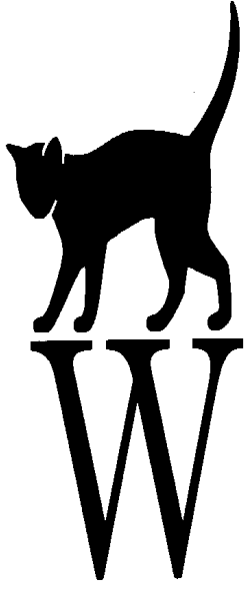


Whittington Hospital NHS Trust

TEMPORARY CARDIAC PACING

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Target audience:	Cardiologists, Radiologists

	A Whittington Hospital Clinical Management Guideline
	Temporary Cardiac Pacing
	Speciality: Cardiology Directorate: Medicine Owner/sponsor: Dr David Brull
	Relevant to: Cardiologists, Radiologists

Key words: Temporary, transvenous cardiac pacing, transcutaneous cardiac pacing

➤ **Criteria for use**

Any patient with acute haemodynamic compromise caused by bradycardia and/or episodes of asystole should be considered for temporary pacing particularly if they have failed to respond to intravenous Atropine or an infusion of Isoprenaline.

➤ **Introduction**

Temporary transvenous cardiac pacing is a potentially life saving procedure for patients in whom there is actual or high-risk of symptomatic bradyarrhythmia or asystole, particularly in the emergency setting. The technique required for successful transvenous pacing is technically demanding and requires significant experience. As such complication rates associated with the procedure are high and can occur in high proportion of cases particularly with inexperienced operators. Failure to gain venous access has been reported in up to 15% of procedures. Attaining satisfactory pacing wire position is often associated with arrhythmia, cardiac perforation or technical failure. More importantly

microbiologically septicaemia has been confirmed in up to 20% of patients associated with pacing wires left in situ for more than 48 hours.

It is in this context that this guideline has been drawn up noting that **the vast majority of patients can be successfully treated with temporary transcutaneous pacing** as is already available on Montuschi Ward, indeed the UK Resuscitation Council recommends this approach as part of advanced life support. Successful transcutaneous pacing can be carried out for many hours allowing sufficient time for there to be available an experienced operator if implantation of a temporary transvenous pacing wire is required.

We advocate that in **all situations where temporary cardiac pacing is required and there is not an experienced operator* available, then transcutaneous pacing should be the default option.** We do not recommend that inexperienced operators who are not confident or competent in transvenous pacing should ever attempt this procedure because of the associated morbidity in inexperienced hands

Transvenous pacing should **only** be considered if the patient fails to tolerate transcutaneous or there is difficulty with capture. Under these circumstances assistance should be sought from the Cardiology Department in-house at The Whittington or after hours consider emergency transfer to the Heart Hospital UCLH.

**** An experienced operator is one who has undertaken upwards of 20 procedures***

➤ Is emergency temporary pacing indicated?

For initial treatment of bradyarrhythmias see Table 1.

Any patient with acute haemodynamic compromise caused by bradycardia and/or episodes of asystole who fails to respond, should be considered for temporary pacing. For the majority of patients this will be in the context of an acute MI.

Patients presenting with sinus node disease *rarely* need pacing and the risk of infection and compromise of subsequent venous access for permanent pacing usually outweighs the benefits in these patients.

As a general rule patients who may require permanent pacing should only be considered for temporary pacing if they have syncope at rest, are haemodynamically compromised by the bradycardia or have ventricular tachyarrhythmia in response to bradycardia. Patients requiring permanent pacing should be promptly transferred to a tertiary centre as appropriate.

Table 2a below gives the indications for temporary pacing. The indications for temporary pacing can be considered in two broad categories.

- i. Emergency (usually associated with acute MI)
- ii. Elective (not further discussed here)

If a profound bradyarrhythmia follows an ST elevation MI the priority is reperfusion therapy and thrombolysis should not be delayed by the need to consider temporary transvenous pacing. If the bradycardia is unresponsive to medical treatment with atropine or Isoprenaline then temporary transcutaneous pacing should be instituted whilst thrombolysis is prepared, or transfer for emergency primary PCI is organised.

Table 1: Treating Bradyarrhythmia:

Ask patients about previous symptoms of cardiac disease
Stop any negatively chronotropic drugs
Full general examination

Investigations

ECG ± rhythm strip and telemetry
Blood tests (FBC Electrolytes, Glucose, calcium magnesium troponin T)
Where appropriate: blood cultures, ESR, CRP thyroid function, drug levels, blood gases
Chest X-ray

Give oxygen by mask if patient hypoxic
Secure IV access
Keep nil-by mouth

Bradyarrhythmia causing haemodynamic compromise i.e.

BP<90 systolic, pulmonary oedema, cerebral hypoperfusion, cardiac arrest

- Give Atropine 1 mg IV bolus (up to 3mg maximum). If this is ineffective then;
- If the patient remains unstable give Isoprenaline 0.2mg IV (Mini-jet) and set up an infusion (1mg/ml = 5mg/500ml Dex5%) titrating to heart rate, maintenance dose 3-60ml/hr (0.5/10ug/min) . If this is ineffective then;
- Set up transcutaneous pacing.

Haemodynamically stable patients

Admit to CCU for ECG monitoring
Refer to cardiology and consider indications for permanent pacing

Table 2a) - Indications for Temporary Pacing

Emergency/Acute Acute MI

Asystole

Symptomatic bradycardia (not responsive to Atropine/Isoprenaline*)

Complete heart block

Sinus bradycardia with hypotension

Type 1 2nd degree heart block

Mobitz type 2 second degree heart block

Bilateral bundle branch block (alternating BBB or RBBB alternating LAHB/LPHB)

} With
hypotension

Bradycardia not associated with acute MI

Second or third degree AV block with haemodynamic compromise or syncope at rest

Ventricular tachycardia secondary to bradycardia

Elective

General anaesthesia with second degree or third degree AV block (even if asymptomatic)

Table 2b) - Situations where temporary pacing may offer benefit after acute MI

RBBB with LAFB or LPFB

RBBB with first degree HB

Recurrent pauses >3sec unresponsive to atropine

Incessant VT

Table 2c) - Situations where temporary pacing is not indicated

Acute MI

First degree heart block

Type I second degree heart block (Wenckebach with normal haemodynamic)

Accelerated idioventricular rhythm

Pre-existing bundle branch block or fascicular block

Bradycardia not associated with acute MI

Type II second degree or third degree heart block without haemodynamic compromise syncope or associated VT at rest

Sinus node disease without haemodynamic compromise or syncope at rest

Abbreviations:

RBBB = right bundle branch block

LAFB = left anterior hemi-block

LPFB = left posterior hemi-block

HB = heart block

BBB = bundle branch block

VT = ventricular tachycardia

➤ **Contacts**

- Consultant Cardiologist on call (via switchboard)
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