Infections in British clinical laboratories, 1988-1989

N R Grist, J A N Emslie

Abstract

During 1988-89 this continuing survey showed 18 infections in the staff of laboratories reporting from 166 centres, representing 21 756 person-years of exposure. *Shigella* and other bowel infections (one caused by *S typhi*) predominated, affecting 11 microbiology medical laboratory scientific officers. Three shigella infections originated from quality control samples. Pulmonary tuberculosis affected four workers, including two mortuary technicians, but without detected occupational exposure to *Mycobacterium tuberculosis*. Other infections included one caused by *Brucella melitensis*. Hepatitis was not reported.

The sustained low level of hepatitis is encouraging and suggests a low risk to staff of bloodborne infections such as human immunodeficiency virus.

Methods

The survey, completing the second decade of the ongoing programme, was conducted by the same methods as reported previously.¹ Questionnaires were sent to members of the Association of Clinical Pathologists (ACP), to non-members who belonged to the British Association in Forensic Medicine (BAFM),

and to a supplementary list compiled with the help of the Institute of Medical Laboratory Sciences (IMLS). To conform with reorganisation of the surveillance systems of the Communicable Diseases (Scotland) Unit (CDSU), data were compiled using a Compaq 386 Personal Computer running DataEase (Sapphire) 4.01 software.

Results

Returns were received from 166 centres comprising 139 in England, 21 in Scotland, four in Wales and two in Northern Ireland. Of these, 127 were from ACP respondents, one of them including a Blood Transfusion Centre, 33 from the IMLS list including two Blood Transfusion Centres, and six from BAFM members.

INCIDENCE OF INFECTIONS

Table 1 summarises the overall data, including all reported infections, irrespective of whether they were suspected to be of occupational origin. Infections were reported from 16 laboratory centres (14 in England, including the Channel Islands, two in Scotland). They comprised 18 cases of which two cases were reported from each of two laboratories in England. As before, most (n = 11) were bacterial bowel infections, predominantly shigellosis but including one

Table 1 Reported infections (No/100 000 person-years)

Grade and discipline	Population at risk (person-years)	Salmonella	Tuberculosis	Shigella	Others
Medical:	2224				1 (45)
Morbid anatomy	872	0	0	0	1 (115)
Haematology	554	0	0	0	0
Biochemistry	189	0	0	0	0
Microbiology	507	0	0	0	0
Immunology	40	0	0	0	0
Other	63	0	0	0	0
Science:	974				
Morbid anatomy	71	0	0	0	0
Haematology	84	0	0	0	0
Biochemistry	551	0	0	0	0
Microbiology	137	0	0	0	0
Immunology	32	0	0	0	0
Other	99	0	0	0	0
MLSO:	12427	3 (24)	2 (16)	7 (56)	2 (16)
Morbid anatomy	2076	0	0	0	0
Haematology	3594	0	1 (28)	0	0
Biochemistry	2693	0	0	0	0
Microbiology	3646	3 (82)	1 (27)	7 (192)	2 (55)
Immunology	266	0	0	0	0
Other	153	0	0	0	0
Others	6131		2 (33)		1 (16)
Post mortem mortuary technicians	487	0	2 (411)	0	0
Post mortem attendants	36	0	0	0	0
Nurses, etc	1161	0	0	0	0
Laboratory assistants	1079	0	0	0	0
Domestics, etc	282	0	0	0	0
Office administrators	481	0	0	0	0
Others	2419	0	0	0	1 (41)
Total (all groups)	21756	3 (13.7)	4 (18.4)	7 (32.2)	4 (18.38)

The University of Glasgow and the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB
N R Grist
J A N Emslie

Correspondence to:
Dr N R Grist

Accepted for publication
25 March 1991

Table 2 Cases of *Shigella* infection

Infesting organism	Year	Grade	Main discipline	Age	Sex
<i>Shigella flexneri</i>	1988	MLSO	Microbiology	23	Male
<i>Shigella flexneri</i>	1989	MLSO	Microbiology	27	Female
<i>Shigella sonnei</i>	1988	MLSO	Microbiology	26	Female
<i>Shigella sonnei</i> *	1989	MLSO	Microbiology	30	Male
<i>Shigella sonnei</i>	1989	MLSO	Microbiology	30	Female
<i>Shigella boydii</i> *	1989	MLSO	Microbiology	28	Female
<i>Shigella boydii</i> *	1989	MLSO	Microbiology	?	Male

*Attributed to quality control specimens; both *S boydii* cases in the same laboratory.

Table 3 Cases of *Salmonella* infection

Infesting organism	Year	Grade	Main discipline	Age	Sex
<i>S typhi</i>	1989	MLSO	Microbiology	36	Female
<i>S typhimurium</i>	1988	MLSO	Microbiology	49	Male
<i>S braenderup</i>	1988	MLSO	Microbiology	58	Male

typhoid infection. There were four cases of tuberculosis, but none of hepatitis, and fatalities were not reported.

Shigellosis (table 2)

Three infections were acquired during routine diagnostic work with stool specimens. One was acquired during routine subculture and typing of an isolate (*S flexneri*) referred from another laboratory, and three others during work with quality control samples. The two *S boydii* infections were in the same laboratory and the organisms proved identical with the quality control sample by two typing methods. Laboratory accidents were not recognised in these seven cases.

Salmonellosis (table 3)

The *S typhi* infection was acquired during routine work with a suspect clinical isolate which later proved to belong to the same phage type. The other two salmonella infections occurred during routine diagnostic work with stool specimens. Associated laboratory accidents were not reported, but the worker who processed the infected *S typhi* isolated had been ungloved.

Tuberculosis (table 4)

Exposure to tuberculosis infection was not traced in any of the four reported cases. All seemed to be new infections with pulmonary lesions visible on x-ray picture. The haematology worker had last worked with tuberculous material 23 years previously in the microbiology department. The *M tuberculosis* isolated from her was fully sensitive to antibiotics.

The infection in the male mortuary tech-

nican was detected on routine chest x-ray picture; he had a fully sensitive strain of *M tuberculosis* on sputum culture. Tuberculosis cases had not been dealt with knowingly in the post mortem room during the previous five years and a review of reported cases and of contacts failed to uncover any such case. As a part-time porter he collected bagged pots of sputum from wards but did not handle infected material until it had been autoclaved.

The microbiologist also yielded *M tuberculosis*. His source of infection was not found, but the laboratory performs a wide range of microbiological tests including sensitivity tests of strains of *M tuberculosis*.

The female mortuary technician did not yield *M tuberculosis* on culture of a bronchial lavage specimen but had a characteristic radiological upper lobe lesion of lung. A definite source of infection was not found but routine post mortem work was the suspected source.

Other infections (table 5)

A histopathologist without recognised injury at post mortem or surgical cut-up developed paronychia with lymphangitis of the arm which responded to antibiotics and local surgery. *Klebsiella* and *E coli* were isolated, suggesting a faecal origin.

A routine microbiology worker without recognised accidental exposure developed enteritis from which an atypical, non-lactose fermenting, lysine decarboxylase negative strain of *E coli* was isolated—not necessarily of occupational origin.

A receptionist's eye became infected with a *Staphylococcus* following an accident when a jet of transport medium from a batch of faulty swabs with pin-holes in the caps squirted into her eye.

An MLSO doing routine blood culture work became infected by *Brucella melitensis*. As the possibility of *Brucella* infection had not been indicated on the request form which accompanied the clinical specimen, the diagnostic work was carried out by conventional methods and not at containment level 3. Neither faulty procedure nor an accident was recognised.

Discussion

Compared with 1986–1987, reports were received from fewer laboratories and covered fewer person-years of exposure. Table 6 shows that the average number of person-years per reporting laboratory had been relatively stable over the decade and did not show a trend towards fewer but larger laboratories participating in the survey. Nevertheless, the incidence rates per 100 000 person-years remain valid for comparison with previous years.

Bacterial bowel infections still predominated, affecting microbiology MLSOs, and with shigellosis topping the list. For the first time several shigella infections originated from quality control samples. The third typhoid infection of these surveys was reported.

Table 4 Cases of tuberculosis infection

Infesting organism	Year	Grade	Main discipline	Age	Sex
<i>M tuberculosis</i>	1989	MLSO	Haematology	49	Female
<i>M tuberculosis</i>	1989	Mortuary technician	Morbid anatomy	46	Male
<i>M tuberculosis</i>	1988	MLSO	Microbiology	28	Male
<i>M tuberculosis</i> *	1988	Mortuary technician	Morbid anatomy	32	Female

*Not bacteriologically confirmed.

Table 5 Other infections

Infesting organism	Year	Grade	Main discipline	Age	Sex
<i>E coli and Klebsiella</i>	1989	Medical	Morbid anatomy	—	—
<i>E coli</i>	1989	MLSO	Microbiology	27	Female
<i>Staphylococcus</i>	1989	Secretary/receptionist	Microbiology	—	—
<i>Brucella melitensis</i>	1988	MLSO	Microbiology	58	Male

Table 6 Numbers of reporting laboratories and exposed staff in consecutive surveys

Survey period	Laboratories	Staff (person-years)	Ratio (staff laboratories)
1980–81	260	34064	131
1982–83	240	29223	122
1984–85	193	23043	119
1986–87	235	28524	121
1988–89	166	21756	131

Accidents were not noted in these cases, thus emphasising the importance of scrupulous care in this area of work.

Mortuary workers were again represented among the tuberculous cases, several of which had a doubtful association with work.

Viral hepatitis, the original target of these surveys,² maintained the low incidence reached in the second half of the decade without any case reported in 1988–1989. A delayed report, however, was received of one case of non-A, non-B hepatitis in 1986 which

involved a medical morbid anatomist without recognised laboratory exposure. Tests excluded hepatitis A and B as well as infection by Epstein-Barr virus, cytomegalovirus and leptospirosis, and the patient recovered completely. The occupational origin of most recently reported cases is doubtful. Unless specific prophylactic measures before and after exposure to hepatitis B have been widely implemented, the current low incidence suggests improved working conditions and more meticulous techniques than in earlier years. If so, this should usefully lower the risks of exposure to other blood-borne agents such as human immunodeficiency virus, of which the incidence has been rising in the general population in recent years.

This survey was conducted with support from the Association of Clinical Pathologists and with the cooperation of the Institute of Medical Laboratory Scientists and the British Association in Forensic Medicine. We thank all those who provided information for the survey; also Mr W Smyth and Miss Fiona Johnston at the Communicable Diseases (Scotland) Unit for processing the data and typing the paper, respectively.

1 Grist NR. Hepatitis in clinical laboratories: a three-year survey. *J Clin Pathol* 1975;28:255–9.

2 Grist NR, Emslie JAN. Infections in British clinical laboratories, 1986–87. *J Clin Pathol* 1989;42:677–81.