

THE MENTAL STATUS EXAMINATION

Robert M. House M.D.

1. What is the mental status examination?

The mental status examination (MSE) is a component of all medical exams and may be viewed as the psychological equivalent of the physical exam. It is especially important in neurologic and psychiatric evaluations. The purpose is to evaluate, quantitatively and qualitatively, a range of mental functions and behaviors at a specific point in time. The MSE provides important information for diagnosis and for assessment of the disorder's course and response to treatment. Observations noted throughout the interview become part of the MSE, which begins when the clinician first meets the patient. Information is gathered about the patient's behaviors, thinking, and mood.

At an appropriate point in the evaluation the formal MSE is undertaken to compile specific data about the patient's cognitive functioning. Earlier informal observations about mental state are woven together with the results of specific testing. For example, the interviewer will have considerable information about attention span, memory, and organization of thought from the process of the interview. Specific questions during the formal exam clarify more precisely the degree of attention or memory dysfunction.

Case.

A 55-year-old man presented with recent complaints of sadness and fear of being alone. He also expressed thoughts about death. As he presented his concerns, he rambled to unrelated topics and seemed to lose track of the interviewer's questions. During the formal inquiry he was able to recall only 1 of 3 objects he was asked to memorize and made several mistakes in serial subtractions of 7 from 100. Specific questioning about suicidal wishes and actions revealed that he had overdosed with aspirin 1 month earlier and still experienced suicidal thoughts and wishes to die. The cognitive tests were compatible with mild dementia, and the differential diagnosis included major depression. Further work-up and treatment supported this diagnosis. Cognitive functioning improved with antidepressants.

2. Is the MSE a separate part of the patient evaluation?

No. The MSE must be interpreted along with the presenting history, physical exam, and laboratory and radiologic studies. Separate interpretation makes you vulnerable to erroneous conclusions. Collateral information from families and friends is also invaluable to confirm or supply missing data.

Case.

A 27-year-old man presented to the psychiatric emergency department with somewhat grandiose behavior, pressured speech, irritability, and psychomotor agitation. The initial diagnostic impression was bipolar disorder, manic or drug-

induced mania. The patient denied drug abuse. However, questioning his wife uncovered a history of substance abuse, and laboratory evaluation revealed the presence of amphetamine metabolites. The correct diagnosis was amphetamine-induced mood disorder.

3. What key factors should be considered along with the MSE?

To assess properly the patient's mental status, it is important to have some understanding of the patient's social, cultural, and educational background. What may be abnormal for someone with more intellectual ability may be normal for someone with less intellectual ability. Patients for whom English is a second language may have difficulty understanding various components of the MSE, such as the proverbs. Age may be a factor. In general, patients over the age of 60 years tend to do less well on the cognitive elements of the MSE. Often this is related to less education rather than to aging alone.

4. What are the major components of the MSE?

Components vary somewhat from author to author. However, most detailed MSEs include information about appearance, motor activity, speech, affect, thought content, thought process, perception, intellect, and insight.

<i>Major Components of the Mental Status Examination</i>	
Appearance	Age, sex, race, body build, posture, eye contact, dress, grooming, manner, attentiveness to examiner, distinguishing features, prominent physical abnormalities, emotional facial expression, alertness
Motor	Retardation, agitation, abnormal movements, gait, catatonia
Speech	Rate, rhythm, volume, amount, articulation, spontaneity
Affect	Stability, range, appropriateness, intensity, affect, mood
Thought content	Suicidal ideation, death wishes, homicidal ideation, depressive cognitions, obsessions, ruminations, phobias, ideas of reference, paranoid ideation, magical ideation, delusions, overvalued ideas
Thought process	Associations, coherence, logic, stream, clang associations, perseveration, neologism, blocking, attention
Perception	Hallucinations, illusions, depersonalization, derealization, déjà vu, jamais vu
Intellect	Global impression: average, above average, below average
Insight	Awareness of illness
<i>Adapted from Zimmerman M: Interviewing Guide for Evaluating DSM-IV Psychiatric Disorders and the Mental Status Examination. Philadelphia, Psychiatric Press Products, 1994, pp 121–122.</i>	

5. What is the first step in the MSE?

A determination of consciousness must be the first step in MSE. Basic brain function determines the patient's ability to relate to the surroundings and cooperate with the interviewer. Disturbance of this basic function affects higher level mental processes that make up the major portions of the exam. The Glasgow Coma Scale was developed by Teasdale and Jennett in 1974 to assess impaired consciousness. It is based on eye opening and motor and verbal responses to stimuli. The scale ranges from 3 (deep coma) to 14 (full-alert wakefulness).

<i>Glasgow Coma Scale</i>	
CATEGORY	SCORE
Eyes open (E)	
Spontaneously	4
To speech	3
To pain	2
None	1
Best motor response (M)	
Obeys command	5
Localizes pain	4
Flexion to pain	3
Extension to pain	2
None	1
Best verbal response (V)	
Oriented	5
Confused	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
Summed coma scale = E + M + V	

6. Are there short forms of the MSE?

Several shortened forms of the MSE have been developed as screening instruments. All are composed of a combination of measures to detect cognitive impairments more accurately. Although helpful, such exams must be combined with clinical history. The diagnosis of dementia and delirium also requires the demonstration of a decline in cognitive functioning from a higher baseline. All screening exams have difficulty in identifying patients with mild cognitive impairment and patients with focal neurologic lesions, such as subdural hematomas or meningiomas. The key point is that *MSEs should not be used as the sole criteria for diagnosing delirium or dementia.*

7. What are some of the more common screening exams?

The Mini-Mental State Examination (MMSE) is probably the best known. The MMSE tests orientation, immediate and short-term memory, concentration, arithmetic ability, language, and praxis. It takes about 10 minutes to administer. The Cognitive Capacity Screening Examination (CCSE) tests orientation, serial subtraction, memory, and similarities. It is less sensitive to delirium or dementia in the elderly. The Neurobehavioral Cognitive Status Examination (NCSE) is especially good for medically ill patients; it focuses on consciousness, orientation, attention, language, construction, memory, calculations, and reasoning. It tends to be more sensitive in detecting impairment because it is more detailed.

<i>Mini-Mental State Examination</i>		
MAXIMAL SCORE	SCORE	
		Orientation
5) (What is the (year) (season) (date) (day) (month)?
5) (Where are we: (state) (country) (town) (hospital) (floor)?
		Registration
3) (Name 3 objects: take 1 second to say each. Then ask patient to repeat them. Give 1 point for each correct answer.
		Attention and Calculation
5) (Serials 7s from 100. 1 point for each correct answer. Stop after 5 answers. Alternatively, spell "world" backward.
		Recall
3) (Ask for the 3 objects named above. 1 point for each correct answer.
		Language
9) (Ask patient to name a pencil and watch. (2 points)
		Repeat the following: "No ifs, ands, or buts." (2 points)
		Follow a 3-stage command: "Take a paper in your right hand, fold it in half, and put it on the table." (3 points)
		Read and obey the following:
		Close your eyes (1 point)
		Write a sentence (1 point)
		Copy a drawing of intersecting pentagons (1 point)
<i>Adapted from Folstein MF, Folstein SE, McHugh PR: Mini-Mental State: A practical method for grading the cognitive states of patients for the clinician. J Psychiatr Res 12:189-198, 1975.</i>		

Additional questions can be used to extend and expand the components of a screening exam:

Attention can be tested by counting by 2s to 20. This task is easier and can be used for patients with poor arithmetic skills.

Calculation abilities can be tested by asking the patient to add simple combinations of two-digit numbers. The task can be graded in difficulty.

Immediate recall can be assessed by asking patients to repeat number sequences up to seven forward and four in reverse order. Start with shorter sequences.

Memory can be assessed by asking about news events, sports, television shows, or recent meals.

Long-term memory can be assessed by using past events confirmed by family members and also by repeating names of historical figures, such as presidents of the U.S.

Language ability can be assessed by asking patients to explain similarities and differences between common objects (e.g., tree-bush, car-plane, air-water).

Thinking processes can be assessed by asking patients to explain common proverbs with which they are familiar.

8. Can the MSE help to detect organic brain disease?

Emotional and behavioral change is frequently the first presentation of organic brain disease, especially in patients with frontal and temporal tumors, hydrocephalus, or cortical atrophy. Brain tumors, subdural hematomas, small infarcts, and cerebral atrophy may be undetected on routine neurologic exam, whereas the cognitive effects of such lesions may be apparent on mental status examination. For patients with known brain lesions, a thorough MSE documents cognitive or emotional changes.

9. Does a normal MSE or MMSE score mean competence?

No. Competence relates to patients' ability to make reasonable decisions for themselves and others. Such decisions include ability to provide food and shelter, to manage money, and to participate in activities such as deciding a course of medical care. Patients who score well on an MSE may have deficits in understanding or completing common tasks of daily living. Among a population with a probable diagnosis of Alzheimer's disease, 50% of patients scoring between 26 and 30 on the MMSE had difficulty with basic tasks such as coping with small sums of money or finding their way around familiar streets. The MSE is only one component needed to assess competency. Medical condition, current ability for self-care, and corroborating information from family or friends must be taken in consideration.

<i>Probability of Alzheimer's Disease Among Patients with Specific Problems of Daily Living</i>				
SPECIFIC ABILITY	MMSE RANGE (%) [±]			
	0–10	11–20	21–25	26–30
Cope with small sums of money	98	78	53	50
Perform household tasks	97	87	63	56
Recall recent events	97	92	89	91
Remember short lists of items	95	89	83	84
Find way around familiar streets	92	72	59	53
Recognize surroundings	82	44	30	19
Dress self	82	38	15	16
Find way about indoors	68	40	20	16
Tendency to dwell in the past	50	57	48	34
Feed self	44	05	02	06
Bowel and bladder continence	41	14	17	12

Adapted from Mungas D: In-office mental status testing: A practical guide. Geriatrics 46:54–66, 1991, with permission.

* Values are percentages of probable Alzheimer's disease among patients with MMSE scores falling in each range and difficulty performing the indicated activities.

10. Does an abnormal MSE or MMSE score mean incompetence?

Not necessarily. Many patients with cognitive limitations develop alternative means of coping with their deficits that allows them to live fairly independent and satisfying lives. As with patients with a normal MSE or MMSE score, **collateral history** helps to determine whether the patient is able to provide for basic needs.

11. What are the major limitations of MSE screening questionnaires?

Although structured, screening questionnaires are still subject to interpretive bias and depend on the skill and experience of the interviewer. All screening questionnaires have a fairly significant false-negative rate, especially in patients with focal lesions of the right hemisphere. Age (especially > 60 years), education (< 9th grade), cultural experience, and low socioeconomic standing limit the usefulness of MSE screening questionnaires. Unlike a detailed mental status exam, screening questionnaires are less sensitive to subtle cognitive impairment.

12. What are executive functions?

Complex cognitive abilities mediated primarily by the frontal lobes, dorsolateral prefrontal cortex, head of the caudate nucleus, and medial thalamus are referred to as executive functions. Disorders in these areas can be assessed by evaluating the patient's ability to self-regulate and plan. For example, can the patient inhibit impulsive responses to a stimulus and deliberate before acting? Failure to do so suggests a frontal lobe disorder. Perseveration of motor activity is another example of frontal lobe dysfunction: ask the patient to perform an alternating task such as palm up–palm down, and later insert a third task (e.g., palm up–palm down–fist). The impaired patient may be able to repeat only two components of the assigned task. Focal lesions or degenerative disorders, such as Huntington's chorea, that affect these structures may lead to disorders of executive function.

13. Is the MSE important to perform in patients who appear cognitively intact?

Yes. The exam can be abbreviated, but testing of cognitive functions provides a useful baseline. Patients may deteriorate during follow-up. The initial exam provides a point for comparison. Furthermore, mental status observations are a key tool for psychiatrists. Honing observational skills through informal assessment and formal exams helps to alert the clinician to subtle aspects of affect, speech, and behavior, especially as they change during the course of meetings. Subtle fluctuations are important sources of information throughout treatment. Learning to detect subtleties is a critical component of learning to become a skilled psychiatric clinician.