SURVEY OF CONTAMINATED WASTE DISPOSAL PRACTICES

Waste contaminated with biological material is a potential source of a wide range of infectious disease and, as such, should be disposed of and stored appropriately. The Environment Protection Authority has special conditions for the storage and transport of contaminated waste in NSW[1]. The NSW Health Department has published guidelines to assist public health system managers to meet these conditions[2].

In response to concerns that contaminated waste disposal practices in some non-hospital health facilities were inadequate, a survey of non-institutional health services was conducted in Central and Southern Sydney Health Service Areas to determine the adequacy of storage, handling and disposal practices for contaminated waste.

Services assessed in the study were funeral parlours, nursing homes, pathology laboratories, dental, medical and veterinary practices and specialty offices (dermatology, gynaecology, plastic surgery and acupuncture). For the purpose of the study, medical practices were classified as either medical centres (four or more practitioners) or general practices (maximum of three practitioners). Funeral parlours, nursing homes and pathology laboratories are subject to special requirements covering the disposal of contaminated waste while the other types of premises are not.

The study was conducted using a structured questionnaire to assess methods of contaminated waste storage and disposal as practised by a sample of non-hospital health services. Hepatitis B immunisation of personnel in these establishments was also determined. These results have been reported elsewhere[3].

One hundred premises were surveyed between July and November 1991. Thirty general practices and ten providers of each of the other services were selected. A larger sample of GPs was included in the survey to reflect the higher proportion of general practices in the study area. The funeral parlours were randomly selected from a list provided by the NSW Health Department and all other premises were randomly selected from the 1991 Telecom Yellow Pages.

All premises were visited and the managers interviewed using the questionnaire. An information sheet was provided to all participants outlining the purpose of the study, assuring confidentiality and providing a contact number for further inquiries.

Data were coded and entered into a statistical/database computer software package (EPI Info Version 5) by one individual to maintain uniformity and participant confidentiality. The data were then transferred to SPIDA statistical analysis software[4] for analysis.

TYPES OF CONTAMINATED WASTE GENERATED

At five of the 100 premises surveyed — three funeral parlours, a dental practice and a doctor's surgery — it was claimed that no contaminated waste was generated. Although some health care workers were uncertain which items should be designated as contaminated waste, the identification of needles as such was immediate. There was a noticeable lack of knowledge and, at times, concern about the correct or acceptable methods of storage and handling of contaminated waste.

From the categories of contaminated waste shown in Table 1, respondents were asked to indicate which types they generated. They were also encouraged to name potential sources of contaminated waste not listed in the questionnaire. The proportion of premises generating each type of contaminated waste is shown in Table 1. The contaminated waste definition developed by the Contaminated Waste Advisory Committee was found to be extensive[2].

TABLE 1

PROPORTION OF PREMISES GENERATING SPECIFIC TYPES OF WASTE

Type of waste generated	Percentage of premises
Sharps	96
Swabs	92
Disposable equipment	91
Blood	74
Bandages	65
Soft tissue	39
Other	32
Bone	19
Cultures	10

STORAGE OF CONTAMINATED WASTE

All bags, bins and sharps containers used for the storage of contaminated waste should be clearly labelled and yellow in colour, and sharps containers and bins should be composed of a rigid impenetrable material and have a secure fitting lid. Sharps containers are covered by Australian Standard 4031.

The types of containers used varied among all types of services except pathology laboratories, which all used approved yellow labelled plastic containers (see Table 2). Other containers used included plastic milk and orange juice containers, glass jars, drink tins and, in two instances, cardboard boxes. The use of approved containers was substantially higher among regulated services (RR 1.60; 95% CI 1.15, 2.24; p=0.013) (Table 2).

TABLE 2

TYPE OF CONTAINERS USED FOR STORAGE OF CONTAMINATED WASTE BY TYPE OF PREMISES

Premises	Yellow labelled container	Other containers	No container	Total
Regulated services				
Funeral parlours	4	2	4	10
Nursing homes	8	2	0	10
Pathology	10	0	0	10
Sub total	22 (73%)	4 (13%)	4 (13%)	30
Non-regulated services				
Dentists	0	10	0	10
General practices	17	11	2	30
Medical centres	7	3	0	10
Specialty offices	4	4	2	10
Veterinary practices	4	6	0	10
Sub total	32 (46%)	34 (48%)	4 (6%)	70

SEPARATION OF CONTAMINATED WASTE

The contaminated waste guidelines recommend total separation of contaminated waste from regular garbage[1,2]. Table 3 shows there was a strong adherence to this practice among premises subject to regulatory or licensing requirements covering waste disposal activities. (RR 2.59; 95% CI 1.44, 4.68; p<0.001.)

REMOVAL OF CONTAMINATED WASTE

The recommended method for the removal of contaminated waste from premises is by licensed contractors[5]. Table 4 shows that the recommended method is used much more frequently by regulated than by non-regulated premises (RR 2.98; 95% CI 1.62, 5.50; p<0.001). Many premises used pathology couriers to remove their contaminated waste, particularly sharps. Other methods of removal included transportation via private vehicle to local hospitals, disposal by incineration or disposal to the sewer (funeral parlours) or, in the case of veterinary practices, to RSPCA facilities.

All but one of the contaminated waste contractors were licensed by the Waste Management Authority. Four of the funeral parlours did not require removalists as they did not separate contaminated waste and disposed of this waste to the sewer or by incineration. This is not in accordance with either EPA or NSW Health Department requirements.

DISCUSSION

Body fluids are a potential health hazard, as even minute amounts can contain viruses in sufficient quantities to cause infection[6]. Extensive publicity on the potential of needles and other 'sharps' to harbour and transmit infections such as hepatitis B has emphasised the importance of appropriate storage and disposal of sharps and other biologically contaminated waste.

Awareness of the particular risk from sharps was reflected in the high proportion of premises that stored their sharps in containers before disposal. Similar data were collected from a study of physicians' offices in Minnesota USA in 1989[7]: of the 141 premises surveyed, 90.8 per cent were found to use plastic containers for sharps. It was also observed that smaller offices were more likely to handle and dispose of sharps in a manner inconsistent with recommendations: nearly 20 per cent of physicians surveyed disposed of their contaminated waste with regular garbage. Similarly, 21 per cent of premises surveyed in this study used their regular garbage for disposal.

It became evident that many premises were not aware of the service offered by licensed contaminated waste contractors, and others had misgivings about their price and flexibility. Some premises justified not using a contractor by claiming their method of disposal was adequate and posed no health threat. Others believed they generated a minimal amount of contaminated waste. However, given the large number of such premises, they contribute substantially to the larger total contaminated waste management problem.

CONCLUSION

The major finding from this study is that among premises generating biologically contaminated waste, regulated services are much more likely than non-regulated services to follow requirements for the appropriate storage, separation and disposal of contaminated waste. This may be because regulated services may be more aware of the guidelines, or because they may feel obliged to observe the guidelines because of concerns about possible sanctions.

Clearly there is a need to improve storage and disposal practices among non-regulated services. This could be achieved by:

- improved awareness of requirements;
- publicising licensed services for disposal; and
- appropriate information on handling and storage.

The Public Health Unit has implemented this strategy and will monitor its effectiveness. If these steps fail to improve disposal practices substantially, it may be necessary to change the regulations to broaden the coverage.

TABLE 3

THE EXTENT OF SEPARATION OF CONTAMINATED WASTE FROM REGULAR GARBAGE BY TYPE OF PREMISES

Premises	Totally	Partially*	Not separated	Total
Regulated services				
Funeral parlours	8	2	0	10
Nursing homes	9	1	0	10
Pathology	9	1	0	10
Sub total	26 (87%)	4 (13%)	0 (0%)	30
Non-regulated services				
Dentists	1	2	7	10
General practices	3	17	10	30
Medical centres	3	6	1	10
Specialty offices	2	5	3	10
Veterinary practices	1	9	0	10
Sub total	10 (14%)	39 (56%)	21 (30%)	70

*Sharps were stored and separated from other waste such as swabs, gauze and gloves, which were placed with regular garbage.

TABLE 4

METHODS OF CONTAMINATED WASTE REMOVAL BY TYPE OF PREMISES

Premises	Contractor	Pathology couriers	Regular garbage	Other method	Total
Regulated services					
Funeral parlours	6	0	0	4	10
Nursing homes	9	0	0	1	10
Pathology	7	3*	0	0	10
Sub total	22 (73%)	3 (10%)	0 (0%)	5(17%)	30
Non-regulated services					
Dentists	2	0	7	1	10
General practices+	6	11	10	2	29
Medical centres	3	5	1	1	10
Specialty offices	3	1	3	3	10
Veterinary practices	3	0	0	7	10
Sub total	17 (25%)	17 (25%)	21 (30%)	14 (20%)	69

*These three pathologists were collection centres for the main laboratories, which were located outside the study area.
+One premises had recently acquired a sharps container but had not yet disposed of it.

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