function of making the procedure more tolerable for patients. This may be partially explained by the amount of sedation given; we titrated the dose to produce light sedation to minimise the risks previously described.² Given the patients' opinion, we suggest that phenoperidine and droperidol should no longer be recommended and that light sedation with midazolam has few benefits. Our results suggest that routine sedation has little part to play in patients undergoing a single diagnostic procedure.

We thank Mrs S Barrowclough and Miss K McConnelly for

their help with the bronchoscopies and completion of the visual analogue scales.

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(Accepted 6 June 1994)

Impact of war on infectious disease in Bosnia-Herzegovina

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BMJ 1994;309:1207-8

The war that broke out in Bosnia-Herzegovina in April 1992 resulted in the collapse of surveillance of infectious diseases in many areas. The Bosnian authorities recognised the importance of surveillance in managing outbreaks of communicable diseases and the management and evaluation of the humanitarian aid programme, and they have rebuilt the notification system during the conflict with the help of the World Health Organisation. We compared the rates of notification of infectious diseases during 1993 with those during 1987-91.

Methods and results

The surviving elements of the pre-existing surveillance system were used to report to the Republic Institute of Public Health in Sarajevo. Notification was carried out by experienced local staff, often those responsible for notification before the conflict. Various methods were used to overcome difficulties in trans-

mitting notifications. Telephone lines worked occasionally, even across front lines; international humanitarian aid staff visited isolated locations and collected forms. For some enclaves the only method available was amateur radio.

The population figure that we used to calculate incidence of disease was the official estimate of beneficiaries of aid. The figures do not cover tuberculosis, which was reported separately.

During 1993, 45 200 reports were received, covering an estimated population of 1 608 000. The table shows the major conditions notified per 100 000 population for 1987 to 1993. No data were available for 1992.

In the years before the conflict the number of notifications had declined steadily; this decline was reversed for many conditions in 1993. Almost two thirds of disease reported was enteric—mainly, enterocolitis and hepatitis A, and toxoinfectio alimentaris (severe diarrhoeal disease with systemic manifestations of confusion and fever for which no clear definition differentiates it from enterocolitis). The other condition with a notable rise was mycosis (skin fungal infection). There was a fall in the notification of influenza, salmonellosis, and the common childhood diseases (mumps, measles, whooping cough, and scarlet fever).

Comment

The impact of the war in Bosnia on the morbidity of the civilian population and the lack of accurate data have been noted.^{1,2} The data presented here were obtained during a war, from areas of conflict; the data are flawed yet have provided objective information for guiding public health interventions. The prewar reporting categories were retained for comparative purposes, but the absence of confirmation by laboratories of most conditions means that the data must be interpreted with caution. The apparent rise in enterocolitis, hepatitis A, and scabies may be spurious. Increased finding or reporting of cases seems unlikely during a war. Furthermore, the decline in the reporting of conditions such as measles, mumps, and scarlet fever suggests underreporting rather than overreporting. Preferential reporting of diarrhoeal disease and hepatitis over respiratory disease may have occurred. Inadequate or destroyed laboratory facilities have probably resulted in a bias towards conditions that do not require confirmation by a laboratory. Reporting was performed, however, by experienced staff, which should maintain consistency. The increased rate of notification reported here is probably an underestimate of the true figure because of underreporting and inflated population estimates—population estimates are the basis for calculating humanitarian aid so they tend to be overestimated.

The importance of epidemiological data in guiding the planning and allocating of resources for emergency

Notifications of major diseases per 100 000 in Bosnia-Herzegovina, 1987-93*

	1987	1988	1989	1990	1991	1993	1987-91 (mean)	Change (1993 compared with mean 1987-91)
Enteric disease:								
Bacillary dysentery	10.3	6.7	7.2	6.6	5.4	51.0	7.3	7.0
Enterocolitis	127.2	109.5	95.1	95.0	70.8	1313.3	99.5	13.2
Hepatitis A	122.5	141.9	95.0	79.4	71.9	381.1	102.1	3.7
Salmonellosis	20.6	14.8	12.52	17.03	9.83	3.23	14.95	0.2
Toxinfectio alimentaris†	31.9	25.8	21.6	18.4	20.9	37.4	23.7	1.6
Skin infections and infestations:								
Erysipelas	1.2	1.1	1.0	1.0	1.1	0.2	1.1	0.2
Mycosis	0.9	1.9	0.8	0.3	0.2	14.0	0.8	17.2
Scabies	116.9	78.4	57.9	48.9	36.0	780.2	67.6	11.6
Meningitis:								
Bacterial	3.1	4.1	4.4	3.9	3.7	4.7	3.8	1.2
Viral	4.8	7.0	5.7	3.6	4.8	0.9	5.2	0.18
Childhood disease:								
Measles	18.2	11.0	95.7	11.44	4.0	15.5	28.1	0.55
Mumps	18.0	41.2	84.5	19.8	7.6	8.6	34.2	0.25
Whooping cough	11.3	5.0	4.6	6.4	5.5	5.1	6.6	0.78
Rubella	8.7	20.7	35.2	6.5	5.3	9.0	15.3	0.59
Scarlet fever	53.8	36.4	48.9	36.4	29.9	14.5	41.1	0.35
Others:								
Brill-Zinsser disease	0.4	0.4	0.4	0.3	0.3	0.1	0.4	0.34
Gonorrhoea	12.3	7.9	5.7	4.0	3.2	9.3	6.6	1.40
Hepatitis B	6.5	5.3	7.2	7.2	5.8	3.7	6.4	0.57
Infectious mononucleosis	5.2	5.9	6.7	5.9	6.0	1.4	5.9	0.24
Influenza	203.2	94.4	1349.4	808.4	560.4	17.2	603.2	0.03
Leptospirosis	0.3	0.3	0.6	0.3	0.2	0.9	0.3	2.75
Streptococcal sore throat	48.2	39.1	34.2	31.3	36.3	17.5	37.8	0.46
Total	1218.4	973.8	997.3	781.7	521.9	2690.5	898.6	3.3

*Table comprises data for major diseases notified, except for totals, which cover all notifications; no data were available for 1992.

†Severe diarrhoeal disease with systemic manifestation of confusion and fever, for which no clear definition differentiates it from enterocolitis.

assistance has been emphasised repeatedly.^{3,4} It has been suggested, however, that in wartime the traditional epidemiologists can do little.⁵ The ability to collect data in a time of conflict is severely limited by lack of access, danger, and the destruction of infrastructures. The present study shows, however, that support for epidemiologists in wartime is worthwhile and that useful data, both for detecting outbreaks of infectious disease and for informing humanitarian aid, can be obtained.

We thank all the doctors in Bosnia-Herzegovina who have continued to collect data and plan for the public health despite

extremely adverse circumstances and the staff of the World Health Organisation's field offices and health monitoring unit in the former Yugoslavia.

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(Accepted 12 June 1994)

Does the type of sewage drainage affect health?

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BMJ 1994;309:1208

In a Kent coastal town (population about 3000) some houses have cesspool sewage drainage instead of the usual mains drainage. Following public concern about health hazards of cesspool drainage, the water company was asked to provide mains drainage to all houses. It said it would consider doing so if there was evidence that the lack of mains drainage posed a serious public health problem. After discussion between the environmental health department of the local council and the department of public health medicine of the health authority, it was decided to conduct a cohort study to determine whether the cesspool drainage of household sewage is associated with increased consultations with general practitioners for gastrointestinal and other symptoms.

Methods and results

As calculated with the Stat Calc function of EpiInfo software,¹ a sample of about 2000 patients was selected at random from two general practices in the town. From their medical records the address and information on the number and nature of all consultations during 1991 were recorded by a research worker using a questionnaire. An environmental health officer allocated drainage type on the basis of the address. The research worker was not aware of the type of drainage and the environmental health officer was not aware of the clinical information. Information was gathered retrospectively for a period of one year before the intention to conduct the study had become public knowledge.

All data were entered on to a confidential database. Analysis was carried out with EpiInfo and SPSS for Windows software.²

Of the 1863 medical records analysed, 31 could not be coded for type of drainage. Of the 1832 remaining, (932 in one practice and 900 in the other), 734 (40.1%) had cesspool drainage and 1097 (59.9%) had mains drainage.

The cesspool drainage group had an older population (mean age 43.2 years) than the mains drainage group (mean age 43.2 v 38.9 years; Mann Whitney U test, $P=0.0009$). There was no statistically significant difference between the two sex distributions.

The proportion of people who visited their general practitioner during 1991 was not significantly different—63% of the cesspool group and 62% of

the mains drainage group (Yates corrected χ^2 test, $P=0.96$), nor was the mean number of consultations (2.47 and 2.25 respectively; t test, $P=0.11$, 95% confidence interval -0.50 to 0.49).

Relative risk of consulting the general practitioner was not significant for diarrhoea, nausea, vomiting, abdominal pain, jaundice, fever, headache, or anorexia, but for malaise the relative risk was significant (2.01; 1.14 to 3.57). The number of times patients visited their doctors did not differ significantly between the cesspool and mains drainage groups (table).

Comment

Although no recent studies have specifically investigated the relation between sewage drainage and health, there is evidence of environmental factors being responsible for ill health.^{3,5} Because of political pressure and public sensitivity, total objectivity was necessary for this study. This was achieved by using a questionnaire for collecting information, using a double blinded technique, and adopting a method which analysed events that occurred before the debate became public.

People who lived in houses with cesspool drainage did not visit their general practitioner more often than people who lived in houses with mains drainage. The relative risk for certain symptoms was higher for only one symptom, malaise. Age might have been a confounding variable as older people are more likely to visit their doctor, but no association was detected, which backs up the conclusion that—except for malaise—there is no association between cesspool drainage and health problems that require general practice consultation. These results, though encouraging, do not exclude the possibility of an association between drainage and health problems for which medical advice is not sought.

We thank Jane Bruce, Communicable Disease Surveillance Centre, for advice on statistical analysis; Jack McNeil, Environmental Health Officer, Shepway District Council, for identifying type of drainage for each case; Toni Stevens for extracting the information from general practice records; Peter Wells, Assistant Director (Health), Shepway District Council, for providing funds and for support and advice; Drs P Cochrane, S Swoffer, M Towndrow, and V Kanegaonkar for permission to extract information from their records and for their support.

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(Accepted 24 June 1994)

Number (percentage) of times patients with different types of drainage visited their general practitioners

No of visits to general practitioner	Cesspool drainage (n=735)	Mains drainage (n=1097)
0	271 (37)	410 (37)
1	102 (14)	132 (12)
2	73 (10)	136 (12)
3	87 (12)	126 (11)
4	57 (8)	112 (10)
5	34 (5)	62 (6)
6	40 (5)	54 (5)
7	20 (3)	17 (2)
8	13 (2)	19 (2)
>9	38 (5)	29 (3)
Total	735 (100)	1097 (100)