

MSLT PROTOCOL

PURPOSE

The MSLT is intended to measure sleep tendency under standardized conditions in the absence of external alert factors. A standard MSLT protocol that is consistent with AASM practice parameters ensures consistency and allows comparisons of results with published data and with data generated by other sleep programs.

POLICY

The sleep facility performs the MSLT in accordance with AASM practice parameters. The MSLT must be ordered or approved by an appropriately licensed facility medical staff member. The MSLT must always follow all-night polysomnography. The MSLT is indicated as part of the evaluation of patients with suspected narcolepsy to confirm the diagnosis. The MSLT may be indicated as part of the evaluation of patients with suspected idiopathic hypersomnia to help differentiate idiopathic hypersomnia from narcolepsy.

PROCEDURE

General Description:

- 1.0** The MSLT must be performed immediately following polysomnography recorded during the individual's major sleep period.
 - 1.1 The initial nap opportunity begins about one and a half to three hours after the patient has awakened from the all-night sleep study.
- 2.0** The use of MSLT to support a diagnosis of narcolepsy is suspect if total sleep time on the prior night sleep is less than six hours.
- 3.0** The test should not be performed after a split-night study (combination of diagnostic and therapeutic studies in a single night).
- 4.0** Sleep logs may be obtained for one week prior to the MSLT to assess sleep-wake schedules.
- 5.0** Throughout the day no caffeine or stimulant medications are permitted and unusual exposures to bright sunlight should be avoided.
- 6.0** Standardization of test conditions is critical for obtaining valid results. Sleep rooms should be dark and quiet during testing. Room temperature should be set for the patient's comfort level.
- 7.0** The MSLT consists of five nap opportunities given two hours apart.
 - 7.1 A shorter test of four naps may be performed, but the shorter test is not reliable for the diagnosis of narcolepsy unless at least two SOREMPs have occurred.
 - 7.2 Five nap opportunities must be performed for mean sleep latency if no SOREMPs or one SOREMP occurred in the first four naps.
- 8.0** Between naps the patient is kept out of bed and is visually monitored to ensure that no napping occurs. In each nap opportunity, the patient is told to try to fall asleep.

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- 9.0** The patient is given 20 minutes to fall asleep. If the patient falls asleep in 20 minutes or less, he or she is monitored for 15 minutes (clock time) from sleep onset before ending the test.
- 10.0** The MSLT is recorded with standard polysomnography using the following montage: REOG, LEOG, chin EMG, EEG (C3-A2 or C4-A1), EEG (O1-A2 O2-A1) and EKG
- 11.0** The mean sleep latency is determined across all naps. Sleep latency is defined as the time from lights out to the first epoch of any state of sleep scored according to most recent version of the *AASM Scoring Manual*.
- 12.0** Sleep technologists who perform MSLT should be experienced in conducting the test.
- 13.0** Stimulants, stimulant-like medications, and REM suppressing medications should ideally be stopped two weeks before MSLT. Use of the patient's other usual medications 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.

Details of Procedure:

- 1.0** After completion of the polysomnograms, airflow, chest respiration belts, oximeters probe and leg EMG leads are removed.
- 2.0** After rising from the polysomnograms, the patient should dress in street clothes.
- 3.0** Prior to each nap, the patient should be asked if they need to use the bathroom or need comfort adjustments.
- 4.0** The patient is given a light breakfast at least one hour prior to the first nap opportunity, and a light lunch immediately after the end of the second nap opportunity.
- 5.0** The MSLT procedure should be explained to the patient.
- 6.0** Between naps the patient should be out of bed and should be under continuous visual monitoring by technicians to ensure that no napping occurs.
- 7.0** Patients are not allowed to consume caffeine during the day and should avoid exposure to bright sunlight.
- 8.0** The first page of the MSLT is labeled with the following information:
- 8.1 Patient name
 - 8.2 Patient identification number
 - 8.3 MSLT
 - 8.4 Room number
 - 8.5 Date of test
 - 8.6 Patient date of birth
 - 8.7 Ordering physician
 - 8.8 Initials of technologist performing study

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8.9 Montage for the MSLT:

Channel #	Parameter	Derivation	Sensitivity	Low filter	High Filter
1	REOG	REOG/A1	7uv/mm	0.3	35
2	LEOG	LEOG/A1	7uv/mm	0.3	35
3	Chin EMG	Chin EMG	3uv/mm	10	100
4	EEG	C3/A2 or (C4A1)	7uv/mm	0.3	35
5	EEG	O2/A1 or (O1A2)	7uv/mm	0.3	35
6	EKG	EKG	variable	0.3	70

9.0 A 50-microvolt standard calibration is performed for all recording channels.

10.0 The electrodes are visually inspected for good adherence, and any loose electrodes are replaced.

11.0 An impedance check is performed, and any electrodes >10,000 ohms are replaced and rechecked.

12.0 Patient is placed in bed at naptime and equipment is plugged in.

13.0 Technologist starts polygraph or computer and makes adjustments in tracing. When tracing is acceptable, technologist performs the following patient bio-calibrations:

- 13.1 Eyes open for 30 seconds
- 13.2 Eyes closed for 30 seconds
- 13.3 Moving eyes only, look right
- 13.4 Moving eyes only, look left
- 13.5 Moving eyes only, look up
- 13.6 Moving eyes only, look down
- 13.7 Blink several times
- 13.8 Swallow
- 13.9 Grit teeth

14.0 Inform patient that the nap has begun with the following statement: “Relax and let yourself fall asleep. I will let you know when the nap is over.”

15.0 Label the “lights out” page with the following information:

- 15.1 Lights out and time
- 15.2 Patient sleep position

16.0 Document any changes made in sensitivity or filter settings, as well as patient position and behavior during the study.

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- 17.0** The test is ended after 20 minutes if no sleep occurs. If sleep does occur, the test is ended 15 minutes after the first 30 second epoch of scored sleep according to the criteria of the *AASM Scoring Manual*.
- 18.0** On the “lights on” page, label the following information:
- 18.1 Lights on and time
 - 18.2 Post-test machine calibrations
 - 18.3 Standard 50-microvolt calibrations
- 19.0** Knock and enter patient’s room, disconnect jack box from head of bed and get patient out of bed. Inform patient that he or she must stay out of bed and awake until the start of the next nap at approximately (time).
- 20.0** If there are at least two REM onsets, then a fifth nap does not have to be performed; however, this may lead to less precise mean sleep latency. Patients tested with nasal CPAP during the previous all-night sleep study are tested with CPAP during the naps, although air flow is not measured.

End of Study:

- 1.0** At the end of the last nap, turn off polygraph or exit computer.
- 2.0** Gently remove all sensors from patient. Take care to avoid irritation of patient’s skin.
- 3.0** Carefully soak each electrode site with warm water until the electrode lifts away from the patient’s skin.
- 4.0** Ensure that all paste residue has been removed by using a wet washcloth on the skin and a fine-toothed comb through the hair after all electrodes have been removed.
- 5.0** When patient is ready to leave, the technologist should recommend that the patient schedule a follow-up appointment with his or her physician to discuss the results of the study. Then discharge the patient from the facility.

After the Polysomnogram:

- 1.0** Carefully sort wires and group them together by lengths and application sites.
- 2.0** Remove any remaining tape, wash electrodes with soap and water, rinse and allow to soak in Wex-cide solution
- 3.0** Inspect wires at this time to ensure their integrity.
- 4.0** Return any equipment and all cleaned and disinfected wires to the storage area for future use.

General Cleanup Checklist:

- 1.0** Discard all used tape, collars, gauze, etc.
- 2.0** Return patient preparation kit to appropriate area.
- 3.0** Stock patient preparation kit as needed.
- 4.0** If CPAP and/or oxygen equipment was used, remove and empty humidifier, connecting tubing, nasal cannula, and any other equipment and place in designated “dirty equipment area” for cleaning and disinfecting.
- 5.0** Discard disposable equipment such as the nasal cannula or disposable oximeter probe.
- 6.0** Remove any lint from CPAP equipment filter.
- 7.0** Remove used linen and place in appropriate dirty linen container.

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8.0 Leave patient suites in clean and orderly condition.

Scoring:

- 1.0** Sleep stage scoring is based on the *AASM Scoring Manual*. The sleep latency is determined from lights out to the first scored epoch of any stage of sleep. Stage R latency is scored from sleep onset to the first epoch of stage R.
- 2.0** MSLT latencies are based on the most current edition of the *International Classification of Sleep Disorders*.