### Podcast Series

| Reynolds Geriatrics Series • USMLE Step 1 Prep 2012 |

### Episode Title

**ACEing the Diagnosis**

### Personnel

Back: Cynthia Sirri, Quinton Slaughter, Tyler Wildey, Kayla Foster, Michael Hwang, Adetomiwa Ogundere  
Front: Jaden Evans, John Whitney, Karen Luk, Keeley Bramblett (from left to right)

### Group Number

| Group Number | Group 4 |

### USMLE Step 1-Style Question and answers

An 84 year old obese male presents with a ten year history of poorly managed hypertension. He complains of feeling fatigued with diffuse muscle weakness. ECG studies reveal peaked T waves and a wide QRS complex. Which of the following medications is most likely responsible for these adverse clinical findings?  
- a. Hydrochlorothiazide  
- **b. Captopril**  
- c. Furosemide  
- d. Metoprolol  
- e. Nifedipine

### Learning Objectives

**The listener should be able to:**

1. Describe electrolyte imbalance, specifically hyperkalemia, in a geriatric patient.  
2. Describe angiotensin converting enzyme (ACE) inhibitors as drugs that can cause hyperkalemia in geriatric patients.  
3. Explain the mechanism through which ACE inhibitors can cause hyperkalemia.

### Key Teaching Points

- In the geriatric population, kidney function is decreased as a natural physiological part of the aging process. Due to this decreased kidney function, elderly patients are at increased risk for developing electrolyte imbalances. Specifically, hyperkalemia is a common electrolyte imbalance seen in older patients.  
- For this reason, drugs like Captopril, an angiotensin converting enzyme (ACE) inhibitor, that cause hyperkalemia should be closely monitored in the management of geriatric patients.
ACE inhibitors block the conversion of angiotensin I to angiotensin II, which acts on the adrenal cortex to secrete aldosterone. Aldosterone acts by increasing reabsorption of $\text{Na}^+$ and secretion of $\text{K}^+$ in the collecting tubule. A lack of aldosterone secretion results in potassium retention. Note that hyperkalemia is a rare occurrence in patients on ACE inhibitors without underlying kidney dysfunction or concomitant $\text{K}^+$-sparing diuretic use.

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