

Fiona Cooke

Cardiac Rhythm Management Nurse Specialist

Southampton University Hospitals Trust

UK

INTEGRATION OF REMOTE MONITORING INTO CLINICAL PRACTICE

Implantation Numbers 2007

	PPM	ICD	CRT
North America	564074	234780	148092
Europe	638472	87747	61010

HRS/ EHRA 2008

Expert consensus on the Monitoring of Cardiovascular Implantable Electronic Devices (CIEDs)

Principles of Remote Management

- Home based technology
- Flexibility, mobility and connectivity of transmission
- Early detection of changes in patient's device function and/or clinical status
- Monitor disease progression
- Monitor efficacy of medical & drug therapy

Carelink Wireless Technology Medtronic™



1 Using the secure CareLink™ Clinician Website, clinic staff can preschedule up to six automatic device checks for each patient – without having to make appointments or coordinate calendars with patients.

2 The device automatically “wakes up” at the scheduled time and communicates with the CareLink Monitor, which is plugged into a standard phone line and an electrical outlet. Data is transmitted wirelessly from the device to the monitor as the patient sleeps.

3 Data is sent automatically from the CareLink Monitor to a secure server via the phone line.

4 The clinician reviews the patient’s device data on the secure website.

Patient Follow Up

Traditional follow up

- Face to face interaction at clinic
- Wand applied over implant to body surface to receive signal
- Assess function and reprogramming of device
- Assessment of physiological parameters
- Information printed and stored in patients notes

Remote follow up

- Home setting
- RF signal distances have increased from 2-5cm to several metres
- Assess device function
- Assessment of physiological parameters
- Information stored on database

Initial Experience of Carelink

Remote Management – The Southampton Experience

- 2005/06 pilot study of 60 patients
 - Monthly clinics
 - 1 physiologist
 - 15 patients per clinic
 - Appointments arranged by research team
 - Physiologists responsible for data management
 - 2007/08 Continued patient enrolment
- Twice monthly clinics
- 20 patients per clinic
 - 2 physiologist
 - Appointments arranged by administration team
 - Physiologists responsible for data management

Initial Audit Findings May 2008

Remote Management – The Southampton Experience

Outcome

- Increased number of patient telephone queries
- High percentage of DNA's
- Patients added AD Hoc to clinic

Action

- Enrolment open day
- Enrolment open day
- Patient selection protocol

Enrolment Open Days

Remote Management – The Southampton Experience

- On site, monthly meeting
- Audiovisual presentation by company rep
- Non wireless and wireless sessions
- Hands on demonstration of display unit & Carelink transmission
- Troubleshooting
- Privacy statements read and signed
- Q&A session
- Patients asked to download on receipt of their monitor

Audit Findings July 2008

Remote Management – The Southampton Experience

Outcome

- Frequent unscheduled transmissions
- High number of patient telephone queries
- Audible alert not heard by patient with lead #
- Patient transmissions identifying need for clinic visits

Action

- Creation of scheduled test transmission clinics
- Company representative telephone patients
- Wireless care alerts to be programmed on
- Creation of trouble shooting clinic

Evolution of Clinic Sessions

Remote Management – The Southampton Experience

- August 2008 5 clinic sessions per month
- Clinics divided into non-wireless & wireless
- Monthly test transmission session
- 40 patients per clinic
- 1 wireless scheduling session per month

Audit Findings October 2008

Remote Management – The Southampton Experience

Outcome

- Large increase in administration workload
- Clinics slower due to SUHT internet provider and speed of computer network
- Care alert email sent to physiologist technical head only

Actions

- Remote monitoring coordinator
- Carelink IT support group appointed
- Dedicated remote follow up room
- New computers purchased
- Creation of a generic Carelink email
- On call

Patient Feedback

Remote Management – The Southampton Experience

- 90% rated remote monitoring easy to use
- 90% felt more secure
- 90% wished to continue with remote follow up
- 70% patients attended with a carer
- 90% reported remote follow ups more convenient

Remote Monitoring

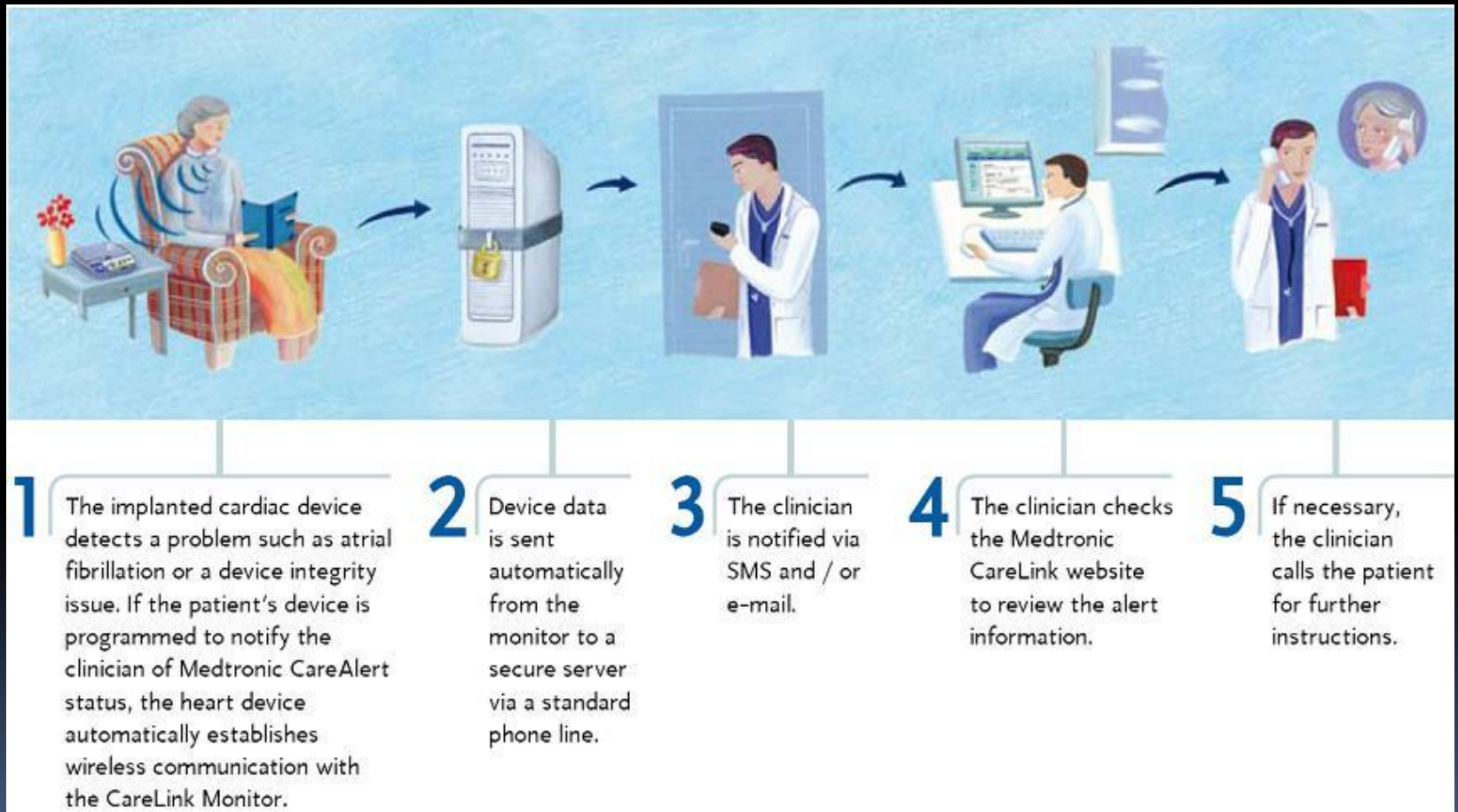
Advantages

- Reduces need for departmental outpatient clinic visits
- Improves patient safety
- Enhances clinical decision making
- Permits closer observation of patients who require more intensive follow up
- More efficient use of resources (financial and time)

Disadvantages

- Resistance to change
- Assessment made on information received not from face to face interaction
- Increasing workload
- Financial implications
- 'Grey' area regarding medico legal issues
- Perceived threat to HCP role

Care Alert Wireless Technology Medtronic™



Care Alerts

- Tailor alerts to benefit the patient
- Frequency data should be accessed
- Notification of events
- Follow up for abnormal findings
- Role of patient in reporting events
- Unscheduled transmissions

Follow Up Considerations

- How often to schedule appointments
 - Remote
 - Face to face
 - Non – wireless vs. wireless
 - CRT vs. ICD
- When to contact patient ?
 - On receiving a transmission
 - Notification of event
- Follow up of alert findings
 - Prioritising alerts
 - Unscheduled – patient initiated
 - Responsibility for dismissing received data
- Documentation
 - Data inputted manually onto database
 - Data automatically uploaded into PaceArt with software gateway

Legal Considerations for Data Management

- Privacy laws
- Data protection
 - Data encrypted
 - Secure Servers
 - EU directive stipulates that EU data remains in Europe
- Data access
 - Responsibilities and boundaries
 - Who is authorised to access info?
- Data ownership
 - Institution or Company?
- Medico legal
 - Liability

2010 - Where We Are At

Remote Management - The Southampton Experience

- >600 patients on remote monitoring systems
- Currently three systems used
- Twice weekly clinics
- Clinic split into wireless/non-wireless
- Physiologists lead (2 per clinic list)
- 40 patients per clinic
- Average follow up per patient 6 minutes
- One dedicated remote monitoring administrator
- One dedicated remote monitoring telephone line

The Future

- Developing role for health care professionals
- Multiple remote systems
- Remote programming
- Role in risk stratification

Conclusion

- Quality control and audit
- Develop clinical standards and guidelines
- Develop protocols for reviewing transmissions and identifying significant alerts
- Not an emergency resource – no unscheduled downloads with out calling
- Care to remain patient centred not device centred

Thank You