The Mini-Mental State Examination (MMSE)

- introduced 1975 (Folstein)
- most widely used instrument to measure cognitive impairment in the elderly
- used in both clinical and epidemiological settings
- usually takes less than 5 minutes
- no particularly embarassing questions
- in samples of psychiatric and neurologic patients, test-retest reliability was .89 or greater, and inter-rater reliability .82 or greater

why necessary:

- only 13% of demented patients in an elderly population were recognized as such by their treating physicians (Williamson et al, 1964)
- 37% of cognitively impaired general medical ward patients went unidentified by ward physicians (Knights and Folstein (1977); nurses failed to identify 55%, and medical students 46%

things measured:

- orientation to time and place
- immediate recall
- short-term memory
- calculation
- language
- constructive ability

problems with the MMSE

- guidelines for use are brief, thus easy to use; however, interpretation and scoring of answers is broad and subjective, and varies between raters
- some items are location-specific, eg “hospital”, “floor”
- education affects performance
- no time limits given
- not clear how near misses should be scored

items on the examination

orientation

- What is the year, season, date, day, month? (5 points)
- Where are we? (state, county, town, hospital, floor) (5 points)

registration

Name three objects 1 s to say each. Ask the patient for all three. Give 1 point for each correct answer. Repeat them until all three can be repeated. (3 points)

attention and calculation

Serial subtractions of 7. 1 point for each correct. Stop after 5 answers. Alternatively: spell “world” backwards. (5 points)

recall

Ask for the three objects repeated above. 1 point for each correct. (3 points)

language

- Name a pencil and a watch. (2 points)
- Repeat the following: “No ifs, ands, or buts.” (1 point)
- Follow a three-stage command: “Take a paper in your right hand, fold it in half, and put it on the floor.” (3 points)
- Read and obey the following: “Close your eyes.” (1 point)
- Write a sentence. (1 point)
- Copy a design of two intersecting pentagons. (1 point)

Use in Alzheimer patients

- ref: Teng EL, Chui HC, Schneider LS, et al. Alzheimer’s dementia: performance on the Mini-Mental State Examination. J Consult Clin Psychol 1987; 55: 96-100.
- 141 Alzheimer outpatients
- all items: significant negative correlation with duration of illness.
- most difficult item: recall; cueing didn’t help much.
- second-most-difficult: “copy a design”.
- only 3% passed both recall and copy a design
- early-onset (<65) did worse on items testing language and visuoconstructive abilities

delirium and dementia

- Anthony et al (1982)
- adequate sensitivity (.87) and specificity (.82) in detecting D & D among hospital patients in a medical ward (using a cutoff of 23/24)
- false positive ratio was 39%; false negative ratio 5%
- all false positives had less than 9 years education; many were >60 years

distinguishing organic dementia from functional psychiatric disorders

has adequate reliability and validity (Folstein et al, 1975)

esthnicity
- specificity lower for blacks (white:black .94 : .78)
- mostly due to education
- spanish MMSE in a mixed hispanic and white population in LA: performance influenced by age, education, ethnicity, and language of the interview

correlation with CT scans (Tsai & Tsuang, 1979)
- 63 patients, 32 had negative CT scan, 31 positive. Of the 31 positive, 10 had only focal lesions, 18 had cerebral atrophy (3 unmeasurable)
- no sign diff between neg scan and focal lesions only
- 100% of neg scan, 90% pos scan pts could correctly name a watch and pencil; 94% of all pts could perform reading task correctly.
- the only test question in the language subtest that differentiated neg and pos scan pts was the copy-design test.

The Mental State in general, in assessing organicity

appearance and general behaviour
- evidence of physical ill-health: pallor, loss of weight, indications of physical weakness
- facies: muscle laxness in lower face, lack of emotional play, in absence of marked depression of mood
- movements: slow, sparse, tremulous
- appearance: looking older than usual for the age; lowered standards of self-care and general tidiness
- conversation: slowness, hesitancy of response, perseverative tendencies, defective uptake or grasp
- alertness and responsiveness vs dullness, apathy
- friendly and cooperative vs. distant and truculent
- adequacy with which attention can be held, diverted or shifted
- impulsiveness, disinhibition, blunted sensitivity to social interaction
- tiring unusually quickly with mental effort

behaviour on the ward:
- indifference to events
- out of contact with surroundings, eg puzzled expression, aimless wandering, restlessness, repetitive stereotyped behaviour
- variability depending on time of day
- losing way, misidentifying people, serious lapses of memory
- interactions with others: paranoid tendencies, reacting to hallucinations
- competence in dressing, undressing, hygiene
- disordered feeding habits
- incontinence, & pt's reaction to it

mood:
- in clouded consciousness: inappropriate placidity, lack of concern, some disinhibition
- in delirium: florid hostile or fearful moods, often rapidly changeable, sometimes elated or expansive phases
- early dementia: quiet wondering perplexity, or emotional lability in which signs of distress resolve as abruptly as they appear
- look for: empty shallow quality to emotional display; apathy; euphoria without true sense of happy elation; emotional blunting and flattening; heightened and sustained anxiety, or marked depressive reactions
- when abilities are taxed: over-react in an anxious, aggressive manner; or become quiet, sullen, withdrawn.
- catastrophic reaction: pt looks dazed, starts to fumble; intense affective response, eg irritability & temper, or outbursts of crying and despair; autonomic disturbance with flushing, sweating, or trembling

talk and content of thought:
- wandering, minor incoherence, perseveration
- pressure of talk as a screen to cover defects
- denials, evasions, facile rationalizations of failures
- poverty of thought; preoccupation with restricted and reiterative themes
- impoverished associations, impaired reasoning power
- paranoid tendencies are common, with marked ideas of reference
- perceptual distortion, illusions, hallucinations, mainly visual; commoner when sensory cues diminish toward nightfall
- feelings of familiarity, unfamiliarity, depersonalization, derealisation , déjà vu
- attitude to illness: fail to recognize; deny disability; surprisingly lighthearted view; however, may be fully compliant to examination and admission

routine cognitive state examination

orientation:

- minor degrees of temporal disorientation: ask pt to estimate time of day, or time elapsed since start of interview.
- orientation for time worth asking in all patients, since this is commonly the first to suffer with mild impairment of consciousness or intellect

attention and concentration

note qualitative observations from history-taking:

- deficiencies in arousal of sustaining of attention
- easily distracted by extraneous or internal stimuli
- fluctuating attention
- difficulty in shifting attention
- diffuse: cannot be directed to a specific purpose
- impairment of ability ot concentrate upon a coherent line of though or reasoning
- easy fatigue of powers of concentration

memory:

- giving categories, eg "the flower is ... daffodil ... please repeat daffodil"
- can test free recall and cued recall (by category) separately
- look for discrepancies between patient's account of his illness and that given by informants
- pay attention to memory for recent happenings, and for the temporal sequence of recent events
- circumstances around admission to hospital, happenings on the unit, can be verified by examiner
- in remote memory, examine for evidence of gaps or inconsistencies
- selective impairments of memory for special incidents, periods, or themes in pt's life
- retrograde or anterograde amnesia
- confabulation or false memories
- pt's attitude to any memory difficulties

general information

- patient's knowledge of current events
- utilisation of old knowledge
- test abstract reasoning