

Problems with temporary cardiac pacing

Expecting trainees in medicine to perform transvenous pacing is no longer acceptable

Temporary transvenous cardiac pacing is a potentially life saving intervention used primarily to correct profound bradycardia. In Britain temporary pacing is usually provided in district general hospitals by general physicians as part of an emergency service. In practice, pacing wires are inserted by doctors in training, with little teaching or supervision, and complication rates are high. Can such a service be allowed to continue?

Differences in the provision of health care make international comparisons difficult. In North America and Western Europe temporary pacing is generally the province of specialist cardiac units. In Britain the procedure remains a part of training in general medicine. Pacing is usually learnt at a junior level and taught at the bedside by fellow doctors in training. On average, a doctor will see two temporary pacings and do two under supervision before being left unsupervised.¹ In the only prospective study in district hospitals consultants were involved in just 14% of cases.² Changes in the management of acute myocardial infarction and the improved availability of permanent pacing have resulted in a decline in the number of temporary pacings.³ Exposure to the procedure has also been compromised by the reduction in working hours of doctors in training.

Temporary pacing involves two components: obtaining central venous access and intracardiac placement of the pacing wire. Complications include local trauma, pneumothorax, arrhythmias, and cardiac perforation.⁴ In the three British series of temporary pacing, complications and problems were reported in a third to a half of all cases,^{2 5 6} and operator inexperience is likely to have been a major factor.⁵ Failure to gain venous access occurred in 17% of subclavian and 8% of internal jugular approaches, and when the pacing wire was left in situ for over 48 hours nearly one fifth of patients developed septicaemia.² Between 17% and 20% of patients transferred to cardiac centres for permanent pacing arrived with a non-functioning temporary pacing system.^{5 6}

What could be done to improve matters? It is unrealistic to expect all general physicians to provide temporary cardiac pacing, and most district general hospitals do not have enough consultant cardiologists to provide 24 hour cover. As part of their clinical governance strategy medical departments should examine the temporary pacing service in conjunction with their cardiac referral centre, and solutions will vary according to local facilities and expertise. Failure to gain central venous access is common, so collaboration with anaesthetists or intensivists could provide cover. Balloon flotation catheters may help to reduce procedure time and improve positioning.⁷ The greater use of atropine and epinephrine or oesophageal⁸ or external pacing⁹ may obviate the need for transvenous pacing or stabilise patients before transfer to specialist cardiac centres. If permanent pacing is expected temporary pacing should be avoided unless essential, because of the risk of infection.¹⁰

There are implications too for the future practice of acute medicine which the Department of Health and royal colleges must consider. Can the concept of the general physician as a medical "all rounder" survive as the specialties develop? In a recent survey of specialist registrars training in general medicine fewer than half felt competent to provide cover for temporary pacing at consultant level.¹¹ Moving to fewer but larger medical units could provide 24 hour specialty cover but at the expense of increasing remoteness. If smaller hospitals are to survive they must develop better interactions with their referral centres, as increasingly happens in the management of acute coronary syndromes. Indeed the National Service framework for coronary heart disease requires that clinical networks be established to facilitate such protocols. Within this context smaller hospitals will increasingly act as assessment units and transfer patients needing pacing and other interventions to cardiac centres.

For those doctors who provide or wish to provide an emergency pacing service, guidance on the number of procedures to achieve and maintain competence is required. Is bedside instruction in an emergency setting adequate, or should it be supplemented by more formal teaching? Comprehensive reviews have been published which could form the core of a formal training programme.^{4 12} Mannequins and instruction videos are also available for central vein cannulation. All doctors providing the service should accept the need to routinely collect information on the practice and complications of the procedure.

The current practice of temporary cardiac pacing within British hospitals is unacceptable and needs to be addressed. The solutions are both short and long term. Cooperation with anaesthetists may ease the problem of failed venous access, but there are wider implications for training in general medicine and the organisation of acute medical care.

JJ Murphy *consultant physician and cardiologist*

Department of Medicine, Darlington Memorial Hospital, Darlington, Co Durham DL3 6HX

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