



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

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Wastes From Healthcare Activities

Health-care activities - for instance, immunizations, medical treatments, and laboratory examinations - protect and restore health and save lives. But what about the wastes and by-products they generate? From the total of wastes generated by health-care activities, almost 80% are general waste comparable to domestic waste. The remaining approximate 20% of wastes are considered hazardous materials that may be infectious, toxic or radioactive. The wastes and by-products cover a diverse range of materials, as illustrated below.

- Infectious wastes – cultures and stocks of infectious agents, wastes from infected patients, wastes contaminated with blood and its derivatives, discarded diagnostic samples, infected animals from laboratories, and contaminated materials (swabs, bandages) and equipment.

- Anatomic - recognizable body parts and animal carcasses.

- Sharps – syringes, disposable scalpels and blades.

- Chemicals – solvents and disinfectants.

- Pharmaceuticals – expired, unused, and contaminated drugs, vaccines and sera.

- Genotoxic waste – highly hazardous, mutagenic, teratogenic or carcinogenic, such as cytotoxic drugs used in cancer treatment, and their metabolites.

- Radioactive matter, such as glassware con-

taminated with radioactive diagnostic material or radiotherapeutic materials.

- Wastes with high heavy metal content, such as broken mercury thermometers.

The major sources of health-care waste are hospitals and other health-care establishments, laboratories and research centres, mortuary and autopsy centres, animal research and testing laboratories, blood banks and collection services.

High-income countries can generate up to 6 kg of hazardous waste per person per year. In the majority of low-income countries, health-care waste is usually not separated into hazardous or non-hazardous waste. In these countries, the total health-care waste per person per year is anywhere from 0.5 to 3 kg.

Health impact

Health-care waste is a reservoir of potentially harmful micro-organisms which can infect hospital patients, health-care workers and the general public. Other potential infectious risks include the spread of, sometimes resistant, micro-organisms from health-care establishments into the environment.

These risks have so far been only poorly investigated. Wastes and by-products can also cause injuries, for example radiation burns or sharps-inflicted injuries, poisoning and pollution, through the release of pharmaceutical products, in particular, antibiotics and cytotoxic drugs, through the waste water or by toxic elements

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Sharps

Throughout the world every year an estimated 12 000 million injections are administered. And not all needles and syringes are properly disposed of, generating a considerable risk for injury and infection, and opportunities for re-use.

Worldwide, 8-16 million hepatitis B, 2.3-4.7 million hepatitis C and 80 000-160 000 HIV infections are estimated to occur yearly from the re-use of syringe needles without sterilization. Many of these infections could be avoided if syringes were disposed of safely. The re-use of disposable syringes and needles for injections is particularly common in certain African, Asian and Central and Eastern European countries.

In developing countries, additional hazards occur from scavenging on waste disposal sites and manual sorting of the waste recuperated at the back doors of health-care establishments. These practices are common in many regions of the world. The waste handlers are at immediate risk of needlestick injuries and other exposures to toxic or infectious materials.

Radioactive waste

The use of radiation sources in medical and other applications is widespread throughout the world. Occasionally, the public is exposed to radioactive waste, usually originating from radiotherapy treatments, that has not been properly disposed of. Serious accidents have been documented in Goiânia, Brazil in 1988 (in which four people died from acute radiation syndrome and 28 suffered serious radiation burns), Mexico City in 1962, Algeria in 1978, Morocco in 1983 and Ciudad Juárez in Mexico in 1983.

Risks associated with other fractions of health-care wastes, in particular blood waste and chemicals, have been relatively poorly assessed, and need to be strengthened. In the meantime, precautionary measures too need to be taken.

Risks associated with waste disposal

Although treatment and disposal of health-care wastes aim at reducing risks, indirect health risks may occur through the release of toxic pollutants into the environment through treatment or disposal.

Landfilling can potentially result in contamination of drinking water. Occupational risks may be associated with the operation of certain disposal facilities. Inadequate incineration, or incineration of materials unsuitable for incineration can result in the release of pollutants into the air. The incineration of materials containing chlorine can generate dioxins, classified as a possible human carcinogen associated with a range of adverse effects.

Incineration of heavy metals or materials with high metal contents (in particular lead, mercury and cadmium) can lead to the spread of heavy metals in the environment. Dioxins, furans and metals are persistent and accumulate in the envi-

ronment. Materials containing chlorine or metal should therefore not be incinerated.

Only modern incinerators are able to work at 800-1000 °C, with special emission-cleaning equipment, can ensure that no dioxins and furans (or only insignificant amounts) are produced. Smaller devices built with local materials and capable of operating at these high temperatures are currently being field-tested and implemented in a number of countries.

At present, there are practically no environmental-friendly, low-cost options for safe disposal of infectious wastes. Incineration of wastes has been widely practised, but alternatives such as autoclaving, chemical treatment and microwaving are becoming available, and may be preferable under certain circumstances. Landfilling may also be a viable solution for parts of the waste stream if practised safely. However, action is necessary to prevent the important disease burden currently created by these wastes.

In addition, perceived risks related to health-care waste management may be significant. In most cultures, disposal of health-care wastes is a sensitive issue and also has ethical dimensions.

Waste management - reasons for failure

The absence of waste management, lack of awareness about the health hazards, insufficient financial and human resources and poor control of waste disposal are the most common problems connected with health-care wastes.

Many countries do not have appropriate regulations, or do not enforce them. An essential issue is the clear attribution of responsibility of appropriate handling and disposal of waste. According to the 'polluter pays' principle, this responsibility lies with the waste producer, usually being the health-care provider, or the establishment involved in related activities.

Steps towards improvement

Improvements in health-care waste management rely on the following key elements:

- 1.The build-up of a comprehensive system, addressing responsibilities, resource allocation, handling and disposal. This is a long-term process, sustained by gradual improvements;
- 2.Awareness raising and training about risks related to health-care waste, and safe and sound practices;
- 3.Selection of safe and environmental-friendly management options, to protect people from hazards when collecting, handling, storing, transporting, treating or disposing of waste.

Commitment and support of governments is needed to reach an overall and long-term improvement of the situation, although immediate action can be taken locally.

Health-care waste management is an integral part of health-care, and creating harm through inadequate waste management reduces the overall benefits of health-care.

Table 1: Vaccine-preventable Diseases & AFP

14th - 20th July 2007 (29th Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Number of cases during same week in 2006	Total number of cases to date in 2007	Total number of cases to date in 2006	Difference between the number of cases to date between 2007 & 2006
	W	C	S	NE	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	01 VA=1	00	00	00	00	01	01	52	74	-29.7%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	00	00	00	00	00	41	20	+105.0%
Tetanus	01 CB=1	00	00	00	00	00	00	00	01	00	21	33	-36.4%
Whooping Cough	01 CB=1	00	00	00	00	00	00	00	01	01	24	60	-60.0%
Tuberculosis	38	31	04	33	00	00	12	15	133	303	5727	5915	-3.2%

Table 2: Diseases under Special Surveillance

14th - 20th July 2007 (29th Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Number of cases during same week in 2006	Total number of cases to date in 2007	Total number of cases to date in 2006	Difference between the number of cases to date between 2007 & 2006
	W	C	S	NE	NW	NC	U	Sab					
DF/DHF*	50	09	03	02	16	07	06	08	101	182	2761	5479	-49.6%
Encephalitis	02 GM=2	00	00	00	00	00	00	00	02	04	126	83	+51.8%
Human Rabies	00	00	00	00	00	00	00	00	00	03	35	37	-5.4%

Table 3: Newly Introduced Notifiable Diseases

14th - 20th July 2007 (29th Week)

Disease	No. of Cases by Province								Number of cases during current week in 2007	Total number of cases to date in 2007	*DF / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever. NA= Not Available. Sources: Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps. Special Surveillance: Acute Flaccid Paralysis. National Control Program for Tuberculosis and Chest Diseases: Tuberculosis. Details by districts are given in Table 5.
	W	C	S	NE	NW	NC	U	Sab			
Chickenpox	13	07	07	04	05	02	10	08	56	2034	
Meningitis	05 GM=4 KL=1	01 NE=1	07 GL=3 HB=2 MT=2	00	02 KR=1 PU=1	01 AP=1	03 BD=3	07 RP=2 KG=5	26	224	
Mumps	08	03	01	20	08	03	03	08	54	891	

Provinces: W=Western, C=Central, S=Southern, NE=North & East, NC=North Central, NW=North Western, U=Uva, Sab=Sabaragamuwa.

DPDHS Divisions: CB=Colombo, GM=Gampaha, KL=Kalutara, KD=Kandy, ML=Matale, NE=Nuwara Eliya, GL=Galle, HB=Hambantota, MT=Matara, JF=Jaffna, KN=Killinochchi, MN=Mannar, VA=Vavuniya, MU=Mullaitivu, BT=Batticaloa, AM=Ampara, TR=Trincomalee, KM=Kalmunai, KR=Kurunegala, PU=Puttalam, AP=Anuradhapura, PO=Polonnaruwa, BD=Badulla, MO=Moneragala, RP=Ratnapura, KG=Kegalle.

Table 4: Laboratory Surveillance of Dengue Fever

14th - 20th July 2007 (29th Week)

Samples	Number tested	Number positive *	Serotypes				
			D ₁	D ₂	D ₃	D ₄	Negative
Number for current week	10	02	01	01	00	00	00
Total number to date in 2007	347	30	01	13	09	00	06

Source: Genetech Molecular Diagnostics & School of Gene Technology, Colombo.

* Not all positives are subjected to serotyping.

Table 5: Selected notifiable diseases reported by Medical Officers of Health
14th - 20th July 2007 (29th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Returns Received Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
Colombo	25	740	11	230	00	07	00	40	02	50	02	76	00	01	09	77	92
Gampaha	19	304	08	232	02	17	01	45	00	35	01	143	01	11	02	81	79
Kalutara	06	186	09	324	00	01	02	35	02	22	00	71	00	01	02	43	100
Kandy	07	259	06	175	00	03	02	41	00	07	01	46	03	46	39	1521	82
Matale	00	63	00	122	00	06	01	11	00	09	00	30	01	05	01	91	58
Nuwara Eliya	02	30	07	181	00	02	04	84	00	366	00	08	00	28	24	344	86
Galle	01	57	03	89	00	08	00	12	00	04	02	34	00	18	00	14	75
Hambantota	01	34	05	69	00	05	00	18	00	15	01	33	00	33	00	11	91
Matara	01	94	17	192	00	08	00	25	00	11	05	116	01	137	01	22	88
Jaffna	00	28	00	95	00	02	00	322	00	05	00	00	00	81	00	16	00
Kilinochchi	00	01	00	00	00	00	00	03	00	00	00	00	00	02	00	02	00
Mannar	00	07	00	14	00	00	01	56	00	00	00	01	00	00	00	07	75
Vavuniya	00	12	01	33	00	04	00	11	02	40	00	02	00	00	00	05	100
Mullaitivu	00	00	00	09	00	06	00	14	00	00	00	00	00	00	00	04	00
Batticaloa	01	62	13	408	00	08	00	14	00	10	00	00	00	22	29	594	55
Ampara	00	03	00	63	00	00	00	03	00	00	00	00	00	00	00	16	57
Trincomalee	01	50	01	161	00	03	01	18	00	23	00	07	01	09	01	84	67
Kurunegala	16	283	08	283	00	03	02	46	00	19	01	19	01	30	02	39	94
Puttalam	00	77	03	78	00	10	03	52	00	03	00	15	00	04	02	63	89
Anuradhapura	07	106	04	61	00	08	00	17	01	14	00	18	00	18	01	33	79
Polonnaruwa	00	41	01	57	00	02	00	07	00	04	00	19	00	00	00	16	86
Badulla	01	23	28	385	00	02	01	64	00	08	00	34	01	101	03	178	93
Monaragala	05	16	12	224	00	02	00	35	00	10	01	36	04	40	01	23	100
Ratnapura	05	148	01	364	00	11	01	41	00	08	02	36	00	13	00	57	63
Kegalle	03	134	08	183	00	07	01	33	00	04	01	66	00	17	14	114	91
Kalmunai	00	03	04	108	00	01	00	07	00	00	00	00	00	02	05	91	62
SRI LANKA	101	2761	150	4140	02	126	20	1054	07	667	17	810	13	619	136	3546	77

Source: Weekly Returns of Communicable Diseases (WRCD).

*Dengue Fever / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.

**Timely refers to returns received on or before 28 July 2007. Total number of reporting units = 290. Number of reporting units data provided for the current week: 223

A = Cases reported during the current week. B = Cumulative cases for the year.

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