

VIRGINIA EPIDEMIOLOGY BULLETIN

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Public Health Implications of Medical Waste*

The Medical Waste Tracking Act passed by Congress in 1988 requires the administrator of the Agency for Toxic Substances and Disease Registry (ATSDR) to prepare a report on the health effects of medical waste.** For the report, ATSDR defined medical waste as cultures and stocks, pathologic wastes, blood and blood products, sharps, animal waste, selected isolation waste, and unused discarded sharps.

To comply with the act, ATSDR obtained data from professional associations, unions, and environmental, academic, and industrial groups (1). The information and comments were collected during an extensive review process that involved an internal panel; a federal advisory panel comprising representatives from Public Health Service (PHS) agencies, the Environmental Protection Agency, and the Health Care Financing Administration; an external peer review panel; public comments; and review by PHS and the Department of Health and Human Services. The findings were presented to Congress in *The Public Health Implications of Medical Waste: A Report to Congress* (2). This report summarizes the conclusions and recommendations in the ATSDR report.

The report presented estimates of the number of persons injured by sharps (needles, scalpel blades, and other implements that could cause puncture wounds or other injuries) in medical waste, the number who may become infected with hepatitis B virus (HBV) and human immunodeficiency virus (HIV) as the result of medical waste-related sharp injuries,

account the rapid decline of viable HIV outside a living host. Because data were not available to determine how many janitorial and laundry workers, laboratory workers, and building engineers are employed at nonhospital facilities that generate medical waste, estimates could not be derived for these workers in these settings.

Based on available estimates, a maximum of less than 1-4 AIDS cases per year, i.e., less than 0.003%-0.01% of 33,173 AIDS cases in the United States reported to CDC in 1989 (4), occur in health-care workers as a result of contact with medical waste sharps (Table 1). An estimated 80-160 hepatitis B cases per year may occur as a result of contact with medical waste sharps—0.05%-0.1% of 150,000 hepatitis B cases annually in the United States (5).

Other findings included:

- Persons without occupational exposure are not likely to be adversely affected by medical waste generated in the traditional health-care setting.
- Outside the health-care setting, the potential for HBV or HIV infection in the general population following medical waste-related injuries is not likely to be a public health concern; however, needlestick injuries may cause local or systemic secondary infections.
- Increased in-home health care and other sources of nonregulated medical waste increase the likelihood that the general public may come in contact with medical waste.



and the number who may develop hepatitis B and acquired immunodeficiency syndrome (AIDS) as the result of those injuries. (The number of other infections or infectious diseases related to medical waste could not be estimated because relevant data were not available.) These estimates are upper-limit theoretical estimates because the probability of infection is based on case studies of persons who came in contact with freshly drawn blood or other body fluids—an event more likely to occur during patient care than during medical-waste handling. In addition, some persons may be immune to HBV infection because of prior exposure or immunization (3). The estimates did not take into

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- The estimated numbers of medical waste-related HIV and HBV infections and cases are of public health concern for selected occupations involved with medical waste (e.g., janitorial and laundry workers, nurses, emergency medical personnel, and refuse workers).
- The approximately 1.2 million U.S. intravenous-drug users (IVDUs) (6)—who have high rates of HIV and HBV infection—are a major source of discarded sharps. Although the general public may be at risk for injury and infection following contact with these discarded sharps, the potential risk for HIV and HBV infection from IVDU-related waste cannot be estimated.
- The potential for infection resulting from contact with non-sharp medical waste is likely to be substantially less than that related to contact with medical waste sharps, since a portal of entry must exist before contact with nonsharp medical waste for infection or disease to occur.
- Medical waste can be effectively treated by chemical, physical, or biologic means (e.g., chemical decontamination, autoclaving, incineration, irradiation, and sanitary sewage treatment). Medical waste does not contain any greater quantity or different type of microbiologic agents than residential waste. In addition, properly operated sanitary landfills provide microbiologic environments hostile to most pathogenic agents. Therefore, untreated medical waste can be disposed of in sanitary landfills if procedures to prevent worker contact with this waste during handling and disposal operations are strictly followed.

Editorial Note: In general, medical waste generated in traditional health-care settings is not a health risk for the general public. However, general environmental degradation caused by medical waste poses public health and aesthetic concerns. Because of the special characteristics of medical waste as a solid waste, management systems must be developed for nonregulated medical waste; these systems must be environmentally safe and not jeopardize the public's health.

Table 1. Estimated annual injuries and theoretical estimates of annual numbers of hepatitis B (HBV) infections, HIV infections, hepatitis B (HB) cases, and AIDS cases in employees as a result of medical waste-related injuries from sharps, United States, 1990

Employee group	Sharps injury range	HBV infections	HB cases	HIV infections	AIDS cases
Nonhospital					
Physicians*	500-1,700	1-3	<1-2	<1	<1
Registered nurses	17,800-32,500	36-65	18-33	<1	<1
Licensed practical nurses	10,200-15,400	20-31	10-15	<1	<1
Emergency medical personnel**†	12,000	24	12	<1	<1
Dentists*	100-300	<1	<1	<1	<1
Dental assistants*	2,600-3,900	5-8	3-4	<1	<1
Refuse workers*	500-7,300	1-15	<1-7	<1	<1
Hospital					
Physicians/Dentists/Interns‡	100-400	<1	<1	<1	<1
Registered nurses	9,800-17,900	20-36	10-18	<1-1	<1-1
Licensed practical nurses	2,800-4,300	6-9	3-4	<1	<1
Laboratory workers§	800-7,500	2-15	1-8	<1	<1
Janitorial/Laundry workers§	11,700-45,300	23-91	12-45	<1-3	<1-3
Hospital engineers**	12,200	24	12	<1	<1

*Information for hospital employees in this group was not available.
†Only one annual injury rate was available to calculate the injury range and infections.
‡Information for nonhospital employees in this group was not available.

Of the 158 million tons of municipal solid waste created yearly nationwide, 0.3% is medical waste. The most effective way of reducing medical waste is to reduce the amount of waste created, on a small scale in homes and on a large scale in health-care operations. Simultaneously, the impetus to recycle, reuse, and reclaim products is essential to adequately manage medical waste and other solid wastes.

In 1988, 44 states had medical-waste regulations in place. Among those states, however, there were differences in the types of waste materials designated as medical waste and in their management and disposal. Some states (e.g., Washington) have conducted worker surveys to determine injury rates. Metropolitan areas such as New York City have conducted similar worker surveys of municipal trash collectors and medical waste trash collectors.

Copies of the ATSDR report can be obtained through the National Technical Information Service for \$31, plus a \$3 handling fee; telephone (703) 487-4650.

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3. CDC. Racial differences in rates of hepatitis B virus infection—United States, 1976-1980. *MMWR* 1989;38:818-21.

4. CDC. HIV/AIDS surveillance report: year-end edition. Atlanta: US Department of Health and Human Services, Public Health Service, Jan 1990.

5. CDC. Hepatitis surveillance report no. 52. Atlanta: US Department of Health and Human Services, Public Health Service, 1989.

6. Public Health Service. Report of the workgroup on intravenous drug abuse. *Public Health Rep* 1988;103(suppl 1):66-71.

*Reprinted from *MMWR* 1990;39:822-824.

**Section 11009 of the act specifies that the report must include 1) a description of the potential for infection or injury from the segregation, handling, storage, treatment, or disposal of medical wastes; 2) an estimate of the number of persons injured or infected annually by sharps in medical waste, and the nature and seriousness of those injuries or infections; 3) an estimate of the number of persons infected annually by other means related to waste segregation, handling, storage, treatment, or disposal, and the nature and seriousness of those infections; and 4) for diseases possibly spread by medical waste, including acquired immunodeficiency syndrome and hepatitis B, an estimate of what percentage of the total number of cases nationally may be traceable to medical wastes.

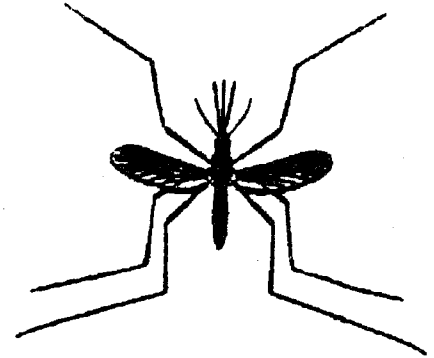


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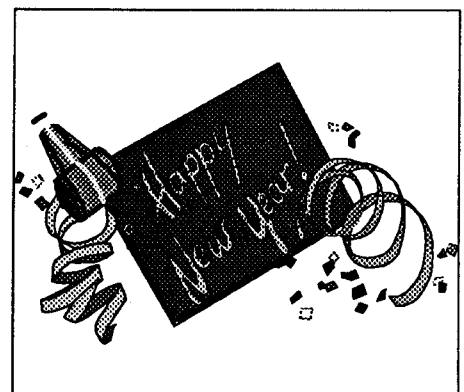
Revised Dosing Regimen for Malaria Prophylaxis with Mefloquine

A U.S. interagency group on malaria prevention has recently reviewed documented experience on the effectiveness and tolerance of mefloquine (Lariam®) for malaria prophylaxis. Based on this review, the group has proposed a change in the dosing regimen for malaria prophylaxis with mefloquine. Consequently, the Centers for Disease Control (CDC) has revised the dosing recommendations for mefloquine use. The new regimen consists of a single dose of mefloquine to be taken weekly, starting one week before travel. Prophylaxis should be continued weekly during travel in malarious areas and for four weeks after a person leaves such areas.



This notice updates the malaria prevention recommendations printed in the June 1990 issue of the Virginia Epidemiology Bulletin. Detailed recommendations for the prevention of malaria may be obtained 24 hours a day by calling the CDC Malaria Hotline at (404) 332-4555. Information about the availability of mefloquine can be obtained from the manufacturer at (800) 526-6367.

Source: MMWR 1990;39:630.



Cases of Selected Notifiable Diseases, Virginia, November 1 through November 30, 1990.

Disease	Total Cases Reported This Month						Total Cases Reported to Date in Virginia		
	State	Regions					This Yr	Last Yr	5 Yr Avg
		NW	N	SW	C	E			
AIDS	52	4	17	5	7	19	582	352	234
Campylobacter	44	11	12	8	10	3	533	632	631
Gonorrhea	1871	-	-	-	-	-	16724	14783	15261
Hepatitis A	22	1	3	7	3	8	283	312	233
Hepatitis B	26	0	5	4	3	14	236	296	405
Hepatitis NANB	6	2	0	2	0	2	42	66	68
Influenza	3	0	0	3	0	0	785	1998	2178
Kawasaki Syndrome	0	0	0	0	0	0	24	22	22
Legionellosis	0	0	0	0	0	0	13	12	16
Lyme Disease	10	2	2	0	1	5	122	52	22
Measles	0	0	0	0	0	0	86	22	66
Meningitis, Aseptic	68	4	20	10	13	21	344	385	302
Meningitis, Bacterial	18	4	2	5	3	4	136	173	190
Meningococcal Infections	6	1	0	3	1	1	52	62	61
Mumps	4	0	0	1	1	2	103	118	85
Pertussis	6	1	5	0	0	0	24	34	34
Rabies in Animals	17	2	6	1	6	2	188	246	256
Reye Syndrome	0	0	0	0	0	0	1	2	1
Rocky Mountain Spotted Fever	2	0	0	0	1	1	24	17	26
Rubella	0	0	0	0	0	0	1	0	3
Salmonellosis	142	15	37	21	40	29	1332	1358	1537
Shigellosis	8	2	3	0	1	2	147	389	242
Syphilis (Primary & Secondary)	100	2	9	5	47	37	854	548	369
Tuberculosis	29	0	18	0	10	1	349	333	371

Localities Reporting Animal Rabies: Culpeper 1 fox; Fairfax 1 raccoon; Gloucester 1 skunk; Hopewell 1 raccoon; Loudoun 4 raccoons; Lunenburg 1 raccoon, 1 skunk; Madison 1 raccoon; Newport News 1 raccoon; Nottoway 1 raccoon; Petersburg 1 raccoon; Prince William 1 raccoon; Smyth 1 skunk; Sussex 1 raccoon.

Occupational Illnesses: Asbestosis 22; Carpal Tunnel Syndrome 30; Coal Workers' Pneumoconiosis 24; Loss of Hearing 6; Poisoning, Carbon Disulfide 1.

*other than meningococcal

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