

**Harvard Medical School Department of
Continuing Education and the Renal Division
of Brigham and Women's Hospital**



Nephrology Rounds
November 2008

**The Cardiorenal Syndrome: Nontraditional Cardiovascular
Risk Factors in Patients with Renal Disease**

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Objectives:

This issue of *Nephrology Rounds* will allow the reader to:

- Appreciate that cardiovascular disease is the leading cause of death in patients with end-stage renal disease (ESRD).
- Recognize that even patients with mild degrees of renal insufficiency have significant elevations in cardiovascular risk, at approximately 3-fold compared with the general population.
- Understand the multitude of cardiovascular risk factors present in patients with kidney disease, and the particular relevance of numerous "nontraditional" risk factors in this patient population.
- Recognize the recently described link between cardiovascular disease and inflammation.

Questions:

1. Analysis of the United States Renal Data System (USRDS) revealed that mortality from cardiovascular disease accounted for 42.2% of the 17.9 deaths per 100 patient-years at risk.
True False
2. Patients with ESRD have cardiovascular mortality rates 50- to 60-fold greater than those of the general population.
True False
3. By stage 5 chronic kidney disease (CKD) approximately 90% of patients are anemic.
True False
4. The US Normal Hematocrit Study was preemptively terminated due to a statistically significant increase in risk of the primary endpoint, death or first nonfatal myocardial infarction, in the normal hematocrit group.
True False
5. A large observational study of hemodialysis patients revealed that phosphorous levels of >5.0, higher adjusted serum calcium concentrations, and moderate to severe hyperparathyroidism (parathyroid hormone [PTH] \geq 600 pg/mL) were associated with an increased relative risk of death.
True False
6. In ESRD patients, total and low-density lipoprotein cholesterol (LDL-C) levels are usually elevated, while plasma triglycerides are often in the normal range.
True False
7. Homocysteine (Hcy) is a sulfur-containing amino acid that arises as a result of the oxidation of methionine.
True False

8. C-reactive protein has been reported to be elevated in 40% of patients receiving hemodialysis.

True False

9. Asymmetric dimethyl L-arginine (ADMA), an analog of L-arginine, blocks the active site of nitrous oxide synthase, thus suppressing synthesis of nitric oxide.

True False

10. Postulated mechanisms of action for the increased atherogenicity of lipoprotein (a) include ingestion by macrophages, resulting in the formation of foam cells; oxidization, thereby increasing its atherogenicity; and impairment in the activation of plasminogen, resulting in enhancement of vascular smooth-muscle proliferation.

True False

11. This issue of *Nephrology Rounds* adequately addressed the topic, and the data and discussion were fair and balanced.

AGREE DISAGREE

12. Potential conflicts of interest disclosed by the author on the back page were properly expressed.

AGREE DISAGREE

13. The information presented in this issue of *Nephrology Rounds* will increase my clinical knowledge and improve the care of my patients.

AGREE DISAGREE

14. *Nephrology Rounds* from Brigham and Women's Hospital and Harvard Medical School is an effective CME program.

AGREE DISAGREE

Comments/Topic Suggestions: _____

To receive AMA category 1 credit, you must correctly answer 60% of questions 1-10, and answer 11-14.

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