

# Guidelines at-a-Glance

## ADAPTED FROM

Standards of Practice Committee of the American Academy of Sleep Medicine. Practice parameters for clinical use of the multiple sleep latency test and the maintenance of wakefulness test. *SLEEP* 2005;28(1):113-121.

## Practice Parameters for the Clinical Use of the Multiple Sleep Latency Test and the Maintenance of Wakefulness Test

### AASM LEVELS OF RECOMMENDATIONS

TERM	DEFINITION
<b>STANDARD</b>	This is a generally accepted patient-care strategy, which reflects a high degree of clinical certainty. The term standard generally implies the use of Level I Evidence, which directly addresses the clinical issue, or overwhelming Level II Evidence.
<b>GUIDELINE</b>	This is a patient-care strategy, which reflects a moderate degree of clinical certainty. The term guideline implies the use of Level II Evidence or a consensus of Level III Evidence.
<b>OPTION</b>	This is a patient-care strategy, which reflects uncertain clinical use. The term option implies either inconclusive or conflicting evidence or conflicting expert opinion.

### GENERAL RECOMMENDATIONS

<b>1</b>	The MSLT is a validated objective measure of the ability or tendency to fall asleep.	STANDARD
<b>2</b>	The MWT is a validated objective measure of the ability to stay awake for a defined time.	STANDARD
<b>3</b>	The MWT is used in association with the clinical history to assess the ability to maintain wakefulness.	STANDARD
<b>4</b>	The MWT 40-minute protocol is recommended when the sleep clinician requires objective data to assess an individual's ability to remain awake.	OPTION
<b>5</b>	To provide a valid assessment of sleepiness or wakefulness the MSLT and MWT must be performed under appropriate conditions using proper recording techniques and accepted protocols, with interpretation by a qualified and experienced clinician.	STANDARD

## SPECIFIC INDICATIONS FOR THE USE OF MULTIPLE SLEEP LATENCY TEST(MSLT)

- |   |  |  |          |
|---|--|--|----------|
| 1 |  | The MSLT is indicated as part of the evaluation of patients with suspected narcolepsy to confirm the diagnosis.  | STANDARD |
| 2 |  | The MSLT may be indicated as part of the evaluation of patients with suspected idiopathic hypersomnia to help differentiate idiopathic hypersomnia from narcolepsy.  | OPTION   |
| 3 |  | The MSLT is not routinely indicated in the initial evaluation and diagnosis of obstructive sleep apnea syndrome or in assessment of change following treatment with nasal CPAP.  |          |
| 4 |  | The MSLT is not routinely indicated for evaluation of sleepiness in medical and neurological disorders (other than narcolepsy), insomnia, or circadian rhythm disorders.   | OPTION   |
| 5 |  | Repeat MSLT testing may be indicated in the following situations:<br>(a) when the initial test is affected by extraneous circumstances or when appropriate study conditions were not present during initial testing, (b) when ambiguous or uninterpretable findings are present, (c) when the patient is suspected to have narcolepsy but earlier MSLT evaluation(s) did not provide polygraphic confirmation. | STANDARD |

## SPECIFIC INDICATIONS FOR THE USE OF MAINTENANCE OF WAKEFULNESS TEST (MWT)

- |   |  |   |           |
|---|--|---|-----------|
| 1 |  | The MWT 40-minute protocol may be used to assess an individual's ability to remain awake when his or her inability to remain awake constitutes a public or personal safety issue. | OPTION    |
| 2 |  | The MWT may be indicated in patients with excessive sleepiness to assess response to treatment.   | GUIDELINE |

## RECOMMENDATIONS FOR THE MSLT PROTOCOL

1. The MSLT consists of five nap opportunities performed at two hour intervals. The initial nap opportunity begins 1.5 to 3 hours after termination of the nocturnal recording. A shorter four-nap test may be performed but this test is not reliable for the diagnosis of narcolepsy unless at least two sleep onset REM periods have occurred.
2. The MSLT must be performed immediately following polysomnography recorded during the individual's major sleep period. The use of MSLT to support a diagnosis of narcolepsy is suspect if TST on the prior night sleep is less than 6 hours. The test should not be performed after a split night sleep study (combination of diagnostic and therapeutic studies in a single night).
3. Sleep logs may be obtained for 1 week prior to the MSLT to assess sleep-wake schedules.
4. Standardization of test conditions is critical for obtaining valid results. Sleep rooms should be dark and quiet during testing. Room temperature should be set based on the patient's comfort level.
5. Stimulants, stimulant-like medications, and REM suppressing medications should ideally be stopped 2 weeks before MSLT. Use of the patient's other usual medications (e.g., antihypertensives, insulin, etc.) should be thoughtfully planned by the sleep clinician before MSLT testing so that undesired influences by the stimulating or sedating properties of the medications are minimized. Drug screening may be indicated to ensure that sleepiness on the MSLT is not pharmacologically induced. Drug screening is usually performed on the morning of the MSLT, but its timing and the circumstances of the testing may be modified by the clinician. Smoking should be stopped at least 30 minutes prior to each nap opportunity. Vigorous physical activity should be avoided during the day and any stimulating activities by the patient should end at least 15 minutes prior to each nap opportunity. The patient must abstain from any caffeinated beverages and avoid unusual exposures to bright sunlight. A light breakfast is recommended at least 1 hour prior to the first trial, and a light lunch is recommended immediately after the termination of the second noon trial.
6. Sleep technologists who perform MSLTs should be experienced in conducting the test.
7. The conventional recording montage for the MSLT includes central EEG (C3-A2, C4-A1) and occipital (O1-A2, O2-A1) derivations, left and right eye electrooculograms (EOGs), mental/submental electromyogram (EMG), and electrocardiogram (EKG).
8. Prior to each nap opportunity, the patient should be asked if they need to go to the bathroom or need other adjustments for comfort. Standard instructions for bio-calibrations (i.e., patient calibrations) prior to each nap include: (1) lie quietly with your eyes open for 30 seconds, (2) close both eyes for 30 seconds, (3) without moving your head, look to the right, then left, then right, then left, right and then left, (4) blink eyes slowly for 5 times, and (5) clench or grit your teeth tightly together.
9. With each nap opportunity the subject should be instructed as follows: "Please lie quietly, assume a comfortable position, keep your eyes closed and try to fall asleep." The same instructions should be given prior to every test. Immediately after these instructions are given, bedroom lights are turned off, signaling the start of the test. Between naps, the patient should be out of bed and prevented from sleeping. This generally requires continuous observation by a laboratory staff member.
10. Sleep onset for the clinical MSLT is determined by the time from lights out to the first epoch of any stage of sleep, including stage 1 sleep. Sleep onset is defined as the first epoch of greater than 15 sec of cumulative sleep in a 30-sec epoch. The absence of sleep on a nap opportunity is recorded as a sleep latency of 20 minutes. This latency is included in the calculation of mean sleep latency (MSL). In order to assess for the occurrence of REM sleep, in the clinical MSLT the test continues for 15 minutes from after the first epoch of sleep. The duration of 15 minutes is determined by "clock time", and is not determined by a sleep time of 15 minutes. REM latency is taken as the time of the first epoch of sleep to the beginning of the first epoch of REM sleep regardless of the intervening stages of sleep or wakefulness.
11. A nap session is terminated after 20 minutes if sleep does not occur. 12. The MSLT report should include the start and end times of each nap or nap opportunity, latency from lights out to the first epoch of sleep, mean sleep latency (arithmetic mean of all naps or nap opportunities), and number of sleep-onset REM periods (defined as greater than 15 sec of REM sleep in a 30-sec epoch). 13. Events that represent deviation from standard protocol or conditions should be documented by the sleep technologist for review by the interpreting sleep clinician.
12. The MSLT report should include the start and end times of each nap or nap opportunity, latency from lights out to the first epoch of sleep, mean sleep latency (arithmetic mean of all naps or nap opportunities), and number of sleep-onset REM periods (defined as greater than 15 sec of REM sleep in a 30-sec epoch).
13. Events that represent deviation from standard protocol or conditions should be documented by the sleep technologist for review by the interpreting sleep clinician.

### ADAPTED FROM:

Association of Professional Sleep Societies, APSS Guidelines Committee: Carskadon MA, Dement WC, Mitler MM, Roth T, Westbrook PR, Keenan S. Guidelines for the Multiple Sleep Latency Test (MSLT): a standard measure of sleepiness. *SLEEP* 1986; 9:519-524

Modified by collective expert opinion using Rand/UCLA Appropriateness Method

## RECOMMENDATIONS FOR THE MWT PROTOCOL

1. The 4-trial MWT 40-minute protocol is recommended. The MWT consists of four trials performed at two hour intervals, with the first trial beginning about 1.5 to 3 hours after the patient's usual wake-up time. This usually equates to a first trial starting at 0900 or 1000 hours.
2. Performance of a PSG prior to MWT should be decided by the clinician based on clinical circumstances.
3. Based on the Rand/UCLA Appropriateness Method, no consensus was reached regarding the use of sleep logs prior to the MWT; there are instances, based on clinical judgment, when they may be indicated.
4. The room should be maximally insulated from external light. The light source should be positioned slightly behind the subject's head such that it is just out of his/her field of vision, and should deliver an illuminance of 0.10-0.13 lux at the corneal level (a 7.5 W night light can be used, placed 1 foot off the floor and 3 feet laterally removed from the subject's head). Room temperature should be set based on the patient's comfort level. The subject should be seated in bed, with the back and head supported by a bedrest (bolster pillow) such that the neck is not uncomfortably flexed or extended.
5. The use of tobacco, caffeine and other medications by the patient before and during MWT should be addressed and decided upon by the sleep clinician before MWT. Drug screening may be indicated to ensure that sleepiness/wakefulness on the MWT is not influenced by substances other than medically prescribed drugs. Drug screening is usually performed on the morning of the MWT but its timing and the circumstances of the testing may be modified by the clinician. A light breakfast is recommended at least 1 hour prior to the first trial, and a light lunch is recommended immediately after the termination of the secondnoon trial.
6. Sleep technologists who perform the MWT should be experienced in conducting the test.
7. The conventional recording montage for the MWT includes central EEG (C3-A2, C4-A1) and occipital (O1-A2, O2-A1) derivations, left and right eye electrooculograms (EOGs), mental/submental electromyogram (EMG), and electrocardiogram (EKG).
8. Prior to each trial, the patient should be asked if they need to go to the bathroom or need other adjustments for comfort. Standard instructions for bio-calibrations (i.e., patient calibrations) prior to each trial include: (1) sit/lie quietly with your eyes open for 30 seconds, (2) close both eyes for 30 seconds, (3) without moving your head, look to the right, then left, then right, then left, right and then left, (4) blink eyes slowly for 5 times, and (5) clench or grit your teeth tightly together.
9. Instructions to the patient consist of the following: "Please sit still and remain awake for as long as possible. Look directly ahead of you, and do not look directly at the light." Patients are not allowed to use extraordinary measures to stay awake such as slapping the face or singing.
10. Sleep onset is defined as the first epoch of greater than 15 sec of cumulative sleep in a 30-sec epoch.
11. Trials are ended after 40 minutes if no sleep occurs, or after unequivocal sleep, defined as three consecutive epochs of stage 1 sleep, or one epoch of any other stage of sleep.
12. The following data should be recorded: start and stop times for each trial, sleep latency, total sleep time, stages of sleep achieved for each trial, and the mean sleep latency (the arithmetic mean of the four trials). 13. Events that represent deviation from standard protocol or conditions should be documented by the sleep technologist for review by the sleep specialist.

### ADAPTED FROM:

Doghramji K, Mitler M, Sangal RB, Shapiro C, Taylor S, Walsleben J, Belisle C, Erman MK, Hayduk R, Hosn R, O'Malley EB, Sangal JM, Schutte SL, Youakim JM. A normative study of the maintenance of wakefulness test (MWT). *Electroencephal Clin Neurophysiol* 1997;103:554-562.

Modified by collective expert opinion using Rand/UCLA Appropriateness Method