

Human Cognition

Cognition: mental processes that control executive functions.

Enables humans to acquire knowledge and understanding through thought, experience, and sensory input.

Core Components of Cognition:

1. Attention:

Focus on specific stimuli, filter out irrelevant information.

Critical for surgical precision and diagnosing subtle symptoms.

2. Perception:

Interpret sensory information to make sense of the world.

Recognize patterns in patient presentations (e.g., radiograph abnormalities).

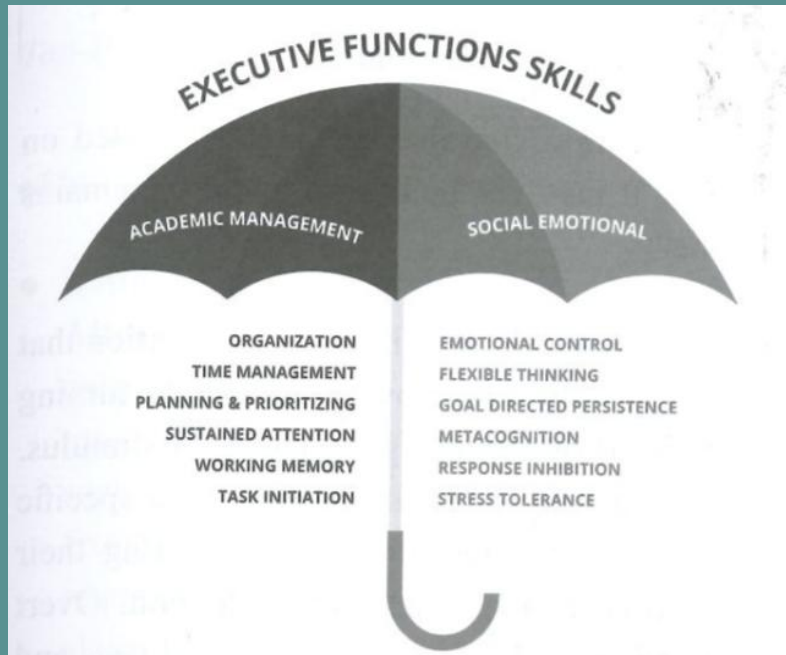
Core Components of Cognition:

3. Memory:

Encode, store, and retrieve information.

Essential for retaining medical knowledge, recalling patient histories, and applying learned protocols in emergencies.

4. Language



Key learning point

Cognitive processes such as perception, memory, attention, and language are interconnected and play critical roles in everyday functioning. Impairments in these areas can significantly impact quality of life and require tailored interventions.

(Attention)

Definition: fundamental cognitive process allowing individuals to selectively concentrate on specific aspects of their environment while filtering out irrelevant stimuli.

Function: enables prioritization of information most relevant to goals or tasks.

Clinical Role: critical for precision and accuracy; sustained focus needed for interpreting diagnostic images, performing intricate surgical procedures, and monitoring patients during emergencies (Posner & Rothbart, 2007).

History: part of human experience but not widely studied as a distinct cognitive process until recent decades; overshadowed by research on memory and perception.

Recent Advances: neuroscience and cognitive psychology have brought attention to the forefront, highlighting its integral role in cognition and behavior (Driver, 2001).

Primary Types of Attention

1. Sustained Attention: maintaining focus on a task over an extended period; examples include reading lengthy medical records or observing subtle patient changes; fatigue and stress significantly impair it, leading to errors in high-stakes environments (Warm et al., 2008).

2. Selective Attention: focusing on specific stimuli while ignoring distractions; in noisy hospital wards, clinicians must attend to critical conversations or alarms while tuning out background noise; mediated by neural networks, especially the prefrontal cortex, to suppress irrelevant information (Desimone & Duncan, 1995).

3. *Divided Attention:* also known as multitasking; allocating cognitive resources to multiple tasks simultaneously; necessary in fast-paced medical environments (e.g., managing multiple patients, responding to emergencies) but can compromise performance if tasks require high cognitive effort; increases cognitive load and may lead to errors, highlighting the importance of prioritizing tasks (Pashler, 1994).

Attention Classification: can be overt or covert depending on whether body movement is involved.

Overt Attention:

1-Involves physical movement such as turning the head or shifting gaze toward a stimulus.

2-Example: a dentist focusing on a specific area of a patient's mouth by adjusting their position.

3-Often guided by external cues and linked to sensory-motor coordination.

Covert Attention:

1-Focusing on a stimulus without physical movement.

2-Example: a clinician mentally focusing on a detail in a radiograph without moving their eyes.

3-Important in situations where movement is restricted or unnecessary, allowing rapid shifts in focus.

Overt vs. Covert Attention

Overt attention

- The eye moves to focus on the object of attention



With the Eyes

Covert attention

- You attend to an area of space but the eye does not move
- Object of attention is in your peripheral vision



Top-Down vs. Bottom-Up Processing

Bottom-Up Processing (Exogenous Attention):

Driven by external stimuli; occurs automatically in response to salient features (e.g., loud noise, flashing light).

Reflexive, does not require conscious effort.

Example: sudden hospital alarm captures clinician's attention regardless of current focus (Theeuwes, 1991).

Top-Down Processing (Endogenous Attention):

Goal-directed; influenced by expectations, knowledge, and intentions.

Requires cognitive effort; essential for deliberate focus and planning.

Example: physician searching for a specific symptom during physical examination (Egeth & Yantis, 1997).

1-Factors that reduce attention: stress, fatigue, and neurological disorders such as ADHD → decrease focus ability and increase errors.

2-Factors that improve attention: training programs such as mindfulness-based interventions → enhance cognitive performance and reduce stress.

& Tantis, 1997).

Key learning point

An important implication of attention is that it focuses cognitive resources on relevant stimuli while filtering distractions and sustaining concentration.

Human diversity

- Cultural differences influence how individuals perceive and interpret sensory information. For example, some cultures prioritize holistic perception, while others emphasize detail-oriented observation.
- Language diversity highlights variations in cognitive processing, as bilingual individuals often exhibit enhanced executive function compared to monolinguals.



(Perception)

Definition of Perception: cognitive process of organizing, interpreting, and integrating sensory information to create a coherent and meaningful representation of the external world.

Sensory Modalities Involved: vision, hearing, touch, taste, smell.

Clinical Importance: essential for diagnosing conditions, interpreting medical images, and assessing symptoms.

Perception

Examples:

Visual perception: identifying abnormalities in radiographs.

Somatosensory perception: detecting subtle tissue changes during oral examination.

Stages of Perceptual Process:

1. Sensation (detecting stimuli).
2. Organization (structuring sensory data into patterns).
3. Interpretation (assigning meaning to sensory input).

Perceptual Errors: illusions caused by misinterpretation of sensory information → may lead to misdiagnosis or diagnostic bias.

Perception can be categorized based on the sensory modality involved, each playing a unique role in clinical practice:

1-Visual Perception: interpreting visual stimuli such as shapes, colors, movement, and spatial relationships.

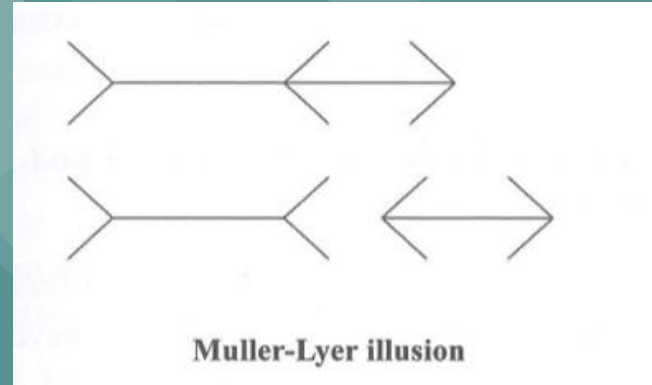
Clinical Importance: essential for reading diagnostic images, identifying skin lesions, and detecting subtle facial expression changes.

Examples:

Radiologists: detect fractures or tumors in X-rays.

Surgeons: navigate complex anatomical structures during procedures.

Visual Illusions: e.g., Müller-Lyer illusion can be misleading → need to corroborate visual assessments with objective measurements or additional diagnostic tools.



2-Auditory perception: processing sounds and speech, essential for communication with patients and colleagues.

Clinical importance: diagnosing hearing impairments or tinnitus, and understanding patients' symptom descriptions, especially in noisy environments (e.g., emergency rooms).

Potential issues: background noise can cause misinterpretations
→ need for quiet clinical spaces to ensure accurate communication.

3-Somatosensory perception: interpretation of tactile sensation, touch, pain, temperature, and body position(proprioception).

Clinical importance: essential for precise manual tasks such as suturing or tooth extraction.

Example: tactile feedback helps detect caries or periodontal pockets during oral examinations.

Issues: conditions like peripheral neuropathy can impair performance, emphasizing the importance of maintaining sensory health.

Neural Mechanisms:

1)The occipital lobe is primarily responsible for visual perception and houses the primary visual cortex (V1), which processes basic features like edges and motion.

Ventral stream ("what" pathway): enables object recognition.

Dorsal stream ("where" pathway): enables spatial navigation.

Damage to the occipital lobe can result in cortical blindness — loss of vision despite intact eyes.

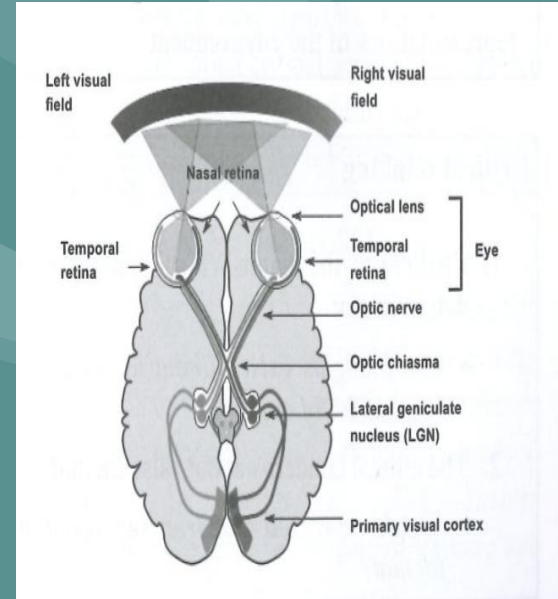
2)The temporal lobe plays a critical role in auditory perception, with the primary auditory cortex analyzing sound frequency and pitch.

Damage to the temporal lobe can cause central deafness — inability to process sound despite functional ears.

Multisensory Integration:

#The parietal lobe combines visual, auditory, and somatosensory inputs to create a unified perceptual experience.

#In clinical practice, clinicians integrate visual observations (e.g., skin discoloration), auditory cues (e.g., wheezing), and tactile feedback (e.g., palpation findings) to form a comprehensive understanding of the patient's condition.



Clinical relevance of perceptual deficits:

#Example: Neglect syndrome after right hemisphere stroke → failure to perceive stimuli on one side of the body or environment.

#Patients may ignore food on one side of the plate or fail to dress one side of the body → shows how impaired perception disrupts daily functioning.

#Early rehabilitation (e.g., visual scanning training, prism adaptation therapy) can help restore awareness and improve quality of life.

Visual illusions in a clinical context:

#Example: Ponzo illusion where converging lines create the impression of different-sized objects.

#Shows how contextual cues influence visual judgments.

#In healthcare: may lead to overestimating or underestimating lesion sizes in radiographic images if surrounding structures bias perception.

#Awareness of such biases is crucial to minimize diagnostic errors and enhance patient care.

Key Practical Implications for Medical and Dental Students:

1) Understanding perception is essential for medical and dental students to develop skills in observation, diagnosis, and patient interaction, while recognizing human perception limitations such as visual illusions and fatigue.

2) Errors can be reduced and diagnostic accuracy improved by double-checking visual assessments with objective measurements or assistive technologies, along with fostering empathy and active listening.

Memory

#Memory is the cognitive process by which information is encoded, stored, and retrieved, enabling individuals to retain and utilize knowledge over time.

#A deeper understanding of memory helps enhance learning, improve patient outcomes, and address conditions such as dementia and post-traumatic stress disorder (PTSD).

Types of memory

Sensory Memory: briefly retains sensory input for milliseconds to seconds; serves as the initial stage of information processing and helps healthcare professionals quickly detect changes in a patient's condition, such as subtle variations in vital signs or facial expressions.

Short-Term Memory (STM): temporarily holds a limited amount of information for 20–30 seconds; essential for tasks requiring active manipulation of information such as calculating medication dosages or recalling patient symptoms; capacity is constrained by stress, fatigue, and cognitive load, and distractions can cause forgetting of critical details.

Long-Term Memory (LTM): stores information indefinitely, including factual knowledge (semantic memory), personal experiences (episodic memory), and skills (procedural memory).

In healthcare, LTM allows professionals to draw upon years of training and experience when making diagnostic decisions or performing procedures.

Example: semantic memory enables a dentist to recall the anatomical features of teeth, while procedural memory supports executing technical skills like suturing or cavity preparation.

Neural Mechanisms of Memory

Hippocampus (located in the medial temporal lobe): plays a central role in encoding and consolidating new memories, particularly episodic and spatial information. Damage to the hippocampus, as seen in Alzheimer's disease, results in severe memory impairments, including difficulty forming new memories.

Prefrontal cortex: involved in working memory and executive functions, enabling individuals to manipulate and prioritize information.

Cerebellum and basal ganglia: critical for procedural memory, supporting motor skills and habitual behaviors.

Understanding these neural pathways provides insight into how memory can be disrupted by neurological conditions and how rehabilitation strategies might target specific brain areas.

Clinical Implications of Memory

False Memories and Diagnostic Bias: recalling events that never happened or misattributing details to the wrong source can lead to diagnostic errors; highlights the importance of documenting patient encounters meticulously and corroborating subjective reports with objective data.

Memory Decline in Aging and Neurological Disorders: common among older adults, often presenting as difficulties in recalling names, dates, or recent events; conditions like Alzheimer's disease exacerbate these deficits; early identification through cognitive assessments can facilitate timely interventions such as pharmacological treatments or cognitive rehabilitation programs.

Flashbulb Memories: vivid, detailed recollections of emotionally significant events (e.g., traumatic experiences, major life milestones) that may appear highly accurate but can become distorted over time.

Trauma and PTSD: in trauma survivors, intrusive flashbacks—a hallmark of PTSD—can disrupt normal functioning and may require therapeutic interventions such as CBT or EMDR.

Enhancing Memory in Medical Education: strategies like spaced repetition, active recall, and interleaved practice help retention; tools such as flashcards or Anki reinforce learning; adequate sleep, proper nutrition, and stress management support memory consolidation and retrieval.

Examples from Clinical Practice

Medication Errors: wrong dosage due to a lapse in short-term memory from multitasking and interruptions → importance of structured workflows and double-check systems to reduce cognitive overload.

Patient Compliance: forgetting prescribed treatment due to poor episodic memory → written instructions, visual aids, or mobile reminders can enhance adherence and outcomes.

Memory Rehabilitation: stroke survivor with anterograde amnesia → use of external memory aids (calendars, alarms) to compensate for deficits and promote independence.

Language

Language is a complex cognitive system comprising phonology, syntax, semantics, and pragmatics, essential for effective communication, accurate diagnosis, and treatment planning. For medical and dental students, understanding language is crucial for mastering technical terminology and improving patient communication, while language impairments can negatively impact healthcare delivery.

Components of language

Phonology: Sound patterns and rules for combining sounds; errors can cause diagnostic or treatment mistakes. Example: Distinguishing between “hypertension” and “hyperthyroidism.”

Syntax: Grammatical rules for arranging words; clear, simple sentences improve comprehension and adherence. Example: Using “Take this medication twice daily” instead of complex phrasing.

Semantics: Meaning of words and phrases; accurate understanding prevents miscommunication. Example: Differentiating between “dizzy” (lightheadedness) and “vertigo.”

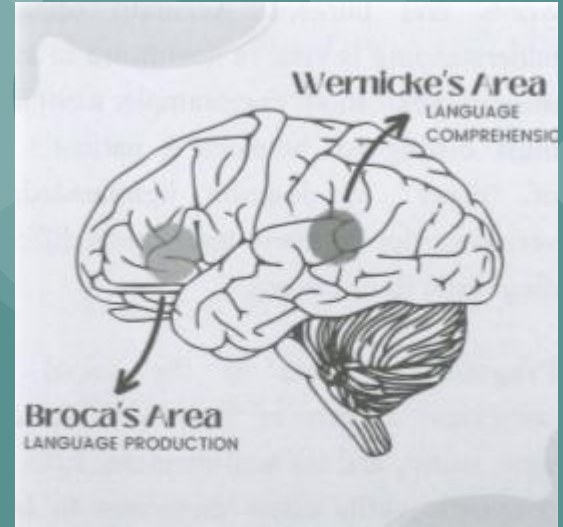
Pragmatics: Social and contextual aspects of language; tailoring communication ensures clarity and cultural sensitivity. Example: Adjusting tone and style to match the patient’s cultural background.

Neural Basis of Language

Broca's Area: Located in the left frontal lobe, responsible for speech production. Damage causes expressive aphasia with short, fragmented sentences despite intact comprehension.

Wernicke's Area: Located in the left temporal lobe, responsible for language comprehension. Damage causes receptive aphasia with fluent but nonsensical speech (word salad).

Arcuate Fasciculus: A bundle of nerve fibers connecting Broca's and Wernicke's areas. Damage leads to conduction aphasia, with difficulty repeating words despite preserved comprehension and fluency.



Developmental Language Disorders

Dyslexia: A learning disorder causing difficulties in reading, decoding, spelling, and text comprehension, which affects academic performance and self-esteem. Early interventions, such as phonics-based instruction and assistive technologies, can help.

Specific Language Impairment (SLI): A condition affecting language acquisition without an apparent cause, leading to delayed vocabulary, grammatical errors, and poor sentence construction. Speech-language therapy is a common intervention.

Acquired Language Disorders

Aphasia: Post-stroke, brain injury, or Alzheimer's; may be expressive, receptive, or global. Recovery depends on speech therapy and rehabilitation.

Primary Progressive Aphasia(PPA): In frontotemporal dementia, language declines gradually; patients struggle with naming, conversation, and writing. Early detection is key for referral and support.

Clinical Implications of Language Disorders

Miscommunication in Patient Interactions: Language barriers or impairments can cause misunderstandings between patients and clinicians, such as a patient with receptive aphasia failing to grasp postoperative care instructions, increasing risks.

Cultural and Linguistic Diversity: Patients from non-English-speaking backgrounds may face challenges in healthcare access. Use of professional interpreters and careful attention to semantics and pragmatics help avoid confusion.

Impact of Neurological Conditions: Disorders like Parkinson's disease or ALS can impair articulation and voice quality. Speech-language pathologists provide AAC tools (e.g., text-to-speech devices) to maintain communication.

Language Development in Pediatric Populations: Early identification of language delays, such as not using two-word phrases by age two, allows timely referral to speech-language therapy, preventing long-term challenges.

Clinical Examples of Communication Adaptations

Aphasia after stroke: Use of yes/no questions and visual aids for communication.

Dyslexia in medical education: Audiobooks, mind maps, and spaced repetition to aid learning.

Cultural sensitivity in dentistry: Interpreter ensures patient understands procedure details.

Key learning point

Noam Chomsky proposed that humans are born with an innate Language Acquisition Device (LAD), a hypothetical mechanism enabling children to learn language rapidly and intuitively. On the other hand, critical Period Hypothesis (CPH) proposed by Eric Lenneberg, the critical period posits a biologically determined window (up to ~puberty) for optimal language acquisition. The LAD operates most effectively within the critical period, combining innate readiness with developmental timing. Together, they explain why language acquisition is effortless in childhood but becomes harder with age, shaping educational practices (e.g., early bilingual exposure) and interventions for language disorders.

Clinical Cases: Cognitive Processes, Implications, and Management in Medical & Dental Practice

Multiple Sclerosis (MS)

#Clinical Presentation: Fatigue, difficulty concentrating, memory lapses, fine motor skill challenges, cognitive fog, sensory disturbances.

#Cognitive Implications:

Attention: Reduced sustained/divided attention.

Perception: Sensory deficits (proprioception/tactile).

Memory: Working memory impairments.

Language: Slowed processing speed lead to communication difficulties+ primary language deficits less common

#Management Strategies:

General Practitioner(GP): Clear language, written plans, organizational tools, occupational therapy referral.

Dentist: Simplify instructions, allow extra time, provide sensory accommodations.

ADHD Case

#Clinical Presentation: Forgetting medications, difficulty sitting still, challenges in long tasks.

#Cognitive Implications:

Attention: Deficits in sustained/selective attention.

Perception: Overstimulation in sensory-rich environments.

Memory: Poor working memory.

Language: Impulsivity affecting responses.

#Management Strategies:

GP: Break info into small tasks, visual cues, reminder systems(alarm+pill organizers)

Dentist: Calm environment, positive reinforcement, hands-on oral hygiene demonstration.

Stroke Case

#Clinical Presentation:

60-year-old stroke survivor with left-sided weakness, difficulty expressing themselves due to aphasia, and neglect of the left side of the mouth during brushing.

#Cognitive Implications:

Attention: Hemispatial neglect after right hemisphere stroke → impaired awareness of one side of body/environment.

Perception: Visual-spatial deficits → may distort depth perception or facial recognition.

Memory: Short-term memory loss → affects recall of post-stroke rehabilitation exercises or medication regimens

Language: Aphasia affecting speech production, comprehension, or both.

#Management Strategies:

At the GP:

Conduct thorough cognitive & physical assessments to tailor rehabilitation.

Use visual aids & repetition to reinforce instructions.

Collaborate with speech-language pathologists.

At the Dentist:

Use yes/no or picture-based questions.

Focus on neglected side during exams/treatments.

Educate caregivers on oral hygiene for unilateral neglect

Key learning point

Understanding cognitive processes—attention, perception, memory, and language—is essential for delivering patient-centered care. By recognizing how these processes are affected in conditions like multiple sclerosis (MS), stroke, and ADHD, healthcare providers can adapt their communication and treatment strategies to meet individual needs effectively. Practical applications of cognitive science not only improve diagnostic accuracy but also enhance patient outcomes and satisfaction.

Psychology on the ground

Cognitive impairments often manifest differently in real-world clinical settings than they do in textbooks. For example:

- A stroke survivor with neglect syndrome may ignore instructions about caring for one side of their body.
- A child with ADHD may appear disengaged during consultations, not due to lack of interest but because of attention deficits.
- A patient with MS may struggle to recall complex medical advice, requiring simplified explanations and written reminders.



General Considerations Across Cases

Regardless of the condition, certain principles apply universally when managing patients with cognitive impairments:

1. **Patient-Centered Communication:** Tailor interactions to the individual's cognitive abilities. For example, simplify language for patients with aphasia or memory deficits, and allow extra time for processing information.
2. **Multimodal Approaches:** Combine verbal, written, and visual methods to reinforce key messages. This strategy benefits patients with attention or memory challenges.
3. **Environmental Modifications:** Reduce environmental stimuli (e.g., noise, bright lights) to prevent overstimulation, particularly in patients with ADHD or sensory sensitivities.
4. **Collaborative Care:** Work with multidisciplinary teams, including neurologists, occupational therapists, and speech-language pathologists, to address complex needs comprehensively.



By grounding psychological principles in practical scenarios, clinicians can bridge the gap between theory and practice, ensuring that care is both compassionate and evidence-based.

7. Practical Tips!

 Do	 Avoid
1. Simplify Communication: Use clear, concise language and avoid medical jargon. Break down complex information into smaller, manageable parts. 2. Use Visual Aids: Incorporate diagrams, pictures, or demonstrations to reinforce verbal instructions, especially for patients with memory or language impairments. 3. Allow Extra Time: Be patient and give individuals sufficient time to process information, respond, or complete tasks. This is particularly important for patients with cognitive deficits. 4. Engage Caregivers: Involve family members or caregivers in discussions to ensure accurate transmission of information and adherence to treatment plans. 5. Adapt the Environment: Minimize distractions, noise, and sensory overload to create a calm and supportive setting, especially for patients with ADHD or sensory sensitivities. 6. Provide Written Summaries: Offer take-home materials, such as brochures or checklists, to help patients remember key points and follow through with instructions. 7. Collaborate with Specialists: Work with multidisciplinary teams (e.g., speech therapists, occupational therapists) to address complex cognitive and physical needs comprehensively. 8. Validate Patient Experiences: Acknowledge the challenges patients face due to cognitive impairments and reassure them that their concerns are understood and addressed.	1. Overwhelm with Information: Avoid bombarding patients with too much information at once, as this can lead to confusion and poor retention. 2. Assume Understanding: Don't assume that patients have understood your instructions; always confirm comprehension by asking them to repeat or demonstrate what was discussed. 3. Neglect Sensory Needs: Don't overlook sensory impairments or sensitivities, such as tactile hypersensitivity in MS or visual-spatial deficits in stroke survivors. 4. Rush Appointments: Avoid rushing consultations, as this can increase stress and reduce the quality of interactions, particularly for patients with cognitive or attentional challenges. 5. Ignore Emotional Factors: Don't disregard the emotional impact of cognitive impairments, such as frustration or anxiety, which can further hinder communication and cooperation. 6. Use Complex Tools Without Training: Avoid introducing assistive devices or technologies without proper instruction, as this may lead to misuse or noncompliance. 7. Dismiss Nonverbal Cues: Don't ignore body language, facial expressions, or other nonverbal signals, as they can provide valuable insights into a patient's level of understanding or discomfort. 8. Fail to Follow Up: Don't leave patients without a plan for follow-up care or support, as this can exacerbate feelings of abandonment or uncertainty.

Quick review and brief answers to unit questions

1. How do sensory inputs transform into meaningful perceptions?

Sensory inputs are transformed into meaningful perceptions through a three-step process:

- **Sensation:** Sensory receptors detect stimuli (e.g., light, sound, touch).
- **Organization:** The brain organizes raw sensory data into patterns, such as shapes or sounds.
- **Interpretation:** The brain assigns meaning to the organized information based on context, past experiences, and expectations.

For example, visual input from an X-ray is interpreted as a fracture due to the clinician's training and contextual understanding.

2. What are the stages of memory, and how can they be disrupted?

Memory has three main stages:

- **Encoding:** Information is processed and stored. Disruptions can occur due to lack of attention or poor focus.
- **Storage:** Information is retained over time. Damage to the hippocampus (e.g., in Alzheimer's disease) impairs long-term storage.
- **Retrieval:** Stored information is accessed. Stress, fatigue, or neurological conditions like dementia can hinder retrieval.

For instance, a stroke affecting the temporal lobe may disrupt semantic memory, making it hard to recall medical terminology.

3. How does attention influence learning and task performance?

Attention enhances learning and task performance by:

- Filtering irrelevant stimuli to focus on critical information.
- Enabling sustained concentration for complex tasks (e.g., reading medical charts).
- Facilitating selective attention to prioritize urgent tasks in high-pressure environments.

Impaired attention (e.g., due to ADHD or fatigue) can lead to errors, missed details, or reduced efficiency.

4. What are the neural bases of language processing, and how do disorders affect communication?

Language processing involves key brain regions:

- **Broca's Area:** Responsible for speech production; damage causes expressive aphasia (difficulty speaking).
- **Wernicke's Area:** Involved in comprehension; damage results in receptive aphasia (nonsensical speech).
- **Arcuate Fasciculus:** Connects these areas; disruption leads to conduction aphasia (impaired repetition).

Disorders like stroke, dementia, or developmental conditions (e.g., dyslexia) disrupt these pathways, affecting verbal and written communication.

5. What ethical considerations arise when addressing cognitive impairments in diverse populations?

Ethical considerations include:

- **Informed Consent:** Ensuring patients with cognitive impairments fully understand treatment options.
- **Cultural Sensitivity:** Adapting communication styles to respect cultural and linguistic differences.
- **Equitable Access:** Providing assistive tools or interpreters to bridge gaps in understanding.
- **Autonomy and Dignity:** Respecting patients' independence while offering necessary support without paternalism.

For example, using professional interpreters for non-native speakers ensures accurate communication without bias or misunderstanding.

How Sharp Is Your Mind?

1. A surgeon maintains focus during a 4-hour operation. This best describes:

- a) Selective attention
- b) Sustained attention
- c) Divided attention
- d) Covert attention
- e) Top-down processing

2. In a noisy ER, a doctor hears the ventilator alarm and ignores other sounds. This is:

- a) Selective attention
- b) Sustained attention
- c) Divided attention
- d) Overt attention
- e) Sensory memory

3. A dentist changes head position to see a specific tooth. This is:

- a) Covert attention
- b) Overt attention
- c) Bottom-up processing
- d) Working memory
- e) Episodic memory

4. A loud crash makes a nurse turn immediately toward the sound. This is:

- a) Top-down processing
- b) Bottom-up processing
- c) Divided attention
- d) Sustained attention
- e) Semantic memory

5. Reading an X-ray to detect a fracture mainly involves:

- a) Auditory perception
- b) Visual perception
- c) Somatosensory perception
- d) Procedural memory
- e) Covert attention

6. Remembering how to perform a filling procedure is:

- a) Semantic memory
- b) Procedural memory
- c) Sensory memory
- d) Working memory
- e) Episodic memory

7. A patient with fluent but nonsensical speech likely has damage to:

- a) Broca's area**
- b) Wernicke's area**
- c) Hippocampus**
- d) Cerebellum**
- e) Basal ganglia**

8. A stroke patient ignores food on the left side of the plate. This is:

- a) Visual illusion**
- b) Hemispatial neglect**
- c) Auditory neglect**
- d) Covert attention**
- e) Divided attention**

9. Knowledge of tooth anatomy is stored in:

- a) Episodic memory**
- b) Semantic memory**
- c) Procedural memory**
- d) Working memory**
- e) Sensory memory**

10. The "what" visual pathway is known as the:

- a) Dorsal stream**
- b) Ventral stream**
- c) Arcuate fasciculus**
- d) Basal ganglia loop**
- e) Parietal pathway**