
- Poorly designed/integrated or inaccessible health IT
- Poorly designed environment (e.g., distractions, interruptions, noise, poor lighting)
- Poor teamwork, collaboration and communication
- Inadequate culture to support decision-making (e.g., lack of resources, time, rigid hierarchical structure)

(Cont.)

Example cognitive biases

More than 100 cognitive biases have been identified. Examples are provided in the sidebar, with a case example below illustrating several biases, noted in parentheses.

A patient with co-morbidities of renal failure, diabetes, obesity and hypertension arrived to the ED via EMS. Though the patient's chief complaint was chest pain, it was reported to triage as back pain, a secondary complaint (*framing effect*). The patient was "known to the organization," having been to the ED several times previously for back pain, and had been seen earlier that day for a cortisone shot (*ascertainment bias*). Triage assessment focused on back pain rather than chest pain (*anchoring, confirmation bias, diagnostic momentum*). The primary nurse began to prepare the evaluation using information from the triage indicating "back pain" (*framing, diagnostic momentum*) and did not independently evaluate the patient. The patient was found deceased a short time after arrival.

Examples of Cognitive Bias
Anchoring bias Giving weight and reliance on initial information/impressions, and not adjusting from this (anchor) despite availability of new information. "Jumping to conclusions" can lead to missed/delayed diagnoses.
Ascertainment bias Shaping decision-making based on prior expectations (e.g., stereotyping, gender bias). "Frequent flyers" with recurrent complaints can affect decision-making or, in the case of falls, a patient who "always uses the call bell" may predispose staff to expect that behavior.
Availability bias Judging likelihood of a diagnosis based on the ease with which examples can be retrieved (more familiar, common, recent, memorable) (e.g., diagnosing a patient based on frequently seen conditions such as the flu, or not considering less common diagnoses).
Confirmation bias Selectively noticing/seeking information that confirms opinion/impression versus seeking information that disconfirms. Evidence in support of beliefs is given more weight; evidence that refutes may not be noticed (e.g., not noticing a warning label on medication or performing procedure on incorrect site).
Diagnostic momentum (bandwagon effect) Once a label (diagnosis) has been assigned, momentum takes hold and reduces ability to consider other alternatives. Can affect future work-up of patient and how handoffs are "framed."
Framing effect How information is presented, and how a question is framed can impact future decisions (e.g., framing in probabilities as to whether patient might "die" or "live"). Source of information (e.g., superior, trusted source); and context can influence framing.
Search satisficing/premature closure Cease looking for findings/signals (e.g., disease processes, fracture, retained object) once something has been identified. Accepting a diagnosis before considering all information and verifying diagnosis.

Safety Actions to Consider:

While mitigating the occurrence of cognitive bias can be challenging, health care organizations should consider the following strategies to help increase the awareness of cognitive biases and promote work system conditions that can detect, protect against, and recover from cognitive biases and associated risk.³⁻⁶

- **Enhance knowledge and awareness of cognitive biases**
 - Support discussion of clinical cases to expose biases and raise awareness as to how they occur (M&M meetings, reflective case reviews)
 - Provide simulation and training illustrating biased thinking
- **Enhance professional reasoning, critical thinking and decision-making skills**
 - Train for and incorporate strategies for metacognition ("thinking about one's thinking")
 - Practice reflection or "diagnostic time-out" which facilitate being open to and actively considering alternative explanations/diagnoses asking the question, "How else can this be explained?"
 - Train for and incorporate systematic methods for reasoning and critical thinking (Bayesian model or probabilistic reasoning, mnemonics such as "SAFER")
 - Promote systematic method for presenting information to reduce framing effect
 - Provide simulation opportunities to increase experience and exposure
 - Provide focused and immediate feedback regarding diagnostic decision-making (why it was right or wrong) to allow insight into one's own reasoning and recalibrate where needed
- **Enhance work system conditions, workflow design that affect cognition**
 - Promote conditions that facilitate perception/recognition/decision-making (e.g., useful information displays, adequate lighting, supportive layout, limited distractions, interruptions and noise)



Legal disclaimer: This material is meant as an information piece only; it is not a standard or a *Sentinel Event Alert*. The intent of *Quick Safety* is to raise awareness and to be helpful to Joint Commission-accredited organizations. The information in this publication is derived from actual events that occur in health care.

- Limit cognitive loading, task saturation, fatigue
- Allocate time to review information, gather data, discuss case
- Provide access to/clarity of information (e.g., test results, referrals, H&P)
- Facilitate care transitions
- Ensure health information technology (IT) is usable, accessible and integrated within the workflow
- Facilitate real-time decision making and reduce reliance on memory (e.g., technology, clinical decision support systems, cognitive aids, algorithms)
- Promote inter- and intra-professional collaboration/teamwork to verify assumptions, interpretations, conclusions (e.g., communication/teamwork training)
- Design for error and build resilient systems that help detect and recover from error (redundancies, flagging critical lab values, triangulating data)
- **Promote an organizational culture that supports decision-making process**
 - Provide an organizational culture that support items listed above. Oro™ 2.0 provides tools and resources designed to guide hospital leadership throughout the high reliability journey. For more information, visit the Joint Commission Center for Transforming Healthcare [website](#).
 - Support a safe, non-punitive reporting culture to learn from near misses and incidents (how do cognitive biases arise, what strategies can be deployed to mitigate risk)
 - Actively include consideration of cognitive bias in patient safety incident analysis to enhance understanding of how they contribute and can be mitigated
 - Empower and encourage professionals to speak up
 - Engage and empower patients and families to partner in their care, understand their diagnoses, ask questions and speak up.

Resources:

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Note: This is not an all-inclusive list.



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