

## Editorial

# Cardiac pacing: the service should be local as the anaesthetic

A decade ago attention was drawn to the low rate of pacemaker implantation in the United Kingdom. The limited availability of pacemaker services in district general hospitals (DGHs) was identified as a contributing factor.<sup>1</sup> Five years later the pacing rate in the United Kingdom had increased to 148 implants/million/year, but this was only 27–41% of the rates in some other countries.<sup>2</sup> By 1992 the rate was 202/million/year<sup>3</sup> but less than a third of hospitals implanted pacemakers.<sup>4</sup> The recent British Cardiac Society report on cardiology in district hospitals acknowledges the role of district hospitals in providing pacemaker services.<sup>4</sup>

This role is underlined by two reports from district hospitals. Doherty *et al* reviewed their experience of providing a pacemaker service in a Scottish district hospital remote from a regional centre, and showed that permanent cardiac pacing, including dual chamber pacing, can be carried out safely and effectively in this setting.<sup>5</sup> Dual chamber pacing is more expensive and more time-consuming than VVI pacing. The relative cost effectiveness of these two pacing modes has been questioned<sup>6</sup> and is to be investigated in a multicentre study,<sup>7</sup> the results of which may have important cost and workload implications for all pacing centres. On pages 76–79 Ibrahim *et al* draw attention to the clinical benefits of DDD pacing in the absence of sustained atrial arrhythmia and provide important evidence that most patients paced in DDD mode continue to use it in the long term.<sup>8</sup>

### Advantages of a local service

There are clinical, social, and economic reasons for providing cardiac pacing in district hospitals, particularly if there is no large cardiac centre nearby. Most patients requiring pacing are elderly and averse to long hospital stays and transfer to distant hospitals. Some patients have refused pacing because it involved inter-hospital transfer. A local service avoids the cost of ambulance transfers and escorts during transfer, shortens hospital stays, and makes more efficient use of hospital beds. Up to 65% of patients needing permanent pacing present as emergency medical admissions.<sup>9</sup> Patients may wait several days in a district hospital for transfer to a regional pacing centre, exposing them to the additional risks of temporary pacing—for example, of septicaemia.<sup>10</sup>

Local expertise in pacemaker management is invaluable. If a problem with a pacemaker is suspected, the patient and general practitioner need prompt access to expert local advice. This local expertise can also be used to encourage referral of appropriate patients for pacing, through clinical communication with general practitioners, postgraduate educational activity, or through agreed referral guidelines.

### Equipment requirements

A pacing service requires little capital expenditure. A

dedicated pacing room is desirable but not essential and it is perfectly feasible to implant pacemakers in a general x ray department<sup>9</sup> or operating theatre.<sup>5</sup> Apart from the pacemaker/analyser, the equipment needed during implantation should be available in any hospital.

Investigational facilities to identify patients who need pacemakers and to assess subsequent problems should be available in district hospitals. These facilities include ambulatory electrocardiography, exercise testing, and tilt testing. Pacemaker follow up requires programmers, usually provided by manufacturers with the purchase of pacemakers. Pacing centres need a range of analyser/programmers to check and adjust most commonly used pacemakers. Most centres implant pacemakers from several manufacturers to ensure familiarity with different pacemakers and availability of programmers. This policy also limits the potential workload and economic consequences should a technical fault necessitate explantation and replacement of any model of pacemaker in large numbers.

### Staffing and training

Adequate staffing is essential for the safe provision of a pacing service. Every district hospital should have at least one cardiologist, together with supporting staff, including technicians.<sup>4</sup> There are still some hospitals with no cardiologist,<sup>11</sup> and some DGH cardiologists may not have had training or recent experience in pacing. Most district hospital cardiologists have a commitment in general medicine and a large investigational workload, and a pacing service places additional demands on their time. In hospitals with only one cardiologist the pacing service may be without experienced medical cover when the cardiologist is on leave. This underlines the importance of experienced cardiology technicians. Sometimes patients have to be referred to another centre, but this is rarely required.<sup>9</sup>

Experience in pacemaker selection and implantation and in complications of pacing is an essential part of training in cardiology, and only doctors with such experience (and cardiologists in training) should undertake this work. Pacemaker complications are more frequent when the operator is inexperienced.<sup>12</sup> If pacing in district hospitals is carried out by experienced operators, complication rates should be low. It might be argued that devolution of permanent pacing to district hospitals reduces the ability of regional centres to offer training and to carry out research. If healthcare purchasers and providers achieve the recommended targets for pacemaker implantation of 300/million/year,<sup>4</sup> there will be ample opportunity for training and for research in cardiac pacing in both regional centres and district hospitals.

### Finance and audit

For many years cardiology units in the United Kingdom have struggled with inadequate budgets for pacemaker

purchase. This should happen no longer. Clear guidelines have been published on the appropriate choice of pacemaker for different clinical situations.<sup>13</sup> Such guidelines allow the setting of standards for provision of pacemaker services, and offer an opportunity for local, national, and international audit. The cost implication of implementing these guidelines has been examined,<sup>14,15</sup> enabling purchasers to calculate the amount that they need to spend on cardiac pacing. Cardiac pacing will compete with other demands on resources, and local cardiologists have an important role in ensuring that purchasers are aware of the standards of quality and quantity that they should be purchasing, and of the implications of failing to do so.

### Future developments

It is little more than 30 years since the first use of cardiac pacing. Rapid technological progress, particularly in the past decade, has provided smaller more reliable pacemakers with longer battery life and features such as dual chamber and rate adaptive pacing as routine options. Most of these developments were not foreseen in the early days of pacing,<sup>16</sup> so future trends must be predicted with caution. There may be some, probably unjustified, concern that smaller pacing centres may fail to keep pace with new developments. However, among hopes for the future must be the development of the "smart" pacemaker, capable of delivering appropriate pacing in various clinical situations, with a minimum need for re-programming<sup>17</sup> and the development of a universal analyser/programmer, capable of interrogating and adjusting different pacemakers from different manufacturers.<sup>18</sup> Such developments would facilitate the safe and effective provision of pacemaker services in district hospitals, but the crucial factor in achieving this widely and

uniformly will be the provision of adequate levels of medical and technical staff in cardiology in every district hospital.

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## NOTICES

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The 1996 Annual Meeting of the **British Cardiac Society** will take place at the Scottish Exhibition & Conference Centre, Glasgow from 7 to 9 May.

The sixtieth annual meeting of the **Japanese Circulation Society** will take place from 19 to 21 March 1996 at the Royal Hotel, 5-3-68 Nakanoshima, Kita-ku, Osaka 530, Japan. For further information please contact Kunio Miyatake MD, National Cardiovascular Centre, 5-7-1 Fujishiro-dai, Suita, Osaka 565, Japan (tel: +81 6 873 0707; fax: +81 6 873 0708).

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## CORRECTION

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**Cardiac pacing: the service should be local as the anaesthetic.** *D Pitcher*

The word "as" was omitted by the printers from the title of this editorial (*Br Heart J* 1995;74:7-8). The correct title is "Cardiac pacing: the service should be as local as the anaesthetic."