

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



***Cardiology Rounds***  
**March 2005**

**Therapeutic Minimization of Ventricular Pacing to  
Prevent Atrial Fibrillation, Heart Failure, and Death**

Michael O. Sweeney, M.D.

**Objectives:**

Ventricular pacing has evolved from a one-dimensional ventricle-based therapy to avoid symptomatic bradycardia, to a highly sophisticated array of options for sensing and pacing both the atrial and ventricular chambers that more optimally reflect physiologic activity. Recent recognition that standard right ventricular (RV) apical pacing induces ventricular desynchronization which, in susceptible individuals, can lead to symptomatic heart failure, has stimulated further technological advances that allow for greater utilization of atrioventricular (AV) conduction when possible. The objective of this issue of *Cardiology Rounds* is to provide the reader with the rationale and background for using the newer pacing modalities. These modalities have been specifically designed to optimize the individual patient's AV conduction and intrinsic ventricular activation sequence.

**Test: (only one answer is correct)**

1. For patients with sinus node dysfunction (SND), atrial pacing:
  - a. reduces the risk of subsequent atrial fibrillation.
  - b. reduces the risk of developing congestive heart failure compared to ventricular pacing.
  - c. avoids the ventricular desynchronization produced by RV apical pacing.
  - d. fails to protect from symptomatic bradycardia attributed to AV block.
  - e. all of the above.
  
2. In patients with an electronic ventricular pacemaker, the greater the percentage of RV apical pacing (cumulative percent ventricular pacing) compared to intrinsic conduction, the greater the risk of manifesting heart failure.  
True       False
  
3. The activation sequence produced by RV apical pacing is most similar to:
  - a. right bundle branch block.
  - b. right ventricular infarction.
  - c. left anterior hemiblock.
  - d. left bundle branch block.
  - e. none of the above

4. Managed Ventricular Pacing (MVP™) is a strategy to minimize RV atrial pacing, while maintaining protection from syncope due to AV block.

True  False

5. Clinical trials have definitively shown that the mode of electronic pacing can influence survival.

True  False

6. Right ventricular pacing, even when AV synchrony is preserved, can result in:

- a. reduced ejection fraction
- b. acute and chronic mitral regurgitation
- c. congestive heart failure.
- d. all of the above

7. Which is most important for optimal ventricular pumping function during cardiac pacing?

- a. sinus rhythm
- b. AV synchrony
- c. ventricular synchrony

To receive AMA category 1 credit, you must correctly answer 60% of the test questions.

Harvard Medical School is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Harvard Medical School designates this educational activity for a maximum of 1 category 1 credit toward the AMA Physician's Recognition Award. Each physician should claim only those credits that he/she actually spent in the educational activity.

This program was issued in March 2005. All tests must be returned by September 30, 2005.

Please send the completed test and a check for \$25 US. (Check made payable to: Harvard Medical School) to: Harvard Medical School/Department of Continuing Education, Box 825, Boston, MA 02117-825.

Please keep a copy of your test before submission. A certificate will be sent upon successful completion of the test, along with the answer key.

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_

Fax \_\_\_\_\_