Standardised monitoring of patients on long-term medication in primary care

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SUMMARY

A three-year pilot study was initiated in collaboration with three general practices to develop a standardised monitoring (SM) system to ensure that chronically sick patients on long-term medication, such as thyroxine, diuretics, angiotensin converting enzyme (ACE) inhibitors, statins, and antirheumatics, were reliably monitored following fixed protocols. A high standard of care was achieved, which included identifying and following up patients with borderline or unacceptable results and persistent non-attendees. In addition, the scheme guaranteed that a current set of results was provided in time for clinical review.

Keywords: *standardised monitoring; chronic disease.*

Introduction

EVERY practice has an appreciable number of patients on medication for chronic disease who should have blood tests at regular intervals, and in some cases at long intervals. Such monitoring is often carried out on an opportunistic basis, or blood tests are taken at the time of clinical review; then if any results are abnormal a second consultation is required. The shift to primary care-based rather than hospital-based services has led to an increasing demand on general practitioners (GPs) to monitor such patients. Difficulties in organising and carrying out regular check-ups, or the lack of clear guidelines, may result in variable quality of care.[1,2]

This project involved the implementation of a new system for standardised monitoring (SM) using dedicated software, developed in collaboration with 4S Dawn Clinical Software. This system could automatically recall patients according to set protocols, generate standard letters, print request forms, highlight abnormal results, furnish GPs with a current set of test results prior to clinical review, and identify non-attenders. The system was specifically designed as a new approach to improve on the *ad hoc* systems of monitoring that were formerly in use, to help practices conform to clinical governance standards and improve the level of care.

Method

Initially, the stakeholders of the project (GPs, hospital consultants, and laboratory staff) agreed the relevant protocols. They identified the blood tests to be performed, recall intervals (Table 1), and action limits for each medication.

Six hundred and twenty-six patients on long-term medication requiring regular monitoring were identified. Patients with acute problems were excluded. Using the 4S software, patient data were registered in the computer and letters giving patients an appointment at a SM clinic at their own surgery were generated by the system and sent out. SM clinics were held at intervals of four weeks at each practice. Computer-generated request forms were taken to the surgery, where a member of the SM team took the appropriate samples. After analysis the results were entered into the SM computer, the practice received a copy of the results, and a new appointment was generated for each patient based on the agreed protocols. If a patient missed an appointment then another was offered, but when two consecutive appointments were missed the GP was notified.

The software categorised laboratory results into either (a) 'within acceptable limits', (b) 'borderline', or (c) 'unacceptable'. If results were borderline, the GP received a letter asking if the next appointment was required earlier than scheduled. In the case of unacceptable results, a letter was sent to the GP requesting that the patient be seen by a doctor at the practice and suspending the patient from the scheme. These patients could be re-enrolled, after a period under the acute care of the GP, when results were back within acceptable limits.

To prevent duplicate referrals or unnecessary blood tests, a coding system was included within the patient's surgery records. To accommodate as many patients as possible, arrangements were made for a few patients to see the practice nurse at their own convenience or to be seen at home.

The costs involved in the scheme were carefully recorded as the pilot progressed, as shown in the results section below.

Results

Clinics lasted approximately two hours. On average, 18 patients were invited to attend each clinic. The average attendance rate was 85.4%. In the three years of the study no patient was overlooked.

Of the patients, 84.8% were seen yearly, 3.7% six-monthly, 6.1% three-monthly, 2.7% two-monthly, and 2.7% monthly.

With regards to the test results, 73.0% of patients had all their results within acceptable limits, 12.8% had one or more borderline results, and 14.2% had unacceptable results.

After three years, 56.2% of the original 626 patients were still

Table 1. Monitoring protocols.

Patient category	Laboratory test	Number of months between visits
Thyroxine replacement therapy	TSH[a]	12
Lithium therapy	Lithium	3
	TSH	12
Amiodarone therapy	TSH	6
Phenytoin therapy	Phenytoin	12
Carbamazepine therapy	Carbamazepine	12
Pernicious anaemia	FBC[b]	12
Lipid lowering therapy	LFTs[c], cholesterol	12
ACE inhibitor therapy	U+Es[d]	12
Diuretic therapy	U+Es	12
Methotrexate therapy	FBC, U+Es, LFTs	2
Azathioprine therapy	FBC, LFTs	3
Sulphasalazine therapy	FBC, LFTs	3
Cyclosporin therapy	FBC, U+Es,	1
	LFTs	3
	Chol, trig, urate	12
Myocrisin/ intramuscular gold therapy	FBC, urinalysis	1
Oral gold therapy	FBC, urinalysis	1
Penicillamine therapy	FBC, urinalysis	1

[a]TSH = thyroid stimulating hormone, [b]FBC = full blood count, [c]LFTs = liver function tests, [d]U+Es = urea and electrolytes, Chol = cholesterol,trig = triglycerides .

being monitored by the scheme and 14.4% no longer needed to be monitored, because they were either no longer taking the medication, they were deceased, or they had left the practice. The 14.2% of patients with unacceptable results were under the care of the GP until they were stabilised, and 15.2% preferred not to be part of the SM scheme.

With regard to costs, non-recurrent 'start-up' costs amounted to £9325 for the purchase of software and a personal computer with printer. Revenue costs included staff time (0.16 whole time equivalents/£3700 per year) and a number of non-staff revenue items related to travel, stationery, postage, telephone, and software maintenance, which amounted to £2550 per year. These figures gave a running cost of £9.98 per year for each patient monitored by the scheme.

Discussion

It has been recommended that active strategies, such as the SM scheme described, are required to ensure that established monitoring guidelines are followed reliably.[3]

The SM scheme was effective in achieving this, and was viewed very favorably by the GPs involved. It was also undoubtedly beneficial in lifting much of the burden of recall and routine testing from the practices.

Those patients seen frequently — often monthly — were very appreciative; they were seen at their own surgery, usually at their preferred time, and they rarely waited for more than five minutes.

Patients who had to visit their GP for an unrelated reason occasionally had blood tests performed before the full SM recall period. To prevent unnecessary duplication, a clinic list was forwarded to the practice before each clinic, and if recent normal results were available, the SM appointment date was adjusted accordingly. This flexibility from the set protocol increased the usefulness of the scheme, but the extra administration required reduced the practicality of offering the scheme to a greater number of practices.

In conclusion, the project highlighted the benefits of organised regular blood test monitoring compared with opportunistic monitoring. It ensured that patients with long test intervals were not missed, but it was of more benefit to those patients on more toxic medication who required frequent monitoring and trend detection. For a group of patients with short test intervals in whom monitoring is essential, such as those on antirheumatic therapy, the scheme is particularly beneficial. A follow-up pilot in this group of patients is planned, but the system has general applicability to any group requiring regular monitoring, whether they attend a clinic in the primary or secondary care sector, or even if they are visited in their homes by a community phlebotomist.

References

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