OBJECTIVE:
Assess the cost-effectiveness of remote monitoring interventions given for 6 months for Congestive Heart Failure (HF) patients recently discharged from hospital (>28 days).

Usual Care – outpatient attendance and community nurse visiting.

Structured telephone via human to human contact [STS-HH]: patients use standard telephone equipment in order to communicate with the healthcare providers and transmit their vital signs and symptoms. Staff decide on appropriate advice/referral.

Structured telephone via human to machine interface [STS-HM]: patients use the telephone to communicate with a server collecting the data. Staff examine data and decide on advice/referral.

Home Telemonitoring (TM): Patients use electronic monitoring devices which transmit data automatically. Staff examine data during office hours and decide on advice/referral.

Duration = 6 months (after which patients have GP monitoring and care)

BACKGROUND
Heart Failure (HF) is an inability of the heart to provide sufficient pump action to distribute blood flow to meet the needs of the body. HF is a leading cause of hospitalisation in the UK, with 58,164 admissions recorded for HF in England and Wales1. The cost of inpatient bed days for HF patients has been estimated at £563 millions2.

METHODS
A Cohort Markov model with:
- two different states (Alive at home and Dead)
- a monthly cycle length
- a monthly probability of death based on the time since discharge and the type of treatment.
- patients have a risk of re-hospitalisations i.e. re-admissions to a hospital for HF-related complications
- and a risk of hospitalisation for other non-HF causes
- a 30 year time horizon
- perspective = NHS in England and Wales.

![Fig 1: Model Structure](image)

**Fig 1: Model Structure**

**Alive HF patient**

**Dead**

**HF hospitalisation**

**Other cause hospitalisation**

Baseline Probability of Mortality

The monthly probability of death was estimated from the CHARM study which included 7572 patients followed up for 38 months, and it was assumed that beyond 2 years the mortality hazard ratio is constant.

Baseline Probability of Hospitalisation

The baseline risks associated with the hospitalisations were estimated from Kelsey et al.

**RESULTS**

Base case monthly costs per patient were: £27 for usual care, £119 for STS-HM, £179 for STS HH and £175 for TM during office hours.

Compared with usual care, TM during office hours had an estimated incremental cost-effectiveness ratio (ICER) of £952/QALY, whereas STS-HH had an ICER of £83,240/QALY against TM. STS-HM was dominated by usual care.

Threshold analysis suggested that the monthly cost of TM during office hours has to be higher than £390 to have an ICER greater than £200,000/QALY. Scenario analyses using 12 month treatment duration produced similar results as in the six month treatment duration scenarios.

Conclusions

(1) Base case cost-effectiveness analyses suggest that TM during office hours is expected to be the most cost-effective strategy at a threshold of £200,000/QALY.

(2) However, there is substantial uncertainty in relation to clear descriptions of the interventions and robust estimation of costs.

(3) Scenario excluding one particular trial (the Home HF trial which had particular high intensity usual care) showed TM as slightly more cost-effective, with a reduced uncertainty.

(4) Scenario analyses using 12 month treatment duration produced similar results as in the six month treatment duration scenarios.

**REFERENCES**


