

General practice

Randomised controlled trial of the READER method of critical appraisal in general practice

Domhnall MacAuley, Evelyn McCrum, Conor Brown

Division of
Epidemiology,
Royal Victoria
Hospital, Queen's
University of
Belfast, Belfast
BT12 6BJ

Domhnall
MacAuley,
general practitioner
Evelyn McCrum,
research fellow
Conor Brown,
research assistant

Correspondence to:
Dr MacAuley
drs.hillhead@
dnet.co.uk

BMJ 1998;316:1134-7

Abstract

Objective: To evaluate the READER model for critical reading by comparing it with a free appraisal, and to explore what factors influence different components of the model.

Design: A randomised controlled trial in which two groups of general practitioners assessed three papers from the general practice section of the *BMJ*.

Setting: Northern Ireland.

Subjects: 243 general practitioners.

Main outcome measures: Scores given using the READER model (Relevance, Education, Applicability, Discrimination, overall Evaluation) and scores given using a free appraisal for scientific quality and an overall total.

Results: The hierarchical order for the three papers was different for the two groups, according to the total scores. Participants using the READER method (intervention group) gave a significantly lower total score ($P \leq 0.01$) and a lower score for the scientific quality ($P \leq 0.0001$) for all three papers. Overall more than one in five (22%), and more men than women, read more than 5 articles a month ($P \leq 0.05$). Those who were trainers tended to read more articles ($P \leq 0.05$), and no trainers admitted to reading none. Overall, 58% (135/234) (68% (76/112) of the intervention group) believed that taking part in the exercise would encourage them to be more critical of published articles in the future ($P \leq 0.01$).

Conclusion: Participants using the READER model gave a consistently lower overall score and applied a more appropriate appraisal to the methodology of the studies. The method was both accurate and repeatable. No intrinsic factors influenced the scores, so the model is appropriate for use by all general practitioners regardless of their seniority, location, teaching or training experience, and the number of articles they read regularly.

Introduction

General practitioners need to keep up to date. Evidence based medicine is a useful concept, and we all aspire to knowledge based practice, but it is not easy to appraise and assimilate all this knowledge.¹ There is a huge volume of medical literature, and medical knowledge is increasing at great speed.² We may aspire to practise evidence based medicine, seeking the answers

to clinical questions in the literature and managing patients accordingly.³ But how do we assess the quality of the evidence if we have little training in clinical epidemiology and the skills of critical reading? Journal clubs may be of value and have been shown to work for those in training grades,⁴ but they require protected time. Texts and guidelines on critical reading are available but are increasingly complex and often demand a basic expertise. Moreover, little evidence exists that these methods have been assessed or subjected to clinical trial themselves.

We aimed to evaluate the READER model for critical reading and determine what factors influence the five components of the model (Relevance, Education, Applicability, Discrimination, overall Evaluation) (figure).⁵ Our prior hypothesis was that the READER method improves a general practitioner's ability to appraise the literature critically. We analysed the scores given by general practice principals in a randomised controlled trial of critical appraisal of three scientific papers.

Method

We invited all ($n = 1015$) general practice principals on the medical list in Northern Ireland to participate in a study of three short papers published in the *BMJ*. Our only incentive was an offer to include all participants in a draw in which the prize was a voucher for a meal for two. We randomly assigned volunteers to two groups by using computerised random number allocation and sent both groups the same three papers selected from the *BMJ* in 1995.⁶⁻⁸ These papers were selected from the general practice section of the journal and related to aspects of clinical care that would be of everyday importance in general practice. Each paper was less than one page long. We also requested some personal and practice details which could be possible confounding factors. For one group we included a copy of the READER scoring method and asked if they would rate the papers by using this method (intervention group). We asked the other group (control group) to give a free appraisal of the papers on the basis of "their importance to me in everyday work." They were asked to give two scores, one for scientific quality (maximum score of 10) and a total score (for overall importance (maximum 25)). There are no other known validated scoring methods for critical appraisal, and this free appraisal was an attempt to quantify the overall

Criteria	Possible score	Actual score (Tick ✓)
Relevance		
Not relevant to general practice	1	
Allied to general practice	2	
Only relevant to specialised general practice	3	
Broadly relevant to all general practice	4	
Relevant to me	5	
	Score	<input type="text"/>
Education		
Would certainly not influence behaviour	1	
Could possibly influence behaviour	2	
Would cause reconsideration of behaviour	3	
Would probably alter behaviour	4	
Would definitely change behaviour	5	
	Score	<input type="text"/>
Applicability		
Impossible in my practice	1	
Fundamental changes needed	2	
Perhaps possible	3	
Could be done with reorganisation	4	
I could do that tomorrow	5	
	Score	<input type="text"/>
Discrimination		
Poor descriptive study	1	
Moderately good descriptive study	2	
Good descriptive study but methods not reproducible	3	
Good descriptive study with sound methodology	4	
Single blind study with attempts to control	5	
Controlled single blind study	6	
Double blind controlled study with method problem	7	
Double blind controlled study with statistical deficiency	8	
Sound scientific paper with minor faults	9	
Scientifically sound paper	10	
	Score	<input type="text"/>
Evaluation (overall)	Total score	<input type="text"/>

Components and scoring system in READER method of critical appraisal

impression of the control group's opinion. As an incentive to complete the study we again offered to enter participants' names in a draw with a similar prize. Before we began the study we undertook a pilot study of 16 general practitioners. This revealed some minor problems in the instructions to participants and in the wording of the questionnaire. The results of this pilot

Table 1 Number (percentage of participants) in each group by sex

Sex	Agreed to take part		Completed study	
	Intervention group	Control group	Intervention group	Control group
Male	121 (70)	140 (82)	85 (72)	107 (86)
Female	51 (30)	31 (18)	33 (28)	18 (14)
Total	172	171	118	125

Table 2 Responses by participants agreeing to take part in trial in answer to the question, "How many articles from academic journals (eg, *BMJ*, *Br J Gen Pract* etc) would you usually read fully each month?" Values are numbers (percentages) of participants

No of articles	Intervention group (n=172)	Control group (n=171)	Total (n=343)
None	11 (10)	15 (12)	26 (11)
1-5	82 (72)	78 (63)	160 (67)
>5	21 (18)	31 (25)	52 (22)
Total	114 (48)	124 (52)	238

study enabled us to estimate the sample size required to establish significant differences in the scores. The general practitioners who took part in the pilot were excluded from the main study. After the study we invited a sample of those in the intervention group to repeat their appraisal as a validation exercise. We also sought an objective expert opinion on the methodology scores: we asked an independent epidemiologist with experience in critical appraisal to assign a score to the methodology used in the three papers.

Differences between the two groups were compared by using the Mann-Whitney U test, and between the three groups (the intervention, control, and expert groups) by using Kruskal-Wallis one way analysis of variance on SPSS for Windows. Logistic regression was used to examine the possible associated factors for each component of the score. The Wilcoxon matched pairs, signed ranks test and McNemar's test were used in the repeatability study.

Results

Of the 1015 principals invited to join the study, we excluded the 16 who had taken part in the pilot study. Of the 999 remaining general practitioners, 343 agreed to take part and were randomised. In all, 118 (69%) general practitioners in the intervention group and 125 (73%) in the control group completed the study (table 1). The only significant difference between the groups was in their sex, with significantly more women in the intervention group ($P \leq 0.01$), although this was a feature of the sampling and did not reflect a differential response. The groups were similar in composition in respect of educational factors (whether they were general practice trainers, whether the practice was a training practice, whether they taught medical students regularly); length of time in practice; location of the practice; and number of partners. Both groups read a similar number of articles from academic journals each month.

In an average month, 22% of participants read more than five articles, while 11% read no articles (table 2). Significantly more men than women read more than five articles a month, but significantly more men also read no articles ($P \leq 0.05$). Trainers were more likely to read more articles ($P \leq 0.05$), and no trainers admitted to reading none. No relation existed between the number of articles read each month and the location of practice, the number of partners, or whether the practice was a training or teaching practice.

The hierarchical order for the 3 papers was different for the two groups, according to the total scores (tables 3 and 4). Both groups gave the lowest score to paper 1. The highest median score in the intervention group was for paper 2; the control group ranked papers 2 and 3 equally, although it gave paper 3 a higher score for scientific quality. The control group gave a significantly higher total score than did the intervention group for paper 1 ($P \leq 0.01$) and for papers 2 and 3 ($P \leq 0.001$). The control group also gave a significantly higher score ($P \leq 0.0001$) for the scientific quality of all three papers than the intervention group did for the "discrimination" component of the READER method. Our independent expert gave a discrimination score of 4 for paper 3

Table 3 Distribution of mean (median) scores for 18 participants in intervention group (who used READER method)

	Relevance	Education	Applicability	Discrimination	Evaluation (total)
Paper 1	3.8 (4)	2.2 (2)	3.2 (3)	2.9 (2)	12.1 (12)
Paper 2	4.1 (4)	3.2 (3)	3.5 (4)	4.3 (4)	15.0 (15)
Paper 3	4.0 (4)	3.0 (3)	2.9 (3)	4.4 (4)	14.1 (14)

Papers 1, 2, and 3 are references 6, 7, and 8.
Two participants did not appraise paper 3.
See the figure for the scoring system for the READER method.

Table 4 Distribution of mean (median) scores for 125 in control group (who used free appraisal)

	Scientific quality	Total score
paper 1	4.5 (5)	13.4 (15)
paper 2	6.0 (6)	16.5 (18)
paper 3	6.7 (7)	17.9 (18)

Papers 1, 2, and 3 are references 6, 7, and 8.
No paper was appraised by all participants: paper 1, 121; paper 2, 122; paper 3, 122.
Maximum scores possible: 10 for scientific quality; 25 as a total.

Table 5 Number (percentage) of participants in intervention group who agreed with independent expert

Paper	Agreed exactly	Agreed to within 1 point in score
Paper 1	49 (42)	81 (69)
Paper 2	23 (20)	38 (32)
Paper 3	60 (52)	72 (62)

Papers 1, 2, and 3 are references 6, 7, and 8.

and a score of 2 for papers 1 and 2. The proportion whose scores agreed with the expert appraisal is shown in table 5.

Of the 40 randomly selected participants in the intervention group who were invited to undertake the repeatability study, 19 replied. When the Wilcoxon matched pairs, signed ranks test was applied to the 15 variables (relevance, education, applicability, discrimination, overall evaluation, and total for each of the three papers), only two showed a significant difference between the two assessments. When we aggregated the scores given to each variable into two groups (low and high) we found no significant difference in the scores (McNemar's test).

Almost all participants (215/232) enjoyed taking part in the exercise. Overall, 135 participants (76/112 (68%) in the intervention group and 59/122 (49%) in the control group; ($P \leq 0.01$)) believed that taking part in the exercise would encourage them to be more critical of published articles in the future.

Discussion

This was a very large study of critical reading, with 243 doctors completing the study. The participation rate was remarkable in view of the work required and the increasing difficulties in getting general practitioners to respond to surveys.⁹ Journal clubs usually appraise two papers in about one hour,¹⁰ so participating doctors had made a major commitment to our work. In previous, smaller studies,^{11 12} it took about 30-40 minutes to apply the READER method in a workshop, so each of the participating general practitioners probably spent about two hours reading and completing the paperwork associated with this study.

Confounding

There are possible confounding factors. In theory, critical reading is an objective skill and should not be influenced by the type of practice or seniority. The skills learned in an academic environment, however, may equip doctors to apply the skills of critical reading more effectively. None the less, the groups were similar in educational variables, type of practice, and seniority. There were significantly more women in the intervention group (the group who were asked to use the READER method), and this might be a confounding factor; there might also have been a selection bias if only the general practitioners who had an interest in critical reading took part.

Reading habits

In all, 89% of participants read at least one medical research article per month. There are no comparative data for other branches of the profession, but clearly general practitioners in this study have an interest in keeping up to date with the literature. One can draw few conclusions about the 11% who read fewer than one article each month: they may read professional journals or attend regular medical educational meetings. Indeed, while doctors report that they get most of their information from the literature, they regularly use other written sources and consult colleagues.¹³ All general practitioners were equally interested in reading, and it was unimportant if one was based in a teaching or training practice. All trainers read at least one research article a month, but this educational commitment does not seem to be shared by their practice partners who are not trainers.

There was a highly significant difference between the scores achieved with the READER method and those with the free appraisal. Clearly, doctors who applied a structured method of appraisal were more critical of quality. In particular, there was a highly significant difference between the score for scientific quality given by the control group and the score for discrimination given by the intervention group, and those in the intervention group gave a lower score to the methodology of the studies. Those in the intervention group were broadly in agreement with the expert opinion in their score for discrimination for papers 1 and 3, but less so for paper 2.

Others factors

Other factors may influence the scores that general practitioners give to the components of the READER model. In examining the relation between all recorded factors (whether the doctors were trainers; whether their practice was a training practice or a teaching practice for medical students; the length of time in practice; the location of the practice; the number of partners; the number of articles read each month) and the four main components of the READER method, we found that in all three papers there were only two factors that approached a significance level of $P \leq 0.01$. These were detected in the assessment of paper 1, which focused on the use of lists by patients; the general practitioners who taught medical students were less likely than other doctors to give a high score for "relevance," whereas general practitioners in a training practice were more likely than other doctors to give a high score to this factor. As we explored such

Key messages

- The READER method of critical appraisal is simple and easy to apply
- The method is accurate and repeatable
- General practitioners using a structured appraisal are more critical of quality
- The model may be used by general practitioners with different backgrounds, seniority, and experience of teaching and training

a large number of possible relations, these findings may have occurred by chance. No consistent factors, therefore, relating to the characteristics of the participants influenced the outcome of the results of the appraisal. The repeatability study also strongly supports the reliability of the method. This is important in establishing the validity of the model.

Interest in critical appraisal methods is increasing in primary care, and like other interventions, these should be subject to clinical trial. Although several descriptions of methods of critical reading have been published, no other methods seem to have been subjected to objective evaluation. Some work shows that teaching critical appraisal can improve skills. Kitchens and Pfeifer published a controlled trial of teaching critical appraisal to residents and showed significant improvements in knowledge⁴; in a similar study among medical students, knowledge could similarly be improved.¹⁴ However, no published work shows that any method of critical reading can change the outcome in evaluation of the literature. We used the highest quality research methodology (a randomised controlled trial), and our study was based on a large number of ordinary general practitioners.

Conclusion

There was a significant difference between the scores given with the READER method and those given with free appraisal: general practitioners using the READER model gave a consistently lower total score and a more appropriate score to the methodology. The READER method was both accurate and repeatable. Overall, the articles scored highly on relevance but moderately on education and applicability.

No intrinsic factors influenced the scores, so the model may be used by general practitioners regardless of their seniority, location, teaching or training experience, and the number of articles they read regularly. The outcome is important as it may help to demystify the science of critical appraisal for doctors.

The *BMJ* offered goodwill and permission to undertake the study.

Contributors: DMacA had the idea for the study, sought the funding, planned the study, and jointly wrote the paper with EMcC. EMcC also helped in the planning, coordinated the data collection, and supervised the statistical analysis. CB undertook the data entry, ensured data quality control, and assisted with the statistical analysis. Frank Kee, honorary senior lecturer in the division of epidemiology at the Queen's University of Belfast, provided the expert appraisal of the methodology. Chris Patterson gave statistical and methodological advice from the outset. Professor Alun Evans provided advice, support, and guidance at

every stage in the study and offered helpful criticism of the manuscript. The authors of the papers were very helpful and collaborated in part of the overall study. General practitioner colleagues gave their time generously in taking part; they undertook the appraisal, provided their time for little reward, and offered encouragement and advice throughout the study; those in the pilot study offered very helpful criticism of the questionnaire and methodology.

Funding: This work was supported by a grant from the Department of Health and Social Services (Northern Ireland).

Conflict of interest: None.

- 1 Smith R. What clinical information do doctors need? *BMJ* 1996;313:1062-8.
- 2 Wyatt J. Uses and sources of medical knowledge. *Lancet* 1991;338:1368-72.
- 3 Greenhalgh T. Is my practice evidence based? *BMJ* 1996;313:957-8.
- 4 Kitchens JM, Pfeifer MP. Teaching residents to read the medical literature: a controlled trial of a curriculum in critical appraisal/clinical epidemiology. *J Gen Intern Med* 1989;4:384-7.
- 5 MacAuley D. READER: an acronym to aid critical reading by general practitioners. *Br J Gen Pract* 1994;44:83-5.
- 6 Middleton JE. Asking patients to write lists: feasibility study. *BMJ* 1995;311:34.
- 7 O'Brien J, Long H. Urinary incontinence: long term effectiveness of nursing intervention in primary care. *BMJ* 1995;311:1208.
- 8 Watura R, Lloyd DCF, Chawda S. Magnetic resonance imaging of the knee: direct access for general practitioners. *BMJ* 1995;311:1614.
- 9 McAvoy BR, Kaner EFS. General practice postal surveys: a questionnaire too far? *BMJ* 1996;313:732-3.
- 10 Siderov J. How are internal medicine residency journal clubs organised, and what makes them successful? *Arch Intern Med* 1995;155:1193-7.
- 11 MacAuley D, Sweeney KS. A new model for critical reading. *Forum* 1994;10(8):52-4.
- 12 MacAuley D. Critical reading using the READER acronym at an international workshop. *Fam Pract* 1996;13:104-5.
- 13 Covell DG, Uman GC, Manning PR. Information needs in office practice: are they being met? *Ann Intern Med* 1985;103:596-9.
- 14 Bennett KJ, Sackett DL, Haynes RB, Neufield VR, Tugwell P, Roberts R. A controlled trial of teaching critical appraisal of the clinical literature to medical students. *JAMA* 1987;257:2451-4.

(Accepted 27 November 1997)

Corrections

First myocardial infarction in patients of Indian subcontinent and European origin: comparison of risk factors, management, and long term outcome

We recently published (*BMJ* 1998;316:116) a retraction of this paper by Shaukat et al, which appeared in the *BMJ* last year. Unfortunately, the page numbers were wrong. The complete reference for this paper should have been: *BMJ* 1997;314:639-42.

Obituaries

Several editorial errors have occurred in recent obituaries. In Sir Anthony Dawson's obituary (29 November 1997, p 1470) we wrongly said that he was "almost the first non-Barts man to be appointed a consultant there." In Dr Frizelle's obituary (17 January, p 235) we should have said that he was known as "Friz" [not "Fritz"]. In Dr June Margaret Fletcher's obituary (14 February, p 558) her name was wrongly given as Jane. In Dr Lewis's obituary (28 February, p 709) we wrongly gave her husband's name as Tim—it is in fact Tom. In Dr Wilkinson's obituary (7 March, p 783) we wrongly said that he was a member of the Royal College of Physicians.

Communication among health professionals

An error occurred in this editorial by John Gosbee (28 February, p 642). In reference 2 the web address of the Clinical Systems Group was incorrect. It should have been <http://www.lc.btwebworld.com/imt4nhs/general/csg/index.htm>

Randomised comparison of cost effectiveness of guided self management and traditional treatment of asthma in Finland

Aarne Lahdensuo, Tari Haahtela, Jaakko Herrala, Tuomo Kava, Kirsti Kiviranta, Paula Kuusisto, Markku Pekurinen, Erkki Perämäki, Seppo Saarelainen, Thore Svahn, Bengt Liljas

Department of Pulmonary Diseases, Tampere University Hospital, 36280 Pikkolinna, Finland

Aarne Lahdensuo, head

Jaakko Herrala, consultant physician
Paula Kuusisto, consultant physician
Seppo Saarelainen, consultant physician

Skin and Allergy Hospital, Helsinki University Central Hospital, 00250 Helsinki, Finland

Tari Haahtela, director
Kirsti Kiviranta, consultant physician

Department of Pulmonary Diseases, Central Hospital of Northern Karelia, 80780 Kontioniemä, Finland

Tuomo Kava, head
Erkki Perämäki, consultant physician

Health Services Research, 00150 Helsinki, Finland
Markku Pekurinen, director

continued over

BMJ 1998;316:1138-9

In many countries the cost of caring for patients with asthma is high.¹ Guidelines have recommended guided self management for the treatment of asthma.^{2,3} We recently compared the efficacy of guided self management with traditional treatment for asthma⁴ and here report the cost effectiveness of the two treatments.

Patients, methods, and results

One hundred and fifteen patients with mild to moderately severe asthma were randomly allocated guided self management or traditional treatment. The 56 patients allocated guided self management were given personal education and they were taught to measure their peak expiratory flow rate every morning for a year. If the value fell below 85% of their predetermined optimal value on any morning they were instructed to double their dose of inhaled corticosteroid for 2 weeks. If the value fell below 70% of the optimal value on any morning they were to take oral prednisolone (40 mg/day) for 7 days and immediately contact their nurse or doctor. The 59 patients allocated traditional treatment did not have peak flow meters and received no instructions about changing their dosage. Every fourth month all the patients visited their outpatient clinic.

Direct healthcare costs related to asthma included counselling (individual training and instruction in the guided self management group and general information in the other) peak flow meter, drugs, visits to the doctor other than for the study, and admissions. Indirect healthcare costs included absence from work. Total costs were the sum of the direct and indirect costs. Resource use was valued at 1994 prices (currently 8.84 Finnish marks = £1). Effectiveness was measured as the number of healthy days, defined as 365 minus the number of days with any incident

caused by asthma, including admission, unscheduled visits to their doctor, outpatient clinic, or casualty department, days off work, and courses of oral antibiotics or prednisolone.

The table shows the average costs per patient over the year. The direct healthcare costs were 649 Finnish marks lower for traditional treatment ($P=0.05$), but because of the lower indirect costs for guided self management (2412 Finnish marks; $P=0.008$) the total costs were 1762 Finnish marks lower for guided self management ($P=0.09$). The mean number of healthy days was 359.2 in the guided self management group and 344.3 in the traditional treatment group. Thus, guided self management was 4.3% ($P<0.001$) more effective than traditional treatment. One outlier in the guided self management group was excluded from the analysis as the indirect costs were 24 times higher than those for the patient with the next highest indirect costs in that group. The patient who was the outlier had taken extended sick leave to avoid potentially harmful dusts in the workplace, not because of an exacerbation of asthma as in the other cases. Including this outlier would bias the results and not reflect the true expected costs of guided self management. When, however, the outlier (table) was included the differences in indirect costs were reduced to 1607 Finnish marks ($P=0.18$) and the differences in total costs were reduced to 950 Finnish marks ($P=0.47$). Both these costs are still higher for traditional treatment. We regard the results without the outlier as the main results.

Comment

The guided self management group had more healthy days ($P<0.001$) and lower total costs ($P<0.1$) than the traditional treatment group. The inclusion of an outlier in the guided self management group reduced the

Mean annual direct, indirect, and total costs (in Finnish marks), and mean annual number of healthy days per patient for guided self management (with and without the outlier) and traditional treatment

Cost items	Guided self management group without outlier (n=55; 95% CI)	Traditional treatment group (n=59; 95% CI)	Difference (95% CI)	P value†	Guided self management group with outlier (n=56; 95% CI)	Difference (95% CI)	P value†
Counselling	1637 (1605 to 1668)	843 (819 to 867)	794 (755 to 833)	<0.001	1641 (1609 to 1673)	798 (758 to 838)	<0.001
Peak flow meter	150	0	150		150	150	
Drugs	2882 (2600 to 3164)	2928 (2648 to 3208)	-46 (-435 to 343)	0.82	2871 (2593 to 3149)	-57 (-452 to 338)	0.776
Visits to doctor	223 (91 to 355)	378 (165 to 592)	-155 (-401 to 91)	0.22	239 (105 to 374)	-139 (-391 to 113)	0.272
Admission to hospital	153 (0 to 384)	246 (0 to 543)	-93 (-461 to 275)	0.62	150 (0 to 378)	-96 (-470 to 278)	0.608
Direct costs	5045 (4610 to 5479)	4396 (3899 to 4892)	649 (3 to 1295)	0.053	5052 (4625 to 5479)	656 (1 to 1311)	0.048
Indirect costs	1149 (411 to 1888)	3561 (1945 to 5176)	-2412 (-4151 to -673)	0.008	1954 (186 to 3723)	-1607 (-4002 to 788)	0.181
Total costs	6194 (5127 to 7262)	7956 (6204 to 9708)	-1762 (-3770 to 246)	0.089	7006 (5071 to 8942)	-950 (-3561 to 1661)	0.467
Effectiveness (No of healthy days)	359.2 (356.5 to 361.8)	344.3 (338.8 to 349.8)	14.9 (8.9 to 20.9)	<0.001	358.9 (356.3 to 361.6)	14.6 (8.5 to 20.7)	<0.001

† Calculated by Student's *t* test.

difference in total costs, but the conclusions remain the same. The short term direct healthcare costs for guided self management were increased because of extensive counselling during the study year. Reduction in the counselling should decrease the difference in the direct healthcare costs long term, while the benefits of healthy days with guided self management should prevail.

Contributors: AL initiated and supervised the study, discussed the core ideas, participated in the design protocol, data analysis, and interpretation, and was the main writer of the paper; he will act as guarantor for the paper. TH initiated the study, discussed the core ideas, participated in the design protocol, data analysis, and interpretation, and contributed to the paper. BL discussed the core ideas, participated in the data analysis, statistical analysis, and interpretation, and was the main contributor of the paper. PK discussed the core ideas, participated in the design protocol, data collection, data analysis, and interpretation, and edited the paper. JH, TK, KK, EP, and SS participated in the data

collection and edited the paper. TS participated in the design protocol, data analysis, and interpretation, and quality control and edited the paper; he was the clinical monitor of the study. MP participated in the design and collection of the financial data, data analysis and interpretation, and statistical analysis and edited the paper.

Funding: Suomen Astra Oy.
Conflict of interest: None.

- 1 Weiss KB, Gergen PJ, Hodgson TA. An economic evaluation of asthma in the United States. *N Engl J Med* 1992;326:862-6.
- 2 National Heart, Lung and Blood Institute, National Institutes of Health. *International consensus report on diagnosis and management of asthma*. Bethesda, MD: National Heart, Lung and Blood Institute, National Institutes of Health, 1992. (Publication No 92.3091.)
- 3 British Thoracic Society, British Paediatric Association, Research Unit of the Royal College of Physicians of London, King's Fund Centre, National Asthma Campaign, Royal College of General Practitioners, et al. Guidelines on the management of asthma. *Thorax* 1993;48:S1-24.
- 4 Lahdensuo A, Haahtela T, Herrala J, Kava T, Kiviranta K, Kuusisto P, et al. Randomised comparison of guided self management and traditional treatment of asthma over one year. *BMJ* 1996;312:748-52.

(Accepted 8 September 1997)

Suomen Astra Oy,
02430 Masala,
Finland
Thore Svahn,
*clinical research
scientist*

Astra Draco AB,
221 00 Lund,
Sweden

Bengt Liljas,
health economist

Correspondence to:
Dr Lahdensuo
arne.lahdensuo@
tays.fi

A lesson learnt

Common things are common

It was my first day on the intensive care unit which made the lessons all the more memorable.

I had been asked to assess a patient who had recently been discharged back to the ward. I delegated the task to a senior house officer (SHO) explaining that he should assess the patient's condition and need for intensive care.

Half an hour later he telephoned. After describing the patient's condition he concluded that the patient would benefit from more care than the ward could provide. As our hospital has no high dependency unit for such patients an intensive care admission was required. I joined the SHO on the ward to assess the patient and to assess his clinical judgment.

From the end of the bed I saw a man who seemed to be in his late 60s although he was actually 58. He was propped up, with his head drooping, eyes closed, a rapid respiratory rate, and sweating profusely. Introducing myself he responded appropriately to my questions, unable to speak because of his tracheostomy—a legacy of his recent intensive care admission. Relieved he was still cerebrating I glanced at his chart and urinary catheter bag and made the assumption that his kidneys, as well as his brain, were being adequately perfused despite the presence of rapid atrial fibrillation. His temperature was 38.5°C. On examination I found bilateral basal bronchial breath sounds with crepitations in the right mid zone. His abdomen, scarred from recent surgery, was soft and there were bowel sounds present. Throughout my examination I was struck by his profuse sweating.

The SHO showed me a recent chest x ray, which confirmed bilateral basal atelectasis and consolidation in the right middle lobe. He had made a good assessment, correctly concluding that the patient would benefit from more care than the ward could provide. My working diagnosis was of another episode of sepsis, probably originating from the chest, in an already debilitated patient. I had a gnawing doubt, however; something didn't quite fit with this picture. Yes he was in rapid atrial fibrillation, he was tachypnoeic, sweaty, pyrexial with signs of a chest infection, and a raised

white count, but why was his blood pressure 210/95mm? This must be due to catecholamines I reasoned, but why? Pain? He denied any. Thoughts of hyperthyroidism and pheochromocytoma entered my head but these had to be long shots. So I was left with that familiar nagging feeling of "I'm missing something."

As always happens it was on the consultant ward round that the answer revealed itself and the penny, with a deafening thud, dropped. The nurse casually mentioned that the patient's urine output had been poor in the first hour of admission but a bladder washout had produced a dramatic effect.

I'm not sure whether he realised quite how dramatic his intervention had been as I looked up to see a relaxed 58 year old man with a heart rate of 110/min, a blood pressure of 140/85mm Hg and a respiratory rate of 20 breaths a minute. He was no longer sweaty and more importantly did not look like a patient who required intensive care.

In that instant I heard numerous voices from the past: "Always thoroughly examine the patient" and "common things are common."

The intensive care retrospectroscope is no more powerful or any less frustrating to use than its counterparts in the operating theatre or on the ward. I was just going to have to relearn those valuable lessons again and own up to my novel management of a blocked urinary catheter.

Richard Seigne, *senior registrar in anaesthetics, Cambridge*

We welcome articles up to 600 words on topics such as *A memorable patient, A paper that changed my practice, My most unfortunate mistake*, or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, which have appealed to the reader.