Research papers

Use of a parallel clinical advisory service to support lipid lowering in primary care

W Stuart A Smellie MA DM MRCP FRCPath
Consultant

Catherine A Robson BSc
Research Assistant

Clinical Laboratory, General Hospital, Bishop Auckland, County Durham, UK

ABSTRACT

Problem Increasing and unequal referral rates to a lipid and coronary prevention clinic led to demand outstripping resources and long clinic waiting lists.
Design Clinical and laboratory interventions to support primary care and change delivery of outpatient lipid services including introduction of separate clinical advisory service for general practices. Measurement of referral patterns and patient results before and after interventions.
Background and setting Lipid and coronary prevention clinic and two hospital clinical laboratories serving 34 practices, covering approximately 290 000 patients in South Durham.
Key measurements for improvement Reduction in clinic waiting list, changes in clinical referral patterns, quantitative changes in serum cholesterol and triglyceride concentrations before and 6–12 months after advice.
Strategies for change Clinical advisory service to general practitioners operating in parallel with the outpatient clinic. Laboratory computer-based interpretative advice on lipid testing had been introduced previously to support primary care.
Effects of change Waiting times fell from 35 weeks to one to two weeks, standardised referral patterns changed, the advisory service dealt with 60% of potential referrals. Average serum cholesterol concentrations in patients managed on advice alone fell by 23% and triglycerides by 41%.
Lessons learnt Alternative approaches to outpatient management of cholesterol lowering can help to reduce waiting times, change inequalities in referral patterns and support successful improvements in serum lipid results. This approach may be of use in other targeted clinical situations.

Keywords: lipid services, outpatients, referral, waiting list

Introduction

Outpatient waiting times are a key concern to governments, doctors and patients. In many areas of medical practice there is no viable response to long waiting lists, other than to find a mechanism to enable more patients to be seen in hospital. However, there is an opportunity in selected areas of medical practice to examine alternative outpatient service methods. The *National Service Framework* has identified inequalities in practice in primary care, which are also reflected in the use of related pathology tests.[1,2] In addition, the Department of Health has highlighted the lack of correlation between social need for medical care and referral patterns.[3] We have described a model to support lipid testing in primary care and in this report describe a simple but effective additional intervention in order to address a local problem with demand on a lipid and coronary prevention service.[4]

Background

The Bishop Auckland and Darlington Acute NHS Trusts merged in 1997. Prior to this a lipid and coronary prevention clinic operated once per week at

the Bishop Auckland site, with no equivalent service at the Darlington site. Following the merger, referral rates to the lipid clinic increased progressively from 1998 to 2000, reaching a peak of 35 weeks' waiting time in January 2001. An analysis of general practice referral patterns, using the same method as described previously, demonstrated large differences between general practices.[2]

Methods

Strategy for change

We set out to extend the primary care support introduced initially from the laboratory interpretation of lipid tests to include a separate clinical advisory service for general practices. Waiting times were monitored monthly and referral patterns during the three years before the intervention in March 2001 were compared to patterns after the intervention, until December 2002.

Design

Before introducing a structured advisory service, outpatient referrals arrived in conventional format by letter and contained varying degrees of information. The clinic operated on an open access basis, with ad hoc advice given by telephone or letter when possible.

The computer strategies described previously had been introduced in the laboratory's testing protocols in June 1999.

A short waiting list initiative equivalent to two clinics was used to see a small number of patients who had been waiting more than 26 weeks. Guidance was circulated to general practices including a brief clinical pathway to assist with patient management and a summary of information required to advise on clinical questions. Where clinic attendance was considered to be more appropriate than advice, the patient was called directly to the clinic.

The advisory service was introduced in March 2001 as a service running in parallel with the outpatient clinic although open access remained to the clinic if any doctor wished a patient to be seen in preference to being given advice on management.

Treatment bases and supporting evidence

The casemix referred to the clinic comprised a range of clinical scenarios, the most common of which are listed in Box 1. Advice provided for uncomplicated

---

Box 1 List of reasons for referral of patients to a lipid service (in descending order)

Most referrals arise from difficulties in patient management as most standard primary and secondary management decisions are taken in primary care.

- Failure to achieve target total cholesterol levels (NSF)
- Hypertriglyceridaemia
- Symptomatic intolerance
- Probable familial hypercholesterolaemia
- Liver or muscle enzyme abnormalities
- Borderline treatment decisions
- Primary prevention with none of above
- Secondary prevention with none of above

---

primary and secondary prevention patients was based on guidance in the relevant NSF, and its targets.[1] However as the majority of patients referred were referred because of a perceived difficulty in management, it is not possible to use evidence-based clinical practice to support management decisions in all cases, as the decision to change drug or class of drug for response or tolerability reasons is frequently a practical clinical one. Similarly the NSF targets and risk assessment algorithms cannot be applied in the presence of significant hypertriglyceridaemia or in other specified situations in which clinical decision making is required outside of standard treatment algorithms.[5] Whenever relevant national guidance is available, these guidelines are incorporated into patient management.

Analysis and interpretation

The numbers of patients seen in the outpatient clinic and those dealt with on an advisory basis after the interventions were compared to the numbers referred and seen in clinic before the intervention. Standardised referral patterns for the outpatient clinic were compared before and after the intervention. Lipid measurements (serum total cholesterol and triglycerides) were recorded from the laboratory database before and after (6–12 months where available) advice was given. Where more than one result was available, the most recent was used. Lipid results were audited over a 16-month period from March 2001 to July 2002, in order to leave at least six months from the date of giving advice for a result to be available when the data were analysed in February 2003. The statistical analysis used the Student t test.

Key measures for improvement

These were:

- reduction in the clinic waiting time
- increase in the overall number of patients managed either on a conventional outpatient or on an advisory basis
- removal of inequalities in referral patterns
- improvements in lipid results after advice had been given.

Results

Effects of changes

The clinic waiting times fell from 35 weeks to four weeks over a period of two months and subsequently to one to two weeks thereafter, remaining at this level since. These are shown in Figure 1.

Standardised referral patterns changed after the intervention and are shown in Figure 2. A total of 114 new patients were seen in the clinic for questions relating to lipid management during the 16 months following the intervention until December 2002, compared to 140 in the 16 months before the intervention. An additional 163 received written advice for questions relating to lipid management.

Advisory letters were sent on 139 patients for lipid management questions during the 16-month period audited for lipid outcome. A further 44 received

advice on other aspects of coronary prevention unrelated to lipid management.

Of the 139 patients, advice recommending changing existing or adding new lipid lowering drug therapy was given for 94 patients and other advice for 45 patients (no drug treatment or no change to existing treatment: 25 patients, changes in diabetic management: nine patients, advice on laboratory abnormalities: ten patients, others: one patient). Follow-up laboratory tests between six and 12 months (mean eight months) after advice were available for 74 of the 94 patients and between two and 14 months for a further 13. No follow-up information was available for seven patients. Of these, one had left the practice, active decisions not to treat had been taken in three and no action taken in three (who had either not re-attended or not been recalled to the practice).

Serum cholesterol concentrations fell from 7.48 ± 1.5 mmol/l to 5.7 ± 1.4 mmol/l (23%) and triglycerides from 4.4 ± 2.8 mmol/l (median 4.0) to 2.8 ± 1.1 mmol/l (median 2.5) (41%) in the 87 patients for whom pre- and post-advice results were available and in whom drug management had been recommended ($P < 10^{-6}$ each case).

When the patients were grouped into those with initial triglyceride concentrations of above or below 3.5 mmol/l, to identify those with a significant raised triglyceride component to the lipid disorder, the fall in total cholesterol was slightly greater in the group with lower triglycerides (25%) than in the group with higher triglycerides (22%) ($P = 0.15$, NS) and the fall in triglycerides was greater in the high triglycerides
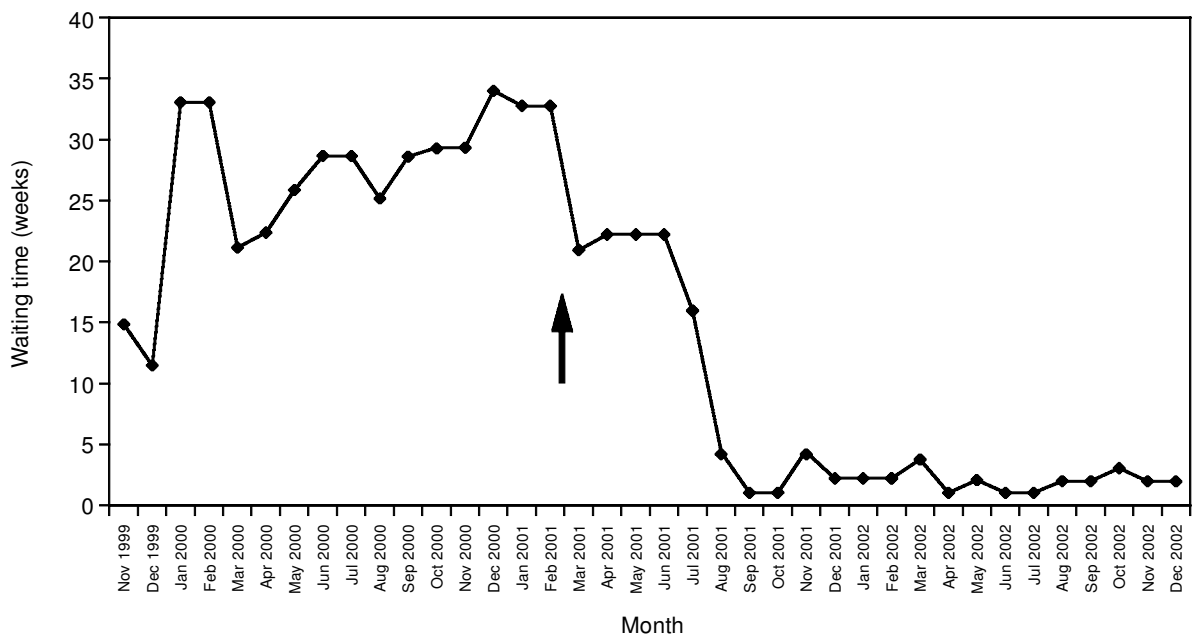

Figure 1 Waiting times for the South Durham lipid and coronary prevention clinic, 1999–2002 showing change after introduction of a separate written advisory service running in parallel with the clinic
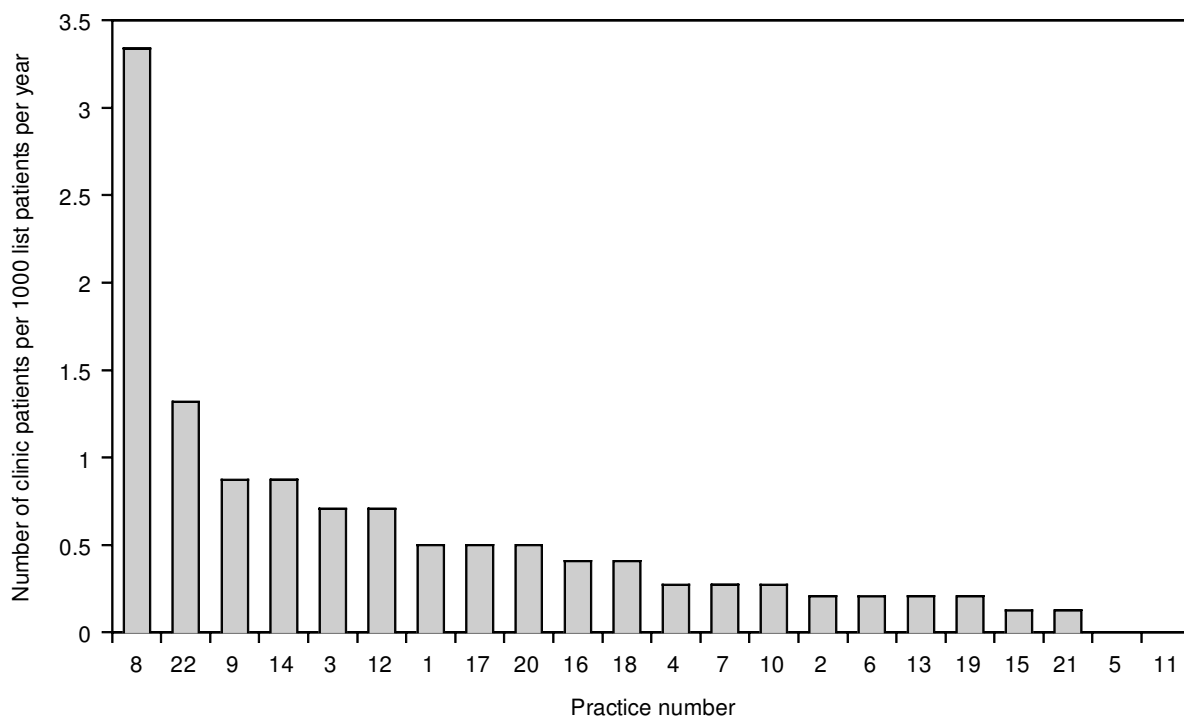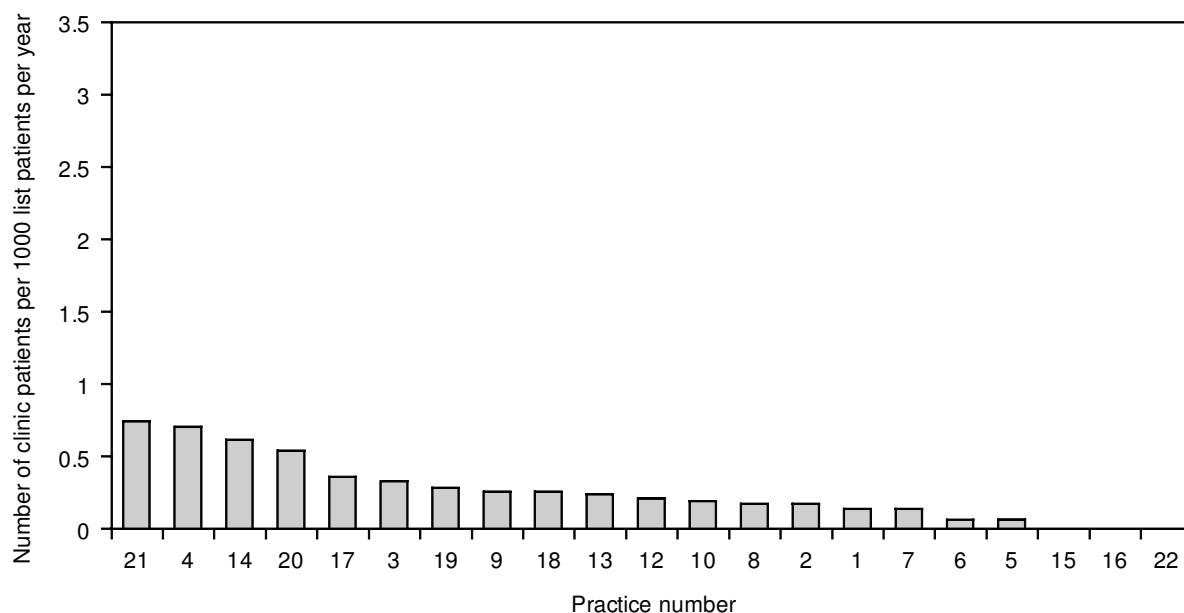
Figure 2a

Figure 2b

Figure 2 Numbers of patients referred by and seen in the lipid and coronary prevention clinic for 22 individual general practices. Numbers are standardised and displayed per 1000 practice list patients, referred per year, from 1997–2000 before (Figure 2a) and March 2001–Dec 2002 after (Figure 2b) introduction of separate written advisory service. These data relate to practices in the Bishop Auckland area prior to merger of the trusts, for which historical referral numbers were available. These show large differences in referrals between the practices before the intervention, which are abolished after the intervention.

group (50%) compared to the lower triglycerides group (unchanged) ($P = 0.0004$).

No formal feedback survey was conducted. Informal feedback and uptake of the service suggest that this change has been easily adopted by practitioners and no negative feedback or resistance to the change in service was experienced.

Discussion

Providing a separate written advisory service supporting primary care management can offer an alternative to conventional outpatient appointments for management of lipid disorders in a large proportion of patients. It also helps to remove inequalities in referral patterns for patients seen in an outpatient clinic and helps to focus secondary care resources towards patients with more difficult management problems or in whom initial advice fails to produce a satisfactory response. In this case it doubled the total number of patients managed with secondary care support and removed a long clinic waiting list, creating a sustainable way of providing secondary care support. No additional resources were required to run this service. Using an advisory service as a distinct entity greatly increased use of advice and quality of referral information, compared to ad hoc advice and an open access outpatient clinic.

These changes have removed a need for a second clinic within the trust, which was perceived as being necessary by the primary care groups, but for which funding was not available.

The general practitioners intervened and treated patients successfully in the vast majority of cases in which drug therapy was advised and the few failures to follow up appear to relate at least in part to patient non-attendance. Quantitatively large improvements in lipid parameters were achieved.

Limitations of the work

Waiting times were recorded prospectively, although lipid results have been gathered retrospectively. It is also difficult to define the expected outcome of advice or treatment on cholesterol or triglycerides results in this group of patients with a range of lipid disorders, many of whom were receiving a range of lipid lowering drug therapy. Because of this, results cannot be compared against NSF targets or other comparators. As such the lipid tests examined (total cholesterol and triglyceride concentrations) were relatively crude.

Next steps

This type of approach is clearly not possible for many areas of medicine or surgery, although it may be appropriate in other selected areas. Improved email use in the NHS will also potentially support this type of practice. Recognition is needed however that while the support of primary care work can reduce demands on secondary care, there are additional work implications for primary care and resources to support such initiatives will be necessary to conduct these on a larger scale.

As these changes have demonstrated sustained improvement in patient throughput with good apparent response to the advice given, it would be useful to examine other areas of medicine in which this may also be possible. We are examining these possibilities with consultant and primary care colleagues.

REFERENCES

1 Department of Health (2002) *National Service Framework for Coronary Heart Disease*. Chapter 2: Preventing coronary heart disease in high-risk patients. HMSO: London. www.doh.gov.uk/nsf/coronary.htm (accessed 05/10/02)
2 Smellie WSA, Galloway MJ and Chinn D (2000) Benchmarking general practice use of pathology services – a model for monitoring change. *Journal of Clinical Pathology* **53**: 476–80.
3 Department of Health (1998) *Relationship of Patterns of Referral and Health Need: primary/secondary care interface*. Department of Health: London. www.doh.gov.uk/ntrd/rd/psi/priority/first/21.htm (accessed 16/01/02)
4 WSA Smellie, R Lowrie and EL Wilkinson (2001) A laboratory based intervention to improve appropriateness of lipid tests and audit cholesterol lowering in primary care. *British Medical Journal* **323**: 1224–7.
5 Working Party of the British Cardiac Society, British Hyperlipidaemia Association and British Hypertension Society (1998) Joint British recommendations on prevention of coronary heart disease in clinical practice. *Heart* **80**: S1–29.

ADDRESS FOR CORRESPONDENCE

Dr WSA Smellie, Clinical Laboratory, General Hospital, Cockton Hill Road, Bishop Auckland, County Durham DL14 6AD, UK. Tel: +44 (0)1388 455273; fax: +44 (0)1388 455272; email: info@smellie.com