

bias from non-responders is to assume very extreme responses from them (in more than one direction), which indicates the uncertainty in the estimate of prevalence caused by a response of less than 100%. This estimation of bias is much more difficult to justify when examining relations between two or more variables. The need for obtaining high (>80%) response rates is therefore obvious.

Sometimes samples with low response rates are valuable. When the result shows, for example, the existence of a problem such as violence in general practice (p 329),² this may of itself be important and the possibility of bias cannot remove the impact of the actual numbers found. Indeed, Hobbs was able to put a lower bound on the prevalence of violence by assuming an extreme bias among the non-responders, but even this lower bound pointed to the problem being real. Similarly, a non-random sample need not totally invalidate a survey, but such studies should not then be used to estimate prevalence or to examine associations between variables.

Using available resources to take a random sample and then pursuing these chosen subjects intensively with repeat letters, telephone calls, and so on to obtain a high response rate is preferable to dissipating resources in mass mailings. When this is impossible the estimation of bias should be made pessimistically, so that misleading conclusions are not drawn. Small random samples with high response rates are more valuable than large non-random samples or those with low response rates.

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2 Hobbs R. Violence in general practice: a survey of general practitioners' views. *BMJ* 1991;302:329-32.

Laparoscopic cholecystectomy

Better for patients and the health service

Laparoscopic cholecystectomy is less painful, has a better cosmetic result, and is no more risky than open operation. Moreover, patients need stay in hospital for only one or two days. These are the claims: Are they justified?

The procedure is carried out with the laparoscope fitted with a colour television camera, which provides a colour picture on two monitors with resolution down to 1-2 mm. The gall bladder is held and dissected with grasping forceps introduced through the right flank and a diathermy probe inserted through the epigastrium just by the side of the xiphisternum. The cystic duct and artery are secured with titanium clips and the gall bladder removed through the umbilical incision. The three (or sometimes four) small punctures in the abdomen are then closed with adhesive strips—without skin sutures. The procedure is much less painful than when an incision is employed with the open operation. Two weeks later it is difficult to see that an operation has been done at all.

In 1977 the average length of stay for "operations on the gall bladder" was 14.5 days.¹ By 1990 this had fallen to 4.9 days in the United States (K S Fisher *et al*, poster at clinical congress of the American College of Surgeons, 1990), and is similar in Britain though there is a wide variation among hospitals.² The average length of stay after endoscopic cholecystectomy in more than 1000 procedures was 1.9 days (K S Fisher *et al*, poster at clinical congress of the American College of Surgeons, 1990).

Evidence on the risks and morbidity is anecdotal. Certainly there have been instances of haemorrhage that have required open laparotomy to control. The common bile duct has been damaged and even the portal vein entered. The closure of the cystic duct has given way and biliary peritonitis has occurred. Clearly there will be a learning curve during which complications are bound to occur, as there is for surgeons learning the open procedure. Because the modern television monitor systems are so good it has been argued that the dissection required is more accurate and therefore capable of yielding better results.

In most centres the open operation is accompanied by cholangiography; although some carry this out with the

laparoscopic method, most do not. Preoperative ultrasonographic assessment of hepatic duct dilatation is therefore important, and ready availability of endoscopic retrograde cholangiopancreatography and sphincterotomy for the stone lodged in the common bile duct is essential.

Experience with laparoscopy, long an essential component of the training of abdominal surgeons, is an advantage, but the basic techniques are not difficult to acquire, and training courses are being set up all over the Western world. Although skill with laparoscopy is useful, experience of biliary surgery and open cholecystectomy is probably more important. As with any new technique, different methods are being described.³ For example, should diathermy alone be used or should it be combined with the laser? Diathermy is cheaper and universally available, but the laser may be quicker for removing the gall bladder from its bed.

An indication of the interest in this technique is the difficulty of acquiring some of the instruments because those available have been snapped up, and there may be a three to six month wait for supplies. Scenting the demand, the surgical instrument industry is responding, and, with characteristic flair, American Autosuture has produced a totally disposable kit—at a price.

There are, of course, dangers, and one is that the procedure will be taken up by enthusiastic surgeons who may cause severe biliary damage through lack of training. Also, this is a procedure that probably should be carried out in hospitals where adequate facilities, such as endoscopic retrograde cholangiopancreatography, are available. There is a more subtle danger, however, that as the operation is much less disturbing to the patient the mere finding of gall stones may become regarded as an indication for operation. In many if not most cases stones are not and never will be associated with complications, and therefore too many patients may be persuaded to part with their gall bladders.

Because of the scale of the problem represented by gall stones it is natural that other methods of treatment should have been developed. For example, gall stones have been dissolved with chenodeoxycholic acid or ursodeoxycholic acid or with other solvents introduced directly into the gall

bladder. They have been plucked from the gall bladder percutaneously or reduced to tiny fragments with extracorporeal shock wave lithotripsy. But cholecystectomy has the unique advantage of removing the organ in which gall stones form and therefore of providing a lifetime cure. A compromise method is to perform minilap cholecystectomy, but this tends to combine the worst of all worlds and compares unfavourably with the endoscopic method.⁴

In England, over 30 000 cholecystectomies are performed each year.¹ If all these were performed by laparoscopic methods the saving resulting from a reduction in bed days alone would amount to £21m. In these days of strict financial and medical audit endoscopic cholecystectomy will inevitably

become the only method for routine cholecystectomy. It is an innovation that has the virtue of being advantageous for both the customer and the community.

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Referrals to rheumatology

Better communication should prevent waste of resources

In 1986, 24 health districts had no rheumatologist.¹ Although most of these districts now have one, long outpatient department waiting lists reflect the continuing low ratio of rheumatologists to the general population. The new NHS contract offers possibilities for reducing these waiting lists: cross boundary referrals will become easier, it is said, and there is evidence that patients do not mind travelling long distances provided that they are seen sooner^{2,3}; budget holders may find it cost effective to employ their own physiotherapist; steroid injections will become a minor surgical procedure; and the establishment of miniclinics (for which there is financial incentive) may alter general practitioners' management of musculoskeletal disorders. But for now do these long waiting lists reflect unnecessary referrals and, in the new climate, which patients will still need a specialist opinion?

Referral rates by general practitioners vary widely for reasons that are still unclear. It has been claimed that many referrals for a specialist rheumatological opinion are unnecessary,⁴ although this view has been challenged.⁵ Much will depend on the local availability of, and ease of access to, services such as radiology, physiotherapy, and orthotics. Rheumatologists consider that a proportion of referrals to them (15% in our survey⁶) could be avoided if general practitioners had access to these services. Trials of open access to physiotherapy and orthotics have shown appropriate use of the services by general practitioners,^{7,8} and on existing evidence open access to these facilities should be made universal.⁹

Billings and Mole showed that of 106 consecutive new consultations for musculoskeletal conditions in general practice, 81 were for non-inflammatory musculoskeletal disorders.¹⁰ The disorders include osteoarthritis, low back pain, neck pain, soft tissue lesions such as tennis elbow, and generalised soft tissue rheumatism. The generalist is well equipped to manage these conditions by advice and reassurance (including the use of information booklets¹¹), by using analgesics and anti-inflammatory drugs, by intralesional corticosteroid injections, and by physiotherapy.

Non-specialists cannot always easily distinguish between non-inflammatory musculoskeletal disorders and those conditions that are potentially progressive and life threatening. Would increasing the amount of time spent training in rheumatology at both undergraduate and postgraduate level make this any easier? Although formal teaching in

rheumatology occupies only a small part of the undergraduate curriculum, it could be argued that the prime educational aim is to teach good clinical methods, including an assessment of the musculoskeletal system.¹² Unfortunately, newly qualified doctors rarely examine the joints and so miss many conditions likely to have an impact on patient morbidity.¹³ This deficiency could be corrected in postgraduate training, yet few vocational training schemes have rheumatology jobs in their rotations. Educational initiatives for established general practitioners suggest that when a doctor is interested in pursuing knowledge these schemes are effective,^{14,15} but without this interest such initiatives fail.¹⁶ Perhaps this is partly because the preferred educational methods (small group teaching, clinic apprenticeships, and "hands on" demonstrations of examination and injection techniques) are seldom offered.^{17,18}

Given this background it still seems reasonable for general practitioners to refer doubtful cases for a specialist opinion. Patients with rheumatoid arthritis, seronegative spondylarthritis (including psoriatic arthritis and ankylosing spondylitis), connective tissue disorders, and other inflammatory arthritides could then be followed up in hospital. A system of shared management between hospital and primary care can help relieve congestion in hospital clinics, but such cooperation needs to be established locally with agreed guidelines. From the specialist's point of view structured referrals are of considerable benefit⁵ because the expectations of both the referring doctor and the patient are clearly stated. Too often patients referred simply for advice and reassurance—for both the patient and the doctor—continue to be seen by the hospital. Better communication between specialists and general practitioners would help to prevent this waste of hospital resources.

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