

Key messages

- Use of clinical trial evidence to underpin everyday practice is seen as a key component of a cost effective high quality health service
- Strategies to facilitate use of clinical evidence in practice—for example, appraisal and clinical guidelines—may fail if they are based on unrealistic models of how evidence is assessed
- In this study the general practitioners interviewed rarely critically appraised trial data but evaluated trial evidence in terms of its social and economic implications
- Local consensus about trial findings and their implications strongly influenced incorporation of trial evidence into everyday practice
- Strategies to maximise the use of clinical evidence in practice should build on local consensus

Practical implications

These findings have implications for the strategies used to encourage general practitioners to base their practice on clinical evidence. Teaching general practitioners critical appraisal skills and developing guidelines may redress identified skill deficiencies and distil trial data in accessible form, but universal awareness and acceptance of trial findings alone may not lead to their integration into everyday practice.

Strategies to maximise evidence based practice may not work if they fail to recognise the judgments general practitioners already make about trial data and the process by which trial data become practically applicable. Our findings confirm that strategies are more likely to be effective if they recognise and build on developing informal consensus about trial data. Imminent organisational changes within the NHS^{1 2} provide the impetus to manage this process purposefully so that it links individual general practitioners' application of trial data to effective use of local resources, chiefly cash limited prescribing budgets, to meet local needs. This requires cooperation and negotiation among important local players—for instance, primary care groups (local health care cooperatives in Scotland), primary and secondary care trusts, and local health authorities—so that this consensus is formalised and made transparent.

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Time trend analysis and variations in prescribing lipid lowering drugs in general practice

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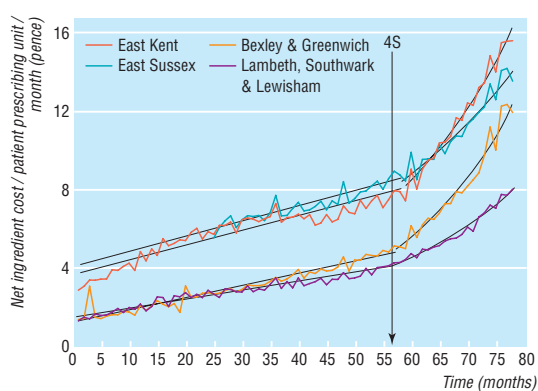
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The first trial to show that patients with coronary heart disease treated with lipid lowering drugs gained a survival advantage was published in November 1994.¹ Other similar trials that used hydroxymethyl glutaryl coenzyme A (HMG-CoA) reductase inhibitors, or statins, have subsequently confirmed these results (Long-term Intervention with Pravastatin in Ischaemic Disease (LIPID) Study Group, 70th scientific sessions of the American Heart Association, Florida, November 1997).² Despite this, consistent failure occurs in the implementation of these findings.³ This study of

primary care in South East Thames investigated variation between practices in the use of lipid lowering drugs and examined how prescribing has changed over time between different health authorities since 1990.

Subjects, methods, and results

Four health authorities were chosen to represent the range of demographic variables (including age, ethnic group, and social status) found in this region. These



Prescribing of lipid lowering drugs in general practice in four health authorities, 1990-6. Linear phase r^2 , exponential phase r^2 , and change points were 0.94, 0.98, and November 1994 for Lambeth, Southwark, and Lewisham; 0.92, 0.97, and December 1994 for Bexley and Greenwich; 0.88, 0.97, and February 1995 for East Kent; and 0.84, 0.93, and January 1995 for East Sussex. 4S is Scandinavian simvastatin survival study¹

authorities were Bexley and Greenwich; Lambeth, Southwark, and Lewisham; East Kent; and East Sussex.

Time trend analysis was performed with prescribing analysis and cost (PACT) data from the Prescription Pricing Authority. Aggregate section trends for lipid lowering drugs were obtained for each health authority from April 1990 to September 1996. Because of boundary changes data from East Sussex were available only from April 1992. The raw data were adjusted for differences in population size and age stratification by calculating health authority net ingredient cost of lipid lowering drugs per patient prescribing unit per month. We used the convention adopted by the pricing authority to give a weighting of three prescribing units for every patient aged 65 years and over and unity for all younger patients. Values for population size and number of patients aged 65 years and over were included in the raw PACT data.

Cross sectional analysis of prescribing was performed with practice profile sections for lipid lowering drugs. As general practitioners may use different methods of repeat prescribing—for example, monthly, two monthly, or quarterly—we collected data from a 3 month period, July to September 1996. These were used to calculate practice net ingredient cost per patient prescribing unit per quarter (with the same weighting system as above). Again list size and number of patients aged 65 years and over were included in the PACT data. Results were analysed with SPSS statistical software.⁴

Changes in prescribing of lipid lowering drugs over time in the four health authorities were described by a single model with an initial linear phase followed by an exponential phase (superimposed on the time trend shown in the figure). The change point from linear to exponential was calculated for each health authority by using the least squares technique and by minimising the residual sum of squares with respect to the change point. This was found to be closely related to the publication date of the Scandinavian simvastatin survival study.¹

One way analysis of variance showed that differences between health authority spending on lipid

lowering drugs were highly significant during both phases of the model (variance ratio (F) $P < 0.00001$). During the exponential phase the time taken for authority spending on lipid lowering drugs to double varied from 16 months (Bexley and Greenwich) to 28 months (East Sussex).

Results of the cross sectional analysis show that prescribing of lipid lowering drugs by individual general practices is highly variable. Practices in Lambeth, Southwark, and Lewisham prescribed significantly fewer lipid lowering drugs than practices in other health authorities ($F = 56$; $P < 0.0001$). Similarly, practices in Bexley and Greenwich prescribed significantly fewer lipid lowering drugs than those in East Kent and East Sussex. Even within a single health authority prescribing varied up to 60-fold between practices, and a 98-fold variation existed across the South East Thames region as a whole.

Comment

Since November 1994 prescribing of lipid lowering drugs increased exponentially in all health authorities studied, but the rate of change varied widely. Use of these drugs also varied greatly between individual general practices. We suggest that the recent increase is linked to the availability of research evidence, but further studies are needed to determine if variation in prescribing between authorities and practices reflects differences in clinical need.

Contributors: CB had the original idea for this study, designed it, collected and analysed the data, interpreted the results, performed the literature search, and wrote the drafts of the paper. RJ contributed to the study design, data analysis, and interpretation of the results and is a guarantor of this research. LC contributed to the study design, data analysis, and interpretation of the results, edited the drafts of the paper, and is a guarantor of the research.

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Endpiece Good advice

Dr Harvy (sic) enjoined him two things—to renew his cheerful conversation, and take moderate walks for exercise, assuring him that in his practice of physic since these times, he observed more people died of grief of mind than of any other disease, and that his studious and sedentary life would contract him frequent sickness, unless he used seasonable exercise.

Thomas Plume, *A century of sermons* (1675)

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