

## Decontamination of instruments and control of cross infection in general practice

D R Morgan, T J Lamont, J D Dawson, Christopher Booth

### Abstract

**Objective**—To assess the effectiveness of decontamination procedures in general practice.

**Design**—Anonymous postal questionnaire survey of 600 general practitioners randomly selected from the national register.

**Setting**—General practices throughout the United Kingdom.

**Subjects**—382 General practitioners, a response rate of 65%.

**Results**—186 General practitioners had autoclaves but 125 used hot water disinfectors or chemical disinfectants to reprocess instruments. 22% (474/2132) Of high risk instruments were inadequately decontaminated. Decontamination was performed by the practice nurse or receptionist in 306 practices. Knowledge of treatment of spillages of blood fluids was uncertain, and only 114 general practitioners used effective methods for dealing with spillages.

**Conclusions**—A comprehensive central code of practice for control of infection is needed for primary health care staff.

### Introduction

In the United Kingdom general practitioners and their staff provide comprehensive primary health care services for roughly 55 million people. On average patients visit their general practitioner three times a year; this is equivalent to 750 000 patient consultations a day. As a result of changes in the organisation of primary health care services the number of minor operations and screening procedures performed by general practitioners may increase. Appropriate decontamination of surgical instruments and effective infection control policies will be essential.

The need for rigorous decontamination procedures is increased by the rising numbers of people infected with HIV; there is also a risk of cross infection with hepatitis B, tuberculosis, cytomegalovirus, and human papillomavirus. In addition, general practitioners have new responsibilities for staff under the Control of Substances Hazardous to Health Act 1989, which obliges them, as employers, to assess the risks to health in the workplace.

Although small studies of decontamination methods in general practice have been undertaken,<sup>1,2</sup> no national survey of practices has been conducted.

### Methods

A computer generated random sample of 600 general practitioners was extracted from a national database of 36 098 general practitioners holding registrable qualifications in the United Kingdom in April 1989. These doctors were sent an unidentifiable, single sided questionnaire on 3 May 1989 with a reply paid envelope. After four weeks all 600 general practitioners were sent a reminder card giving a telephone number at

### Risk category of instruments used in general practice

High	Instruments that penetrate the skin, enter normally sterile body areas, or come into contact with severely ulcerated mucous membranes
Medium	Instruments in contact with intact mucous membranes
Low	Items used on intact skin

the BMA in case a further copy of the questionnaire was needed.

The questionnaire consisted of 10 questions, seven of which covered working practices in general practice surgeries. The questions concerned the type of decontamination system used; the equipment available in branch surgeries, when applicable; the person chiefly responsible for reprocessing used instruments; and the method of treating different instruments. The relative risks of procedures to patients were assessed (see box) with reference to the BMA's code of practice for sterilisation of instruments and control of cross infection.<sup>4</sup> Open questions were asked about the use of chemical disinfectants and the treatment of spillages of body fluids. Three additional questions concerned the type of area served by the practice, the number of patients registered with the practice, and the number and category of practice staff. Proportions were compared by  $\chi^2$  tests.

### Results

We received 382 completed questionnaires, a response rate of 65%. Ten questionnaires were invalidated because, for example, the doctor had moved or retired from the practice. For each question invalid answers were discounted before the data were analysed.

Table I shows the main decontamination systems used by respondents. Almost half of the respondents had an autoclave. We had expected that having an autoclave would be associated with several variables, but no significant association was found between having an autoclave and size of practice, number of partners, or setting of practice (urban or rural) (table II).

Of the 382 general practitioners, 131 worked

TABLE II—Distribution of variables thought likely to be associated with ownership of autoclaves

Type of practice with autoclave	%(No) of practices	p Value
Singlehanded practice	44 (11/25)	0.63
Group practice	49 (175/357)	
Practice with <5500 patients	45 (64/142)	0.65
Practice with $\geq$ 5500 patients	48 (114/240)	
Practice in rural area	40 (20/50)	0.25
Practice in urban area	50 (60/121)	

TABLE I—Decontamination system used in general practices

System	No of practices (n=382)
Autoclaves*	186
Hot water disinfectors	84
Hot air ovens	56
Chemical disinfectants	41
Central sterile supply departments	13
None	2

\*Including 10 domestic type pressure cookers.

### Professional and Scientific Division, British Medical Association, London WC1H 9JP

D R Morgan, MPHIL,  
assistant head of division  
T J Lamont, BA, projects and  
research officer  
J D Dawson, MB, head of  
division  
Sir Christopher Booth, MD,  
chairman, board of science and  
education

Correspondence to:  
Mr Morgan.

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TABLE III—Method used to provide sterile instruments

Instrument	Autoclave	Hot air oven	Central sterile supply department	Single use	Boiling	Chemical disinfectants
Vaginal speculum (n=381)	173	56	13	24	88	26
Surgical scissors (n=377)	172	61	15	7	77	39
Forceps (n=367)	170	61	16	10	74	32
Scalpels (n=337)	99	30	9	168	30	10
Stitch cutters (n=354)	63	16	7	237	19	11
Sets for inserting intrauterine contraceptive devices (n=316)	147	49	31	27	48	8

TABLE IV—Recommended and inadequate methods of decontamination and number (percentage) of practices using inadequate methods

Instrument	Unacceptable methods	Recommended method	Practices using inadequate decontamination
Vaginal speculum (n=381)	Boiling, chemical disinfectants, or soap and water	Sterilisation by autoclave, hot air oven, or central sterile supply department	115 (31)
Surgical scissors (n=377)			121 (32)
Forceps (n=367)			110 (30)
Scalpel (n=337)			40 (12)
Stitch cutters (n=354)			31 (9)
Sets for inserting intrauterine contraceptive devices (n=316)			57 (18)
Auriscopes (n=372)	Chemical disinfectants or soap and water	Heat treatment (all above, plus boiling)	213 (57)
Proctoscopes (n=244)			29 (11)
Laryngeal mirror (n=58)			41 (71)
Thermometer (n=343)	Autoclaving, boiling, hot air ovens, or soap and water	Disinfection (chemical disinfectants)	95 (28)
Tonometer (n=15)			7 (47)

TABLE V—Methods of dealing with spillages of body fluids

Method	No of practices
Satisfactory:	
Hypochlorites	114
Doubtful:	
Alcohols	19
Phenolics	14
Disinfectant (unspecified)	43
Detergent (unspecified)	36
Don't know	13
Blank	51
Unsatisfactory:	
Skin disinfectants:	
Chlorhexidine	70
Iodine	3
Quaternary ammonium compounds	13
Glutaraldehyde*	4
None	2

\*Use of glutaraldehyde is restricted under Control of Substances Hazardous to Health Act.

in practices with branch surgeries. Only 73 branch surgeries had separate decontamination facilities; 47 used some form of heat treatment—autoclaves, hot water disinfectors, or hot air ovens—and 18 used some agent other than heat.

Decontamination was performed by the nurse in 274 practices, the general practitioner in 71, and the receptionist in 32; five general practitioners did not specify who was responsible for decontamination.

General practitioners in practices with no sterilisation facilities can provide sterile instruments by using the facilities of the central sterile supply department or single use instruments that are sterile. Of the general practitioners surveyed, 275 used some form of single use instrument. Of the high risk instruments designated in our questionnaire stitch cutters were the commonest type of single use instrument: 237 practices used single stitch cutters, 156 scalpels, and 93 proctoscopes. Surprisingly, only 27 used single use speculums and only 15 disposable thermometer sheaths or single use thermometers.

One of the questions attempted to determine how selected instruments were treated. Instruments were chosen from different risk categories, according to the procedure undertaken. The questionnaire listed 11 instruments with a series of options for decontamination ranging from basic decontamination with soap and water to autoclaving (table III). Table IV shows the recommended and unsuitable methods of treatment for instruments in different risk categories and the number of practices performing unacceptable decontamination techniques. Analysis showed that 22% (474/2132) of high risk instruments were inadequately decontaminated. This was largely due to inappropriate use of hot water disinfectors.

An open question elicited information on doctors' knowledge and practice of correct treatment for spillages of body fluids. The BMA code recommends a 10 000 ppm hypochlorite solution or a granular form of hypochlorite<sup>4</sup>; household gloves should be worn when

handling these materials. Varying amounts of detail were provided so the responses were analysed on the generic type of chemical used as this was the common denominator of the answers given (table V).

## Discussion

Unlike other pilot surveys our study was not restricted to a single region or locality<sup>2,5,6</sup> and there were no established links with the doctors surveyed.<sup>1</sup> Our response rate of 65% compares favourably with that of similar postal surveys.<sup>6</sup>

It was reassuring that almost half of the practices had autoclaves (including pressure cooker systems). Two previous reports indicated that only 25%<sup>1</sup> and 80%<sup>2</sup> of practices had autoclaves, and a recent survey of equipment in general practice in Devon and Cornwall showed that 38% of respondents owned autoclaves.<sup>5</sup> Nevertheless, 34% of practices in our survey still used non-sterilising techniques such as hot water disinfectors or chemical disinfectants.

Over a quarter of speculums, surgical scissors, and forceps were inadequately decontaminated. Not all speculums, however, are used for high risk procedures, and speculums used for vaginal examinations (medium risk) may be decontaminated adequately by boiling. Thus we probably overestimated the number inadequately decontaminated.

Because any body fluid could be contaminated with HIV or hepatitis B virus, dealing with spillages should be an important part of any practice's decontamination policy. Only 2% of respondents reported using gloves, though this information was not specifically asked for in the questionnaire, and only 30% used effective agents for treating spillages of body fluids.

Many non-technical or nursing staff are responsible for decontamination procedures in general practice, and comprehensive training of staff is therefore essential. The Control of Substances Hazardous to Health Act 1989 demands that employers review every procedure carried out in the workplace that entails contact with a substance hazardous to health; this includes chemical disinfectants, pathogenic organisms, used sharps, and clinical waste. Both money and time will need to be spent to ensure increased safety in general practice.

We have shown the need for a comprehensive central code of practice in control of infection for primary health care staff facing new challenges posed by the introduction of extensive minor operations and screening procedures into general practice.

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