The Process of Endogenous Cortisol Secretion

Cortisol secretion follows a distinct physiological rhythm that peaks in the early morning and reaches nadir around midnight[1,2]

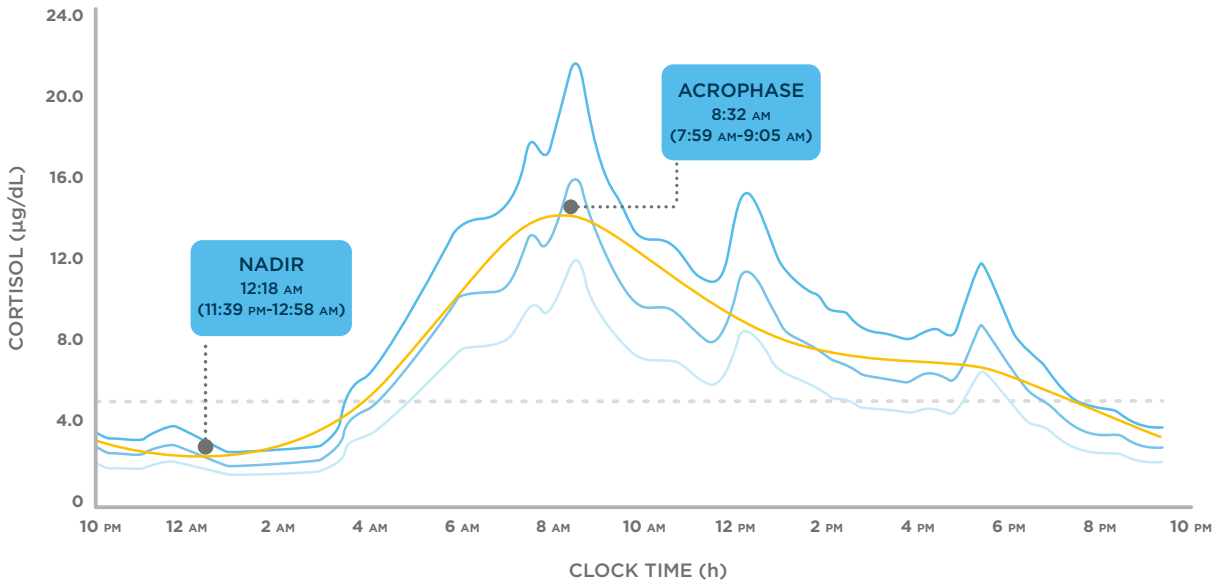
The hypothalamic-pituitary-adrenal (HPA) axis begins to function from week 6 of fetal life but remains dormant throughout most of gestation.[2]

During the first weeks of life, there is an absence of circadian rhythm; however, within 2 months of age, a recognizable rhythm of cortisol secretion can be seen in most infants.[1,2]

- The rhythm is determined by the central pacemaker in the suprachiasmatic nucleus of the hypothalamus

Individual infants can vary greatly in age when their cortisol circadian pattern appears, as well as in how stable the pattern is.[3]

Physiological Cortisol Rhythm[1]



Geometric mean (95% CI) ± 2 SD values of serum cortisol concentration based on 20-minute sampling over 24 hours in 33 healthy subjects.

Average of harmonic regressions for individual subject data.

Mean (95% CI) mesor (midline indicating statistic of rhythm): 5.2 µg/dL (4.7-5.7 µg/dL).

CI=confidence interval; SD=standard deviation.

References: 1. Debono M, et al. *J Clin Endocrinol Metab.* 2009;94(5):1548-1554. doi:10.1210/jc.2008-2380. **2.** Porter J, et al. *Arch Dis Child.* 2017;102(2):199-205. doi:10.1136/archdischild-2015-309538. **3.** de Weerth C, et al. *Early Hum Dev.* 2003;73(1-2):39-52. doi:10.1016/s0378-3782(03)00074-4.

WS-ALK-001-rev3-04/21