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## Optimal glucocorticoid therapy.

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### Abstract

The rhythmic regulation of human physiology and behaviour is controlled by a central endogenous clock located in the suprachiasmatic nucleus. Most tissues have peripheral clocks that oscillate in time with this central clock. How the central time keeper controls peripheral clocks is not established, however there is evidence to suggest that the cortisol rhythm is one important secondary messenger. Loss of the endogenous cortisol rhythm is associated with sleep disturbance, depression, and metabolic abnormalities. In adrenal insufficiency, current glucocorticoid replacement regimens cannot replace the normal circadian rhythm of cortisol, and patients have an increased mortality and impaired quality of life. We propose that reproducing circadian cortisol levels may improve quality of life in patients with adrenal insufficiency and we have been investigating the impact of circadian hydrocortisone replacement. Using Chronocort, a modified release preparation of hydrocortisone, we have demonstrated that it is possible to simulate the overnight rise in cortisol release and, in preliminary studies in patients with congenital adrenal hyperplasia, control morning androgen levels. Future studies are now required to determine whether Chronocort can improve quality of life in patients with adrenal insufficiency.

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