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Leader

Measuring performance in clinical rheumatology

Developments in information technology will allow far greater knowledge about the costs and effects of our investigations and treatments. At the same time the gap between the demands for health care and resources available has widened, with the consequence that clinical practice is being subjected to increased scrutiny. Rheumatologists, therefore, need to pause and consider what they ought to do.[1] Whether this constitutes measuring performance, or whether other terms are more appropriate is a semantic issue, and the terminology is not important. With the publication of the white paper on 'Working for patients'[2] with its associated emphasis on giving patients 'good value services' together with medical audit, there is an undoubted political element to measuring performance. Rheumatologists must ensure that decisions about the performance of our specialty are made rationally and in an appropriate and scientific manner.

Measures of performance can be viewed in several ways. On the simplest level we can collect information about how many patients we see in the clinic or in the wards and the various procedures they undergo. This is the object of the 'Körner data' we should now be collecting. Alternatively, we can look at the costs of rheumatological care, both for inpatients and for outpatients. This equates with resource management. More important may be the results of our treatment, and this merges imperceptibly with the concept of medical audit. We can use these data together with measures of customer satisfaction to assess the quality of our service. There is a view, readily accepted by the unwary, that information will be gathered by managers to use in some way against clinicians. This is fallacious. The information collected will primarily help doctors and their patients. At the same time delays in collecting appropriate information about rheumatology could seriously disadvantage the specialty.

The first contact that most rheumatologists in the United Kingdom will have with measuring performance is in the collection of Körner data, which are based on the recommendations of the steering group on health services information.[3] Clinical, laboratory, and paramedical services are all involved. Differences between districts can theoretically be compared by the computer based package of performance indicators, now renamed health service indicators. Districts collect data of rheumatological relevance on inpatients and outpatients; the table summarises the information currently collected. For a specialty such as rheumatology, which is predominantly outpatient based, the information is very limited. In particular, the absence of outpatient diagnostic information renders the Körner minimum data set, which is all that most districts collect, virtually useless for meaningful comparisons to be made. Another problem with this approach is the validity of the data collected. Much of the time there may be incomplete or inadequate data entry with potentially misleading results; the data collected are rarely checked for accuracy. The most reliable way of overcoming this is to delegate the process of data collection and coding to individual rheumatology departments, but this is not feasible unless adequate administrative and clerical support is also made available. A review of the recommendations of the Körner steering group by a joint committee with the faculty of community medicine[4] identified several deficiencies in the Körner data, such as the limited information about diagnoses and the major components of treatment. Although restricted in their content the Körner data are better than nothing at all.

Information relevant to rheumatology currently collected by districts

Inpatients	*Outpatients*
Personal details	Number of clinics
Consultant	Clinics cancelled
Ward	Number of new referrals
Duration of stay	Number of follow ups
Diagnostic code	Number of non-attenders
Operations (if any)	

The current emphasis on measuring activity stems from the introduction of diagnostic related groups in the United States. First proposed by Thompson *et al* in 1975,[5] they have become a method to control the costs of hospital treatment. Essentially they are a means of grouping patients to measure the output or performance of a hospital. Diagnostic related groups divide inpatients into 383 mutually exclusive categories. These are defined by the principal diagnosis, secondary diagnoses, surgery and other procedures, and age. There are 83 broad diagnostic groups for the principal diagnosis. The hospital discharge abstract is used as the source of diagnostic related group information. The length of stay is used as a surrogate for treatment costs for each group. There are several problems with this approach. Administratively there is the drawback that hospitals will try to maximise their charges; this has been termed 'diagnostic related group creep',[6] and hospitals will try to make the most expensive condition the principal diagnosis, and to undertake the most financially rewarding of a range of potential procedures. Inner city and teaching institutions will do badly because they have more expensive and

complex cases.[7] Several specialist procedures are especially favoured under this system because payment exceeds average costs; they tend to be procedures not related to the management of arthritic disease—for example, angioplasty.[8] Indeed arthritis tends to fare badly in the present diagnostic related group system of reimbursement. Diagnostic related groups only look at inpatient care. A similar approach termed ambulatory visit groups can be use for outpatients, and these may be used more appropriately for rheumatology in the future.

The costs of treatment have been investigated in several rheumatology units in the United Kingdom. An initial analysis by Thould showed that in 1985 each outpatient visit cost £35 and each inpatient day £58.[9] The subsequent introduction of resource management allowed a more detailed analysis in Newcastle and North Tees. Bedi *et al* analysed data from 1985 to 1986.[10] They found the mean cost of each outpatient visit varied from £21 to £32 for different clinicians. Inpatient stays were £49 daily in the Freeman Hospital in Newcastle and £71 per day in North Tees Hospital. There were several interesting differences between these two units. One was the duration of inpatient stay: in the Freeman Hospital patients stayed for a mean of 17·9 days; in North Tees the mean duration was 13·1 days. Another variation was the proportion of total costs spent on different tests. In the Freeman Hospital 16% of outpatient costs were spent on radiology, while at North Tees only 6% of costs were spent in this way. On the other hand, 12% of inpatient costs at North Tees were spent on laboratory tests compared with 6% in the Freeman Hospital. Although drug costs usually attract considerable attention, they proved a minor part of expenditure, dwarfed by the 'fixed costs' such as management, maintenance, heating, and lighting, over which individual practitioners have little influence. It is difficult to know how much importance to attach to these interhospital differences, but they underline the problem of defining reasonable clinical costs and measuring performance. One clear message is the cost of inpatient care; this accounted for 56% of the Freeman rheumatology unit's budget of nearly £800 000. A component of considerable influence on this cost was the presence of co-morbidity, hence a need for accuracy in coding of all diagnoses and complications if adequate funding is to be assured. The total cost of the service worked out at about £1 per person each year for the population they serve, and this may be a figure of national relevance, with a projected budget for rheumatology in the United Kingdom of £55–60 million.

Another way of looking at the performance of rheumatologists is to examine the effectiveness of treatment. Rheumatoid arthritis (RA) is the obvious disease to consider when examining this question. There have been several reviews on the long term outcome of RA.[11 12] Studies from Droitwich,[13] Bath,[14] and North America[15 16] all draw similar conclusions. Over 10 to 20 years there is an increased mortality and substantial functional decline in patients with RA even if they receive apparently optimal treatment with antirheumatic drugs. Thus gold and similar slow acting antirheumatic drugs appear not to stop the progression of RA. The extent of the excessive mortality and functional decline varies between studies, presumably as a result of different methods of patient selection. But by 20 years at least 50% of patients with RA referred to a specialist centre will be dead or severely disabled, many as a direct result of their disease. The elderly, the poor, women, and those with severe initial disease do least well. This does not mean that treatment is inappropriate. Thompson *et al* examined the cost effectiveness of treatment with auranofin over the short term of four to six months.[17] They found that the improvements in global health and the advantageous impacts on daily life resulting from auranofin greatly outweighed the drawbacks due to adverse reactions and the costs of treatment.

These considerations put rheumatologists in an apparent quandary. On one hand, over several decades treatment has little apparent effect on mortality and morbidity of RA. On the other hand, it seems cost effective over several months. And all antirheumatic drugs have been shown to be effective in placebo controlled trials, in which they reduce clinical and laboratory measures of disease activity. There are two reasons for this apparent paradox. First, long term analysis inevitably assesses the treatment methods of previous decades. Although the second line drugs used in those studies were familiar, the timing of their introduction was much later than present practice, most people having had their disease for many years before second line treatment was started. This is dissimilar from the more aggressive approach currently used and early treatment may be important if successful disease retardation is to be achieved.[18] Secondly, there is the way in which the question is put. Outcome measures such as the health assessment questionnaire are widely used and acceptable[19]; they define the function of RA. But patients may wish to have their responses to treatment defined in other ways; such as an immediate improvement in their global sense of wellbeing or other measures of the quality of their lives. These determinations can be complex and time consuming and difficult to standardise and evaluate, but they do at least allow us to put cost-benefit analysis into an area that is more meaningful to the patients as well as their attending doctors.[20] A consensus meeting at St Bartholomew's Hospital in 1987 discussed some of these issues.[21] The participants considered that there are many dimensions of outcome in RA; function is one area of relevance, but there is also the need for a drug reaction index, and measures of morbidity, such as severe extra-articular complications of RA. Thus although it is eminently sensible to measure the outcome of our treatments in an attempt to define the performance of rheumatologists, it is far from certain how this should be assessed. Simply counting admissions to hospital or the numbers coming to rheumatology clinics is clearly inadequate. Measuring the outcome of treatment merges with clinical audit, which is one area of the white paper with which all clinicians agree. Most approaches involve reviewing the medical case notes of recent inpatients to determine what was done, consider what should have been done, and define ways of improving the service.[22 23] There is no doubt that this is educational and can improve the treatment of some patients. But not all the lessons learnt from audit are necessarily put into practice, particularly if they involve extra expenditure, and its real value as a way of improving medical care has not been entirely proved.[24] Individuals' opinions of audit are usually favourable; for example, Van't Hoff after reviewing practice at a number of centres in North America concluded that there would be substantial benefits from audit in the United Kingdom.[25] But we would not want to embark on a major programme of evaluating clinical rheumatological practice without being certain that we had chosen the right approach. In particular we must remember that rheumatology is a multidisciplinary specialty and thus multidisciplinary audit may be an important clinical tool. Although it is a complex process, our early experience in Middlesbrough has shown that it can be an effective method of self appraisal, and does enable us to make use of criteria developed by other professions, especially nurses.[26]

How do these considerations relate to the white paper? Bevan *et al* suggest that in the 1990s every hospital will want to know what it costs to treat individual cases.[27] They estimate that about £500 million will be needed for the

relevant information systems. And this will only be relevant for elective procedures, most of which are surgical, accounting for some 20% of the total NHS budget. Such accounting systems will be less relevant for chronic diseases such as RA. Indeed Scheffler considered that patients with chronic diseases may be adversely selected against.[28] In the United States he estimated that there were 37 million individuals without health insurance; and companies tended to avoid 'high risk' users with chronic disorders. For example, one American health maintenance organisation invited applications for its plan at a dance it sponsored for the elderly on the second floor of a building without a lift. Even if this is an apocryphal tale it illustrates the problem of delivering health care to patients with chronic disabling conditions.

There is no simple message for rheumatologists about measuring performance. We shall all have to do it, in one form or another, and it is always best to welcome the inevitable. There will be problems, and by being prepared for the potential difficulties we shall be better armed to overcome them. Rheumatologists as a group have not defined what should be measured, and this oversight needs to be addressed urgently. We recommend three approaches: (*a*) measuring the number of patients seen by the rheumatology team together with their diagnoses, tests, and other interventions, including not only drugs and surgery but the counselling and education that are such important components of our care; (*b*) measuring the extent to which our interventions meet people's needs and provide 'customer satisfaction' in a continuous way throughout the whole of the patients' contact with the rheumatology unit; (*c*) measuring the outcomes of treating major rheumatological conditions, such as rheumatoid arthritis and osteoarthritis, again on a continuous basis so that apparent inadequacies of treatment at, say, a 21 year end point do not mask the successful influences of treatment during many of those years. All of these need criteria to be agreed and the methods of collecting the data to be validated. Even such apparently simple tasks have several hidden minefields to be negotiated and there is a need for considerable support for research in this area and a widespread commitment by clinicians to develop and maintain the assessment systems we so urgently need.

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1 Haslock I. Epidemiological, sociological and environmental aspects of rheumatology; a clinical rheumatologist's view. *Ballières Clinical Rheumatology* 1987; **1**: 645–63.
2 Secretaries of State for Health, Wales, Northern Ireland. *Working for patients.* London: HMSO, 1989.
3 Steering Group on Health Services Information. *A report on the collection and use of information about hospital clinical activity in the National Health Service. First report.* London: HMSO, 1982.
4 Knox E G. *Health-care information. Report of a joint working group of the Korner committee on health services information and the faculty of community medicine.* Nuffield Provincial Hospitals Trust, 1987. (Occasional papers 8.)
5 Thompson J D, Fetter R B, Mross C D. Case mix and resource use. *Inquiry* 1975; **12**: 300–12.
6 Simbourg D W. DRG creep: a new hospital-acquired disease. *N Engl J Med* 1981; **304**: 1602–4.
7 Sternberg E, Anderson G F. Potential "losers" under per-case payment. *Ann Intern Med* 1987; **106**: 904–6.
8 Prospective Payment Assessment Commission. *Report and recommendations to the Secretary, US Department of Health and Human Services.* Washington DC: US Government Printing Office, 1985.
9 Thould A K. Costs of health care: experience of one department of rheumatology. *Br Med J* 1985; **281**: 957–9.
10 Bedi S, Crook P R, Dick W C, Griffiths I D, Platt P N. Costs of providing a rheumatology service. *Br J Rheumatol* 1987; **26**: 454–7.
11 Spector T D, Scott D L. What happens to patients with rheumatoid arthritis? The long-term outcome of treatment. *Clin Rheumatol* 1988; **7**: 315–30.
12 Sherrer Y S, Block D A, Mitchell D M, Roth S H, Wolfe F, Fries J F. Disability in rheumatoid arthritis: comparison of prognosis factors across three populations. *J Rheumatol* 1987; **14**: 705–9.
13 Scott D L, Symmons D P M, Coulton B L, Popert A J. Long-term outcome of treating rheumatoid arthritis: results after 20 years. *Lancet* 1987; **i**: 1108–11.
14 Rasker J J, Cosh J A. The natural history of RA. A fifteen year follow-up study. *Clin Rheumatol* 1984; **3**: 11–20.
15 Pincus T, Callahan L F, Sale W G, Brooks A L, Payne L E, Vaughn W K. Severe functional decline, work disability, and increased mortality in seventy five rheumatoid arthritis patients studied over nine years. *Arthritis Rheum* 1984; **27**: 864–72.
16 Sherrer Y S, Block D A, Mitchell D M, Young D Y, Fries J F. The development of disability in rheumatoid arthritis. *Arthritis Rheum* 1986; **29**: 494–500.
17 Thompson M S, Read J L, Hutchings H C, Paterson M, Harris E D. The cost effectiveness of auranofin: results of a randomised clinical trial. *J Rheumatol* 1988; **15**: 35–42.
18 Borg G, Allander E, Lund B, *et al.* Auranofin improves outcome in early rheumatoid arthritis. Results from a 2 year, double blind, placebo controlled study. *J Rheumatol* 1988; **15**: 1747–54.
19 Spitz P W, Fries J F. The present and future of comprehensive outcome measures for rheumatic diseases. *Clin Rheumatol* 1987; **6** (suppl 2): 105–11.
20 Bombardier C, Ware J, Russell I J, Larson M, Chalmers A, Reid J L. Auranofin therapy and quality of life in patients with rheumatoid arthritis. *Am J Med* 1986; **81**: 565–78.
21 Scott D L, Spector T D, Pullar T, McConkey B. What should we hope to achieve when treating rheumatoid arthritis? *Ann Rheum Dis* 1989; **48**: 256–61.
22 Williamson J W. Formulating priorities for quality assurance activity. *JAMA* 1978; **239**: 631–7.
23 The Swansea physicians audit group. Audit reviewed. Implementing audit in a division of medicine. *J R Coll Physicians Lond* 1982; **16**: 252–4.
24 Mitchell M W, Fowkes F G R. Audit reviewed: Does feedback on performance change clinical behaviour? *J R Coll Physicians Lond* 1985; 257–60.
25 Van't Hoff W. Audit reviewed: medical audit in North America. *J R Coll Physicians Lond* 1985; **19**: 53–5.
26 Royal College of Nursing. *Standards of care in rheumatic disease nursing.* Harrow: Scutari Press, 1989.
27 Bevan G, Holland W, Mays N. Working for which patients and at what cost? *Lancet* 1989; **i**: 947–9.
28 Scheffler R. Adverse selection: the Achilles heel of the NHS reforms. *Lancet* 1989; **i**: 950–2.