



WEEKLY EPIDEMIOLOGICAL REPORT

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Vol. 43 No. 51

10th – 16th December 2016

Healthcare Waste : How Safe is it ?

Healthcare activities protect and restore health and save lives. But what about the waste and by-products they generate? About 80% of the waste that is generated is general waste and only the remaining 20% is considered hazardous.

Types of waste

Waste and by-products cover a diverse range of materials such as:

- **Infectious waste:** waste contaminated with blood and its by-products, cultures and stocks of infectious agents, waste from patients in isolation wards, discarded diagnostic samples containing blood and body fluids, infected animals from laboratories, and contaminated materials (swabs, bandages) and equipment (such as disposable medical devices)
- **Pathological waste:** recognizable body parts and contaminated animal carcasses
- **Sharps:** syringes, needles, disposable scalpels and blades etc.
- **Chemicals:** mercury, 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 waste:** glassware contaminated with radioactive diagnostic material or radiotherapeutic materials
- **Heavy metals waste:** broken mercury thermometers

Up to 15% of total waste from healthcare activities are hazardous waste and majority of them comprise of infectious and anatomic waste. Sharps represent about 1% of the total waste but they are a major source of disease transmission if not prop-

erly managed. Chemicals and pharmaceuticals account for about 3% of waste from healthcare activities while genotoxic waste, radioactive matter and heavy metal content account for around 1% of the total healthcare waste.

Key facts

- * Of the total amount of waste generated by health-care activities, about 80% is general waste.
- * The remaining 20% is considered hazardous material that may be infectious, toxic or radioactive.
- * Every year an estimated 16 000 million injections are administered worldwide, but not all of the needles and syringes are properly disposed of afterwards.
- * Health-care waste contains potentially harmful microorganisms which can infect hospital patients, health-care workers and the general public.

The major sources of healthcare waste are:

- Hospitals and other healthcare establishments
- Laboratories and research centres
- Mortuary and autopsy centres
- Animal research and testing laboratories
- Blood banks and collection services
- Nursing homes for the elderly.

Health impact

Healthcare waste contains potentially harmful micro-organisms which can infect hospital patients, health-care workers and the general public. Other potential infectious risks may include the spread of drug-resistant micro-organisms from healthcare establishments into the environment.

Waste and by-products can also cause injuries. For example:

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- Radiation burns
- Sharps-inflicted injuries
- Poisoning and pollution through the release of pharmaceutical products, in particular, antibiotics and cytotoxic drugs
- Poisoning and pollution through waste water

Poisoning and pollution by toxic elements or compounds, such as mercury or dioxins that are released during incineration.

Sharps

Throughout the world an estimated 16 000 million injections are administered every year. Not all needles and syringes are properly disposed of, creating a risk of injury and infection and opportunities for re-use.

WHO estimates that injections with contaminated syringes caused 21 million hepatitis B virus (HBV) infections, two million hepatitis C virus infections and 260 000 HIV infections worldwide in year 2000 alone. Many of these infections were avoidable if the syringes had been disposed of safely.

In developing countries, additional hazards occur from scavenging at waste disposal sites and the manual sorting of hazardous waste from healthcare establishments. These practices are common in many regions of the world. The waste handlers are at immediate risk of needle-stick injuries and exposure to toxic or infectious materials.

Vaccine waste

In June 2000, six children were diagnosed with a mild form of smallpox (vaccinia virus) after playing with glass ampoules containing expired smallpox vaccine at a garbage dump in Russia. Although the infections were not life-threatening, the vaccine ampoules should have been treated before being discarded.

Radioactive waste

Occasionally, the public is exposed to radioactive waste, which originates from material used for radiotherapy treatment which has not been disposed of properly. Serious accidents have been documented in Brazil in 1988 (where four people died and 28 had serious radiation burns), in Mexico and Morocco in 1983, in Algeria in 1978 and in Mexico in 1962.

Risks associated with other types of healthcare waste, in particular blood waste and chemicals may be significant, but have not been fully assessed. More work needs to be done. In the meantime, precautionary measures should be taken.

Risks associated with waste disposal

Although treatment and disposal of healthcare waste reduces risks, indirect health risks may occur through the release of toxic pollutants into the environment through treatment or disposal.

- Landfills can contaminate drinking-water if they are not properly constructed. Occupational risks exist at disposal facilities that are not well designed, run or maintained.

- Incineration of waste has been widely practiced but inadequate incineration or the incineration of unsuitable materials results in the release of pollutants and ash residue into the air. Incinerated materials containing chlorine can generate dioxins and furans which are human carcinogens and have been associated with a range of adverse health effects. Incineration of heavy metals or materials with high metal content (in particular lead, mercury and cadmium) can lead to the spread of toxic metals in the environment. Dioxins, furans and metals are persistent and bio-accumulate in the environment. Therefore, materials containing chlorine or metal should not be incinerated.

Only modern incinerators operating at 850-1100 °C and fitted with special gas-cleaning equipment are able to comply with the international emission standards for dioxins and furans.

Alternatives to incineration are now available, such as autoclaving, microwaving, steam treatment integrated with internal mixing and chemical treatment.

Improving healthcare waste management

Lack of awareness about the health hazards related to healthcare waste, inadequate training in proper waste management, absence of waste management and disposal systems, insufficient financial and human resources and the low priority given to the topic are the most common problems connected with healthcare waste. Many countries either do not have appropriate regulations or do not enforce them. An essential issue is the clear attribution of responsibility for the handling and disposal of waste. According to the 'polluter pays' principle, the responsibility lies with the waste producer, usually the healthcare provider, or the establishment involved in related activities. To achieve safe and sustainable management of healthcare waste, financial analysis should include all the costs of disposal.

Improvements in healthcare waste management rely on the following key elements:

- Building a comprehensive system addressing responsibilities, resource allocation, handling and disposal. This is a long-term process, sustained by gradual improvements
- Raising awareness of the risks related to healthcare waste and of safe and sound practices
- Selecting safe and environment-friendly management options to protect people from hazards when collecting, handling, storing, transporting, treating or disposing of waste.

Government commitment and support is needed for universal, long-term improvement, although immediate action can be taken locally.

Source

Waste from health-care activities, available from

<http://www.who.int/mediacentre/factsheets/fs253/en/>

Compiled by Dr. Madhava Gunasekera of the Epidemiology Unit

Table 1: Selected notifiable diseases reported by Medical Officers of Health 03rd - 09st Dec 2016 (50th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	319	14889	5	174	0	13	0	59	1	66	6	286	0	9	0	48	0	0	2	443	0	58	0	0	63	88
Gampaha	31	6174	0	153	0	16	0	27	1	98	0	325	0	18	0	54	0	1	1	382	0	51	0	7	13	33
Kalutara	45	3183	5	116	0	10	0	33	0	41	6	419	0	8	0	32	0	3	6	294	1	100	0	0	64	93
Kandy	22	3818	3	154	0	18	1	23	0	40	2	115	2	98	0	50	0	0	2	240	0	47	0	11	65	78
Matale	13	1057	0	64	0	1	0	16	0	4	0	87	0	20	0	25	0	1	0	37	1	64	0	23	46	77
NuwaraEliya	7	397	2	109	0	3	0	57	0	36	0	66	1	85	0	38	0	0	4	155	2	52	0	0	69	77
Galle	91	2537	2	142	0	8	0	9	2	12	5	341	0	111	1	10	0	0	2	286	2	40	0	3	65	80
Hambantota	21	791	4	86	0	1	0	5	0	61	0	103	0	65	0	104	0	0	2	222	0	15	0	377	58	83
Matarata	35	1240	0	114	0	16	0	8	0	39	6	197	1	57	0	41	0	0	4	184	1	30	1	190	100	100
Jaffna	62	2156	12	379	0	12	1	86	2	125	1	22	5	620	0	10	1	2	0	169	3	68	0	1	83	100
Kilinochchi	1	77	1	50	0	2	0	36	0	76	0	16	0	26	0	2	0	0	0	10	0	11	0	0	25	50
Mannar	0	160	0	46	0	4	0	23	0	12	0	11	0	42	0	0	0	0	0	7	0	4	0	0	20	100
Vavuniya	12	256	1	17	0	5	1	99	0	45	0	18	1	12	0	6	0	0	0	33	0	10	0	7	75	100
Mullaitivu	4	174	0	29	0	5	0	19	0	41	2	26	0	6	0	2	0	1	0	25	0	11	0	6	60	80
Batticaloa	13	511	0	316	0	5	0	52	1	100	2	51	0	6	0	13	0	1	3	116	0	20	0	1	36	86
Ampara	0	234	1	52	0	3	0	1	0	21	0	26	0	0	0	11	0	0	0	172	0	5	0	9	14	43
Trincomalee	1	373	0	57	0	2	0	13	0	25	0	35	0	26	0	34	0	2	3	166	1	16	0	17	50	75
Kurunegala	15	2338	4	325	0	12	0	4	0	19	1	161	0	45	0	34	0	4	5	398	1	73	1	104	38	83
Puttalam	5	988	2	101	1	6	0	7	0	3	0	52	0	61	0	3	0	3	2	97	2	82	0	4	36	64
Anuradhapura	4	679	2	129	0	4	0	12	0	34	0	265	0	26	0	40	0	1	2	265	0	48	0	258	11	68
Polonnaruwa	3	440	1	47	0	4	0	12	0	15	0	89	0	4	0	5	0	0	0	151	0	21	1	132	57	71
Badulla	6	1076	3	141	0	13	0	13	0	32	1	134	0	114	0	123	0	1	1	252	2	205	0	3	41	82
Monaragala	5	419	1	129	0	1	0	5	0	11	1	166	0	125	0	147	0	2	0	87	0	27	0	39	55	91
Ratnapura	26	2877	0	355	0	33	1	31	0	25	3	594	0	40	3	211	0	0	6	259	1	162	0	1	44	72
Kegalle	7	1390	0	80	1	21	0	33	0	58	3	180	2	41	0	33	0	0	2	330	2	59	0	3	45	82
Kalmune	11	662	1	107	0	7	0	5	0	64	0	21	0	0	0	7	0	4	2	116	0	30	0	0	31	69
SRILANKA	759	48896	50	3472	2	225	7	688	7	1103	39	3806	12	1665	4	1083	4	26	49	4896	19	1309	3	1196	49	78

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 09th December, 2016. Total number of reporting units: 339. Number of reporting units data provided for the current week: 270. C**=Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

03rd - 09st Dec 2016 (50th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2016	Number of cases during same week in 2015	Total number of cases to date in 2016	Total number of cases to date in 2015	Difference between the number of cases to date in 2016 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	01	00	00	00	00	00	00	00	01	03	63	68	-7.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	00	00	00	00	00	00	00	01	01	05	383	374	+2.4%
Measles	01	01	00	00	00	01	00	00	01	04	17	376	2570	-85.3%
Rubella	00	00	00	00	00	00	00	00	00	00	00	11	08	+37.5%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	10	16	-37.5%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	01	21	15	+40%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	68	104	-34.6%
Tuberculosis	103	15	15	27	01	07	05	10	23	206	232	8874	9423	-6.1%

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
 RDHS 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.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS, Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them

PRINTING OF THIS PUBLICATION IS FUNDED BY THE WORLD HEALTH ORGANIZATION (WHO).

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to chepid@sltnet.lk. **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

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