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Circadian Variation of Testosterone Requires Early Morning Blood Collection

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Although the circadian variation of cortisol has been widely recognized, and blood specimens collected accordingly in the early morning, the daily variation of testosterone may not be as well known. The variation of serum testosterone concentration during the day has been extensively studied and has been shown to peak in the early morning, between 0500-0800, and to reach a nadir in the

evening, between 2000-2300. A group of Japanese investigators have shown that the rise of testosterone in the morning is unrelated to either sleep or light-dark cycles[1]. The implication of these findings is that blood specimens for testosterone should be collected as soon in the morning as possible. Collection of specimens from men who work on the mid- or night-shifts and whose sleep cycles are not synchronized with the normal light-dark cycle should also be collected in the early morning.

The magnitude of the difference in serum testosterone concentrations at the peak and trough times may be as much as $\pm 20\%$ from the baseline; an early evening serum testosterone concentration could be as much as 20% lower than baseline and 40% lower than the morning peak level.

Reference:

1. Miyatake A, Morimoto Y, Oishi T, Hanasaki N, Sugita Y, Iijima S, Teshima Y, Hishikawa Y, Yamamura Y. Circadian Rhythm of Serum Testosterone and Its Relation to Sleep: Comparison with the Variation in Serum Luteinizing Hormone, Prolactin, and Cortisol in Normal Men. *J Clin Endocrinol Metab* 1980;51-1365-71.

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