these figures are favourably influenced by the deaths of high risk patients.

If a patient ruptures his aneurysm and reaches hospital alive early diagnosis and an immediate operation are vital. With a non-operative mortality of 100% there is little need for debate or delay. The patient should be anaesthetised on the operating table after all preparations for the operation are complete. The relaxation of the abdominal muscles may result in the rupture extending and dramatic hypotension. Early proximal control of the aneurysm is important, and catheters have been used before the patient is anaesthetised.⁵⁰ Interventional radiology may have an increasingly important place if it does not delay the operation.

Many deaths occur in patients who are moribund when they present, and medical ingenuity cannot help. The opportunity for improving results must lie in diagnosis before rupture, and in an ideal world a screening programme could be employed using ultrasonography or, better still, nuclear magnetic resonance. Necropsy studies suggest that three elective resections would be needed to avert one rupture.¹⁴⁶ Such a programme would need 12 000 operations in England and Wales⁵¹ and cost £9000 for each life saved.⁵² In the United States the cost might be \$10 billion.²² More realistically, doctors must become more aware of abdominal aneurysms and palpate the abdomen of men over 50, just as they would take their blood pressure. Ultrasonography should then be used in doubtful cases and those with other cardiovascular symptoms.

N F GOWLAND HOPKINS

Senior Registrar,
Department of Surgery,
Royal Postgraduate Medical School,
London W12 0HS

- 1 Turk KAD. The postmortem incidence of abdominal aortic aneurysm. *Proceedings of the Royal Society of Medicine* 1965;58:869-70.
- 2 Ingoldby CJH, Wijanto W, Mitchell JE. Impact of vascular surgery on community mortality from ruptured aortic aneurysms. *Br J Surg* 1986;73:551-3.
- 3 Registrar General. *Mortality statistics. Cause 1984. Series DH2*. London: HMSO, 1986.
- 4 Johansson G, Swedenborg J. Ruptured aortic aneurysms. *Br J Surg* 1986;73:596.
- 5 Melton LJ, Bickerstaff LK, Hollier LH, et al. Changing incidence of abdominal aortic aneurysms—a population based study. *Am J Epidemiol* 1984;120:379-86.
- 6 Castleden WM, Mercer JC. The members of the West Australia Vascular Service. Abdominal aortic aneurysms in Western Australia; descriptive epidemiology and patterns of rupture. *Br J Surg* 1985;72:109-12.
- 7 Cabellon S, Moncrief CL, Pierre DR, Cavanaugh DG. Incidence of abdominal aortic aneurysms in patients with atherosclerotic arterial disease. *Am J Surg* 1983;146:575-6.
- 8 Robicsek F. The diagnosis of abdominal aneurysms. *Surgery* 1981;89:275-6.
- 9 Graeve AH, Carpenter CM, Wicks JD, Edwards WS. Discordance in the sizing of abdominal aortic aneurysms and its significance. *Am J Surg* 1982;144:627-34.
- 10 Papanicolaou N, Wittenberg J, Ferrucci JT, et al. Preoperative evaluation of abdominal aortic aneurysms by computed tomography. *AJR* 1986;146:711-5.
- 11 Lee JKT, Ling D, Heiken JP, et al. Magnetic resonance imaging of abdominal aortic aneurysms. *AJR* 1984;143:1197-202.
- 12 Amparo EG, Giggins CB, Hoddick WK, et al. Magnetic resonance imaging of aortic disease; preliminary results. *AJR* 1984;143:1203-9.
- 13 Amparo EG, Hoddick WK, Hricak H, et al. Comparison of magnetic resonance imaging and ultrasound in the evaluation of abdominal aortic aneurysms. *Radiology* 1985;154:451-6.
- 14 Dubost C, Allary M, Oeconomos W. Resection of aneurysm of the abdominal aorta; re-establishment of the continuity by a preserved human arterial graft, with results after five months. *Arch Surg* 1952;64:405-8.
- 15 Plate G, Hollier LA, O'Brien P, Pailorero PC, Cherry KJ, Kazmier FJ. Recurrent aneurysms and late vascular complications following repair of abdominal aortic aneurysms. *Arch Surg* 1985;120:590-4.
- 16 Estes JL. Abdominal aortic aneurysm; a study of 102 cases. *Circulation* 1950;2:258-63.
- 17 Szilagyi DE, Smith RF, DeRusso FJ, Elliott JP, Sherrin FU. Contribution of abdominal aortic aneurysmectomy to prolongation of life. *Ann Surg* 1966;164:678-99.
- 18 Yeager RA, Weigel RM, Murphy ES, McConnell DB, Sasaki TM, Vetto RM. Application of clinically valid cardiac risk factors to aortic aneurysm surgery. *Arch Surg* 1986;121:278-81.
- 19 Diehl JT, Cali RF, Hertzner NR, Beven EG. Complications of abdominal aortic reconstruction. *Ann Surg* 1983;197:49-56.
- 20 Bernstein EF, Chan EL. Abdominal aortic aneurysm in high risk patients. *Ann Surg* 1984;200:255-63.
- 21 Pasch AR, Ricotta JJ, May AG, Green RM, Dewese JE. Abdominal aortic aneurysm: the case for elective resection. *Circulation* 1984;70(suppl 1):11-4.
- 22 Cooley DA. Abdominal aortic aneurysm. *Circulation* 1984;70(suppl 1):15-6.
- 23 McCabe CJ, Coleman WS, Brewster DC. The advantage of early operation for abdominal aortic aneurysm. *Arch Surg* 1981;116:1025-9.
- 24 Crawford ES. Symposium: prevention of complications of abdominal aortic reconstruction. *Surgery* 1983;93:91-6.
- 25 Nash T, Gold J. Surgery for abdominal aortic aneurysms. *Med J Aust* 1983;ii:434-6.
- 26 Makin GS. Changing fashions in the surgery of aortic aneurysms. *Ann R Coll Surg Engl* 1983;65:308-10.

- 27 Fielding JWL, Black J, Ashton F, Slaney G, Campbell DJ. Diagnosis and management of 528 abdominal aortic aneurysms. *Br Med J* 1981;283:355-9.
- 28 Flanagan DP, Quinn T, Kraft RO. Selective management of high risk patients with an abdominal aortic aneurysm. *Surg Gynecol Obstet* 1980;150:171-6.
- 29 Soreide O, Lillestol J, Christensen O, et al. Abdominal aortic aneurysms: survival analysis of 434 patients. *Surgery* 1982;91:188-93.
- 30 Rantakokko U, Havia T, Luberg MV, Vantinen E. Abdominal aortic aneurysms; a clinical and autopsy study of 408 patients. *Acta Chir Scand* 1983;149:151-5.
- 31 Campbell WB, Collin J, Morris PJ. The mortality of abdominal aortic aneurysms. *Ann R Coll Surg Engl* 1986;68:275-8.
- 32 Harris KA, Ameli FM, Lally M, Provan JL, Johnston KW, Goldberg MR. Abdominal aortic aneurysm resection in patients more than 80 years old. *Surg Gynecol Obstet* 1986;162:536-8.
- 33 Fielding JWL, Black J, Ashton F, Slaney G. Ruptured aortic aneurysms; post operative complications and their aetiology. *Br J Surg* 1984;71:487-91.
- 34 Jenkins A McL, Ruckley CV, Nolan B. Ruptured abdominal aortic aneurysm. *Br J Surg* 1986;73:395-8.
- 35 Wakefield TW, Whitehouse WM, Shu-Chen Wu, et al. Abdominal aortic aneurysm rupture: statistical analysis of factors affecting outcome of surgical treatment. *Surgery* 1982;91:586-95.
- 36 Fitzgerald JF, Stillman RM, Powers JC. A suggested classification and re-appraisal of mortality statistics for ruptured atherosclerotic infrarenal aortic aneurysms. *Surg Gynecol Obstet* 1978;146:344-6.
- 37 Hiatt JCG, Barker WF, Machleder HI, Baker JD, Busuttill RW, Moore WS. Determinants of failure in treatment of ruptured abdominal aortic aneurysms. *Arch Surg* 1984;119:1264-8.
- 38 Abernathy CM, Baumgartner R, Butler HG, et al. The management of ruptured abdominal aortic aneurysms in rural Colorado. *JAMA* 1986;256:597-600.
- 39 Talbot S, Langman MJS. Epidemiological features of ruptured, dissecting and saccular aortic aneurysms. *Postgrad Med J* 1972;48:414-6.
- 40 Armour RH. Survivors of ruptured abdominal aortic aneurysms: the iceberg's tip. *Br Med J* 1977;iii:1055-7.
- 41 Johansson G, Swedenborg J. Ruptured abdominal aortic aneurysms: a study of incidence and mortality. *Br J Surg* 1986;73:101-3.
- 42 Bowers D, Cave WS. Aneurysms of the abdominal aorta: a 20 year study. *J R Soc Med* 1985;78:812-9.
- 43 Treiman RL, Levine KA, Cohen JL, Crossman DV, Foran RF, Levin PM. Aneurysmectomy in the octogenarian. *Am J Surg* 1982;144:194-7.
- 44 Sterpetti AV, Schultz RD, Feldhaus RJ, Peetz DJ, Frasciano AJ, McGill JE. Abdominal aortic aneurysm in elderly patients. *Am J Surg* 1985;150:772-6.
- 45 Delin A, Ohlson H, Swedenborg J. Growth rate of abdominal aortic aneurysms as measured by computed tomography. *Br J Surg* 1985;72:530-2.
- 46 Darling RC. Ruptured arteriosclerotic abdominal aortic aneurysms. A pathologic and clinical study. *Am J Surg* 1970;179:397-401.
- 47 Appleberg M, Coupland GAE, Reeve TS. Ruptured abdominal aortic aneurysm: long term survival after operation. *Aust NZ J Surg* 1980;50:28-32.
- 48 Bardram L, Buchardt Hansen HJ, Hansen ABD. Abdominal aortic aneurysms. *Acta Chir Scand* 1980;502:85-93.
- 49 Gravaard E, Juul S, Albrechtsen O, Mauritzen C. Prognosis and treatment of abdominal aortic aneurysms. *Surg Gynecol Obstet* 1980;151:777-80.
- 50 Sensenig DM. Rapid control in ruptured abdominal aneurysms. *Arch Surg* 1981;116:1034-6.
- 51 Collin S. The incidence of abdominal aortic aneurysm. *Br J Surg* 1985;72:499.
- 52 Collin J. Screening for abdominal aortic aneurysm. *Br J Surg* 1985;72:851-2.

Nursing manpower

Is there a crisis in nursing manpower? The National Health Service's chief executive, Len Peach, has warned of future difficulties in recruitment, and many local voices are complaining of shortages. Old troubles with the quality of training and the excessive work contribution of student nurses have regained prominence through the Project 2000 report.¹ But after four years in which the same number of nurses has faced up to a 13% rise in workload the atmosphere remains surprisingly calm.²

Management action is now an alternative to complaint. Techniques of measuring the need for nurses are now available: the monitor project at Newcastle Polytechnic and work in Brighton and north Lincolnshire have developed the earlier work at Aberdeen.³ Many districts may complain of shortages, but only those that can prove their shortages with the new measures will command respect. The Department of Health and Social Security's work on the lack of fit between nursing resources and needs has also had an impact on opinion, most recently through the report on the mix of nursing skills.⁴

The nursing force is now much better educated and flexibly trained than it was. The development of postbasic training has been a success, and, although wastage among student nurses throughout their course and through exam failure is at least 30%,¹ the turnover among trained staff is probably lower than in the 1960s: more people are working as

staff nurses for a time. The British nursing profession is now a major asset to the NHS. The review body has made a good start, and the Royal College of Nursing has been giving a clear lead so that there is much less interunion rivalry. All these are changes that tend to damp down crisis, although with weakening effect as turnover among trained staff is likely to rise.

The emerging local problems may be rather different from those diagnosed in the Project 2000 report. Staffing difficulties may be growing in less popular aspects of care, where enrolled nurses have made a vital contribution in the past. Professional criticism of the training of enrolled nurses is natural, but enrolment has introduced into nursing many mature entrants without formal qualifications who often serve for longer than state registered nurses. The practical result of phasing out pupil nurse training is likely to be an increased reliance on nursing auxiliaries or aides with even less training. A new deal for nursing education would certainly mean that fewer people were trained even if demographic changes did not make this inevitable. Unless the total number of nurses is to be reduced other sorts of nurses will have to provide cover, and as the number of enrolled nurses declines this will be done by nursing aides. The Project 2000 report seemed to regard the case for abolishing pupil nurse training as self evident, but the grade has grown through local initiative in a way that should command respect from reformers at the centre.

The second local crisis is likely to be stress on ward sisters and charge nurses. With fewer beds the old problems of basic cover may be reduced, but patients being more dependent and the greater complexity of hospital care put great pressure on ward sisters. They still have a surprising number of non-nursing duties, and they have the problems that nobody else wants to solve—such as how to find an ambulance within 24 hours to take a patient 50 miles. This stress presents a serious threat to the quality of care.

The third crisis is likely to be in staffing special units and wards in the south east and particularly in central London. The NHS will share the staffing problems that will face all public services in central London, and the awesome number of special units all fishing in the same staffing pond will give a special and competitive quality to the complaints that will be heard.

The first reaction to shortages of staff has been to encourage nurses who have left to return, and to recruit part time staff and mature entrants—the same methods that were used in the 1960s. These are useful steps, especially in the south east, where the new problems are closest to the old, but they need to be complemented by policies to improve staffing in unpopular aspects of care and to reduce stress on ward sisters. There could be a new emphasis on in-service training and on improving the quality in geriatric and longstay care.⁵ Some DHSS financed pilot projects would be useful.

Ward sisters must be at the centre of initiatives to improve quality of care. They need the power, the resources, and the budgets to solve the problems, time to develop skills and interests, and a pay structure that will give an incentive to improved care. The aim must be to use their time more effectively and to give them more of a chance to develop potential.

The new local problems with an immediate impact on services are likely to get much less attention nationally than the issue of changing student nurse training. The case for change is strong in the light of the continuing high wastage rate and the heavy work commitment of the trainees, and the

next five years are a time of unusual opportunity for making the change. There will be a 20% fall in the relevant age group by the early 1990s, which will force intakes down and reduce the work contribution of student nurses.⁶ Training will have to be reorganised as schools become too small to be viable, and local arrangements with polytechnics and universities would be easy to organise. But unless managers and nurses can deal with the immediate service problems the case for change in training is likely to be lost yet again as health authorities resist the cost and the upheaval.

NICK BOSANQUET

Senior Research Fellow,
Centre for Health Economics,
University of York,
York YO1 5DD

- 1 United Kingdom Central Council for Nursing Midwifery and Health Visiting. *Project 2000: a new preparation for practice*. London: UKCC, 1986.
- 2 HM Treasury. *The government's expenditure plans 1987-88 to 1989-90*. Vol II. London: HMSO, 1987:222.
- 3 Goldstone LA, Ball JA, Collier MM. *Monitor: an index of the quality of nursing care for acute medical and surgical wards*. Newcastle: Newcastle upon Tyne Polytechnic, 1983.
- 4 Department of Health and Social Security. *"Mix and match": a review of nursing skill mix*. London: DHSS, 1986.
- 5 Bosanquet N, Gerard K. *Nursing manpower: recent trends and policy options*. York: Centre for Health Economics, University of York, 1985.
- 6 Royal College of Nursing. *The education of nurses: a new dispensation. Annexe of research studies for commission on nursing education*. London: RCN, 1985:108.

Long term urethral catheterisation in the elderly

Incontinence and retention of urine are common in the elderly, and the apparently simple solution of urethral catheterisation is immediately attractive, particularly in patients with declining physical and mental health. But it is in this group that long term catheterisation is most difficult. The complications of infection, blocked catheters, and leakage of urine may lead to a frenetic rate of replacement, often with bigger and bigger catheters. The patient then suffers discomfort and loss of dignity, and considerable pressure is put on the community nursing services.

In a study of patients admitted to a chronic care centre in the Netherlands 16% had an indwelling catheter; yet fewer than one fifth of the catheters remained in place for the designated period of one month.¹ Most needed replacing because of persistent blocking or leakage. Some of the catheters, all of which were originally intended for long term management of retention, could be successfully removed. Kennedy and Brocklehurst have highlighted the varied and contradictory attitudes of doctors and nurses to the complications of indwelling catheters; they also showed that many were vague about the original indications for long term catheterisation.²

The common indications are incontinence or retention of urine, which may be real or imagined. Incontinence in the elderly secondary to bladder instability, immobility, and confusion is common and deserves more medical interest than simply committing a patient to life with a catheter. The patient can often be successfully managed with urodynamic investigation³ and conservative treatments—such as bladder training for detrusor instability and various incontinence appliances. Retention of urine and severe bladder outflow obstruction are best treated by an endoscopic operation,