Remote management of heart failure using implanted devices and formalized follow-up procedures (REM-HF)

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On behalf of the REM-HF Investigators

Declaration of Interest

- Research contracts (Bayer; ResMed; Boston Scientific)
- Consulting/Royalties/Owner/ Stockholder of a healthcare company (Bayer; Novartis; Servier; Medtronic; Boston Scientific; St Jude Medical; Pfizer; BMS; Neurotronik; Respicardia)

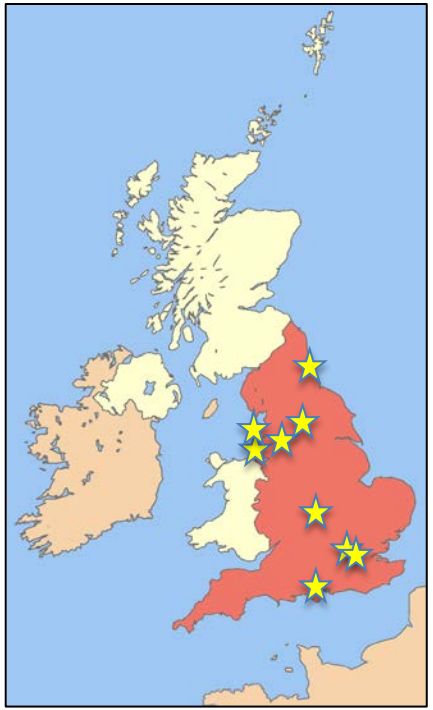
Rationale

- Despite advances in heart failure care, patients remain at high risk of mortality and hospitalisation
- Many heart failure patients have a Cardiac Implantable Electronic Device (ICD; CRT-D or CRT-P) for therapeutic reasons
- To date, randomised controlled trials of remote monitoring have had variable results – presumably depending on patient characteristics, the monitoring technology, and the responses taken to data collected
- We wished to perform a pragmatic study of a care pathway informed by weekly remote monitoring of typical CIEDs – to determine the effect on mortality and hospitalisation

Design

Sept 2011 - March 2014: 1650 patients

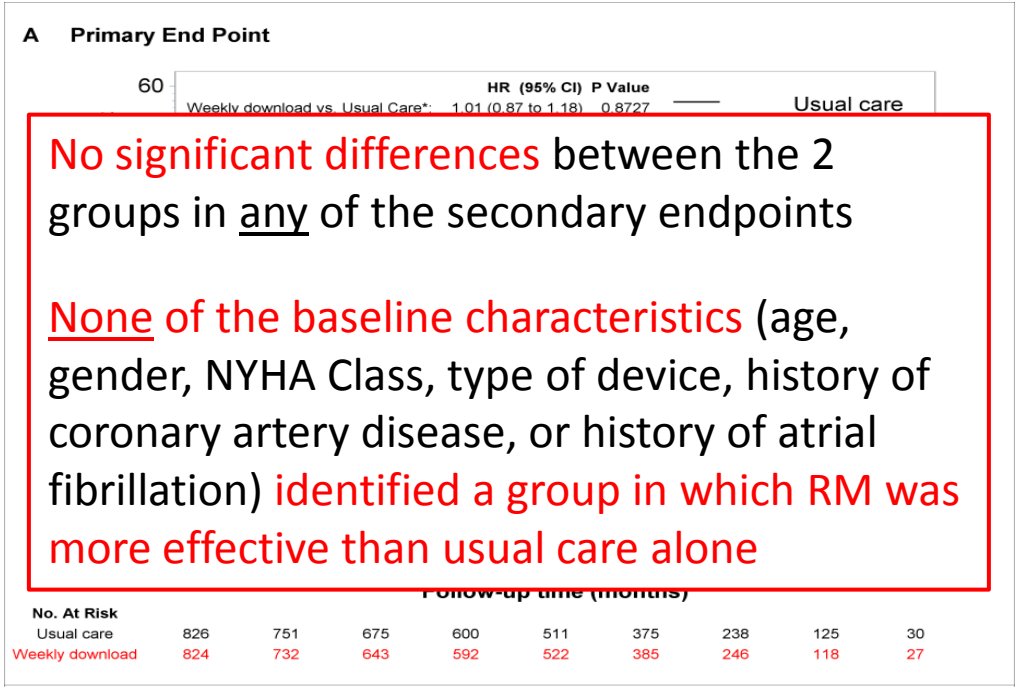
- Multi-centre, prospective, randomised, non-blinded, controlled trial comparing:
  - Usual care + weekly Remote Monitoring, with
  - Usual care alone



Primary endpoint – neutral

All-cause mortality or CV hospitalisation

Median follow-up: 2.8 years
[Range 0-4.3 years]



No significant differences between the 2 groups in any of the secondary endpoints

None of the baseline characteristics (age, gender, NYHA Class, type of device, history of coronary artery disease, or history of atrial fibrillation) identified a group in which RM was more effective than usual care alone

HR 1.01
[0.87-1.18]

P=0.87

(adjusted for site and device type)

Actions taken in response to RM

Action Taken	Number of Incidences	Number of Subjects impacted
Remote monitor took action	3534	599 (72.5%)
Action(s) taken (not mutually exclusive categories):		
Phoned Patient	2378	520 (62.9%)
Discussed download with clinician	1390	408 (49.4%)
Medication change by remote monitor without medical contact	226	134 (16.2%)
Advised to contact GP	206	124 (15.0%)
Advised to visit HF clinic	198	113 (13.7%)
Advised to attend device clinic	328	202 (24.5%)
Advised to attend cardiovascular out-patient clinic	178	109 (21.5%)
Other advice to patient	632	274 (33.3%)

Conclusions

- Our study suggests that in developed healthcare systems with high quality heart failure services, using data from weekly remote monitoring of CIEDs is unlikely to improve the outcome for patients
- Future technological innovations in remote monitoring require robust evaluation prior to widespread clinical adoption