3 mg vancomycin/l, 7.5 mg colistin/l, and 12 500 units nystatin/l. To recover proteae present in small numbers both direct and enrichment cultures were used.⁴ Gram negative, oxidase negative bacteria growing on proteae isolation medium and causing characteristic browning of the medium were presumed to be proteae and were tested for urease activity. No urease positive *P. alcalifaciens* has been reported, so only urease negative isolates were identified further.

When *P. alcalifaciens* was isolated from a stool specimen the predominant lactose fermenting coliform was subcultured from MacConkey's agar and tested for production of heat labile enterotoxin with a co-agglutination test. The χ^2 test was used to evaluate the significance of the data.

The table summarises the findings. The most obvious difference between the two groups was the increased frequency with which *P. alcalifaciens* was isolated from the patients who had travelled abroad ($p < 0.001$). Most isolates (23 of the 25) were obtained from patients returning from Mediterranean countries, but most of the patients who had travelled abroad (194 of the 254) had visited these countries, and no significant association could be shown. None of the patients from whom *P. alcalifaciens* was isolated had travelled together, and

none of them were found to carry *Escherichia coli* that produced heat labile enterotoxin. Urease positive proteae were isolated with relatively high frequency in both groups but again were significantly more common in the patients who had travelled abroad ($p < 0.01$). Conversely, campylobacter was isolated significantly less commonly in this group ($p < 0.01$).

Comment

Various factors may have contributed to the differences between the two groups. Patients with travellers' diarrhoea may present for diagnosis later than other patients with diarrhoea, thus reducing the likelihood of the causative agent being isolated. This could account for the lower frequency of isolation of campylobacter in the patients who had travelled abroad. These patients may also be more exposed to faecal bacteria in food and water, resulting in increased carriage of some non-pathogenic bacteria including the proteae. This seems unlikely to explain the sevenfold or eightfold difference in the distribution of *P. alcalifaciens* between the two groups, but to be certain we would need to examine the normal stools of people who have and have not travelled abroad, and such specimens are not readily available. In the light of previous studies we suggest that *P. alcalifaciens* may be a major cause of diarrhoea among British travellers abroad.

Numbers of isolates of enteric pathogens and proteae from patients with diarrhoea

Organism	Patients who had travelled abroad (n=254)	Patients who had not travelled abroad (n=373)
Salmonella	22	30 ($p > 0.70$)
Campylobacter	8	35 ($p < 0.01$)
Shigella	6	
Vibrio	3	Not examined
<i>Giardia lamblia</i>	1	3
Cryptosporidium		2
<i>Providencia alcalifaciens</i>	25	5 ($p < 0.001$)
<i>Providencia rustigianii</i>	1	2
Urease positive proteae	82	77 ($p > 0.01$)

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Gastro-oesophageal disorders in adults with severe mental impairment

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The prevalence of vomiting in children with severe mental impairment is 10-15%; in three quarters of cases the vomiting is associated with gastro-oesophageal reflux, oesphagitis, or hiatus hernia.^{1,2} We had gained the impression that vomiting was equally common in mentally impaired adults and so assessed the prevalence of vomiting and other gastrointestinal symptoms and their causes and complications in such patients.

Patients, methods, and results

We studied 380 long term resident patients in a hospital for adults with severe mental impairment and identified those with recurrent vomiting. We also noted the results of investigations on any of these patients referred to the local district general hospital during 1986-8 because of vomiting and other upper gastrointestinal symptoms.

Thirty nine of the patients (26 men and 13 women; mean age 44 (range 21 to 80) had recurrent vomiting or other upper gastrointestinal symptoms. Twenty two of them were referred to the district general hospital for investigations: 15 had an upper gastrointestinal endoscopy, four had a barium meal examination, and

three needed emergency laparotomies. The main reasons for referral included intractable vomiting and weight loss (13 patients), vomiting and anaemia (11), haematemesis or malaena (four), and dysphagia (one).

Gastro-oesophageal reflux and oesophagitis, with or without a hiatus hernia, was the main cause of vomiting in half of those investigated (table). Of the three patients who needed emergency surgery, one had a haematemesis from a large oesophageal ulcer and required postoperative balloon tamponade, one had an intrathoracic gastric volvulus, and one had a caecal volvulus. In six patients we found either no abnormality to explain the recurrent vomiting or only minor changes such as gastritis, duodenitis, or hiatus hernia without oesphagitis; in these patients the symptoms seemed to be behavioural in origin. The 17 patients with recurrent vomiting who were not investigated all responded to treatment with H₂ blockers, metoclopramide, or antacids, which suggested that upper gastrointestinal disease was the cause of their vomiting.

Gastro-oesophageal disorders in severely mentally impaired adults

Diagnosis	No
Hiatus hernia with free reflux	3
Severe oesophagitis with hiatus hernia	4
Severe oesophagitis without hiatus hernia	4
Horizontal volvulus of stomach	1
Volvulus of caecum	1
Carcinoma of colon infiltrating stomach	1
Gastric ulcer	2
Gastritis/duodenitis	2
Hiatus hernia	1
No abnormality	3
Total	22

Comment

Ten per cent of the mentally impaired adults we studied suffered from recurrent vomiting. No common aetiological factor could be found to explain the high prevalence of oesophageal and upper gastrointestinal disorders in this group. Posture may be one important factor³; most patients spend their day and night semirecumbent, even when eating. In some patients spasticity of the abdominal muscles may exacerbate reflux through abdominal compression.⁴ In addition, many of the patients were taking drugs that reduce the pressure of the lower oesophageal sphincter. In children hypoxic damage to the vagal nuclei at birth has been suggested as a cause of gastro-oesophageal reflux, and this could be the cause in adult patients.²

Adults who are mentally impaired may not be able to indicate that they have dyspeptic symptoms associated with reflux. Vomiting may therefore be the first sign of serious oesophageal disease. Ideally all such patients should be investigated, but the difficulties entailed in

even simple examinations make this a counsel of perfection. Empirical treatment with antacids and other antireflux measures may be most appropriate for patients in whom investigation is thought inappropriate.

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Defibrillation by ambulance staff who have had extended training

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With mounting evidence of the efficacy of defibrillation by paramedical staff outside hospital² a national scheme for extended training in ambulance aid was introduced in 1986.³ Experienced ambulance staff receive training in emergency care, including defibrillation, management of airways, and intravenous replacement of fluids. Adoption of the scheme and deployment of trained staff are left to the individual ambulance authorities.

We report the results of defibrillation by staff who had extended training in West Yorkshire during 1987.

Patients, methods, and results

Each extended trained member of the ambulance staff was dispatched in a rapid response unit: a car with full resuscitation equipment. For each call a standard report form was completed, and these forms provided the data for this report. During the year the number of units increased from three to five and the number of trained ambulance staff from nine to 24. Only five of the nine health districts within West Yorkshire were covered, one unit being provided for each district during the day and evening. One district had a programme for training the general public in resuscitation. For this report resuscitation by a bystander indicated some attempt at resuscitation before the trained ambulance staff arrived. Response time was the time from receiving the call to arriving at the scene plus one minute for processing by ambulance control. Results were analysed by χ^2 test with Yates's correction for continuity for small numbers.

In the 12 months the units attempted defibrillation on 110 patients (85 men; age range 36-89). Ventricular fibrillation had occurred in all patients but was not the initial rhythm disturbance in 26. The table shows the results. Seventeen patients survived to leave hospital (15% survival overall, 20% survival among cases with initial fibrillation).

No survivor had pronounced neurological defects, though one patient with a severe defect died in hospital

three weeks after admission. Eleven survivors were intubated by the ambulance staff, and drugs (lignocaine, adrenaline, or atropine) were used in nine. Detailed information was missing on four patients who died. For the patients who had a cardiac arrest before the unit arrived a short response time significantly improved the outcome ($p<0.01$). The maximum response time for a survivor was 11 minutes. Attempts at resuscitation by bystanders and the arrest occurring in public also improved the outcome but not significantly.

Comment

These results show the initial potential of the NHS scheme without a large resuscitation training programme for the public. Extended trained ambulance staff can not only deal with ventricular fibrillation in transit but also successfully treat patients who have developed this arrhythmia before their arrival. Although the rate of success is similar to that in other reports,^{2,4} the number of survivors was not large. The units attended only a minority of the episodes of ventricular fibrillation outside hospital in West Yorkshire. Prolonged resuscitation may be required, and the other skills taught in extended training, particularly intubation, might be important.

Results of defibrillation by ambulance staff who had had extending training in 110 patients

	Total	Reached hospital alive	Survived to leave hospital
Initial cardiac rhythm:			
Ventricular fibrillation before unit arrived	74	29	11
Ventricular fibrillation after unit arrived	10	7	6
Asystole	21	4	
Electromechanical dissociation	5	1	
Patients who had cardiac arrest before unit arrived (n=100*)			
Response:			
≤ 6 minutes	31	15	8 (26%)
> 6 minutes	65	19	3 (5%)
Resuscitation attempted by bystander:			
Yes	47	8	7 (15%)
No	49	11	4 (8%)
Location of arrest:			
At home	52	15	4 (8%)
In public	44	19	7 (16%)

*Records incomplete for four patients.