Q & A
By Paul Margulies, MD, FACE, FACP

Q. Why do some secondary adrenal insufficient patients (either from pituitary non-function or adrenal atrophy from long-term cortisol prescription use) end up needing to take aldosterone replacement medication?

A. Aldosterone is primarily regulated by the kidney. When blood volume drops, the kidney makes renin, which then stimulates the production of angiotensin, which is metabolized in the lung, and then stimulates the adrenal to produce aldosterone and increase sodium retention and potassium excretion and increase blood volume. This mechanism usually does not require the pituitary, and therefore most people with secondary adrenal insufficiency (who lack ACTH) have only cortisol deficiency, but still maintain adequate aldosterone production, since their adrenals are intact. However, there are some people (about 10% of the population) who do seem to need ACTH stimulation to maintain their renin-aldosterone balance. These people wind up with high potassium levels despite prednisone treatment, and they do respond to fludrocortisone (Florinef®), or may be managed with hydrocortisone in place of just prednisone alone.