

How Much Prior Sleep is Adequate for the Multiple Sleep Latency Test?

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Commentary on Bradshaw DA; Yanagi MA; Pak ES et al. Nightly sleep duration in the 2-week period preceding multiple sleep latency testing. *J Clin Sleep Med* 2007;3(6):613-619.

The Multiple Sleep Latency Test (MSLT) is an important tool in the evaluation of excessive daytime sleepiness. It is indicated for the diagnosis of narcolepsy and the evaluation of idiopathic hypersomnia.¹ However, the MSLT results can be affected by a variety of extraneous variables that must be controlled or minimized to obtain interpretable diagnostic data.² Prior sleep deprivation is the most worrisome and difficult to monitor extraneous variable. The article “Nightly Sleep Duration in the Two-Week Period Preceding Multiple Sleep Latency Testing” in this edition, examines this issue by comparing sleep duration from self-reported average nightly sleep time, sleep logs, and actigraphy. Results showed that subjective estimates of sleep time were longer than the time measured by actigraphy. Moreover, actigraphy was the only measure that showed a low but significant correlation with MSLT results. It was suggested that actigraphy might be a better way of measuring sleep duration before the MSLT.

This article touches on several basic questions surrounding prior sleep duration and the MSLT. The first question is when should an MSLT be performed? It is common for sleep duration to vary across the week with partial sleep deprivation on work nights followed by “catch up” on the weekend. This pattern was evident in the participants in this study, who also reported about 4 naps (range 0-14) per week. Not surprisingly, the patients slept the longest (7.4 hr) on the polysomnogram (PSG) night when given the opportunity. Having this information, a clinician should consider a diagnosis of insufficient sleep and recommend increasing sleep time to eliminate excessive daytime sleepiness before performing an MSLT. If this is not effective, an MSLT would be warranted if the history could support a diagnosis of narcolepsy. In practice, however, estimates of sleep durations in the week prior to MSLT

are not usually obtained, so the clinician is not aware of the potential role of sleep deprivation. This study dramatically demonstrates what clinicians could be missing. Although military personnel with truncated sleep opportunities are not typical patients, it is well established that most Americans are sleep deprived.³

The next question is how should prior sleep time be measured? This study compared actigraphy, a single subjective estimate of sleep duration, and sleep time from measured line lengths on sleep logs. Actigraphy showed the shortest total sleep time (0.5-1.5 hr less) in the 2 weeks prior to MSLT compared to the other measures. On the PSG night, actigraphy also showed shorter sleep duration than sleep measured by PSG. Sleep log estimates were not obtained on the PSG night. These data make it difficult to draw conclusions because the measures are not really comparable, and data are not available for all measures.

This last question is how much sleep is adequate? Adequate sleep is a requirement for correct interpretation of MSLT, but it is not defined.⁴ Indeed, it cannot be defined because it varies among individuals. Confusion arises because a minimum of 6 hours of sleep in the preceding PSG is required in the International Classification of Sleep Disorders-2 for performing the MSLT.¹ This lower limit is not the same as adequate sleep. The lower limit was derived from the fact that narcolepsy patients often have very fragmented sleep and may not be able to get more than 6 hours of sleep at night. Six hours was not intended as an adequate amount of sleep in most cases, since most adults need 7-8 hours of sleep, while teenagers and some adults need more. Adequate sleep should allow a person to function well throughout the day without falling asleep or fighting sleepiness. Unfortunately, the sleep clinician will not know how many hours of sleep are adequate for a patient by looking at sleep duration in the weeks prior to the MSLT.

The answers to these questions are still largely unknown. However, it is clear that a thorough sleep history combined with information about the prior week’s sleep duration from any measure can help the clinician answer all of these questions. Moreover, given the large sleep debt in the country, a reasonable first step in most cases would be to prescribe increased sleep time for a week or two before deciding to do an MSLT. This may be beneficial to the patient, could provide valuable clinical information, and help assure more “adequate” prior sleep if an MSLT is performed.

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