Poll 1

- Dementia is a ……………………..disorder

1. Simple for the physicians and neurologists
2. Complex for the physicians and neurologists
3. Simple for physicians and complex for the Neurologists
4. Complex for the physicians and simple for the Neurologists

Poll 2

- How many patients of dementia/memory problem do you see in a month or a year?

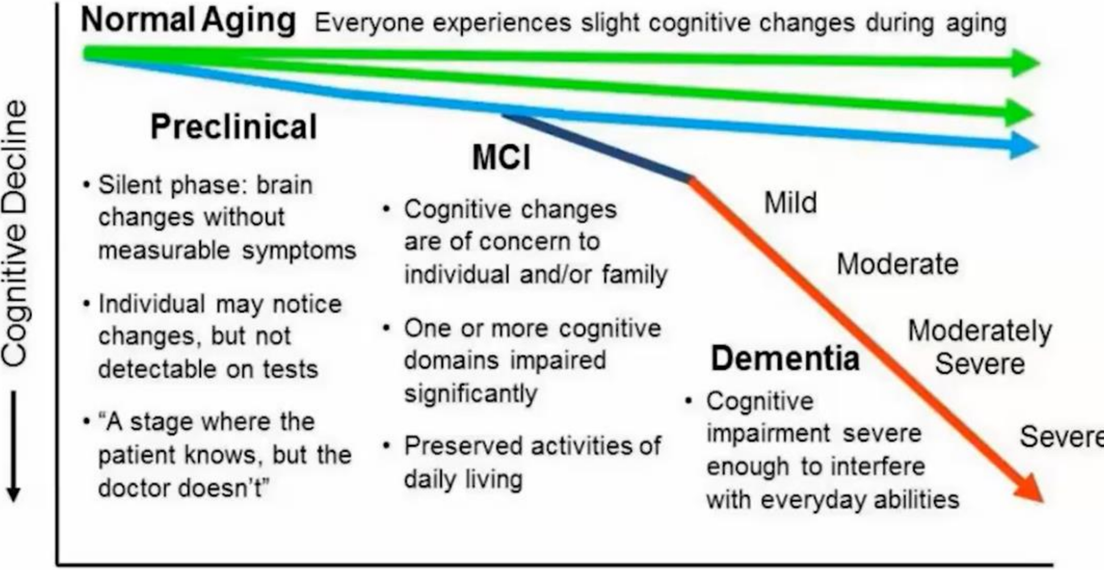
1. 1-10/week
2. 1-10/month
3. 1-10/year
4. Not seen any yet

Poll 3

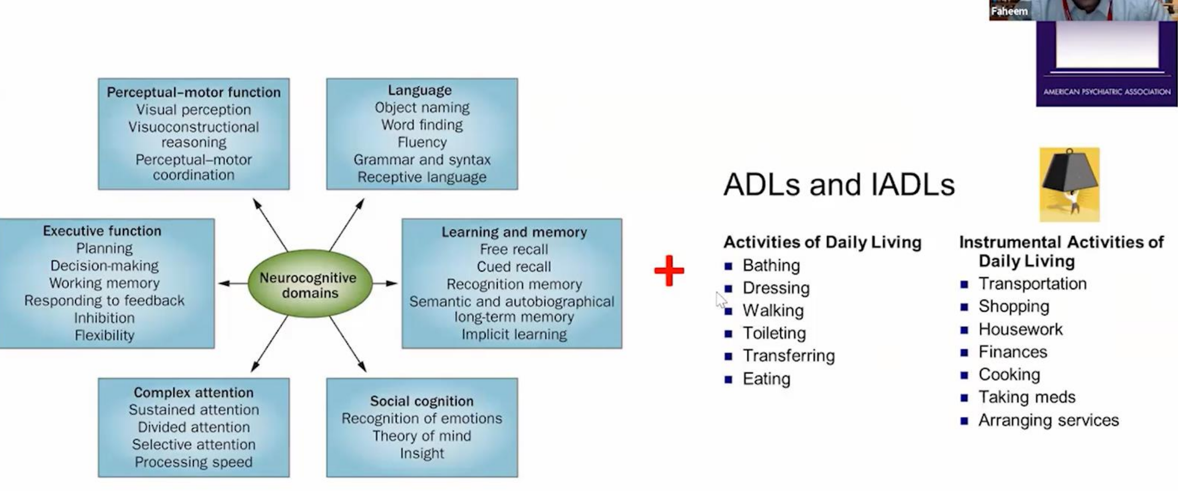
- How frequently you perform a Mini mental status examination (MMSE) in a patient with dementia/memory problem?

1. Every time whenever a patient with dementia comes to hospital
2. Sometimes (once in 6 months)
3. Rarely (once in a year)

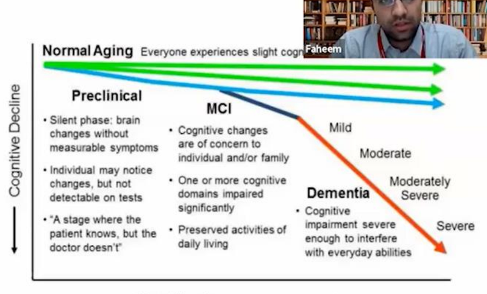
Road Map to Dementia



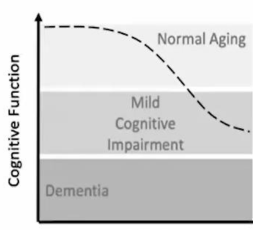
Neurocognitive Domains



Age related cognitive changes

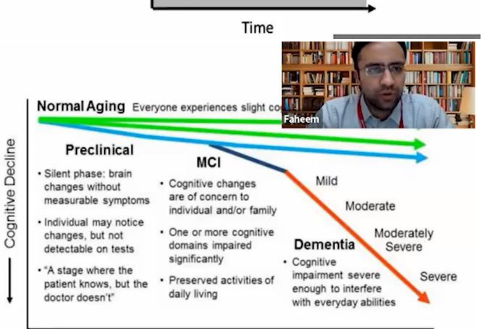


- Subjective cognitive concern
- Slowed thinking
- Difficulty sustaining attention, multitasking, finding words

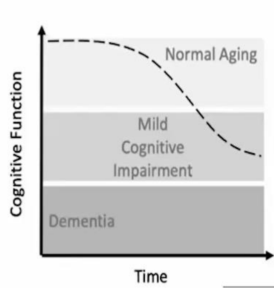


'Loss of functioning due to cognitive changes is never normal'

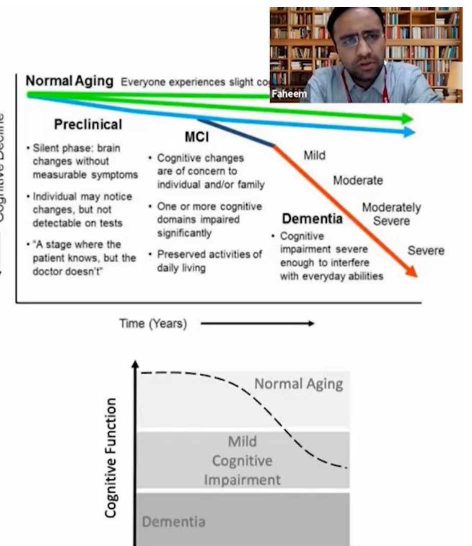
Mild cognitive impairment



- Subjective cognitive concern (self or others)
- Abnormal cognition for age (one or more domain)
  - Memory loss
  - Language disruption
  - Executive dysfunction
  - Visuospatial Impairment
- Stage between normal cognitive ageing and dementia
- Compensation to maintain independence but no functional impairments- **IADLs are not affected**



Dementia



➢"Dementia is a syndrome of a **chronic or progressive nature** involving a deterioration in cognitive function beyond what may be expected from normal ageing"

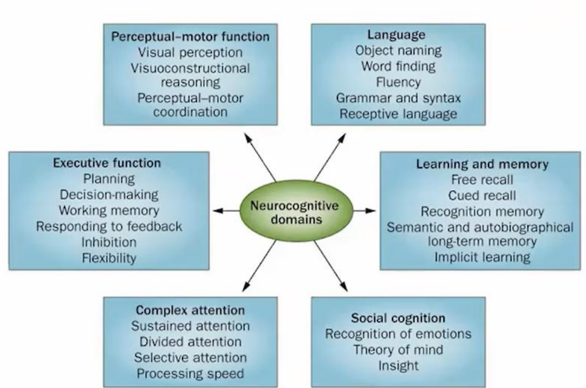
➢These deficits must represent a **decline from a previous higher level** of functioning and impairment in social or occupational functioning

➢**IADLs are affected**

(American Psychiatric Association, 1994; WHO, 2016)

DSM-5 criteria for major neurocognitive disorder (D

A. Evidence of significant cognitive decline from a previous level of performance **in one or more** cognitive domains*: - Learning and memory - Language - Executive function - Complex attention - Perceptual-motor - Social cognition
B. The cognitive deficits interfere with independence in everyday activities. At a minimum, assistance should be required with complex instrumental activities of daily living, such as paying bills or managing medications.
C. The cognitive deficits do not occur exclusively in the context of a delirium.
D. The cognitive deficits are not better explained by another mental disorder (eg, major depressive disorder, schizophrenia).



1. Attention

- **Definition**

"Capacity to voluntarily or involuntarily give priority to some parts of the information that is available at a given moment"

- **History**

1. Has increased difficulty in environments with multiple stimuli (TV, radio, conversation)
2. Misplacing objects
3. Is easily distracted by competing events in the environment.
4. Is unable to attend unless input is restricted and simplified.

2. Executive function

- **Definition**

The term "executive functions" refers to the higher-level cognitive skills you use to control and coordinate your other cognitive abilities and behaviors.

Planning
Mental Flexibility
Decision making
Working memory
Responding to feedback
Organising
Executive function

- **History**

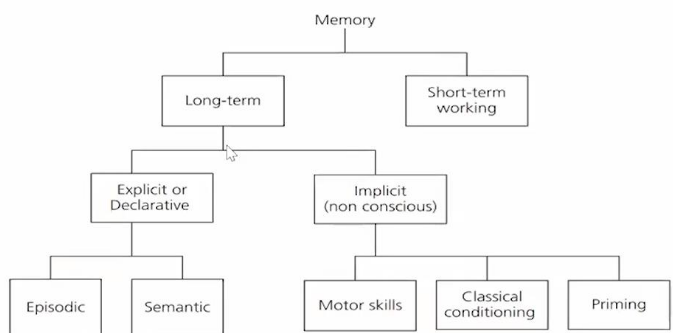
1. Difficulty in sequential tasks- cooking
2. Difficulty planning-organizing events etc
3. Abandons complex projects.
4. Needs to focus on one task at a time.
5. Needs to rely on others to plan instrumental activities of daily living or make decisions.

3. Memory

- **Definition**

"Memory refers to the ability of the brain to store and retrieve information, the necessary prerequisite for all learning"

- **Types**

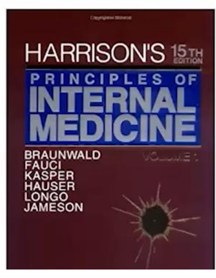


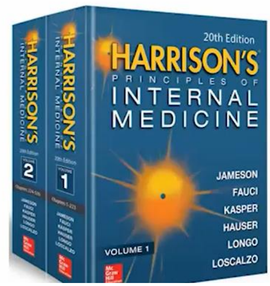
Two main forms of memory

- **Short-term memory** lasts for a very brief time and can only hold 6–9 pieces of information.

91480 57649

- **Long-term storage** can hold an infinite amount of information and can last for a very long time.



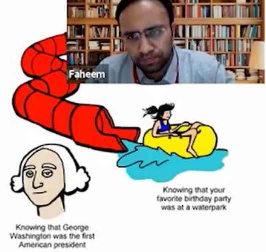


Long term memory

- **Explicit memory** (declarative memory)
  - **Episodic memory-** which concerns personal or autobiographical information.

History-

- ✓ Does one have difficulty remembering recent events (eg: attending a wedding, conversations, meeting guests)?
- ✓ Is one repeating the same thing again and again?
- ✓ Does one know where one is?
- ✓ Forgetting appointments, passwords etc



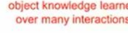
- **Semantic memory**, referred to as factual knowledge that includes memory of meanings, understandings, and other concept-based knowledge as well as general knowledge about the world.

Examples:

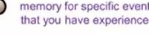
- ✓ Recall of famous figures or events, such as presidents or wars
- ✓ knowledge of semantic information, such as the definitions of words and the differences between words

Semantic Memory

Apples
Edible - Fruit - Stem
Seeds - Tree – Red
Round - Sweet



Episodic Memory



4. Language

- **Definition**

➢ Language is the method humans use to communicate with each other, often involving words and symbols used consciously by a group in a structured or conventional way.

➢ Languages can be spoken, signed and/or written

- **History**

✓ Difficulty naming objects

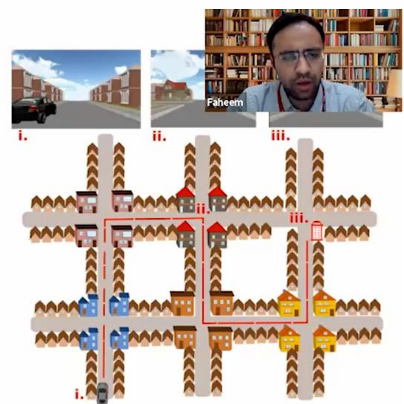
✓ Has significant difficulties with understanding spoken or written language language.

✓ Often uses general-use phrases such as “that thing” and “you know what I mean,” and prefers general pronouns rather than names

✓ Has noticeable word-finding difficulty.

✓ Difficulty expressing onself

5. Perceptual-motor



- **Definition**

Includes Abilities - *Visual Perception,*
Visuo-constructional,
Praxis, And *Gnosis*

- **History**

✓ Difficulty in using familiar technology, tools or kitchen appliances

✓ Way finding difficulties- getting lost in the environment

✓ Difficulty in judging distances

✓ Difficulty in wearing clothes

How patients present to us

Easily distracted
Difficulty concentrating
Misplacing objects

Attention
(FTD, Secondary dementias)

Difficulty in sequential tasks
Difficulty in planning, organizing

Executive function
(AD, FTD, DLBD, VaD, Secondary dementias)

Frequently repeating oneself
Duplicating bill payments
Forgetting appointments,

Memory
(AD, Secondary dementias)

I can’t seem to find the right word
Not able to express or understand

Language
(Primary progressive aphasia-AD, FTD, post stroke)

Difficulty finding ways
Difficulty in using tools
Difficulty in judging distances

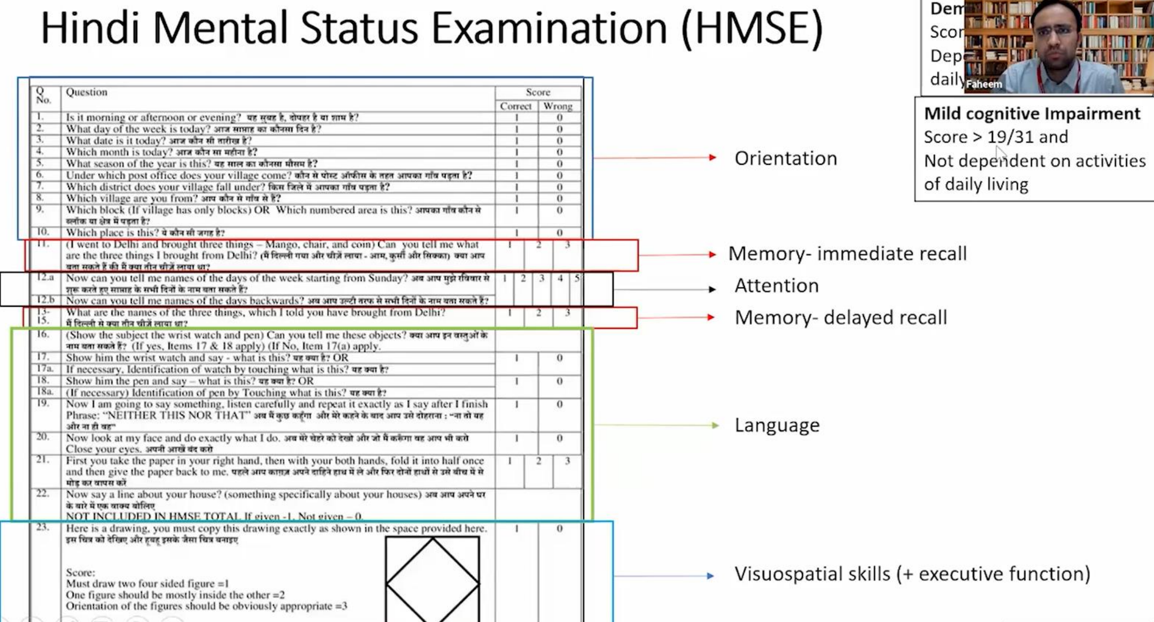
Perceptual-motor
(AD, CBS, CJD, Secondary Dementias)

My mother is behaving oddly
Obsessions
Lack of Empathy
Hallucinations/Delusions

Behavior/Social Cognition
(FTD spectrum disorders)

Examination of a patient with dementia

- Is the patient was conscious, cooperative
- Observe the appearance and behaviour of the patient-
- Try to establish rapport with the patient if possible
- Is the patient making eye to eye contact
- Affect of the patient- Expression of emotion
- Mood: Does the patient have low mood
- Thought and perception: Any delusions, fear, hallucination, illusions
- Insight-patients attitude towards the illness



Q No.	Question	Score: Correct	Score: Wrong
1.	Is it morning or afternoon or evening? यह सुबह है, दोपहर है या शाम है?	1	0
2.	What day of the week is today? आज सप्ताह का कौनसा दिन है?	1	0
3.	What date is it today? आज कौन सी तारीख है?	1	0
4.	Which month is today? आज कौन सा महीना है?	1	0
5.	What season of the year is this? यह साल का कौनसा मौसम है?	1	0
6.	Under which post office does your village come? कौन से पोस्ट ऑफीस के तहत आपका गाँव पड़ता है?	1	0
7.	Which district does your village fall under? किस जिले में आपका गाँव पड़ता है?	1	0
8.	Which village are you from? आप कौन से गाँव से है?	1	0
9.	Which block (If village has only blocks) OR Which numbered area is this? आपका गाँव कौन से ब्लॉक या क्षेत्र में पड़ता है?	1	0
10.	Which place is this? ये कौन सी जगह है?	1	0
11.	(I went to Delhi and brought three things – Mango, chair, and coin) Can you tell me what are the three things I brought from Delhi? (मैं दिल्ली गया और चीज़ें लाया - आम, कुर्सी और सिक्का) क्या आप बता सकते हैं की मैं क्या तीन चीज़ें लाया था?	1 2 3	
12.a	Now can you tell me names of the days of the week starting from Sunday? अब आप मुझे रविवार से शुरू करते हुए सप्ताह के सभी दिनों के नाम बता सकते हैं?	1 2 3 4 5	
12.b	Now can you tell me names of the days backwards? अब आप उल्टी तरफ से सभी दिनों के नाम बता सकते हैं?		
13-15.	What are the names of the three things, which I told you have brought from Delhi? मैं दिल्ली से क्या तीन चीज़ें लाया था?	1 2 3	
16.	(Show the subject the wrist watch and pen) Can you tell me these objects? क्या आप इन वस्तुओं के नाम बता सकते हैं? (If yes, Items 17 & 18 apply) (If No, Item 17(a) apply.		
17.	Show him the wrist watch and say - what is this? यह क्या है? OR	1	0
17a.	If necessary, Identification of watch by touching what is this? यह क्या है?		
18.	Show him the pen and say – what is this? यह क्या है? OR	1	0
18a.	(If necessary) Identification of pen by Touching what is this? यह क्या है?		
19.	Now I am going to say something, listen carefully and repeat it exactly as I say after I finish Phrase: "NEITHER THIS NOR THAT" अब मैं कुछ कहूँगा और मेरे कहने के बाद आप उसे दोहराना : "ना तो यह और ना ही वह"	1	0
20.	Now look at my face and do exactly what I do. अब मेरे चेहरे को देखो और जो मैं करूँगा वह आप भी करो Close your eyes. अपनी आखें बंद करो	1	0
21.	First you take the paper in your right hand, then with your both hands, fold it into half once and then give the paper back to me. पहले आप कागज़ अपने दाहिने हाथ में ले और फिर दोनों हाथों से उसे बीच में से मोड़ कर वापस करें	1 2 3	
22.	Now say a line about your house? (something specifically about your houses) अब आप अपने घर के बारे में एक वाक्य बोलिए NOT INCLUDED IN HMSE TOTAL If given -1, Not given – 0.		
23.	Here is a drawing, you must copy this drawing exactly as shown in the space provided here. इस चित्र को देखिए और हूबहू इसके जैसा चित्र बनाइए Score: Must draw two four sided figure =1 One figure should be mostly inside the other =2 Orientation of the figures should be obviously appropriate =3	1	0

HMSE by Dr Geetha

Hindi Mental Status Examination (HMSE) (English version

a. Is it morning or afternoon or evening ? (1)
b. What day of the week is today? (1)
c. What date is it today? (1)
d. Which month is today? (1)
e. What season of the year is this? (1)
f. Under which post office does your village come? (1)
g. What district does your village fall under? (1)
h. Which village are you from? (1)
i. Which block (if the village has only blocks) OR which numbered area is this? (1)
j. Which place is this? (1)
k. I went to Delhi and brought three things- Mango, chair and coin. Can u tell me what are the three things I brought from Delhi? (3)
l. Can you tell me the names of the days of week starting from Sunday backwards? (5)
m. What are the names of the three things, which I told you have brought from Delhi? (3)
n. Show the subject the wrist watch and pen. Can you tell me these objects? (2)
o. Now I am going to say something, listen carefully and repeat it exactly as I say after I finish phrase: 'NEITHER THIS NOR THAT' (1)
p. Now look at my face and do exactly what I do. "CLOSE YOUR EYES' (1)
q. First you take the paper in your right hand, then with your both hands, fold it into half once and then give the paper back to me. (3)
r. Now say a line about your house? (1)
s. Here is a drawing, you must copy this drawing exactly as shown
Score: Must draw two four sided figure = 1
One figure should be mostly inside the other = 2
Orientation of the figures should be appropriate = 3

Total score /31

Challenges in Clinical evaluation

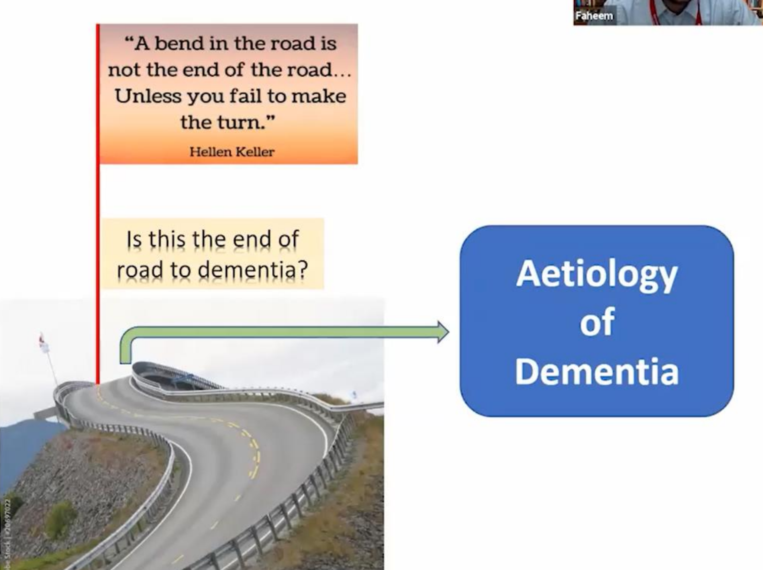
- To be as early as possible
- To be as specific as possible

Research criteria for the diagnosis of Alzheimer's disease: revising the NINCDS–ADRDA criteria

Bruno Dubois, Howard H Feldman*, Claudia Jacova, Steven T DeKosky, Pascale Barberger-Gateau, Jeffrey Cummings, André Delacourte, Douglas Galasko, Serge Gauthier, Gregory Jicha, Kenichi Meguro, John O'Brien, Florence Pasquier, Philippe Robert, Martin Rossor, Steven Salloway, Yaakov Stern, Pieter J Visser, Philip Scheltens*

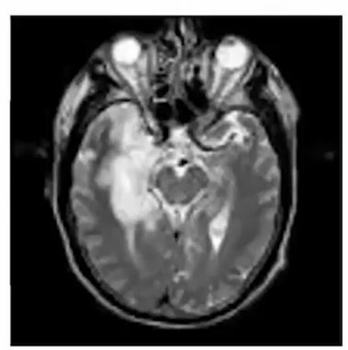
Summarize and thank you for Attention

- Cognitive domains (CD)
- Normal aging
- MCI= 1 CD without affecting IADLs
- Dementia= 1 CD with IADLs affected
- HMSE and diagnose patients having **MCI** or **dementia** depending on the scores

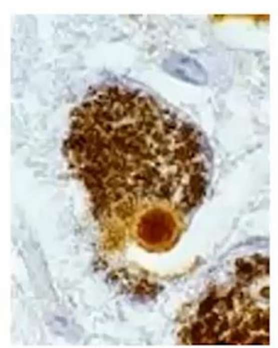


Aim of cognitive assessment

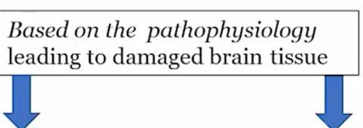
Diagnose Dementia



Aetiology of Dementia



Classification Of Dementia



Depending on treatment
expectations

Primary

- Alzheimer's Disease
- Frontotemporal dementia (FTD)
- Dementia with Lewy Body (DLBD)
- Parkinson's disease
- Huntington's disease
- Progressive supranuclear palsy
- Corticobasal degeneration
- ALS Parkinson's dementia complex of Guam
- Multisystem atrophy

Secondary

- Vitamin deficiency
- Endocrine disorder
- Chronic Infections
- Toxic
- Trauma
- Neoplastic
- NPH
- Miscellaneous

Treatable

- Drugs
- Endocrine disorders
- Metabolic
- Nutritional
- Toxic, tumour, trauma
- Alcohol
- NPH

Manageable

- Alzheimer's Disease
- FTD
- DLBD
- Parkinson's disease
- Huntington's disease
- CJD
- Others

What are Treatable Dementias?

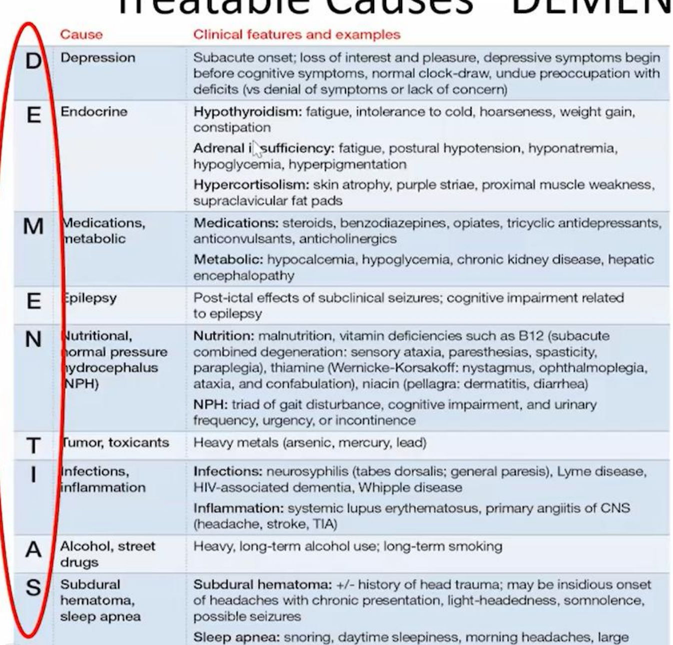
- Associated with cognitive or behavioral symptoms that can be resolved once primary etiology is treated.
- Potential causes have been identified that can result in reversible impairment of neurocognitive function in an elderly
- Common feature among all the possible causes of dementias for them to be called 'potentially treatable' is that treatment of offending agent results in improvement in cognitive functioning

"Treatable dementias may be untreatable or progress after a delay in diagnosis"

Implications

- If these patients are not identified properly, this may lead to their faulty treatment with drugs like cholinesterase inhibitors.
- The side effects of these medications can add to the morbidity of patients.
- Correct identification of this condition can help reduce sufferings of patients and improve their quality of life.

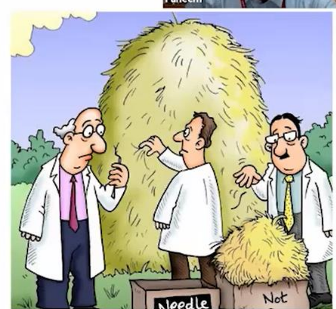
Treatable Causes "DEMENTIAS"



	Cause	Clinical features and examples
D	Depression	Subacute onset; loss of interest and pleasure, depressive symptoms begin before cognitive symptoms, normal clock-draw, undue preoccupation with deficits (vs denial of symptoms or lack of concern)
E	Endocrine	**Hypothyroidism:** fatigue, intolerance to cold, hoarseness, weight gain, constipation **Adrenal insufficiency:** fatigue, postural hypotension, hyponatremia, hypoglycemia, hyperpigmentation **Hypercortisolism:** skin atrophy, purple striae, proximal muscle weakness, supraclavicular fat pads
M	Medications, metabolic	**Medications:** steroids, benzodiazepines, opiates, tricyclic antidepressants, anticonvulsants, anticholinergics **Metabolic:** hypocalcemia, hypoglycemia, chronic kidney disease, hepatic encephalopathy
E	Epilepsy	Post-ictal effects of subclinical seizures; cognitive impairment related to epilepsy
N	Nutritional, normal pressure hydrocephalus (NPH)	**Nutrition:** malnutrition, vitamin deficiencies such as B12 (subacute combined degeneration: sensory ataxia, paresthesias, spasticity, paraplegia), thiamine (Wernicke-Korsakoff: nystagmus, ophthalmoplegia, ataxia, and confabulation), niacin (pellagra: dermatitis, diarrhea) **NPH:** triad of gait disturbance, cognitive impairment, and urinary frequency, urgency, or incontinence
T	Tumor, toxicants	Heavy metals (arsenic, mercury, lead)
I	Infections, inflammation	**Infections:** neurosyphilis (tabes dorsalis; general paresis), Lyme disease, HIV-associated dementia, Whipple disease **Inflammation:** systemic lupus erythematosus, primary angiitis of CNS (headache, stroke, TIA)
A	Alcohol, street drugs	Heavy, long-term alcohol use; long-term smoking
S	Subdural hematoma, sleep apnea	**Subdural hematoma:** +/- history of head trauma; may be insidious onset of headaches with chronic presentation, light-headedness, somnolence, possible seizures **Sleep apnea:** snoring, daytime sleepiness, morning headaches, large

Atypical Features That May Indicate a potentially treatable Cause O

Red Flags



- Rapid unexplained decline in function
- Younger than expected age at symptom onset
- Prominent fluctuations
- Acute or chronic high-risk exposures
- Unexplained or unanticipated findings on the neurologic examination
- Systemic symptoms
- Performance on neurocognitive testing that is incongruent with the clinical history

Case 1

- A 64-year-old mathematics teacher notices a gradually progressive cognitive decline over the past 2 years.
- He has been experiencing difficulty in answering questions in class because he often does not remember what the question was and is becoming more and more easily distracted.
- He sometimes misplaces objects, and his colleagues say that he seems more irritable and forgetful.
- History of hypertension controlled with medication, T2 diabetes, and benign prostatic hypertrophy.

> - He scores 27/30 on the MMSE, missing recall of all three words.
> - On a self-reported scale, he denies depression.
> - Neurological Examination was normal

Which of the following is the most likely diagnosis?

A. Normal Ageing
B. Mild cognitive impairment (MCI)
C. AD
D. Vascular MCI

Case-2

A 50-year-old man presented with history of
- Repeated falls, postural dizziness for 2 years
- Progressive fatigue, generalized weakness and 10 kg weight loss over the course of three to six months.
- Forgetfulness since 1 year
- Behavioral change over the past year, -irritability and emotional lability, difficulty with self-care, grooming and personal hygiene.
- He was a vegetarian.

Examination

- Irritable, HMSE- 18/31
- Grandiose thoughts and impaired insight.
- Uncooperative, but observed to have an unstable, wide-based, ataxic gait as well as difficulty in standing with eyes closed.
- Proprioception, vibration sense and light-touch sensory modalities appeared grossly preserved.

Investigations

- HMG- Hb- 10 g/L, MCV- 102fL), PLT 96×10^9 and TLC 2.7×10^9.
- PS showed hyper-segmented neutrophils
- Thyroid profile and vasculitis was normal

What is the diagnosis

1. Alzheimer's dementia
2. Nutritional deficiency
3. Hypothyroidism
4. Frontotemporal dementia

What is the next step

1. Treat and follow-up

2. Refer to higher centre

Case 3

History

75-year-old Man presented with 2 yrs h/o

- Progressive memory loss -asking same questions repeatedly. A year ago, he was able to retain information for at least half an hour, but in recent months, he was only able to retain information for a few minutes.
- Forgotten names of relatives and friends.
- Long term memory was preserved,
- Intolerance to cold and feeling of tiredness
- Increased sleep and appetite
- HTN, dyslipidemia

Physical examination

His skin was dry, Puffy face

Disoriented to time, place or person,

MMSE was 17/31

Other exam normal

Investigations

Hemogram- Hb-11 g/dl, TLC- 8000, Plt- 166
LFT- Albumin- 4.5, AST-32, ALT- 40
RFT- Urea-33; Cr- 1.2
Na-136, K – 4.3

Case-4

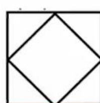
History

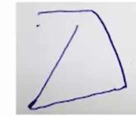
63 year old home maker, educated up to 8th class

- Insidious onset memory problem -4 years. Forgets whether she had breakfast or dinner and tends to ask repeatedly for same. Tends to forget conversations and not able to remember the discussions
- For last 3 years she has had difficulty in cooking-
- Difficulty in handling finances since last 2 years
- 1 year- she has difficulty in wearing clothes- tends to get confused and wears clothes inside out
- Not able to do her daily routines and is dependent on family members since last 6 months

Examination-

MMSE- Orientation : 3 +3, (16/30)
Registration : 3, Attention : 0,
Recall : 0 (with cue 0 out of 3)
Language : Normal



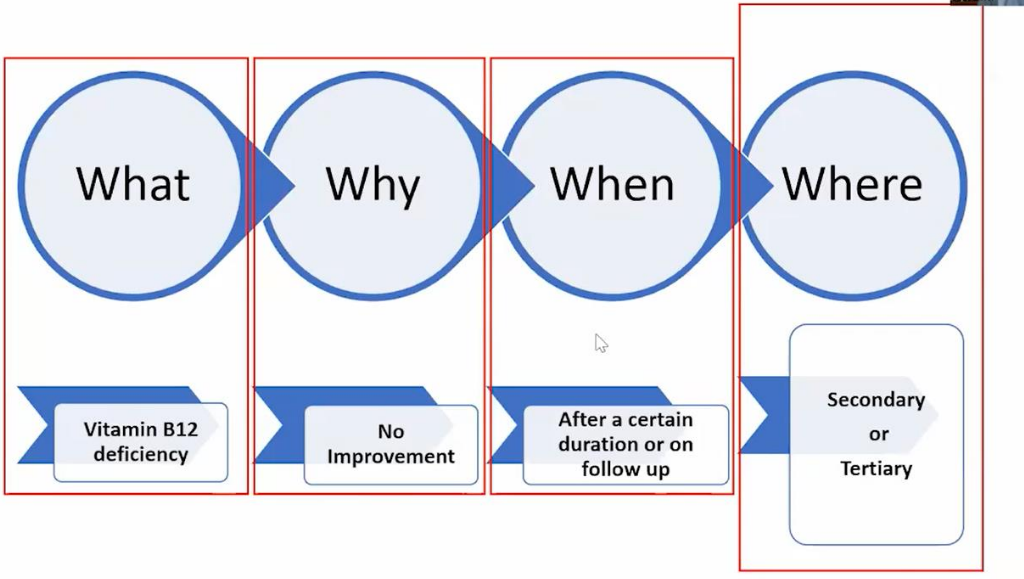


Cranial Nerves/Motor System/sensory/cerebellum: Normal

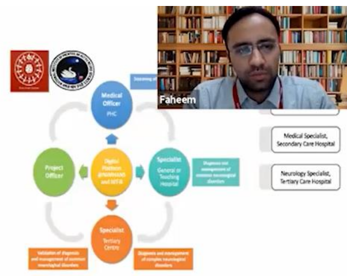
Investigations

Hemogram- Normal
Routine biochemistry was normal
Thyroid profile- Normal
Vitamin B12- Normal

The Four "W"s for the Primary Care Physicia



Conclusion



- Dementia is not a normal part of ageing
- Diagnose dementia based on history and HMSE
- Derive aetiology and look for potentially treatable causes- remember the red flags and identify the manageable ones!
- Management of treatable causes is rewarding
- Remember the 4 'W' s for referring to higher centre

Back to Poll 1

- Dementia is a simple disorder for the physicians

1. Agree
2. Disagree

Back to Poll 1

- Dementia is a simple disorder for the physicians

1. Agree
2. Disagree

Dementia is simple for us,
We don't see many,
If we see any
We refer to many!

Last Question

- How many cases of dementia we discussed today ?

1. 4
2. 3
3. 2
4. 1