considered as a reasonable indication for the benefit to be had from intramedullary nailing with cement. Not only is action welcome in outwardly hopeless circumstances, but these procedures also give good relief of pain.

Nowadays most sufferers from malignant disease expect to share the truth of their plight, and some degree of individual choice has become seen as a patient's right. Pathological fracture never lent itself to the otherwise occasionally useful "copper bottomed lie" approach to cancer described by Sir Heneage Ogilvie. Spontaneous abnormal mobility of a limb is not easily explained away, and the American articles[2-4] give good advice on the humane and effective action.

[1] Sweetman, R, *Clinical Orthopaedics*, 1975, **111**, 57.
[2] Douglass, H O, Shukla, S K, *Journal of Bone and Joint Surgery*, 1976, **58A**, 1055.
[3] Harrington, K D, *et al*, *Journal of Bone and Joint Surgery*, 1976, **58A**, 1047.
[4] Zickel, R E, and Mouradian, W H, *Journal of Bone and Joint Surgery*, 1976, **58A**, 1061.
[5] Stewart, I M, *British Medical Journal*, 1957, **2**, 922.

Perforating diverticulitis

For many years the orthodox management of perforating diverticulitis was a multistage procedure of colostomy followed by elective resection and colostomy closure. More recently, this approach has come under increasing criticism for its high mortality and morbidity.[1 2] The alternative, aggressive operation of emergency resection may now have become the treatment of choice.[3] Review of recent experience in Britain and America shows that not more than 25% of operations for diverticulitis are done for acute perforation.[4-7] A single district hospital might have only three to five such emergency operations a year: in the Birmingham region, for example, with its five-million population, between 1969 and 1973 there were on average 65 operations a year for acute perforated diverticulitis.[1] Most cases are still managed conservatively.

Diagnosis of perforating diverticulitis may be difficult. In a recent account of 30 cases eight had come under the care of gynaecologists; six cases had been diagnosed as appendicitis, and two as carcinoma.[8] Such a scatter seems commonplace: less than half of the patients give a history that would give any guide to the correct diagnosis. These difficulties in diagnosis must lead to many patients having a laparotomy when, had the correct diagnosis been made, emergency surgery might not have been undertaken.

Several different pathological conditions come under the general heading of perforating diverticulitis, and they need to be distinguished if our treatment policies are to be rational. Firstly, the patient may have an area of localised inflammation —to use an old-fashioned expression, a phlegmon of the colon —or he may have a walled-off abscess, either pericolic or intramesenteric. If the diagnosis is reasonably certain the patient may be treated conservatively with intravenous fluids and broad-spectrum antibiotics, in much the same way as for an appendix abscess. In most patients the acute condition will settle down, and they may then be assessed at leisure and a decision made on whether elective surgery is needed. If there are no contraindications to major surgery and the episode has been the culmination of a long history of trouble from diverticulitis, then resection should be advised. If the acute attack was the first evidence of the disease then it seems reasonable to await further developments.

The second group of conditions are those producing a free perforation. This may be large, giving rise to gross severe faecal peritonitis, or small, allowing the escape of only gas and bacteria, producing a much less severe bacterial peritonitis. In either case laparotomy is required. If the perforation is small with bacterial peritonitis only, management may be limited to simple drainage of the site of the perforation, with appropriate antibiotic cover. The surgeon may be able to seal the small perforation with omentum or adjacent appendices epiploicae, but this is by no means always simple. Whether a transverse colostomy should be added is debatable: it is probably safe not to do so but the evidence is not yet conclusive.

The patients with faecal peritonitis are at greatest hazard: mortality rates may be as high as 20% and 40%.[1 2] This gloomy outlook reflects a combination of adverse factors. Most patients are elderly and have other medical problems, and they tend to come in late in the course of their illness. Furthermore, transverse colostomy and simple drainage has often proved ineffective in treating the condition: this method fails to remove the continuing source of faecal contamination between the colostomy and the perforation. The surgical procedure of choice in these patients is becoming resection of the diseased bowel, bringing the proximal descending colon out as a terminal colostomy (combined with copious peritoneal lavage with saline and antibiotic cover), for primary anastomosis after resection carries an unacceptably heavy mortality and morbidity. Nevertheless, while resection may now be the treatment of choice, it is no task for a junior registrar with an SHO anaesthetist in the middle of the night. An experienced team is essential.

[1] Localio, S A, and Stahl, W M, *Current Problems in Surgery*, p 20. Chicago, Year Book Medical Publishers, 1968.
[2] Madden, J L, and Tan, P Y, *Surgery, Gynecology and Obstetrics*, 1961, **113**, 646.
[3] Williams, J A, *Diseases of the Colon and Rectum*, 1976, **19**, 289.
[4] Miller, D W, and Wichern, W A, *American Journal of Surgery*, 1971, **121**, 536.
[5] Colcock, B P, *American Journal of Surgery*, 1968, **115**, 264.
[6] Giffin, J M, Butcher, H R, and Ackerman, L V, *Archives of Surgery*, 1967, **94**, 619.
[7] Watkins, G L, and Oliver, G A, *Surgery*, 1971, **69**, 215.
[8] Sweatman, C A, and Aldrete, J S, *Surgery, Gynecology and Obstetrics*, 1977, **144**, 47.

Whooping-cough immunisation

During the past two decades pertussis has become both much less common and much less life-threatening than in the early part of the century and between the two world wars. Even so, outbreaks still occur, and among the most recently studied (and most notable because of its size) was that of 1974-5. On that occasion the mortality for notified cases under 6 months of age was still high[1]; when there was no threat to life many affected babies were in hospital for long periods, while persistent cough and wheeze continued after the acute phase had passed. Nor should outbreaks be the only cause for concern: in the interval between them the disease remains endemic, with 3000-4000 notifications each year.

The prevention of whooping cough has therefore much to commend it. Extensive vaccine trials were carried out in Britain in the 1950s, and studies were also undertaken to determine the best time in the first year of life to start immunisation and the optimum interval between doses. Maternal antibody against pertussis was found not to be

transferred to the fetus across the placenta, so that there was no objection to early immunisation, as was the case in diphtheria prophylaxis. Nevertheless, in the end the decision came down in favour of a triple vaccine; the need to defer the administration of diphtheria and tetanus toxoids because of maternal antibody was set against the value of the adjuvant effect of pertussis antigen and the need to simplify the immunisation schedule to obtain public acceptance.

The recent decline in acceptance of the triple vaccine has been due to public and medical anxiety about possible adverse reactions to the pertussis component and to some lack of confidence in its protective efficiency. Faced with this climate of opinion the Joint Committee on Vaccination and Immunisation has now published[2] a major review of information on the epidemiology and morbidity of whooping cough and the effectiveness of and risks associated with immunisation.

One of the problems of adverse reactions is simply that we cannot yet assess their frequency. Early studies suggested the frequency of fits in the 28 days after injection might be about 1·5 per 100 000 child days,[3] but other reports have put the risk somewhat higher.[4] Most surveys have been retrospective, and it has been difficult to assess claims of cause and effect between immunisation and subsequent illness, including encephalopathy.[5] A very natural antagonism has grown up in the medical profession and the public to doing something to healthy children which could carry even the slightest risk of a serious complication. The strength of this feeling may account for some of the gross discrepancies between the various published assessments of the value and the risks of immunisation.

The efficacy of the established vaccines has been questioned against a background of acknowledged fact that the occurrence, morbidity, and mortality of pertussis had been declining before immunisation started. The rate of decline of mortality has been said not to have been influenced at all by immunisation.[6] Long ago,[7] and again recently,[8] adverse social factors including overcrowding were put forward as the predominant determinants in the transmission of whooping cough, and against these immunisation is a poor weapon. Nevertheless, observations of this kind have been made against a background of recent fairly high vaccine uptake in the population as a whole, many of whom were thereby protected.[9] The fact remains that within affected families immunised young children are less likely to have whooping cough and if infected to have it less severely than the unprotected.[10] Those most at risk are under 6 months of age.

The Secretary of State's announcement[11] of the Government's acceptance of the principle that compensation should be awarded where serious and damaging complications have been due to immunisation may help to relieve a little of the current anxiety. The decision has been given in advance of the full Report of the Royal Commission on Civil Liability and Compensation for Personal Injury. While it will relieve a sense of grievance, it will bring difficulties in the retrospective assessment of claims, together with a possible sharpening of the pain of families whose children are the victims of naturally occurring disease. More fundamentally, the decision may tend to imply official recognition of a case against rather than for pertussis immunisation.

Two central issues face doctors and the public now. Firstly, should whooping-cough immunisation be abandoned as part of the triple vaccine because of the damage done to the vaccine programme as a whole by lack of public confidence in this component? (If the vaccine were withdrawn the true incidence of the disease in our present social climate could be assessed, but it would be naive to expect the picture to become clear for several years.) Secondly, if vaccination is to continue, should the triple vaccine continue to be given according to the "revised" schedules,[12] in which immunisation is not started until about 4 months of age and a solid immunity cannot be expected until —at the earliest—the latter part of the first year? Or should we return partially to the earlier schedule in which vaccine was given at 3, 4, and 5 months, thereby achieving some protection by the middle of the first year?

The Joint Committee has been quite forthright in finding in favour of pertussis immunisation, emphasising the opportunity it gives to protect the very young from severe morbidity as well as appreciable mortality, and it has been equally emphatic that the benefits outweigh the small risks of adverse reactions.

During the period when the earlier schedule was widely used there was a major decline in the occurrence of pertussis, though it probably would be unwise to say that the precise timing of parts of the schedule was the major factor. It is, however, the Joint Committee's most recent advice[12] that immunisation against pertussis should start when children are 3 months old. The committee has also been explicit in listing the following contraindications to pertussis immunisation:

(1) History of seizures, convulsions, or cerebral irritation in the neonatal period.

(2) History or family history of epilepsy or other disease of the nervous system.

(3) Developmental or other defects.

(4) Any febrile illness, particularly respiratory, until the patient has fully recovered.

(5) Any local or general reaction to a preceding dose.

(6) While a personal or family history of allergy has in the past been considered to be a contraindication, a substantial body of medical opinion no longer considers this to be so. Nevertheless, doctors should use their own discretion in the individual case.

Whooping cough remains both a dangerous and distressing disease, especially for the very young, and the committee's advice (with the contraindications given) should be supported. We have no doubt that this policy should be generally advocated. Some critics have suggested that the immunisation of children is largely for the benefit of their younger siblings, and this point has been used to enhance the argument for compensation. In advocating acceptance of the committee's advice to the public, doctors should point out that protection, valuable if not complete, is being offered to and for the young infants themselves.

[1] Miller, C L, and Fletcher, W B, *British Medical Journal*, 1976, **1**, 117.
[2] *Whooping Cough Vaccination. Review of Evidence on Whooping Cough Vaccination by the Joint Committee on Vaccination and Immunisation (Professor Sir Charles Stuart-Harris, chairman)*. London, HMSO, 1977.
[3] Griffith, A H, *Proceedings of the Royal Society of Medicine*, 1974, **67**, 372.
[4] Dick, G, *Proceedings of the Royal Society of Medicine*, 1974, **67**, 371.
[5] Kulen Kampft, M, Wilson, J, and Schwartmann, J S, *Archives of Disease in Childhood*, 1974, **49**, 45.
[6] Stewart, G T, *Lancet*, 1977, **1**, 234.
[7] Daver, C C, *Public Health Reports*, 1943, **58**, 661.
[8] Bassili, W R, and Stewart, G T, *Lancet*, 1976, **1**, 471.
[9] Tillett, H, *Lancet*, 1976, **1**, 750.
[10] Noah, N D, *British Medical Journal*, 1976, **1**, 128.
[11] House of Commons, 14 June 1977.
[12] Standing Medical Advisory Committee, *Immunisation Against Infectious Disease*. London, Department of Health and Social Security, 1968.
[13] *Immunisation Against Communicable Diseases*. Department of Health and Social Security, 1977, CMO (77)7; CNO (77)3.