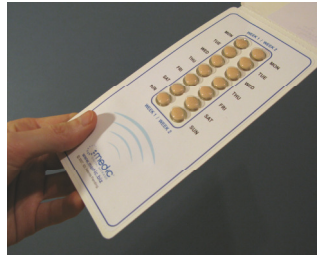


Feasibility and acceptability of electronic blister packaging to measure medication adherence in patients with type 2 diabetes in a long-term medication group

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Introduction

- Medication non-adherence to statins is estimated at up to 50% in some groups, inevitably leading to avoidable morbidity and mortality.
- Self-report of medicine taking can be unreliable and introduce bias in reporting effect sizes of interventions to support adherence. Objective measures provide more reliable estimates of the effects of behavioural interventions.
- Tablet containers with microelectronic circuitry that records lid removal (MEMS® containers) allow more objective measurement. However, medication is now routinely dispensed in blister packs so the use of MEMS containers may have an impact on adherence.
- Blister tablet packs containing microelectronic circuitry (Med-ic®, 2005) offer a promising method of measuring adherence. Electronic circuits connected to a recording system are printed onto a mask that can be overlaid onto a conventional blister pack of tablets.
- We conducted a pilot study to evaluate feasibility and acceptability of the use of blister packs in measuring adherence.
- The primary outcome was the proportion of patients for whom adherence data was obtained with an additional aim of measuring adherence in this group.



Method

- 53 patients from two general practices who had been diagnosed with type 2 diabetes for over 3 months were dispensed their usual prescription for simvastatin for a period of two months in the electronic blister packs that recorded the date and time of removal of each tablet from the package.
- The packaging was returned and the data downloaded and used to derive the proportion of days on which simvastatin was taken as planned.
- Acceptability of the device was assessed via self-completed questionnaires and interviews conducted with 20 participants.
- A report of medication taking behaviour during the period of the study was provided to participants (figure 1).

Results

- 248 patients were invited to participate and 28% (69) responded.
- 77% (53) were enrolled. Reasons for non-enrolment include those unwilling to use designated pharmacies or inability to attend study visits. Baseline characteristics are shown in table 1.
- Adherence data was obtained from 94.3% (50) patients.
- Median (Q1, Q3) percentage of days on which medication was taken as planned was 98.2% (97.7, 100).
- 70% (35) of patients thought using the electronic blister pack was easier or no different to their usual method of taking simvastatin.
- 67.4% (33) said they would consider using the electronic blister packs in a long term study.

n= 53	
Age (mean, SD)	63 (10.3)
Male	34 (64.2%)
Manual occupation	29 (55.8%)
Left education <17 years age	44 (83%)
Duration of diabetes (months) (median, interquartile range)	59 (32,91)
Number of medications (mean, SD)	5.7 (2.8)
No record of previous diabetes related events	41 (77.4%)

Table 1. Baseline characteristics

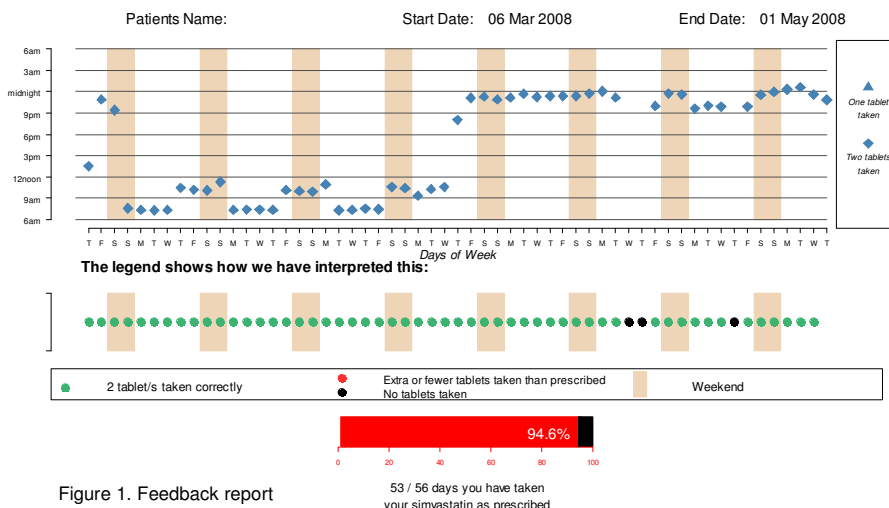


Figure 1. Feedback report

Conclusion

- Measurement of adherence by electronic blister packs was feasible, and acceptable to patients.
- Adherence to statin medication in this selected group of patients with type 2 diabetes appears to be very high.
- Electronic blister packs offer an alternative approach to MEMS containers for objective measurement of medication taking in a group of patients with a long-term condition.

The School for Primary Care Research is a partnership between the Universities of Birmingham, Bristol, Cambridge, Manchester and Oxford and is part of the National Institute for Health Research.