



**Senior Medicine Rotation: Evidence-Based Medicine Project**

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**Block:**

**Date: 22 August 2005**

**Case SIGNOUT:**

80 year old woman presents with lightheadedness. ECG shows complete heart block. The arrhythmia service is consulted for pacemaker placement.

**Clinical Question:** Does dual chamber versus single chamber pacing result in improved mortality and/or cardiovascular outcomes?

**Search Strategy**

Database: PubMed

((("single person"[TIAB] NOT Medline[SB]) OR "single person"[MeSH Terms] OR single[Text Word]) AND versus[All Fields] AND dual[All Fields] AND chamber[All Fields] AND pacing[All Fields] AND high[All Fields] AND grade[All Fields] AND (("heart block"[TIAB] NOT Medline[SB]) OR "heart block"[MeSH Terms] OR AV block[Text Word])) AND English[Lang] AND "humans"[MeSH Terms]



**1:** [Toff WD, Camm AJ, Skehan JD: United Kingdom Pacing and Cardiovascular Events Trial Investigators.](#)

[Related Articles.](#)

Single-chamber versus dual-chamber pacing for high-grade atrioventricular block.

N Engl J Med. 2005 Jul 14;353(2):145-55.

PMID: 16014884 [PubMed - indexed for MEDLINE]



**Senior Medicine Rotation: Based Medicine Project (Cont)**

Group	Criteria or definition	n
Population screened.	16,375 receiving first pacemaker 5308 over age 70 with high degree AV block 4363 eligible for study (945 excluded by criteria below) 2021 Enrolled	
Inclusion criteria	1. Age 70 or older 2. First pacemaker implantation for high degree AV block	5308
Exclusion criteria	1. Chronic established atrial fibrillation 2. NYHA Class IV heart failure 3. Advanced cognitive dysfunction 4. Total Immobility 5. Advanced Cancer (<1 year survival)	4363
Treatment group 1	Dual chamber pacer	1012
Treatment group 2	Single chamber pacer	1009

Primary endpoints: All Cause Mortality

Secondary endpoints: Atrial fibrillation, Heart failure and composite of stroke/TIA/thromboembolism

- Are the Results of the Trial Valid?
  - Randomized? Yes
  - All patients accounted for at end? Yes
  - Intention to treat? Yes
  - Blinding? No
  - Groups similar at start of trial? Yes
  - Equal treatment of groups? Yes
  - Did randomization work? Yes
- Are the Results of the Trial important?
  - Size of treatment effect?
  - Precision of the estimate of the effect?

Endpoint	Result	Significance	ARR	NNT
All Cause Mortality	No difference	P=0.56		
Cardiovascular death	No difference	P=0.07		
Morbidity	Result	Significance	ARI	NNH
Atrial fibrillation	No difference	P=0.74		
Stroke/TIA/Thromboembolism	No difference	P=0.20		
Heart Failure	No difference	P=0.06		

- Can I apply these results to my patient?
  - Comparison of my patient to trial patients. Yes, my patient meets inclusion criteria for this trial.
  - All clinically important outcomes considered. Yes, all cause mortality and important cardiovascular outcomes (atrial fibrillation, heart failure, stroke/TIA/thrombotic events, revision of pacing system, and MI) were all measured.

- Likely benefits outweigh potential harms and cost? Dual chamber pacing in elderly patients with high degree AV block is not associated with mortality benefit within 5 years of placement. Of note dual chamber pacing was associated with higher rates of procedural complications. However, 3 percent of patient crossed over from single to dual chamber pacing due to presumed intolerance of single chamber pacing. Procedural risks must be weighed against the risk of having to switch to dual chamber pacing at a later time. Based on the evidence of this well designed and executed trial single chamber pacing is a reasonable option.