

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi
College of Medicine University of Al-Nahreen
Ahlam Khalil Ibrahim
Institute of Medical Teaching Mansour

Abstract

A descriptive study, was carried out from March 15th 2004 to April 20th 2006 in all departments to assess waste management in teaching and non-teaching hospitals in Baghdad. Non probability sampling is performed. A purposive sample of (32) managers who were responsible of waste management in hospitals, including (13) teaching hospitals consisting: (5) general hospitals (8) specialized hospitals consisting of all teaching hospitals in city center (urban) and (19) non-teaching hospitals consist of (6) general hospitals (3) of it in district (Rural), (13) specialized hospitals all of in city center.

Objective

The main objectives of the study are as follows:

1. To describe aspects of the hospitals waste management.
2. To determine factors which are associated with waste management at hospitals in Baghdad Governorate.
3. To assess the hospitals waste management in Baghdad Governorate hospitals.

Methodology

a descriptive design which appropriately structured for assessment of hospitals waste management,

A questionnaire was constructed for the purpose of the study. It consists of (3) parts and all items included in the questionnaire are (156) .

The validity was established by a panel of expert who gave their opinion and suggestion about the question . while the reliability was employed through computation of Alfa correlation Coefficient, The results indicated that the person correlation coefficient was $r = 0.90$ for the test- retest reliability

Results

There is a significant difference at P-value (0.028) (0.036) level between hospitals segregation, covered container, metal foot drop containers. While no significant differences at P-value (0.060) level significance difference at p-value (0.012) level between easily washing, and hospitals of sample. between

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

daily waste collection and hospitals of sample. There is no waste treatment,. Relative to the transportation of waste in site the hospitals were significant difference at P- value (0.035) (0.032) level between used carts with wheels, not used to other thing and hospitals of sample .

Recommendations

The study recommended that there should be cooperation between the Ministry of Health and Ministry of Environment to apply the whole rules of WHO in the hospital to safe waste management Perfectly work incinerators, the hospitals should be applied (WHO Program of waste management)

Introduction

The hospital is an institution of health and wellness, all operations of health institutions produce hazardous and non hazardous wastes, these hospitals should have a good frame-work and good planning to handle and dispose, treatment at raising the standard of health and environment in the country (Edwin, 2001).

The management of wastes is one of many elements in the protection of public health from different types of wastes which impose different problems. But in general, failure management and disposal of waste expose people to the risk of infectious disease. The most tropical common diseases which involve the domestic wastes like food, medical wastes like syringes, set tube of blood, urine catheters etc (Susan, 2002).

Hospitals are one of sources of infectious waste. Generation of wastes are heterogeneous mixtures composed of general refuse like biological, chemical and pharmaceutical toxic wastes. Some of infectious wastes are not separated from generation of wards , operation rooms or hemodylsis unit. laboratories wastes contain microorganism lead to infectious diseases which are easily transmitted and cause community problems, which surely affect the medical, nursing, laboratory staff and health worker who come in contact with these wastes (Suwanne, 2002).

Importance of the study

Hospitals wastes are currently mismanaged in Baghdad city hospitals . there are no guideline applied at departments of hospitals for safe,

Objectives of the study

The main objectives of the study are as follows:

1. To describe aspects of the hospitals waste management.
2. To determine factors which are associated with waste management at hospitals in Baghdad Governorate.
3. To assess the hospitals waste management in Baghdad Governorate hospitals.

Methodology

A descriptive design which appropriately structured for assessment of hospitals waste management The study was conduct from March 15th 2004 to 20th, April 2006

The study was conduct in 32 hospitals of 36 hospitals in Baghdad Governorate, there were ten hospitals from Karkh sector which includes: Two hospital of than Rural area (District) and eight hospitals in City center (Urban), four hospitals of eight are teaching hospitals. from Al Rasafa sector twenty two hospitals involved one hospital of than in Rural area (District) while there were twenty one hospitals in city center (Urban area), nine hospitals from that over teaching hospitals. The setting included all hospitals departments (Wards, Laboratories, X-rays, dialysis, theaters, pharmacies, kitchen, Laundry) .

A three part questionnaire was designed by the investigators for the purpose of carry out the study which include.

Part one consist of two parts, first part for the demographic data of managers who are responsible for waste Management, age, specialization, type of work, experience, level of education and training courses (program) .

Second part consist of ten items about the policy of the hospital. Handling, Storage, and Transportation of health- care waste

segregation Collection, consist of three items each one of this item consist of three items .

Observation was performed to workers practices during the work, estimated quantity of waste, collection, segregation, treatment, management of wastes .

Interview and filled of questionnaire formats was conducted managers who were responsible of waste management and the head of the department of wards , laboratories , Radiology department, Kitchen and pharmacies the data collection was initiated started from December 2004th to March 2005th at the hospitals of Baghdad Governorate, rural and urban area .

Pilot Study

A pilot study was conducted on a purposive sample of seven hospitals three general and four specialized, of Baghdad Governorate.

The Validity of the Questionnaire determined Initially through panel of (14) experts from different agencies.. While the internal consistency reliability was determined through computation of alph correlation coefficient for internal scales, The results indicated that the person correlation coefficient was $r = 0.90$ for the test—retest reliability.

The result

Tablet Distribution of personnel by type of hospitals and demographic characteristics

a. Age group (years)	Type of Hospitals					
	Teaching		Non-teaching		Total	
	N	%	N	%	Total	
<30						3.125
30-39	3	9.375	9	28.125	12	37.500
40-49	9	28.125	8	25.0	17	53.125
>50	1	3.125	1	3.125	2	6.250
Total	13	40.625	19	59.375	32	100.0%
b Specialization	Type of hospitals					
	Teaching		Non-teaching		Total	
	N	%	N	%	Total	%
Medical	4	12.5	9	28.125	13	40.6
Administrators	9	28.125	10	31.25	19	59.4
Total	13	40.625	19	59.375	32	100.0%
c. =, type o wo k	Type of hospitals					
	Teaching		Non-teaching		Total	
	N	%	N	%	N	%
Manager	2	6.25	5	15.625	7	21.9
Assistant Manager	5	15.625	5	15.625	10	31.2
Service responsible	6	18.75	9	28.125	15	46.9
Total	13	40.625	19	59.375	32	100.0%
d; Ex perience (years-	Type of hospitals					
	Teaching		Non-teaching		Total	
	N	%	N	%	N	%
<5	9	28.125	15	46.875	24	75
5-9	2	6.25	2	6.25	4	12.5
>10	2	6.25	2	6.25	4	12.5
Total	13	40.625	19	59.375	32	100.0%
Level of education						
Higher education	4	12.5	5	15.625	9	28.125
BSC	3	9.375	6	18.75	9	28.125
Higher diploma	2	6.25	3	9.375	5	15.625
Secondary School	4	12.5	4	12.5	8	25.000
Intermediary School	0	0	1	3.125	1	3.125
Total	13	40.625	19	59.375	32	100%

Such distribution indicates that most of them are (40-49) year old for both settings both settings but those who are (30-39) year old are accounted for the most in non-teaching hospitals With respect to their specialization most of them are administrators in all settings but the large number of them is of medical staff in non-teaching hospitals regarding to their type of work, the greater number of them is accounted for service responsible but the higher number of them is accounted for those in non-teaching hospitals and for those who are managers in the same setting Relative to their experience, most of them have (<5) years of experience in both settings and those who

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

are accounted for the greater number are non-teaching hospitals personnel concerning their education most of them have Bachelor Degree and higher in all setting

Table 2. classification of waste b t e of hospitals

Type of Hospital	Classification of waste															
	Domesti c		Medical waste													
			patholog y		radiolog y		chemical		infectious		sharps		Pharmaceut ical		radioactiv e	
N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Teaching	13	100	11	85	13	100	9	69.2	6	46.2	13	100	4	30.8	0	
Non-teaching	19	100	19	100	19	100	19	100	3	15.7	17	89.4	0	0	1	5.3
Total	32		30		32		28		9		30		4		1	

This table reveals that Teaching hospitals produce all means of waste with greater number as being classified as domestic and medical ones than the teaching hospitals.

Tables 3. Quantity of wastes by the type of hospitals

Type of hospitals	Waste generation (kg/ day)		Kg/bed	
	Mean	SD	Mean	SID
Teaching	82.4	5.9	1.8	6
Non-teaching	90.2	5	2.1	5

This table presents that Non-teaching hospitals generate greater quantity of waste than teaching hospitals do.

Table (4) Test of waste management in Baghdad hospitals

Items	Form of Testing				
	Title of waste management	Independence Testing	Linearity form	Correlation ship	
		P- Value	P- Value	P- Value	Cs
	Segregation cord wastes				
	a. Segregation of wastes	0.28	0.030	0.028	S
	b. Used plastic container	0.60	0.610	0.604	Ns
	c. Covered containers	0.036	0.039	0.036	S
	d. Metal foot drop Containers	0.132	0.139	0.0132	S
2	Collection				
	a. Once daily	0.060	0.065	0.050	S
	b. Twice daily	0.618	0.628	0.618	Ns
	c. Three Times daily	0.299	0.326	0.299	Ns
3	Waste treatment in source	0	0	0	
4	Storage's wastes	0	0	0	
5	Wastes transportation				
	a. By hand	0.515	0.522	0.515	Ns
	b. Mechanical	0	0	0	
	c. Carts of transportation	0	0	0	
	d. Carts with wheels	0.035	0.150	0.050	S
	e. Carts used to other things	0.032	0.050	0.045	S

Table 4 Presents the relationship between the waste management and hospital of the sample. It shows that there was a significant difference at p-value(0.028) (0.036) (0.0132) level between covered containers, metal foot drop containers (segregation solid wastes) and hospitals of the sample. This different within not less than (95%) of confidence level should be meaningful. While there was a non significant difference at p- value (0.60) level between segregation of waste, plastic containers in hospitals sample respectively. The difference within less than (95%) of confidence should be meaningless

Table 4.2. This table presents the relationship between the waste management and hospitals of the sample. It show that there was a significant difference at p- value (0.050) level between collection waste once daily and hospitals of the sample. This difference within not less than (95%) of confidence level should be meaningful. While there was a non-significant difference at p- value (0.618) (0.299) level between collection of waste, twice daily and three time daily in hospitals sample respectively. The difference within less than (95%) of confidence should be meaningless.

Table 4.3. This table presents the relationship between the waste treatment and hospitals of the sample. It show that there was no waste treatment in source of hospitals.

Table 4,4 This table presents the relationship between the waste storage at the source of waste production it shows that there was no storage of the wastes in hospitals sample.

Table 4.5. This table presents the relationship between the waste transportation and hospitals of the sample. It shows that there was a significant difference at p- value (0.035) (0.032) level between waste transportation carts with wheels, carts of used to other things in hospitals sample respectively. The difference within less than (95%) of confidence level should be meaningful.

Table 5 Central of Domestic waste management in Baghdad hospitals

tabulation items	Central waste management -a hospitals	Independence testing	Linearity form testing	Correlation ship cc testing:...	
I	Domestic waste	P- value	P- value	P-value	Cs
	a. Number of container (Big)	0.449	0.410	0.449	Ns
	b. Solid type container	0.598	0.604	0.598	Ns
	c. Containers with covered	0.783	0.787	0.783	Ns
	d. Easily washing	0.012	0.013	0.012	S
	e. Light and ventilation	0.961	0.963	0.961	Ns
	f. Easily emptied of wastes	0.515	0.522	0.515	Ns
	g. Daily emptied container	0.109	0.115	0.109	NS

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

h. Twice weekly emptied by p municipal government	0.503	0.254	0.503	Ns
--	-------	-------	-------	----

Table 5 This table presents the relationship between the central domestic waste container in hospitals at the sample it show that there was significant difference at P- value (0.012) level between easily washing and daily emptied of waste and hospitals, this difference within not less than (95%) of confidence level should be meaningful. While there was a non significant difference at P- value (0.598) (0.783) (0.961) (0.515) level between central of domestic wastes containers at the hospitals sample respectively. The difference within less than (95%) of confidence should be meaningless.

Table 6 Central of medical waste management in Baghdad hospitals

tabulation	Central waste management Items and hospitals	Independence testing -	Linearity form testing	Correlation ship Cc testing	
		P- value	P- value	P-value	Cs
2	Medical waste T.T				
	a. Incineration	0.401	0.408	0.401	Ns
	b. There is incinerators	0.687	0.691	0.687	Ns
	c. Incinerator not work	0.401	0.408	0.401	Ns
	d. Incinerator work perfect	0.409	0.417	0.409	Ns
	e. Ash drain to Municipally government	0.409	0.417	0.409	Ns
	f. Incinerator with covered	0.150	0.156	0.050	S

Table 6 This table presents the relationship between the medical wastes treatment and hospitals at the sample it shows that there was a significant difference at P-value (0.050) level between incinerator with covered (Medical waste treatment) and hospitals of the sample, this difference within not less than (95%) of confidence' level should be meaningful.

While there was a non significant difference at P- Value (0.401) (0.687) (0.401) (0.409) (0.409) level between the items of medical waste treatment central at the hospitals sample respectively. The difference within less than (95%) of confidence should be meaningless.

Table 7. The wastes around the container according to the quantity of wastes in teaching and Non teaching hospitals

Type of hospitals	Waste around or near big container						
	Quantity of waste kg/day	Yes	%	No	%		total
Teaching	< 25	1	7.7	I	7.7		15.4
	25-	I	7.7	I	7.7	2	15.4
	50-	1	7.7	1	7.7	2	15.4
	75-	6	46.10	1	7.7	7	53.8
Total		9	69.20	4	30.8	13	100.0
Non-teaching	25	0	0	1	5.26	I	5.26
	25-	3	15.79	2	10.53	5	26.32

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

	50-	4	21.05	3	15.79	7	36.84
	75-	1	5.27	2	10.52	3	15.79
	100 >		10.52	1	5.27	3	15.79
Total		10	52.63	9	47.37	19	100.0

This table reveal quantity of wastes 75 Kg/ day around container with 46.1 in teaching hospitals, with respect 50 kg/ day 21.2% in Non-teaching hospitals.

Table 8. The evaluation at wastes management in hospitals of Baghdad Governorate

	Category				Sig
	Yes	%	No	%	
1- Responsible persons of waste management have motivation.	19	100	13	100	0.337
2- The workers in waste management have motivation.	15		17		0.860
3- Very good work in waste management	10		22		0.052
4- More salary to workers in waste management.	17		15		0.860
5- Special money to occupational risks.	7		25		0.03
6- Following up workers.	9		23		0.022
7- There are medical wastes not burned around the incinerator.	10				0.052
8- There are domestic wastes around the Containers.	19		13		0.377

This table shows a significance difference in items (3, 5,6, 7). At the $P < 0.05$.

Discussion of results.

The result showed that most of them were (40-49) years old for both settings (53.1%) but those who were (30-39) years old are accounted for the most in ordinary hospitals(28.1%) (table 1 a). With respect to manager specialization, most of them were administrators in both setting (59.4%) (table 1b). This result does not agree with the World Health Organization statement which indicates, that managers of hospital waste management should be medically specialized and the other staff work with them as a team, work in waste management (WHO, 1999).

Regarding their type of work, the greater number of them are accounted for managers(service responsible) (46.9%), the highest number of them are from non-teaching hospitals (28%)(table 1 c).

Al- assaf agree with World Health Organization which reports that the workers should be a team (Al- assaf, 2004).

Regarding their experience, the majority of them have (> 5) years of experience in both settings (75%) those who are accounted for the greater number are ordinary hospitals personal (46.9%) (table 1 d).

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

A study of John (1998) indicated that the managers, or the team work who are responsible for waste management should have experience in their work, and have years of specialization and educational training in medical waste management.

Concerning their education, most of them have Bachelor Degree in ordinary hospitals (18.8%) (table 1 e).

This result is supported with rules of waste management that indicate the characteristic of the person who is responsible for waste management should have at least a Bachelor Degree. (Rules, 1998)

All hospitals produce domestic and medical wastes in various proportions according to the type of hospital services, the study found out that ordinary hospitals which produce all means of waste reveal the greater number as being classified as domestic and medical ones than teaching hospitals (100%) (table 2).

Domestic wastes produced from patients, workers and visitors, medical waste produced from diagnosis and treatment.

This result is in agreement with (Ullah, 1999) (WHO, 2000).

Regarding the classification of hospital waste, (85%) of the hospital produce pathological wastes (table 2).

Most hospital produce medical waste which is the pathological waste is a part of it with a small proportion (WHO, 2000).

Regarding the type of medical wastes with different quantity according to number of patients (in patients, out-patients) and the type of hospitals if they are general. The type of the medical waste which is infected most produced by the hospital-acquired infection, and some accept and treat patients with infectious diseases. Infectious disease, are in both setting, but were accounted from all teaching hospitals (46.2%) (table 2). Some hospitals have special rooms to treat the patients with infectious disease like hepatitis, measles, anthrax, the wastes of those patients are not completely isolated, collected and treated in special methods to prevent risks to the workers and others and sometime mixed with domestic wastes.

This result agree with (Smith, 1991) which indicated that infectious wastes revealed in hospital-acquired infection, most of them treat the cases of epidemic and endemic diseases.

Sharp wastes which consist of (Needles, syringes with needles, knives, blades, etc.) revealed in both setting the most accounted in teaching hospitals (table 2). 100% of medical wastes are the sharps wastes which are thrown out from all medical departments of hospitals use (OJHS, 2002).

(30.8%) from all teaching hospitals produce pharmaceuticals wastes

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

that is revealed in ordinary (table 2). Pharmaceutical waste is one categories of healthcare waste in all hospitals (Siddiqui, 2000).

The radioactive waste produced only in one hospital (specialized in cancer treatment) and that in ordinary hospital, (5.3%) from all ordinary hospital (table 2)

This result is supported by Edward(2000). Who indicates the new diagnostic and therapeutic procedure developed through the research. In generating of new types the wastes that are problematic to manage under the present regulatory framework the waste radioactive material are only general hospital the type of the medical waste which is infected most produced by the hospital-acquired infection, and some accept and treat patients with infectious diseases. Infectious disease, are in both setting, but were accounted from all teaching hospitals (46.2%) (table 2).

This result agree with (Smith, 1991) which indicated that infectious wastes revealed in hospital- acquired infection, most of them treat the cases of epidemic and endemic diseases.

Sharp wastes which consist of (Needles, syringes with needles, knives, blades, etc.) revealed in both setting the most accounted in teaching hospitals (table 2). 100% of medical wastes are the sharps wastes which are thrown out from all medical departments of hospitals use (OJHS, 2002).

Table (3) indicate that the rate of quantity, waste rang (Mean= 90.2 kg/ day) (Mean = 2.1 kg/ day) (Mean = 80.6 kg/ day) (Mean = 1.8 leg/ bed) respectively in ordinary, teaching hospitals. In the findings presented in table (3) showed that the quantity of waste agreement with (4.Skg/day) in USA, (2.7kg/day) in Netherlands and (2.Skg/day) in France, the range (1- 4.5 kg/ bed)in Latin American countries like Chil, Brazil, Americana (Habibur, 1999).

Environmental protection Agency of America and Japan, Ministry of Health suggested a volume of 1 to 1.5 kg/day/bed for hospitals. However, waste produced has been quoted up to(5.24 kg/day) in developed countries (Hemangin, 2000).

The average quantity of hospital solid waste produced in India ranges from(1.5 to 2.2 kg/day/bed). (Kumar, 1995).

Regarding the waste management the important procedure is segregation, that presents the relationship between the waste segregation and hospitals of the sample results shows that there was a significant difference at p-value (0.028) (0.036) (0.032) level between segregation covered containers, metal foot drop containers and hospitals of the sample. This difference within no less than (95%) of confidence level should be meaningful (table 4.).

Laws require that infectious waste be segregated from non-infectious

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

spe Laws require that infectious waste be segregated from non-infectious waste companies certified to dispose of infectious waste offer both reusable and single-use containers (Neely, 2003).

Segregation should always be the responsibility of waste producer, there is a system of segregation but not an appropriate way of identifying the categories of health- care waste is by sorting the waste into color- coded plastic bags or container. (Rules, 1998).

Risk waste shall be separated from non-risk waste at source, that is at the ward bedside, operation theater, laboratory, or any other rooms in the hospital where the waste is generated, by doctors, nurses, or other person generating the waste(WHO,1999).

All disposal medical requirement and supplies including syringes, needles, plastic bottle, drips and infusion bags shall be cut or broken so are not to be used for another person. All risky wastes other than sharps, large quantities of pharmaceutical, or chemicals, waste with a high content of mercury or cadmium such as broken thermometers or used batteries, or radioactive waste should be placed in a suitable container made of metal or tough plastic, with a pedal type or swing lid, lined with a strong yellow plastic bag(APruss,1998). The bags should be removed when it is not more than three quarters full and sealed, preferably with self-locking plastic sealing bags and not by stapling. Each bag shall be labeled, indicated date, point of production/ ward/ hospital, quantity and a description of waste(Rule,1998).

The bag removed should be immediately replaced by a new one of the same type, sharps waste shall be placed in metal or high-density plastic containers resistant to penetration and leakage, the containers shall be colored yellow and marked "DANGER" CONTMINATED SHARPS. If the sharps container is to be incinerated placed in the yellow plastic bag with the other risk waste. Large quantities shall be returned to cialized hospitals, suppliers(Rule,1998). Small quantities should be placed in a yellow plastic bag crushed done safely, large quantities of chemical waste should be placed in chemical resistant containers and sent to specialized treatment facilities radioactive waste which has to be stored to allow decay to background level shall be placed in a plastic bag marked "RADIOACTIVE WASTE"(EP, 1999).

Non-risky waste should be placed in a suitable container lined with a black plastic bag and should be placed in all areas of the hospital and notices affixed to encourage visitors to use them (Rule, 1998).

With proper waste segregation practices, roughly 15% (by weight) of hospital waste can be classified as infectious, requiririg treatment before disposal

(Charles, 2002).

Segregating the waste streams for optimal end use such recycling and materials recovery (Beagley, 1994).

Reducing mercury emission by installing pollution control equipment such as mercury traps can be considered a down stream tactic (Kaiser et al, 2001). American Hospital Association indicated that this category of waste should not be more than 15% of the total hospital waste stream, and the number of US hospitals who have implemented good segregation programs have reduced this portion of their waste stream to less than 8%, non- US countries that believe that the average hospital waste stream contains less than 10% of materials that could be considered "potentially infectious waste" if properly segregated, the

benefits of segregation are to be realized then there must be secure internal and external collection and transportation system for waste. If segregated at the point of generation only to be mixed together by laborers as they collect it (WHO, 1999).

It is critical that wastes are segregated prior to treatment and disposal .segregation should be achieved through training clear standards and tough enforcement (BAN, 1999).

Wastes should be segregated and clearly labeled at source The important step in handling of waste and mainly form the patient -caress(Rules ,1998).

Table (4.2) presents the relationship between the waste collection and hospitals of the sample. It showed that there was a significant difference at p-value 0.050)level between waste collection once daily and hospitals of the sample .This difference within no less than (95%) of confidence level should be meaningful .

The process of waste collection starts from hospital department, the radiology time of collection according to the system of hospitals as a part of health- care waste management plan, usually collected wastes daily in the morning from the teaching hospitals departments and transported to disposal ,medical waste to the incinerator and domestic waste to the hospital big container Non-teaching hospitals system collect domestic waste more than once daily .

WHO indicated that the waste should be collected daily (or as frequently as required) (Mohammed, 2002).

In Dhaka city hospitals, the wastes were collected three time daily (Habibur, 1999).

Regarding the treatment of waste (table 4.3.) presents the relationship between the waste treatment and hospitals of the sample. It showed that there was no treatment at the source of hospitals.

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

There isn't treatment at the source of wastes production in all departments of hospitals, only laboratories , theaters departments. In both setting teaching and ordinary hospitals

The infected wastes should be treated on-site department that the sources of waste, by autoclave or chemical disinfection example of the resources dialysis unit and laboratories (Al- Zahrani, 1998). Regarding the waste management that the (table 4.4.) presents the waste storage at the source of waste production it showed that there was no storage of wastes in the hospitals sample.

The result disagreed with WHO program, that the location of storage for healthcare waste should be designated inside the health- care establishment, the waste in bags or containers the storage time should be no more than 72 hours in winter, 48 hours in summer (WHO, 2000).

All medical waste must be stored in containers that are waterproof and insect and vermin proof all containers of medical waste that are kept or further used must be thoroughly cleaned and disinfected as soon as reasonably practicable after emptying Containers of medical waste must be clearly labeled as containing medical waste. The containers of medical waste must be stored in a secure location all sharp articles must be contained in a disposal in rigid -proof containers that taped closed medical waste must be disposed of as soon as reasonably practicable (EPP,1994).

(Table 4.5.) presents the relationship between the waste transportation and hospital of the sample It shows that there is a significant difference at p-value (0.035) (0.032) level between waste transportation carts with wheels carts used for other things in hospitals sample respectively The difference within less than (95%) of confidence level should be meaningful.

Some janitors transport the wastes by hands because the departments do not vehicle or trolley to transport the waste from department to the hospital big containers sometimes the wastes mixed hazardous and non-hazardous wastes . The transporter must be given such assistance as required to ensure that loading operations are carried out in such a way as to prevent spillage of any medical waste A person who transports waste on or in a vehicle must take all reasonable and practicable steps to cover, contain or secure the waste to ensure that it remains on or in vehicle throughout the course of transportation (EPP,1994).

This result agrees with WHO, which indicates that health- care waste should be transported within hospitals by means of wheeled trolleys, containers, or carts that are not used for any other purpose (Krishnan, 1997). Medical waste transporters and disposal facilities may not be licensed to Handle this waste Those materials identified as hazardous waste are required to be containerized,

labeled with the (John,1998).

On-site transportation the waste collection trolley shall be free of sharp edges, easy to load and unload and to clean and preferably a table three or four wheeled design with high sides .The trolley shall be cleaned regularly and especially before any maintenance works performed on it

Transportation off-site by vehicles or skips used for carriage of yellow-bagged waste are not used for any other purpose, cleaned and disinfected after use Rules 1998).

Regarding the central waste management, (table 5) there should be a significant difference at p-value (0.012) level between easily washing containers and daily emptied of waste and hospitals of the sample. This difference within no less

than (95%) of confidence level should be meaningful) .

One big container of domestic wastes in some hospitals sample some of them do not have big containers (Hawaii).

There was no well-established system for segregation hazardous from non hazardous waste In hospitals wastes which were frequently dumped with municipal solid waste , no landfills to receive either hazardous or non-hazardous wastes (Drafi ,2000).

Concerning the central medical waste management, (table 6) presents the relationship between the medical wastes treatment and hospitals at the sample .It shows that there was a significant difference at p-value (0.050)level between incinerator with covered (medical waste treatment) and hospitals of the sample ,this difference within no less than (95%) of confidence level should be meaningful

This result agreed with WHO which indicated, that the hospital should have efficient work incinerators whose capacity is according to the capacity of hospitals, occupation of beds, and also, the residual ash generated from incineration of medical waste which is tainted with heavy metals and other toxic residues, that collected and disposed should be drain it with municipal landfill (Hopi, 2004).

To reduce potential infectious hospitals wastes should be treated. The medical wastes by incineration two substances mercury and dioxin have been detected in a significant amount in the air ~uZd ash emission from medical waste incinerators (Beagley , 1994).Setting teaching and The result indicate that the waste collection near container in both ordinary hospitals according the

waste quantity, (75 kg) (46.20%) (50 kg)(21.2%) respectively (table 7). Analyzing this status is the waste accumulated near incinerator, some incinerator don't work and residual don't drain to the municipal, authority, that the system of the hospital, incineration medical waste every 2 days or more.

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

Evaluation the Hospitals Waste Management in Baghdad Governorate hospitals
Regarding the evaluation of hospitals waste management, there is significant relationship between the items (3, 5, 6,7) very good work in waste management, special money to occupational risk., following up workers and there are medical wastes not burned around the incinerators (table 8).

Accumulation of ash and unburned waste near the incinerators, because he municipal authority are collected the wastes twice weekly to transported to the sanitary landfill , this is the system of hospitals The large quantity of medical wastes, and the wastes collection from department more than once daily this is the causes of accumulation medical wastes near incinerator. Poor waste management in studied hospitals.

This result disagreed with World Health Organization Program that indicates that all healthy institution should be followed safe wastes management, collected and treated in hygienically methods to prevent the environment from contamination(WHO, 1999).

conclusions

- 1- All hospital's generate domestic, medical wastes. Medical wastes collected in general without isolating
- 2- Unhealthy methods of wastes (collections, storage transportation) some hospitals do use .
- 3- Hospitals incinerators do not work perfectly
4. There is no cooperation between municipal authority Ministry of Environment toward hospitals wastes management (transfer the waste. There are no treatment units in hospitals

There is no special budget to the waste management in hospitals to provide supply of equipment and articles There is no incentive to the workers especially who work in burning the wastes

The hospitals policy does not indicate the plan of the waste management.

Recommendations

All hospitals should have a waste management system that is indicated by ministry of health and environment appreciated with WHO program of waste management

Provided plastic color containers with enough number and bags to segregated and collected wastes

Hospitals should be provided with incinerators work perfectly and capacity according to the size and type of hospitals.

Municipal government should empty the big containers (Hawaii) daily.

References

- Al-Zahrani MA "Guide health care waste management" fahid kingdom library, Ministry of Health, Al-Riad, Saudi, P.48. 1998

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi, Ahlam Khalil Ibrahim

- BAN Basal Action Network , Clinical Waste 1999
- Beagley KG What's being done to control medical waste ?
pharmaceutical and medical packing News, March 27-30 1994.
- Draf M: Hospital waste management rules 2000, hospital waste management committee Pakistan environmental protection council.
- Edward H, Environmental health perspectives supplements, volume 108, Number 56, December 2000, USA.
- Edwin N: A study on the waste management of hospital in Davaocity, April 17,2001.
- E P: Thinking :Green" sawing Illinois hospitals Dollars, Illinois environmental protection agency, 1999.
- EPP Environment protection (Waste Management) Policy South Australia 1994.
- Habibur M: A study on hospital waste management in Daka eity, Addis Ababa, Ethiopia 1999.
- Hageman-J-p: Handling, storage, treatment, and disposal of mixed wastes at medical facilities and a cadmic institutions. 2002 May: 82(5 supp 1)
- Hollie S : Better medical waste management by municipal government and health care facilities, Articles the nightingale institute for health and environment, 2004. 566-76. USA.
- John A: Developing public health service management in Europe, EUROPEN JORNAL o f Publi s health Vol.8 1998 No, 1 .
- Kaiser et al: Solution to Health Care Waste: Life -cycle Thinking and Green Purchasing Environmental Health Perspectives. Volume 109 No 3 March 2001
- Krishnan S: Integrated waste management plan, Hospital waste management plan n, strategies for implementation, CEE south, 1997
- Kumar M; Hospital waste disposal, a planning consideration, National seminar on hospital architecture, planning and engineering, 1995; IV: 40450.
- Mohammed M: Solid waste management of hospitals in Baghdad city, case study of (3) Baghdad teaching hospitals, (thesis) of master degree 2002
- Neely, A-N: Investigation ~-!ngle - use versus reusable infectious waste containers as potential source of microbial contamination, Am-J- infect - control. 2003 feb; 31 (1): 13-7.
- OJHS Waste management, hazardous waste management, university of Victoria committed to thee and environmentally, 2002.
- Rule The legislation Biomedical Waste Management and Handling Rules .1998 .
- Siddiqui CHAFB protocol t,) handle hospital waste, India, 2000
- Susan cl: The community mid health welfare, environmental Resources, comprehensive community health Nursing, sixth edition 2002.
- Suwanee M: Study on from hospital and cline in philsanulok, on line of health and allied sciences, 2002:3:2.
- • Smith D. W and Rnsnak, P.G. APIC guideline for infection prevent and control in the long-term care facility. American journal of infection control 1991, 198-215
- ULLAH, M.S., A study on hospital waste management in Dhak city; M. Eng. Thesis, Dept. of civil Eng., Buet, Dhake 1999
- WHO: World Health Organization "Safe management of wastes from health-care activities", 1 9 Geneva
- WHO; World Health Organization ,2000; " Wastes from Health - care Activities" Fact sheet N 253 Geneva.

الخلاصة:

دراسة وصفية استخدمت اسلوب التقييم واجريت الدراسة من 15 اذار 2004 ولغاية 20 نيسان 2006 من اجل تقييم ادارة النفايات في المستشفيات التعليمية وغير التعليمية في محافظة بغداد.

الهدف

- 1- وصف مظاهر ادارة النفايات في مستشفيات بغداد
- 2- تحديد العوامل التي ترتبط بادارة النفايات.
- 3- تقييم ادارة النفايات في مستشفيات محافظة بغداد.

المنهجية:

استخدمت الدارس اسلوب اختيار العينة غير الاحتمالية حيث اختيرت عينة غرضية مكونة من 32 مدير مسؤول عن ادارة النفايات في المستشفى

Assessment of Hospital waste management in Baghdad governorate

Dr. Abdul Hassin M. AL-Hadi,Ahlam Khalil Ibrahim

ومنها 13 من المستشفيات التعليمية و 19 من المستشفيات الغير تعليمية شملت قطاع الكرخ والرصافة (الحضري والريفي).
تم بناء استمارة استبيان لغرض الدراسة تكونت الاستمارة من 3 اجزاء رئيسية والمجموع الكلي للفقرات المنظمة للاستمارة 156 فقرة.
النتائج:

وجدت الدراسة ان هناك علاقة احصائية بين عزل النفايات وتجميعها في حافظات مغطاة كما لم تجد هذه العلاقة بين تكرارات فترة جمع النفايات في هذه المستشفيات، بالنسبة لنقل النفايات في المستشفى باستخدام العربات ذات العجلات.

الاستنتاج والتوصيات

استنتجت الدراسة ان معظم المستشفيات المدروسة تشكل خطر من عدم اتباع الطريقة الصحيحة في تدبير النفايات ما عدا عدد قليل من المستشفيات التعليمية.

اوصت الدراسة بأنه يجب ان يكون تعاون مشترك بين وزارتي الصحة والبيئة لوضع خطة على غرار القواعد العامة لادارة النفايات لمنظمة الصحة الدولية بجعل تدبير النفايات بشكل صحي.

العساف: رجاء عبد الوهاب العساف، رئيس كيمياوين، تغريد خلف عبد الرزاق، بايولوجي، انعام محمود جاسم. واقع حال الرعاية الصحية في مستشفيات بغداد لعام 2004م، وزارة البيئة، دائرة الشؤون الفنية، قسم المخلفات الصلبة والخطرة تشرين الثاني، 2004.