

## Brief Report

---

# Interference of electrocardiographic recordings by a mobile telephone

Malcolm Brodlie, Daniel Robertson, Jonathan Wyllie

*Neonatal Unit, James Cook University Hospital, Middlesbrough, United Kingdom*

**Abstract** The ownership of mobile telephones is now almost universal amongst the teenage population of the United Kingdom. Such telephones are a potential source of electromagnetic interference to medical equipment. We describe a case of troublesome interference with an electrocardiogram recording in a teenage patient whose mobile telephone was left switched on during a visit to hospital. This is likely to be a common reason for poor quality electrocardiographic recordings.

Keywords: Medical devices, cardiology, paediatrics

**M**OBILE TELEPHONES ARE NOW ALMOST universally owned by the adolescent section of the population in the United Kingdom. They offer teenagers individuality, sociability, rebellion, peer group bonding, and adult aspiration.<sup>1</sup> Such telephones, however, are known to be a potential source of electromagnetic interference that may affect the reliability of medical equipment.<sup>2</sup> Many hospitals in the United Kingdom, therefore, operate a ban on their use in clinical environments. The rationality of such blanket bans has been questioned by some, who argue that they should be limited to areas involved in intensive care, and that the potential benefits to patients and staff outweigh the minimal risk in low dependency or communal areas.<sup>3</sup> It is certain, however, that warning signs, policies concerning the general use of mobile telephones, are frequently ignored in hospitals, perhaps especially so by teenagers.

## Case report

We describe the observation of troublesome interference with a routine electrocardiogram recording in a 15-year-old girl undergoing evaluation in our outpatient department. The abnormal trace (Fig. 1) was inexplicable, and occurred repeatedly until it was discovered that the girl had a mobile telephone left on silent-mode in the pocket of her trousers. Once the telephone was turned off, we obtained at the first attempt a normal electrocardiogram (Fig. 2), free of any interference.

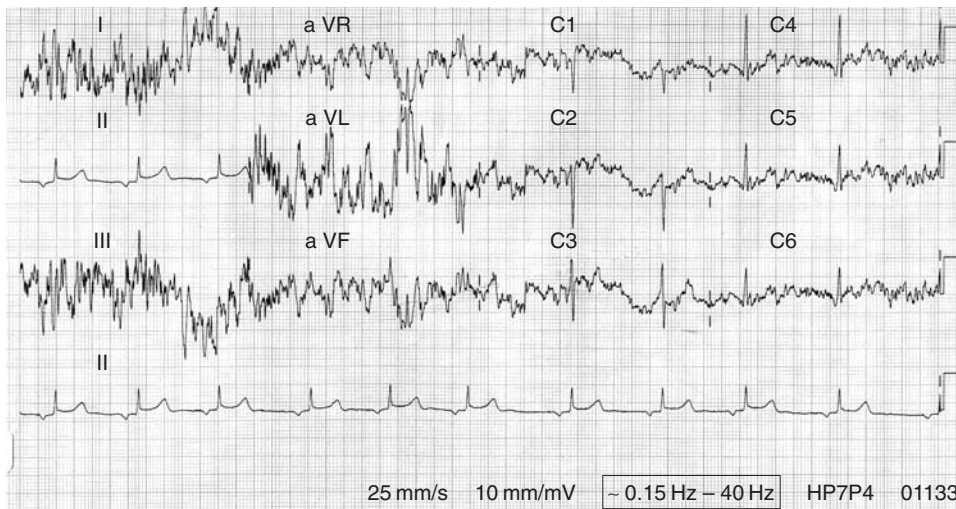
## Discussion

It seems likely that the phenomenon of interference by mobile telephones may be responsible for many poor quality electrocardiographic recordings. This is especially true given how common now is the ownership of mobile telephones in the United Kingdom, and how frequently policies asking for them to be switched off are ignored. We highlight our experience as a potentially simple, and easy to remedy, cause for abnormal or poor quality electrocardiographic recordings in older children who own mobile telephones. Our example also reinforces the potential interference that mobile telephones may have on medical monitoring equipment.<sup>4</sup>

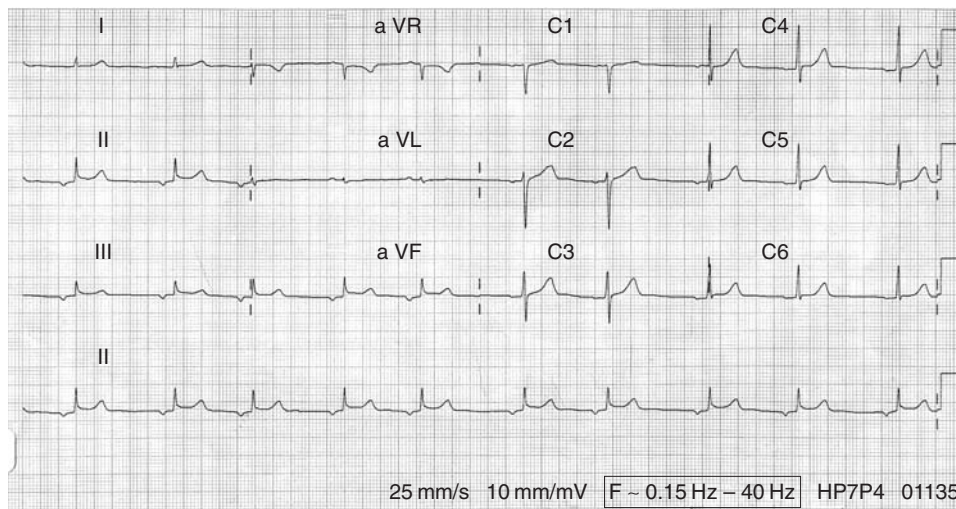
---

Correspondence to: Dr Malcolm Brodlie, Specialist Registrar in Paediatrics, Department of Paediatric Cardiology, Freeman Hospital, High Heaton, Newcastle upon Tyne, NE7 7DN, United Kingdom. Tel +44 191 2336161; Fax +44 191 2231314; E-mail: m.j.brodlie@ncl.ac.uk

Accepted for publication 2 October 2006



**Figure 1.**  
The recording of poor quality obtained whilst our patient had her mobile telephone switched on.



**Figure 2.**  
The normal electrocardiogram obtained immediately the patient had turned off her mobile telephone.

## References

1. Charlton A, Bates C. Decline in teenage smoking with rise in mobile phone ownership: hypothesis. *BMJ* 2000; 321: 1155.
2. MDA Device Bulletin DB9702. Department of Health, London, 1997.
3. Myerson SG, Mitchell AJR. Mobile phones in hospitals. *BMJ* 2003; 326: 460-461.
4. Tri JL, Hayes DL, Smith TT, Severson RP. Cellular phone interference with external cardiopulmonary monitoring devices. *Mayo Clin Proc* 2001; 76: 11-15.