

# Puberty turned on by brain during deep sleep

September 13 2012

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Slow-wave sleep, or 'deep sleep', is intimately involved in the complex control of the onset of puberty, according to a recent study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology and Metabolism (JCEM)*.

The many changes that occur in boys and girls during puberty are triggered by changes in the brain. Previous studies have shown that the parts of the brain that control puberty first become active during sleep, but the present study shows that it is [deep sleep](#), rather than sleep in general, that is associated with this activity.

"If the [parts of the brain](#) that activate the reproductive system depend on deep sleep, then we need to be concerned that inadequate or disturbed sleep in children and [young adolescents](#) may interfere with normal pubertal maturation," said Harvard researcher, Natalie Shaw, MD, of Massachusetts General Hospital and Boston Children's Hospital who led the study. "This is particularly true for children who have been diagnosed with [sleep disorders](#), but may also have more widespread implications as recent studies have found that most adolescents get less sleep than they require."

In the study, researchers examined pulses of luteinizing hormone (LH) secretion in relation to specific sleep stages in children ages 9-15. LH is essential for reproduction and triggers ovulation in females and stimulates the production of testosterone in males. Researchers found that the majority of LH pulses that occur after sleep are preceded by deep sleep suggesting that deep sleep is intimately involved in pubertal

onset.

**More information:** The article "Insights into Puberty: The Relationship between Sleep Stages and Pulsatile LH Secretion" is slated to appear in the November 2012 issue of *JCEM*.

Provided by The Endocrine Society

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