Dual-chamber pacemakers for treating symptomatic bradycardia due to sick sinus syndrome without atrioventricular block (part review of Technology Appraisal 88): Assessment Report

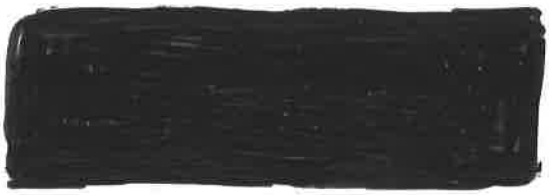
I am grateful for this opportunity to comment on the assessment report on dual-chamber pacemakers for treating symptomatic bradycardia due to sick sinus syndrome without atrioventricular block (part review of Technology Appraisal 88), prepared by the BMJ technology assessment group.

The report is thorough and well-written, including a new economic evaluation. I agree with the conclusions of the group, that dual chamber pacing as a higher initial cost (£563) but is more clinically effective in most patients. There are, however, specific situations in selected patients where single chamber atrial pacing may be more appropriate.

As discussed in the report, the ICER is most sensitive to the impact of pacing mode on heart failure and I agree with the group's reservations about sub-set analyses of DANPACE and other clinical trials. It should also be noted that since DANPACE, dual chamber pacemakers have included increasingly sophisticated algorithms which prevent unnecessary ventricular pacing. It is this aspect of dual chamber pacing which can have an adverse effect on left ventricular systolic function and increase the risk of heart failure.

I agree with the conclusion of the report that dual chamber rate responsive pacing (DDDR) is the most clinically effective pacing mode in most patients with symptomatic and sinus bradycardia without evidence of atrioventricular block, and that this appears to be cost effective at a willingness to pay of £20,000/QALY. There is also a small number of patients for whom single chamber atrial rate responsive pacing (AAIR) would be more appropriate for specific clinical reasons and I would recommend an acknowledgement of this in the revised guidance.

There are some typographical and minor factual errors in the report which I have listed on the next page, but none of these is likely to have any significant effect on the calculations or conclusions in the report.



C. J. Plummer
BSc, PhD, BM, BCh, FRCP
Consultant Cardiologist

page	line	comment
30	14	Atrial fibrillation (AF) is classified as paroxysmal, persistent or permanent. In this case, and at other points, the authors appear to be referring to permanent AF.
31	18	"Triggered" pacing refers to delivering pacing to a chamber in response to a sensed event in another chamber. In DDDR pacing, this refers to ventricular pacing a pre-determined interval after atrial sensing because of atrioventricular heart block.
33	12	Current estimates of pacemaker battery longevity from the national database are significantly longer than those quoted here.
37	28	Table 2 error
46	2	Reference error
69	11	Reference error
116	12	The quoted cost of total UK direct healthcare costs of CVD appears to be too low by a factor of 1000 – the figure quoted on p205 of the reference is 8,680,892 (£ thousands).
117	6	The quoted cost of hospital admissions with principal diagnosis of AF appears to be too low by a factor of 1000 – the figure quoted in the reference is £271.6 million.
117	8	The costs of anticoagulants appear to be inconsistent, with the <u>daily</u> costs of apixaban, dabigatran and rivaroxaban and (presumed) <u>monthly</u> cost of warfarin quoted in the table
137	14	The first follow-up after device implantation is conventionally regarded as the interrogation performed 1 day (not week) after the procedure
138	10	ECG, electrocardiogram, is required not echocardiography
141	27	See page 117 line 8 comments