Introducing Home Monitoring For Patients with Pacemakers, Implantable Cardioverter Defibrillators and Implantable Loop Recorders

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Sheffield Teaching Hospitals
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- Northern General
- Royal Hallamshire
- Jessop Wing
- Weston Park
- Charles Clifford Dental
Increased use of devices creates a significant growth in demand for device follow-up resources

Growth:
- 140% (year 2000-2005) - actual
- 160% (year 2005-2010) - estimated

Economic modelling based on CCAD data

NICE recommendations are 5 FU per year – model based on 1.3 pacemaker FU and 3 ICD / CRT FU
The Northern General Hospital Covers South Yorkshire for Pacemaker, Implantable Cardioverter Defibrillator and Implantable Loop recorder implants and Follow up.

In the 2010/2011 12 month time period we implanted:

- **535 Pacemakers** – VVIR, DDDR and CRT (Bi V).
- **166 Implantable Cardioverter defibrillators** (ICD’s).
- **42 Implantable Loop Recorders** (ILR’s).
Northern General Hospital Device Follow up:

**Pacemakers** – 1 month post implant, 3 months, 12 month from implant and then annually until reduced follow up is indicated due to battery depletion.

**Implantable Cardioverter Defibrillators (ICD’s)** – 1 month post implant and every 4 months thereafter.

**Implantable Loop Recorders (ILR’s)** – 1 month post implant and every 4 month thereafter.

* If a patient has a shock or untoward event then they attend clinic for an ad hoc appointment.
Utilising home monitoring patients will attend hospital for annual follow up appointments, all other appointments will be done remotely.

Home monitoring systems automatically record and flag up any adverse events or warnings.

The patient is able to make manual downloads if they feel unwell.

* All of the information gained from the above downloads can be reviewed and analysed. If the patient needs to attend hospital to either see a Physiologist to reprogramme their device, see a Cardiologist for medication review or be admitted they will be notified.
What is a Home Monitoring Network:

- An internet/web based remote device follow up system that assists in the management of patients with implanted cardiac devices, such as CRT, ICDs, Pacemakers and implantable loop recorders.

- Patient data is transmitted via a telephone line and viewed on a secure website in clinic.

- Comprehensive device information identical to an in-office device interrogation.

- UK Server Complies with Directive 95/46/EC - Data Protection Legislation Registered with Information Commissioners Office

* Requires Patient consent
Patient’s Home

Device: Pacemaker / ICD / ILR

Web Server

Objectives
• Collaborative patient management
• HF management

Physician

Objectives
• Device management
• Arrhythmia management

Cardiac Physiologist

Objectives
• Device management
• Arrhythmia management

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Who Benefits?

The Patient: -
Home monitoring allows patients to have the reassurance of frequent monitoring and expert attention whenever needed, whilst avoiding unnecessary hospital visits.

Both patients and carers benefit from remote device follow up by reducing the time and money spent on travelling.

This also prevents any loss of time or earnings from work associated with attending hospital appointments.
The Healthcare System:-

Remote device follow up reduces the number of scheduled and unscheduled Clinic visits.

It allows for a greater number of patients to be followed up in the same period of time.

This allows more effective utilisation of healthcare resources, resulting in considerable savings in terms of hospital capacity, physiologist time and transportation costs.

The quantified benefits above are wholly consistent with the QIPP agenda and as such were one of 55 technologies recommended by the iTAPP initiative from the Department of Health.
Financial benefits:-

Indicative savings for an average clinic of 500 device patients is approximately £24,000 per year – direct cost savings of staff and transportation.

Remote Device Follow up Reduces Physiologist time compared with in clinic visits – 8.4 mins vs 25.8 mins.
This frees up scarce resources and manages future demand.

Remote device follow up reduces length of stay for cardiovascular hospitalisation by 18%.

Remote device follow up reduces the risk of inappropriate shock versus in clinic follow up by 26%.
Case Study – Belfast City Hospital (Irish Times – Friday, May 2, 2008)

Belfast city hospital has reported “phenomenal” results in terms of time saved with Medtronic’s CareLink system.

Time Saved
185 patient transmissions assessed in 15.4 hrs = 2 working days without CareLink this would have taken 77 hours = 11 working days.

Money Saved
€1,188 ambulance and other transport fees were avoided
11% of patients avoided having to take time off work
2 Hospital Admissions were avoided
97% of patients preferred the Medtronic CareLink system
Any Questions?