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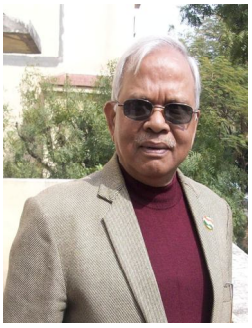


Friends!

ISHWM is in its 11th eventful year! Last annual conference was held in India Habitat Centre, New Delhi on 30-31st October, 2010. The conference was inaugurated by His Excellency Shri Tejendra Khanna, Lt Gov of Delhi His Excellency in his address implored upon the professionals to develop 'Gold Standard' in their work culture and attitude. Shri Rajiv Gauba, IAS Jt Sec MoEF was the key note speaker, and in his talk emphasized upon dangers posed by improper handling and disposal of hospital waste, and importance of its proper management. An exhibition was inaugurated by the DGRHS, Dr V Ramteke. There was a large participation from the senior dignitaries and paramedical personnel of the Armed Forces Medical Services. The conference was a grand success with large participation of delegates from all over the country and also from the UK, Sri Lanka, and Nepal. Best Paper Award has been instituted and two awards were given during ISHWM Conference 2010. The society has also launched Fellowship Programme. Details are available at the web site of the society.

Now we are into 11th conference organized by M S Ramaiah Medical College, Bangalore on 2-4th December 2011. The organizers took great pains and the conference was organized in a befitting manner. I am glad that the membership of the society has grown to more than 310 and we have 1 more corporate member.

The society has recently been authorized tax exemption protocol 80 G under income tax act 1961, through which donations and financial support the ISHWM will qualify for tax exemption under 80 G of the Income Tax rules. All should take full advantage of the provision and contribute to the society funds and claim IT exemption.

While the society has been always propagating proper healthcare waste management practice and system development at hospitals and other healthcare facilities there still remains a lot to do in this direction. After the Modasa episode in Gujarat once again another unfortunate incidence has come

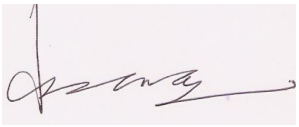
to light. More than 38 thalassemic children have been reported to have been transfused HIV infected blood in Gujarat. Sharps management is still not perfected in most of hospitals as the incidental finding by the then Health Minister, NCT of Delhi was reported during one of her inspection visits to a hospital in Delhi. All this clearly point out to the fact that authorities have to apply stricter control and monitoring at healthcare facilities. Though the pollution boards and committees have been penalizing the erring hospitals its universal improvement and acceptance is not apparent.

A parliamentary committee on subordinate legislation has been constituted to have a relook on the BMW management and handling rules 1998. Public opinion and comments were invited through newspaper announcements, and comments and suggestions were sent on behalf of ISHWM. It is hoped that the existing dichotomy in the rules is adequately addressed as it is becoming more and more evident that present provisions, controls and checks have not brought about desired results. BMW Rules 1998 requires a relook.

Indian Society of Hospital Waste Management therefore has an onerous societal responsibility and active participation and cooperation from members is essential.

Wishing you all a very happy and prosperous year 2012!

Jai Hind!



Lalji K Verma

EDITORS PAGE

Bio medical waste is increasing in quantity day by day over the years. This is largely because of increasing use of consumables, increase in number of health care institutions, increasing population and more people seeking health care. Awareness and attempts towards its better management is also increasing – may not be to the required extent. Challenges to better management of health care waste include available options being limited for managing glass, plastic, metal waste. We have not looked at seriously about chemical waste – especially mercury, lead – which we see as a waste in dentistry. But, experience has shown that within the limited options, change in attitude will bring in better effect. Can application of "management "make difference?

Experience in Gujarat state has revealed that application of quality concepts to health care will make difference – including aspects of health care waste management and infection control. It is part of NABH and NABL accreditation process taken up in tertiary care hospitals and to some extent in primary health care institutions. We see this in private sector too, in some of the states.

In Karnataka , Environment Management and Policy Research Institute of Government of Karnataka has initiated an attempt towards creating resource base of six persons – from Medical, Nursing, Veterinary, Medical College, District health system in each district to serve as health care waste management cell for the respective district. Attempt started in collaboration with Health Care waste management cell of Dept of community medicine, M.S.Ramaiah Medical College; Bangalore KHSDP has covered 13 districts and is envisaged to cover rest of the state in the next three months. Trainings at Districts have also gone in.

We see "no mercury" hospitals in Delhi We see Government of India planning amendments to BMW rules. We see budget allocation being made in government and private sector for health care waste

management. We see increasing use of common biomedical waste management facilities. Amidst these good developments, we see many gaps. What action will make difference?

Creating a mechanism for home health care waste management, better management of waste in small health care settings in a cooperative mode, making certification and training mandatory for at least one nodal person in each health care setting, formalizing approaches to liquid waste management, attention to use of mercury spill kits, liquid waste spill kits, undertaking research to address the challenges of glass, metal and plastic – will contribute to fill the gaps.

ISHWM is proud to release the 10th issue of the Journal in the 11th annual conference of the society. This issue covers interesting articles on Management Plan and Injection safety in the two articles by the President of ISHWM, Air Marshal Dr Lalji Verma, delineation of experience in Delhi by Dr Bhagotia, Dr Asima Banu brings to light need for evaluation and follow-up after training. Article from Health Care without harm - Bangladesh and article on Patient safety in the context of primary health care bring in insights to emerging issues.

We need research activities, its documentation and dissemination. This Journal likes to do this more. We seek your support with more contributions, active participation to bring in two issues instead of one every year and also, to make it indexed. Please join hands. Thanking all of you readers for your cooperation and good will we wish you a happy new year !

Dr S Pruthvish

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ORIGINAL ARTICLE

IMPROVING MEDICAL WASTE MANAGEMENT FOR HIV PROGRAMS IN BANGLADESH

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ABSTRACT

Objectives: To improve current MWM systems at MCs by conducting site assessment visit and provide recommendations to strengthen the MWM service for HIV program in Bangladesh.

Methodology: The seven day onsite assessment visits were conducted at five healthcare centers providing HIV services in Bangladesh. A standardized rapid assessment tool (I-RAT) and questionnaire was used to collect information of the types and quantities of medical waste generated, current MWM practices including their storage, treatment, disposal and disposal method. The information will be used to provide the recommendation

Results: Average rate of waste generation is 0.41 kg/day/client; A total of 90 different items were generated and toxic waste is accounted for 25% of the total waste. All the centers are aware about occupational health and safety but most of them unaware about its protocols. Their I-RAT score is poor (vary between 39-43 out of 100). FHI360 had provided recommendation and training to improve the key finding issue.

Conclusion: Medical Waste Management (MWM) service is important to HIV service facility. FHI360 provided training and other supports according to result of I-RAT score and onsite assessment. The priority recommendations are ensuring the site had established their own MWM policy and ensuring that the implementation of the policy was done efficiently. The success of the program also depends on ongoing monitoring and provided training to their staff as needed.

Key Words: Medical Waste Management, HIV Programs, Bangladesh

BACKGROUND

FHI 360 is a global development organization funded by the United States Agency for International Development (USAID) to be working in the area of HIV prevention, care and support through the Modhumita project in Bangladesh. FHI 360 is implementing its activities in 17 districts through 40 Modhumita centers. Including Dhaka, the capital city of Bangladesh.

FHI 360 is carrying out HIV prevention program through the Modhumita centers (MC) while MC providing these services to clients, FHI360 observes that MCs generates waste of different categories but what FHI360's most interest is about how the MCs manage their medical waste. Inefficient medical waste management can pose a risk to their client, their healthcare provider, community and environment at large. MCs agreed to FHI360's proposal on performing the gap analysis to identify the area of improvement to strengthening their Medical Waste Management System at Mcs.

OBJECTIVES

To improve current MWM systems at MCs by conducting site assessment visit and provide recommendations to strengthen the MWM service for HIV program in Bangladesh.

METHODOLOGY

FHI360 had conducted onsite assessment visit at 5 selected Modhumita centers (MC) using the interview technique using questionnaire (annex 2) and I-RAT (individualized rapid assessment tool) developed by the UNDP GEF Global Healthcare Waste Project. The MCs's participating sites are chosen from the site that has HIVs services and location in Dhaka. The sites are: Ashar Alo Society (AAS), Bangladesh Women Health Coalition (BWHC), Community Health Rehabilitation Education and Awareness (CREA), Mukta Akash Bangladesh (MAB) and Social Marketing Company (SMC).Training on Medical Waste Management was provided to 5 laboratory staffs who are represent their MCs. These members became waste assessors and be part of the assessment team after they have completed the training. The equipment used in the training is shown on the picture 1, the color bins that have now been used at the MCs, the color helps indicate the type of waste goes into which bin. The code used are black- general waste, yellow- infectious waste, red-sharp objects, green-plastic, and blue-liquid waste.

Figure1: Different color of waste bin used at the site

The assessment on quantification and categorization was performed after the bins had collected the waste over exact 24 hour period. During the process of segregation, waste items were inventoried. The outcome is to find out the total number of different items generated in the waste stream. The process had been continued for five working days to measure total waste generated and rate of waste generation in the facility. The quantitative data will be analyzed by using the I-RAT (individualized rapid assessment tool).

RESULTS

The average weight (kg per day) from each site is 17.9,5.36, 1.9 ,1.2 and 1.0 at CREA, AAS, BWHC and SMC respectively which is accounted for waste generation rate of 0.4 kg/day per person. Total of 90 Items of waste were generated of which 25% of total is toxic waste (infectious or other hazardous waste). Three sites had their small local incinerator and the other two sites had outsourced their waste management to third party. It was noted that incineration helps reduce amount of waste dramatically; however because of the potential release of hazardous emissions, especially dioxins and furans. UNDP, the WHO and the Stockholm Convention recommend non incineration technology for medical waste treatment (http://chm.pops.int/Programmes/BAT/BEP /Guidelines /tabid/187/language/en-GB/Default.aspx)

Twenty-six interview respondents reported that they have dedicated staff responsible for waste management; however their medical waste management operation is unclear among their staff member response by poor scoring of I-RAT; 39-43 score out of 100 even though they mentioned that the national guideline of waste management was implemented at the site. The sites did not have their own Standard Operating Procedures for Medical Waste Management. The site lacks systems of efficiently managing their Medical Waste; 75% staff members were aware of the Occupational Health and Safety Practices but were unaware of its protocols. Hazardous and non-hazardous wastes were not segregated at the point of generation. Neither of color coding nor labeling of waste bins was used for collection of wastes at the initial assessment visit. Bins used for collection of infectious waste are inappropriate; net-bins were used for collection of all categories of waste. Plastic bags lining the bin for collection of waste were very thin and weak.

70% of respondents were not satisfied with the management of the sharps waste at their site. No needle destroyer/cutter was used. Needles of the syringes were not recapped and undestroyed needles were found at the waste collection sites without being deformed. 75% of the staff confirmed that they have not had any training.

Site's management of mercury composite waste also triggers concern to medical waste management. Mercury is a very toxic heavy metal. Mercury thermometers were found being used in almost all the centers, when broken it leads to a high level of vulnerability to the staff dealing with the spill and accident. During the site assessment, none of the sites had Mercury spill management kit. 70% of staff reported that they do not know about the health hazards of mercury and had no idea on how to manage mercury spillage. The site lacks personal protective equipment and has poor monitoring and evaluation mechanisms of medical waste.

Hygiene and Sanitation Status was evaluated during the onsite assessment. House keeping and hygiene kitchen's was found to be less than satisfactory; some centers use the same gas stove for regular cooking and for autoclaving infectious waste produced at the site. Floors were found to be clean but there was no clear instruction given to the staff on frequency, use of disinfectant and method of floor washing.

The author interviewed key staff and observed medical waste management system in detail at each center and did the rapid assessment. A final score was obtained for each MC after completion of I-RAT. Table below shows the score obtained by each of the assessed MCs.

Table1: I-RAT Score at 5 Modhumita Center; (0-25)% =Very Poor, (26-50)%=Poor, (51-75)% =Good, (76-100)%= Excellent

Sl.No	**Modhumita Center (MC)**	**Max. Score**	**I-RAT Score**	**Status**	**Remarks**
1	CREA, Lalbagh	100	43	Poor	Lack of Policy, training, safe MWM practice, PPEs, color coding, waste treatment & disposal
2	MAB, Nimtoli	100	44	Poor	
3	SMC, Tejgaon	100	41	Poor	
4	AAS, Mohammadpur	100	42	Poor	
5	BWHC, Mohakhali	100	39	Poor	

Discussion: All the assessed Modhumita centers scored below 45% using I-RAT developed by UNDP GEF Global Healthcare Waste Project. Scores obtained by the centers clearly showed that the centers have poor MWM systems. There are various factors leading to these scorings. Main reasons for such low scorings are the non-availability of clear policies and guidelines on MWM at the centers. Similarly, non-availability of waste management specific trainings could also have contributed to such scoring. Absence of color coding system for waste segregation, inappropriate containers for collecting waste, poor use of personal protective equipments and poor monitoring and evaluation mechanisms have also contributed to the low scoring by the MCs.

RECOMMENDATIONS

1. The systemic approach is recommended to improve Medical Waste Management at Modhumita Centers. The site should start by developing Standard Operating Procedures (SOP) to be used at the MCs; the procedure should cover all elements of Medical Waste management such as management of solid waste, liquid waste, infectious waste, sharp objects, mercury's composite equipment, segregation, waste transfer and waste destruction method. The process of monitoring and evaluating their SOPs is also to be planned. The focal person should be appointed to set up the committee to be working on the implementation of the SOP as well as ensure that high compliance of Medical Waste management is maintained.

2. Establishing the model Site as a model for Medical Waste Management. The management should ensure that the model facility contains appropriate infrastructure such as collection, segregation and transportation system and the waste management officer has appropriate personal protective equipment (PPEs) and necessary vaccination.

3. Establish an environmentally friendly treatment technology (autoclave) in the Model Modhumita center. Develop a waste disposal system including the principle of 3R (reduce, reuse and recycle)

4. Utilize the model center as a learning center to implement the medical waste management at other MC Sites. Acknowledging the site that it is performing well to other MCs. This will help about sustainability of infrastructure building.

CONCLUSION

The situation at these centers is probably very similar to those of other health centers in Bangladesh and elsewhere. The situation can be improved by establishing the policy on Medical Waste Management, ensuring that the budget and manpower were allocated. The success of this operation requires ongoing monitoring and training wherever necessary. The authors encourage donors and stakeholders to address medical waste management as a high priority in their health programs and their services.

ORIGINAL ARTICLE

IMPACT OF STRUCTURED TRAINING AND AWARENESS PROGRAMME ON HEALTH CARE WASTE MANAGEMENT AMONG DOCTORS IN A TERTIARY CARE HOSPITAL IN BANGALORE

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Short title: Awareness of Health Care Waste Management among doctors.

Type of article: Original article

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ABSTRACT

PURPOSE: To assess the impact of education on Knowledge, Attitude and Practice (KAP) of doctors regarding Health Care Waste Management (HCWM)

METHODS: 63 doctors were enrolled in the study. A structured questionnaire on HCWM was used to assess their KAP. Immediately a structured training session was conducted. The post training evaluation was done using the same questionnaire. The answers obtained in the form of positive and negative responses were subjected to statistical analysis.

RESULTS: In the pre education questionnaire, the interns scored 56%, post graduate students scored 67.91% and consultants scored 65.41% scores. After the structured training the scores using the same questionnaire significantly improved to 92.67%, 92.91% and 96.25% respectively in the three

groups. Accordingly, the percentage improvement was 65.5%, 38.2% and 47.2 % respectively and the impact of training has been very large (VL) in all three groups.

CONCLUSION: Health Care Waste Management should be on a priority list of policy makers and organizing structured training programmes and strict enforcement of law will go a long way in improving the overall HCWM scenario. Education has a positive impact on retention of KAP in all categories of staff. There is need to develop a system of continuous education for better management of Health Care Waste and compliance with interventions is mandatory.

KEY WORDS: Health Care Waste, Tertiary Hospital, Hospital Management.

INTRODUCTION

Health Care Waste(HCW) has assumed great importance the world over because of the serious hazard it poses to the environment in general and the public in particular[1]. Health-care waste includes all the waste generated by health-care establishments, research facilities, and laboratories [2]. According to a WHO report, around 85% of the hospital wastes are actually non hazardous, 10% are infective (hence, hazardous), and the remaining 5% are non infectious but hazardous (chemical), pharmaceutical and radioactive [3]. Improper Health Care Waste Management (HCWM) has serious impact on our environment. Apart from risk of water, air and soil pollution, it has considerable impact on human health due to the presence of virulent strains of viruses and pathogenic bacteria in undetected numbers [4, 5]. Despite the statutory provision of biomedical waste management, practice in Indian hospitals has not achieved the desired standard even after 12 years of enforcement of the law [3].

The definite apathy of intellectuals towards HCW can also be attributed to tubular vision of professionals that is mainly focused on patient care services with lack of understanding towards the role of support services in the overall context of comprehensive health care delivery [3]. In addition, doctors, from the onset of their careers, perform dual duties not only as health care personnel but also administrators. They act as role models and provide training for nurses, paramedics and waste handlers. Subsequently, in their administrative capacity, they have to monitor the entire health care waste management. As they are also decision makers, a lot of their decisions can affect the proper functioning of waste systems. Hence, awareness developed amongst doctors will help them in administering good waste management practices and set up a good functioning system. Education and training helps to broaden the horizon of the management practitioners and facilitates the movement of services in consonance with scientific principles [1].

In view of this, the present project of studying the impact of a structured training and awareness programme on health care waste management among doctors was carried out in a tertiary level teaching hospital with the following objectives:

1. To assess the knowledge, attitude and practice about health care waste management among doctors before a structured training programme.
2. To conduct a structured training and strengthen awareness among the study group.
3. To immediately evaluate the impact of the training and awareness programme among the study group.

METHODOLOGY

This study was conducted in Bowring and Lady Curzon Hospital which is a tertiary level teaching hospital attached to Bangalore Medical College and Research Institute (BMCRI). Permission of the Dean cum Director of BMCRI was obtained. This hospital is a premier research and referral centre. It is a 686 bedded hospital with a work force of 120 doctors working at that point of time which included consultants, post graduate and interns.

Study design: Cross sectional, interventional study

Method of collection of data: The tool used for collection of data was a structured questionnaire having 10 questions concerning knowledge, attitude and practice towards HCWM.

Subjects included in the study: 63 doctors including consultants, post graduate students (PGs) and interns working in the hospital who were willing to participate in the study.

A pre education structured questionnaire on HCMW was used to assess the knowledge, attitudes and practices among the study group. Immediately a training session of 2 hours was conducted using audio-visual aids and discussions. The training was imparted on different aspects of HCWM like the amount of waste generated, hazards, segregation policies, biomedical waste management rules, legislations, universal precautions, immunization policies and hospital infection control based on the questionnaire that was administered. The post education evaluation was then done using the same pre education questionnaire. The answers obtained in the form of positive and negative responses were subjected to descriptive statistical analysis. The information gathered by questionnaires and the change in the practices was verified by means of personal observations after a period of 3, 6 and 12 months [6].

STATISTICAL ANALYSIS: [7, 8, 9]

Results on continuous measurements are presented on Mean ± SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance. Kruskal Wallies test has been used to find the significance of knowledge, attitude and practice between three groups and Wilcoxon Signed ranked test has been used to find the within group significance, Effect size has been computed to find the effect of intervention with in each group.

1. Effect Size

$$d = \frac{mean1 - Mean2}{PooledSD}$$

No effect (N)	d<0.20
Small effect (S)	0.20 <d<0.50
Moderate effect (M)	0.50 <d<0.80
Large effect (L)	0.80<d<1.20
Very large effect (VL)	d>1.20

2. Significant figures

+ Suggestive significance (P value: 0.05<P<0.10)

* Moderately significant (P value: 0.01<P ≤ 0.05)

** Strongly significant (P value: P≤0.01)

RESULTS

This cross sectional interventional study was carried out on a study population of 63 doctors which included 15(23.8%) interns, 24(38.1%) post graduate students and 24(38.1%) consultants.

In the pre education questionnaire, the interns scored 56%, post graduate students scored 67.91% and consultants scored 65.41%. After the structured training the scores using the same questionnaire significantly improved to 92.67%, 92.91% and 96.25% respectively in the three groups.

Accordingly, the percentage improvement was 65.5%, 38.2% and 47.2 % respectively and the impact of training has been very large (VL) in all three groups while being maximum among interns (Table 1).

KNOWLEDGE

Results showed that interns, post graduates and consultants respectively have 51.67%, 71.87% and 58.33% knowledge about HCWM before training. Post training scores showed 86.67%, 92.7% and 90.62% knowledge among the three groups respectively. Thus the percentage change in knowledge among these three groups was 67.6%, 28.8% and 55.8% respectively. Observed changes/differences were found to be significant in all three groups with VL effect in interns and consultants (Table 2).

ATTITUDE

With regard to attitude, interns scored 51.11%, post graduates scored 77.78% and consultants scored 79.16% before training. Post training scores were 100%, 95.83% and 100% respectively in the three groups. Thus the percentage change in attitude was 96.1%, 25.7% and 26.1% respectively. Observed differences were found to be significant in all three groups with a VL effect in interns and consultants (Table 3).

PRACTICE

The study results showed that interns scored 66.67%, post graduates 52.78% and consultants 61.11% before the training session. After training the scores were 93.33%, 90.27% and 100% respectively. The percentage improvement was 40.0%, 74.1% and 63.9% respectively in the three groups studied. The observed differences were found to be significant in all three groups with a VL effect in all three groups (Table 4).

DISCUSSION

Inadequate and inappropriate handling of health care waste may have serious public health consequences and significant impact on environment. The main goal of health care waste management is the protection of public health. Other priorities include promotion of environment quality and sustainability and the support of economic productivity. [1]

During meetings and focus group discussions all have suggested for in-house intensive training on management of biomedical waste and awareness raising programmes[11]. Thus this study was undertaken to assess the awareness levels among doctors and impact of structured training

regarding HCW management. Similar studies have been done to assess the KAP among staff of a tertiary care hospital [3, 12] and dentists [13]

In a study done by Qureshi Wasim et al, overall doctors were found to be well aware of the hazards of HCW which was similar to our study [14].

Therefore, hospitals must provide support and sufficient resources in the form of continuous education programmes Regarding the extent of knowledge we observed that post graduates had the maximum knowledge about amount of waste generated, risk of transmissions and hazards of biomedical waste and interns were least aware of the same. However, the percentage improvement was maximum in the interns. Therefore awareness should be developed during MBBS courses and syllabus of HCWM applicable to MBBS students should be incorporated. Problem solving approach at MBBS and post graduate level should be adopted. The consultants were aware of the existing HCW management protocols and had undergone some basic level training earlier. The post training scores showed that post graduates were least receptive to change. Therefore, to develop awareness at PG level, they should be allotted projects pertaining to their own specialty. For example; biosafety guidelines in laboratory, waste disposal in operation theatres etc.

Senior doctors seemed to have an edge over the PGs and interns as far as attitude was concerned in that senior doctors believed that biomedical waste management is the responsibility of all health care providers whereas the interns believed that it was the work of Class IV officials. Consultants and PGs were more aware of the concept of scientific waste management as they had attended either some seminar or classes regarding the subject. This was similar to the study conducted by Saini et al [3]. However, PGs showed least improvement in attitude following training, therefore PG guides can help by developing small groups and initiating group discussions.

Best practices were seen among interns followed by consultants and then PGs. All the groups were aware and practiced segregation based on colour coding as the hospital already had posters illustrating segregation of HCW at different points of waste generation. The percentage improvement was highest among PGs as far as practice was concerned. This implies that at PG level, problem solving approach should be adopted for training purposes.

In the present study, there was a significant difference in the pre and post education response.

The follow up of practices based on observations at 3, 6 and 12 months showed significant improvement and compliance of the participants towards scientific HCW management. However, our observation showed that in spite of the educational programme and significant improvement of

scores in the post education period, interns were less compliant and needed constant monitoring and moreover, there was a constant turnover of interns who needed frequent guidance.

CONCLUSION

There was a very large change in the KAP of the three groups after training. The present study therefore implies that there is an urgent need to train and educate doctors at all levels about HCWM for successfully implementing safe waste disposal practices. This has to be done on a continuous basis to upgrade the knowledge. Continuous monitoring and evaluation is necessary to ensure that policies and procedures are followed as even a small proportion of improperly managed waste is hazardous. The WHO acknowledges this as a problem and observes that human element is as important as technology in waste management. [12]

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TABLES

Table 1: Evaluation of Total score of knowledge, attitude and practice in three groups subjects studied

		INTERNS	PG	CONSULTANTS	P VALUE
Total score	Pre	5.60±1.92	6.75±2.13	6.54±2.27	0.291
	Post	9.27±0.79	9.33±0.92	9.63±0.58	0.373
	% change	65.5%	38.2%	47.2%	-
	P value	<0.001**	<0.001**	<0.001**	-
	Effect size	2.71(VL)	1.69(VL)	2.17(VL)	-

** Strongly significant (P value: P≤0.01)

Table 2: Evaluation of Knowledge score in three groups subjects studied

		INTERNS	PG	CONSULTANTS	P VALUE
Knowledge Score	Pre	2.07±0.79	2.88±0.99	2.33±0.92	0.033
	Post	3.47±0.52	3.71±0.55	3.63±0.58	0.262
	% change	67.6%	28.8%	55.8%	-
	P value	<0.001**	0.001**	<0.001**	-
	Effect size	2.13(VL)	1.07(L)	1.73(VL)	-

** Strongly significant (P value: P≤0.01)

Table 3: Evaluation of Attitude in three groups subjects studied

		INTERNS	PG	CONSULTANTS	P VALUE
Attitude score	Pre	1.53±0.83	2.29±0.69	2.38±0.88	0.005
	Post	3.00±0.00	2.88±0.34	3.00±0.00	0.081
	% change	96.1%	25.7%	26.1%	-
	P value	<0.001**	0.003**	0.004**	-
	Effect size	3.54(VL)	1.15(L)	1.41(VL)	-

** Strongly significant (P value: P≤0.01)

Table 4: Evaluation of Practice in three groups subjects studied

		INTERNS	PG	CONSULTANTS	P VALUE
Practice score	Pre	2.00±0.76	1.58±1.06	1.83±0.96	0.498
	Post	2.80±0.41	2.75±0.44	3.00±0.00	0.038*
	% change	40.0%	74.1%	63.9%	-
	P value	<0.001**	<0.001**	<0.001**	-
	Effect size	1.37(VL)	1.56(VL)	2.44(VL)	-

** Strongly significant (P value: P≤0.01)

ORIGINAL ARTICLE

PATIENT SAFETY IN PRIMARY HEALTH CARE SYSTEM: AN EXPLORATION

Pruthvish S *Nandakumar BS** Narendranath V***

Introduction: It is estimated that 20 to 25 percent of patients in developed countries experience problems due to medical care in health care settings. Information on this in developing countries is scarce. Patient safety is a critical area which can minimize if addressed appropriately. WHO has taken an initiative to address this issue? The study is a pioneering attempt in this direction to initiate action in primary health care system in India.

Objectives: Objectives of the study were to study the level of knowledge and perceptions of Medical Officers on patient safety. Secondly, to refine the instrument of data collection for further studies.

Methodology: Study Design - Descriptive study, cross sectional - Study Population; Medical Officers of Bangalore Rural District, Karnataka; Study Period - June 2010 to January 2011. A structured questionnaire on patient safety issues encompassing areas of concept of patient safety, possible medical errors during patient care, infection control, health care waste management, patient's rights, counseling of patients and families, counseling of community members , suggestions for designing an intervention was designed , field tested and administered to 25 medical officers during their monthly meeting. Data was analyzed manually.

Results: 14 (56.00) were Medical officers working at Primary Health centre level, 4 (8.00) at Community Health Centre level and rest were from District level. Only 5 (20.00) Medical Officers were aware of correct definition/explanation of Patient Safety; all i.e. 25 (100.00) of the Medical offices were of the opinion that Patient safety is an issue and is a matter of concern frequently as expressed by 15 (60.00) of the respondents; 12 (48.00) responded that adverse reactions to drugs happens frequently and equal number responded that it is rare; 19 (76.00) responded that Injection Safety is a major issue in the context of Patient safety. 5 (20.00) responded that Health care waste management is not satisfactory in their institution. Majority, i.e. 23 (92.00) Medical officers opined that there is need for training in patient safety in primary health care system.

Conclusion and recommendations: The investigator is of the opinion that the study is continued on a large population of Medical Officers, Health workers so that more information is gathered on the area of Patient Safety. Currently, not much of the information is available in the country, especially

regarding reporting of adverse events. There is a need for establishing systems for reporting, discussion and solutions for adverse events with respect to patient safety in Primary Health Care System.

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INTRODUCTION

Patient safety is a new healthcare discipline that emphasizes the reporting, analysis, and prevention of medical error that often lead to adverse healthcare events. The frequency and magnitude of avoidable adverse patient events was not well known until the 1990s, when multiple countries reported staggering numbers of patients harmed and killed by medical errors. Recognizing that healthcare errors impact 1 in every 10 patients around the world, the World Health Organization calls patient safety an endemic concern.[1] Indeed, patient safety has emerged as a distinct healthcare discipline supported by an immature yet developing scientific framework. There is a significant trans-disciplinary body of theoretical and research literature that informs the science of patient safety.[2] The resulting patient safety knowledge continually informs improvement efforts such as: applying lessons learned from business and industry, adopting innovative technologies, educating providers and consumers, enhancing error reporting systems, and developing new economic incentives.

Millennia ago, Hippocrates recognized the potential for injuries that arise from the well intentioned actions of healers. Greek healers in the 4th Century B.C., drafted the Hippocratic Oath and pledged to "prescribe regimens for the good of my patients according to my ability and my judgment and never do harm to anyone."[3] Since then, the directive *primum non nocere* (“first do no harm) has become a central tenet for contemporary medicine. However, despite an increasing emphasis on the scientific basis of medical practice in Europe and the United States in the late 19th Century, data on adverse outcomes were hard to come by and the various studies commissioned collected mostly anecdotal events.[4]

Although health care-associated infections are estimated to affect hundreds of millions of people globally, precise numbers remain unknown because of the difficulty in gathering reliable data

worldwide. While national surveillance systems exist in many high-income countries, they are non-existent in the vast majority of middle- and low-income countries.

"Health care-associated infections have long been established as the biggest cause of avoidable harm and unnecessary death in the health systems of high income countries. We now know that the situation in developing countries is even worse. There, levels of health care-associated infection are at least twice as high," says Dr Benedetta Allegranzi, Technical Lead for the Clean Care is Safer Care programme at the WHO and author of the study. "One in three patients having surgery in some settings with limited resources becomes infected. Solutions exist, and the time to act is now. The cost of delay is even more lives tragically lost."

It is estimated that 20 to 25 percent of patients in developed countries experience problems due to medical care in health care settings. Information on this in developing countries is scarce. Patient safety is a critical area which can minimize if addressed appropriately. WHO has taken an initiative to address this issue. The study is a pioneering attempt in this direction to initiate action in primary health care system in India.

OBJECTIVES

1. To study level of knowledge and perceptions of Medical Officers on patient safety.
2. To refine the instrument of data collection for further studies

Study Design: Descriptive study, cross sectional

Study Population: Medical Officers of Bangalore Rural District, Karnataka

Study Period: June 2010 to January 2011

METHODOLOGY

A structured questionnaire on patient safety issues encompassing areas of concept of patient safety, possible medical errors during patient care, infection control, health care waste management, patient's rights, counseling of patients and families, counseling of community members , suggestions for designing an intervention will be designed , field tested .

The questionnaire will be administered to 25 medical officers during their monthly meeting.

Data will be analyzed and presented.

INCLUSION CRITERIA

All Medical Officers of Bangalore Rural District working for at least previous six months

METHOD OF ANALYSIS

Analysis will be made on ten areas identified by IGNOU and WHO for their material development on patient safety.

Knowledge levels and opinion of medical officers will form the basis for designing an intervention programme.

Data will be analyzed using excel;

EXPECTED OUTCOMES

Level of knowledge and type of perceptions amongst Medical Officers of PHC system

A design for intervention to increase awareness on issues of patient safety in PHC system

OBSERVATIONS AND DISCUSSION

The investigator participated in monthly meeting (July 2010) of a typical Indian Rural District and sought the cooperation of all Medical officers of the District. He distributed structured questionnaire to all the Medical Officers of the District.

He went through the questionnaire and explained the questions and concurrently the Medical Officers responded. Following is analysis of data captured:

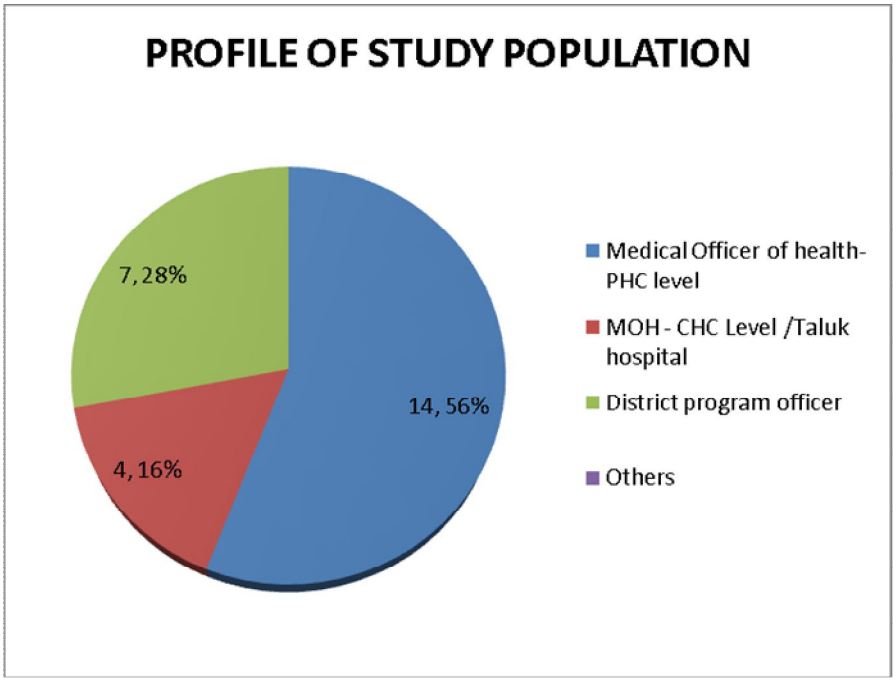
1. Profile of Study Population:

Table 1.

Among the study population, 14 (56.00) were Medical officers working at Primary Health centre level, 4 (8.00) at Community Health Centre level and rest were from District level.

Table1. PROFILE OF STUDY POPULATION

Sl No	Description	Number	Percentage
1	Medical Officer of health- PHC level	14	56
2	MOH - CHC Level /Taluk hospital	4	16
3	District program officer	7	28
4	Others	0	0
5	Total	25	100



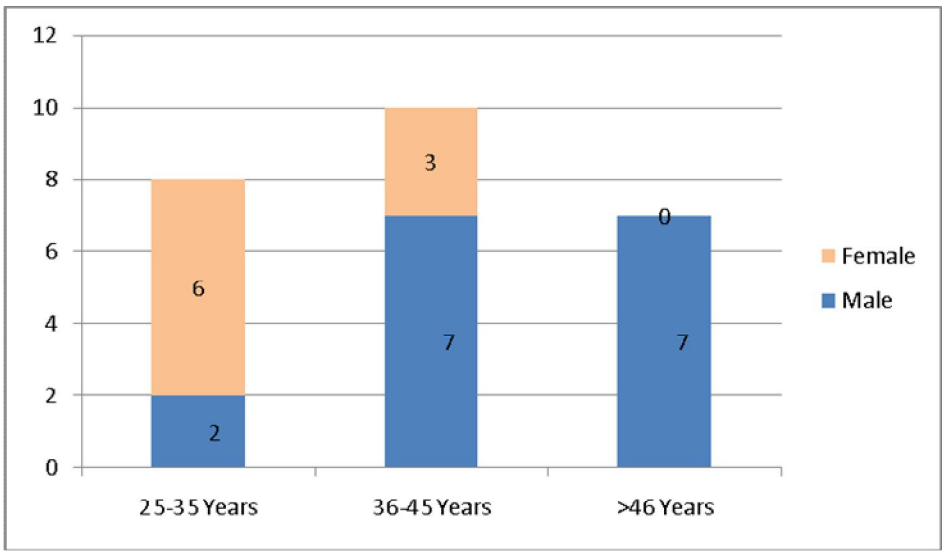
2. Age and sex distribution of Study Population:

Table 2.

Among the Study Population i.e. 25 (100.00), 16 (64.00) were male.

Table 2. AGE AND SEX DISTRIBUTION OF STUDY SUBJECTS

Sl No	Age	Male(%)	Female(%)	Total(%)
1	25-35 Years	2 (6.16)	6 (66.66)	8 (32.00)
2	36-45 Years	7 (43.74)	3 (33.38)	10 (40.00)
3	>46 Years	7 (43.74)	0	7 (28.8)
4		16 (100.00)	9 (100.00)	25 (100.00)



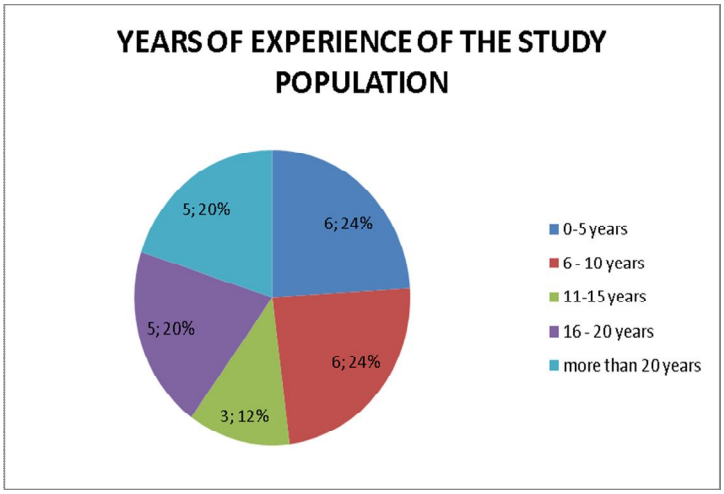
3. Duration of experience of Study Population:

Table 3.

Among the study population, 10 (40.00) had more than 15 years of experience as Medical officers.

Table 3 . YEARS OF EXPERIENCE OF STUDY POPULATION

Sl No	Years of experience	Number(%)
1	0-5 years	6 (24.00)
2	6 - 10 years	6(24.00)
3	11-15 years	3 (12.00)
4	16 - 20 years	5(20.00)
5	more than 20 years	5(20.00)
6	Total	25 (100.00)



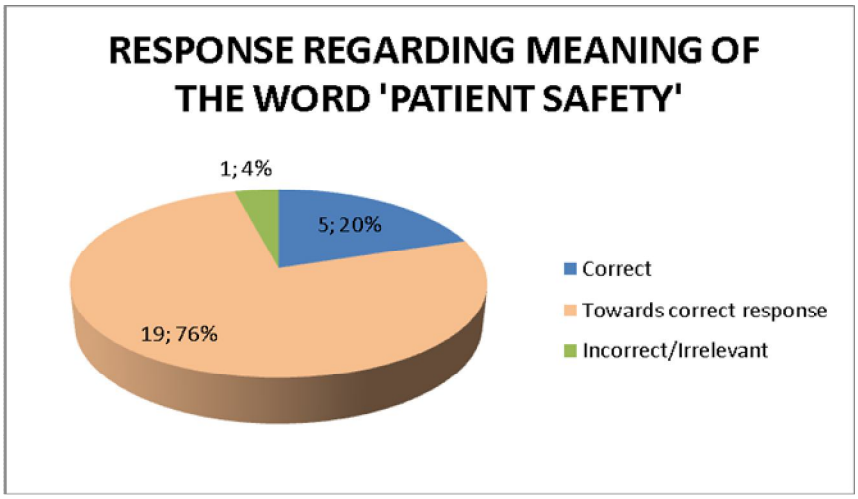
4. Awareness regarding concept and definition of Patient Safety:

Table 4.

Only 5 (20.00) Medical Officers were aware of correct definition/explanation of Patient Safety. 19 (76.00) responded with partially correct meaning of Patient Safety.

Table 4. RESPONSE REGARDING MEANING OF THE WORDS PATIENT SAFETY

Sl No	Response	No(%)
1	Correct	5((20)
2	Towards correct response	19(76.00)
3	Incorrect/Irrelevant	1 (4.00)
4	TOTAL	25 (100)



5. Magnitude of problem regarding patient safety in Primary Health care System: All i.e. 25 (100.00) of the Medical offices were of the opinion that Patient safety is an issue and is a matter of concern frequently as expressed by 15 (60.00) of the respondents.

Table 5. MAGNITUDE OF PROBLEM REGARDING PATIENT SAFETY IN PRIMARY HEALTH CARE SYSTEM

Sl No	Response	No(%)
1	Occurs frquently (more than once in 6 months)	15 (60.00)
2	Rare (very occassionally)	10 (40.00)
3	Total	25 (100.00)

6. Opinion regarding frequency of adverse reactions to drugs:

Table 6.

Among the study population, 12 (48.00) responded that adverse reactions to drugs happens frequently and equal number responded that it is rare.

Table 6. FREQUENCY OF ADVERSE REACTIONS TO DRUGS IN THE CONTEXT OF PATIENT SAFETY

Sl No	Response	No(%)
1	Occurs frequently (more than once iin 6 months)	12 (48.00)
2	Rare (very occassionally)	12 (48.00)
3	other responses	1 (4.00)
4	Total	25 (100.00)

7. Opinion regarding look alike and sound alike drugs:

Table 7.

Among the Study population, 17 (68.00) responded that adverse reaction to look alike and sound alike drugs is a issue. Examples given by four of them indicate Nemusilide and Furozolidone.

Table 7. ADVERSE REACTION TO LOOK ALIKE AND SOUND ALIKE DRUGS

Sl No	Response	No(%)
1	Not a issue	8 (32.00)
2	It is a issue	17 (68.00)
3	Total	25 (100.00)

8. Adverse reactions to prescription over Telephone:

Table 8.

Among the study population, 5 (20.0) mentioned that Adverse reactions to prescription over telephone is frequent where as 4 (16.00) mentioned that it is not an issue. Rest mentioned that it happens rarely.

Table 8. ADVERSE REACTIONS FOLLOWING PRESCRIPTION OVER TELEPHONE

Sl No	Response	No(%)
1	Occurs frequently (more than once in 6 months)	5 (20.00)
2	Rare (very occasionally)	16 (64.00)
3	Not a issue	4(16.00)
4	Total	25 (100.00)

9. Hospital acquired infections:

Table 9

While 24 (96.00) responded that Hospital Acquired infections are a Patient safety issue, 10 (40.00) responded that it occurs frequently.

Table 9. HOSPITAL ACQUIRED INFECTIONS AND PATIENT SAFETY

Sl No	Response	No(%)
1	No response	1 (4.00)
2	It is not a issue	0 (0.00)
3	Is a issue, occurs frequently, once in less than six months	10 (40.00)
4	Rare , occurs very occasionally	14 (56.0)
5	Total	25 (100.00)

10. Injection safety:

Table 10.

Among the study population, 19 (76.00) responded that Injection Safety is a major issue in the context of Patient safety.

Table 10. INJECTION SAFETY AND PATIENT SAFETY

Sl No	Response	No(%)
1	Not a issue	0 (0.00)
2	Minor issue	5 (20.00)
3	Major issue	19 (76.00)
4	Other responses	1 (4.00)
5	Total	25 (100.00)

11. Recording of needle-stick injury:

Table 11.

Among the study population, 7 (28.00) mentioned that recording of needle-stick injury register is maintained satisfactorily. 14 (56.00) mentioned that it is not maintained at all.

Table 11. RECORDING OF NEEDLE_STICK INJURIES IN PRIMARY HEALTH CARE SYSTEM

Sl No	Response	No(%)
1	No response	2 (8.00)
2	Maintained, unsatisfactorily	2 (8.00)
3	Maintained, satisfactorily	7 (28.00)
4	Not maintained	14 (56.00)
5	Total	25 (100.00)

12. Infection control and hand hygiene in the context of patient safety:

Table 12.

Among the study population, 22 (88.00) mentioned that Infection control and hand hygiene are a major issue in the context of Patient Safety.

Table 12. INFECTION CONTROL AND HAND HYGIENE IN THE CONTEXT OF PATIENT SAFETY

Sl No	Response	No(%)
1	Minor issue	3 (12.00)
2	Major issue	22 (88.00)
3	Total	25 (100.00)

13. Status of Health Care Waste Management:

Table 13.

Among the study population, 5 (20.00) responded that Health care waste management is not satisfactory in their institution.

Table 13. OPINION ABOUT STATUS OF HEALTH CARE WASTE MANAGEMENT IN PRIMARY HEALTH CARE SYSTEM

Sl No	Response	No(%)
1	Not satisfactory	5 (20.00)
2	Satisfactory	15 (60.00)
3	Good	3 (12.00)
4	Very good	2 (8.00)
5	Total	25 (100.00)

14. Medical Equipments and Patient safety:

Table 14.

Among the study population, 23 (92.00) were of the opinion that Medical equipments are an issue in Patient Safety in Primary Health Care system.

Table 14. MEDICAL EQUPMENT AND PATIENT SAFETY

Sl No	Response	No(%)
1	Not a issue	2 (8.00)
2	Minor issue	7 (28.00)
3	Major issue	16 (64.00)
4	Total	25 (100.00)

15. Surgical safety:

Table 15.

Among the study population, 24 (96.00) were of the opinion that Surgical safety is a major issue in the context of patient safety.

Table 15 . SURGERIES ON PATIENTS AND PATIENT SAFETY

Sl No	Response	No(%)
1	Not a issue	1 (4.00)
2	Minor issue	3 (12.00)
3	Major issue	21 (84.00)
4	Total	25 (100.00)

16. Response regarding concern for patient safety in primary health care system:

All the Medical Officers responded that Patient Safety is a major issue.

17. Need for Training in Patient safety in Primary Health Care System:

Majority, i.e. 23 (92.00) Medical officers opined that there is need for training in patient safety in primary health care system.

18. Suggestion of Medical officers regarding topics to be covered during patient safety training:

Personal Hygiene, Health care waste management, PCB guidelines for HCWM
Precautions while treating patients, Injection safety, Medical and Surgical Safety
Health Education regarding patient safety
Needle stick Injuries, Hospital Acquired Infections
Safe prescription practices, Drug safety
Check list (SOPs) for all duties/activities in the hospital

Concept of Patient Safety, Medico-legal aspects, Medical Ethics, Laws governing Medical Profession

19. Suggestions regarding mode of presentation during training on patient safety:

Case presentations with documentary evidence, field visits,
Feedback from patients and staff
Group discussions, participatory methodology
Flip charts, Power point presentations, Audio and Video combination
Booklet
Lectures, Seminars

20. Personnel requiring training on Patient safety:

Doctors	
Nurses/Health workers	
Support staff	
Patients	
Relatives of Patients	
All	**21 (84.00)**
No response	**4 (16.00)**

21. Duration of stay of patients and Patient Safety:

It was not possible to elicit this response. Investigator is of the opinion that question framed needs to be refined.

Medical officers opined that prolonged stay is an issue which should be minimized.

CONCLUSIONS

Patient safety is an issue of concern in Primary Health Care System. It needs to be addressed with efforts of all concerned – Patients, Health care workers and Primary Health care system. Training of all stake holders – Doctors, Nurses/ Health Workers, Patients will help address the issue.

The investigator is of the opinion that the study is continued on a large population of Medical Officers, Health workers so that more information is gathered on the area of Patient Safety. Currently, not much of the information is available in the country, especially regarding reporting of adverse events. There is a need for establishing systems for reporting, discussion and solutions for adverse events with respect to patient safety in Primary Health Care System.

Training needs, content, suggestions for designing training programme on Patient safety has been obtained from Medical Officers of Primary Health Care System.

RECOMMENDATIONS

Review of literature indicates scanty information regarding adverse events related to patient safety in Primary Health care System in India. Following recommendations help address the problem:

1. Reporting of adverse events related to patient safety needs to be established as a mandatory mechanism in the primary health care system.

2. There is need to commission special studies on incidence of adverse events in primary health care system.

3. There is need to address the issue of developing and designing trainings on Patient Safety for all stake holders – Administrators, Doctors, Nurses/Health workers, patients, community, in the Primary Health care system.

The investigator had opportunity to visit 14 health care institutions in Gujarat in the context of Health Care Waste Management in 2009.

He visited Civil Hospital at Gandhi Nagar and Porbander where NABH accreditation has been attempted and formation of groups of patients (Rogi kalian samithis) and their empowerment on rights of patients has been tried. The investigator is of the opinion that this is a good effort needing expansion to entire primary health care system in the country.

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ORIGINAL ARTICLE

A STUDY ON BIOMEDICAL WASTE MANAGEMENT IN SELECTED HOSPITALS OF DELHI

Dr Kamal Singh Baghotia

SUMMARY

A study on Biomedical Waste Management in 20 Selected (10 Govt. and ten private) Hospitals of Delhi was carried out with the objectives to i) ascertain status of implementation of Biomedical Waste (Management and Handling) Rules 1998; ii) to find out practices adopted for biomedical waste management in the hospitals and iii) to recommend strategies for effective biomedical waste management in the hospitals. The average biomedical waste generated in Delhi Hospitals is 290gms per bed per day (Govt. hospitals 200 gms. per bed per day whereas private hospitals 420 gms. per bed per day). All hospitals have obtained authorization from prescribed authority. They are using colour coded bags for segregation and maintaining records. It was found that Delhi hospitals are meeting over 90 percent criteria for collection, segregation, transportation, treatment and disposal of biomedical waste. One needle destroyer/sharp container is catering to almost 9 beds on an average. There is a performance decline on the criteria like awareness activities, waste audit, injury register, containment of mercury, spill management and SOP/guidelines are concerned. There lot of scope for improvement in biomedical waste management in Delhi.

INTRODUCTION

Delhi is national capital territory. Its healthcare institutions cater to neighbouring states in addition to Delhi's population. In the scientific and industrial era, turnover of the products is very high. With industrialization and increasing urbanization the quantum of urban solid waste is also increasing. With increasing need of Health Care in fast changing society, the role of hospitals/nursing homes comes to the forefront. Anything which is not intended for further use is termed as waste. In Delhi, there are 137 healthcare units with indoor facilities under govt. sector, 613 registered nursing homes and 1225 dispensaries. In addition to this there are about 1550 unregistered establishments with different names like Nursing Homes, Medical Centres, Dental Hospitals, MTP centres etc. About 44000 hospital beds are available in the public and private sector in Delhi. With increasing number of hospitals and nursing homes in Delhi, this number may go up even higher. All these establishments

in the process of providing healthcare generate health care waste. Hospital Waste or Health care waste should include any type of material generated in Health Care Establishments including aqueous and other liquid waste.

With increasing awareness in general population regarding hazards of hospital waste, public interest litigations were filed against erring officials. Some landmark decisions/guidelines to streamline hospital waste management have been made in the recent past. These are:

1. Supreme Court judgment dated 1st March 1996 in connection with safe disposal of hospital waste, it ordered that

a. All hospitals with 50 beds and above should install either their own incinerator or an equally effective alternative method before 30th November 1996.

b. The incinerator or the alternative method should be installed with a necessary pollution control mechanism conforming to the standard laid down by Central Pollution Control Board (CPCB).

c. Hazardous medical waste should be segregated at source of generation and disinfected before final disposal.

2. Ministry of Environment & Forest, Govt. of India issued a notification for Biomedical Waste (Management & Handling) Rules 1998 in exercise of powers conferred by Section 6, 8 & 25 of the Environment (Protection) Act, 1986 that was published in "The Gazette of India Extraordinary, Part-II, Section 3-Sub-section (ii) New Delhi, July 27, 1998". These rules were further amended in 2000 and 2003.

AIMS AND OBJECTIVES

The aim of the study is to find out the status of biomedical waste management in National capital Territory of Delhi

General Objective:

To study the biomedical waste management in selected major hospitals of Delhi

Specific Objectives:

1. To ascertain status of implementation of biomedical waste (management and handling) rules 1998
2. To find out practices adopted for biomedical waste management in the hospitals

3. To recommend strategies for effective biomedical waste management in the hospitals

METHODOLOGY

The study was conducted in twenty (20) selected major hospitals of Delhi. Keeping in view the feasibility, the data was collected by Questionnaire. Hospital administrators and nodal officer's biomedical waste management were contacted for clarification for missing points asked in the questionnaire. The observation was also made using checklist for practices adopted by hospitals.

Twenty major hospitals were selected randomly (ten from Govt. of NCT of Delhi and Ten from private sector). Records related to hospitals were also seen were ever available from August 2010 to October 2010.

DATA COLLECTION TECHNIQUES AND TOOLS

Keeping in view the feasibility, a structured questionnaire was sent to Medical Superintendents of the concerned hospitals. The secondary data was collected through study of record. The personal interview was also held for missing data in the questionnaire during August to October 2010

Data analysis: The collected data was analyzed as per objectives and suitable tests were used as per norms.

Data Analysis and Interpretation /Research Findings:

The collected data was analyzed as per objectives. All medical superintendents provided the basic information like name, phone/Mobile number, fax /email address. However, half of the hospitals only provided email address (four Govt. and six private hospitals). It was found that all hospitals have obtained authorization from Delhi Pollution Control Committee. Hospitals have provided the authorization number, date of issue and its validity.

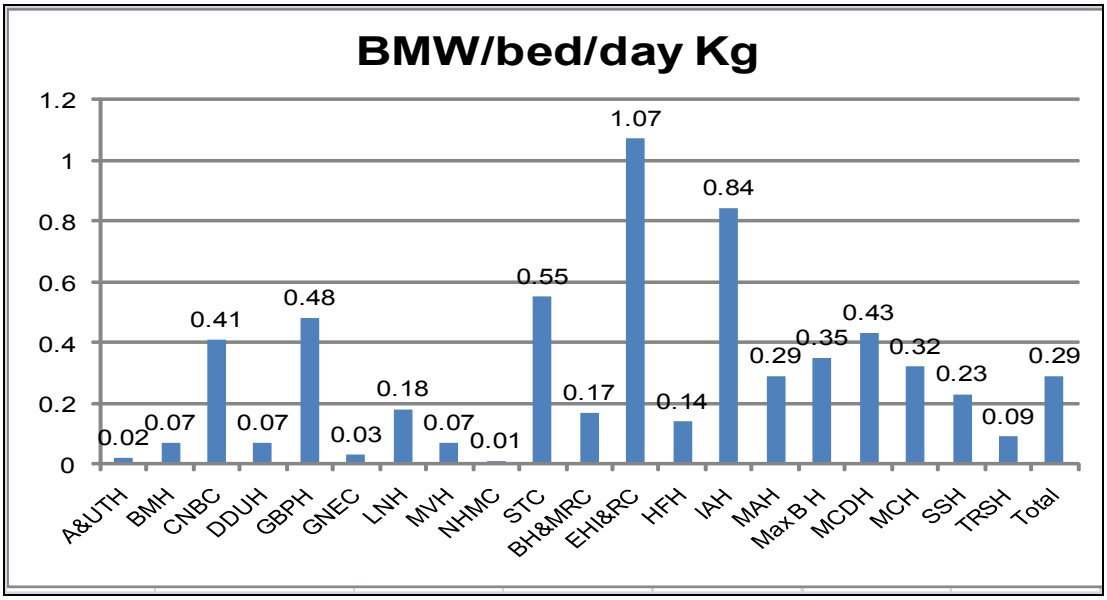
A. **Quantum of waste generated:** The quantum of waste generated in hospitals varies from hospital to hospital.

Table 1: Quantum of waste Generated in Hospitals

Sl No.	Quantum of waste	No. of Hospitals under study		
		Government (10)	Private (10)	Total (20)
1	Quantum of waste generated Monthly (Kg)	24911	42739	67650
2	Quantum of waste generated daily (Kg)	804	1379	2182
3	No. of Beds	4100	3303	7403
4	Waste generated per bed per day (Kg)	0.200	0.420	0.290

Table 1 explains the total quantum of waste generated in the hospitals under study. The total quantum of waste generated monthly is 67.6 tons. The total number of beds in these hospitals is 7403. The BMW generated by govt. hospitals is 200 gms. per bed per day whereas BMW generated by Private hospitals is 420 gms. per bed per day. Hospital wise waste generated is shown in Figure 1.

Figure 1: Biomedical Waste Generated per Bed per Day (Kg)



As revealed by figure 1, BMW generation varies from 10 gms. per bed per day in Nehru Homeopathy Medical College to 1.07 kg. in Escort Heart Institute & Research Centre with an average of 290 gms per bed per day.

B. <u>BMW Handling Practices</u>:

Segregated collection: All hospitals are using segregation bags. It is mandatory to use colour coded containers for segregation in hospitals.

Table 2: Practice of Segregation of Biomedical Waste in the Hospitals:

Sl No.	Use of Segregation containers/ bags/ Puncture proof	No. of Hospitals having Segregation containers		
		Government (10)	Private (10)	Total (20)
1	Segregation containers	10	8	18 (90)
2	Segregation bags	10	10	20 (100)
3	Puncture Proof containers	10	9	19 (95)

However only 90% hospitals are using colour coded containers. Puncture proof containers were also found in 95% hospitals. The segregation containers used by different hospitals are as follows:

The use of colour coded containers in Guru Nanak eye centre but their placement near the air cooler makes the staff and patients more vulnerable to spread of infection. Containers used by DDU hospital do not show any use of biohazard symbols. Ninety percent hospitals under study were using red, yellow and black coloured containers. Yellow bags for incinerable waste, red for autoclavable and black for general waste are used. Containers in GB pant Hospital are having foot operated lids, with biohazard symbols. They are also having labels.

Table 3: Provision of Needle Destroyers for Sharps:

Sl. No.	Availability and use of Needle destroyers	No. of Hospitals having Needle destroyers		
		Government (10)	Private (10)	Total (20)
1	Availability in hospitals	10	9	19 (95)
2	Total No. of Needle destroyers	463	345	789
3	Total No. of Beds	4100	3303	7403
4	Beds served per Needle	8.9	9.6	9.4

All hospitals except Apollo hospital are using needle destroyers. Apollo hospital is directly putting sharps in sharps containers. Each needle destroyer is catering to 8.9 beds in Govt. hospitals whereas 9.6 beds in private hospitals.

Beds catered by each needle destroyer vary from 4 beds in Chacha Nehru Bal Chikitsalya to 100 beds in Nehru Homeopathic Medical College and hospital with an average of 9 beds per needle destroyer. Sharp containers are used in the hospital to prevent needle stick injuries and cuts from sharp instruments.

Transportation: Ninety five percent hospitals are having wheelbarrows/wheeled trolleys.

Table 4: Provision of Transportation of biomedical waste in the hospital:

Sl No.	Availability and use of Trolley/Wheel barrow	No. of Hospitals having trolley/Wheelbarrow		
		Government (10)	Private (10)	Total (20)
1	Availability in hospitals	9	10	19 (95)
2	Separate washing facility	6	6	12 (60)

Provision of separate washing facility was communicated by 60 % hospital. Forty percent hospitals are still using bathrooms for washing of containers/wheelbarrows. Isolated facility for washing containers was not found in any of the hospital.

Storage: Provision of internal storage was found in 95% hospitals. Eighty five percent hospitals are also having centralized storage. Provision of lock and key is there in 90% storage sites

Table 5: Practice of Storage of Biomedical Waste:

Sl No.	Availability and use of Storage site	No. of Hospitals having storage Site		
		Government (10)	Private (10)	Total (20)
1	Internal storage	10	9	19 (95)
2	Centralized storage	8	9	17 (85)
3	Provision of Lock and Key	8	10	18 (90)

Treatment and Disposal: Onsite treatment facility for Incineration was not available in any of the hospitals. They are using the facility of centralized BMW treatment facility of Synergy Waste Management Private Limited 15 (75%) hospitals and Metro Biocare Services (25%) hospitals. Incineration Ash is disposed of by centralized BME treatment facility operator.

Table 6: Availability of onsite treatment facility in hospitals under study

Sl No.	Name of the Functional Equipment	No. of Hospitals having onsite equipment		
		Government (10)	Private (10)	Total (20)
1	Incinerator	0	0	0
2	Autoclave	4	1	5 (25)
3	Microwave	1	0	1 (5)
4	Shredder	4	3	7 (35)

It can be seen from table 6 that 5 (25%) hospitals were having autoclave and only one (5%) was having onsite Microwave facility. Shredding facility is available in 7 (35%) hospitals four (20%) in Government sector and 3 (15%) in private sector.

Sharp blasters work at high temperature and specially used for needles. The containers are encapsulated but their disposal becomes a challenge. The waste after autoclaving/ microwaving is shredded and disposed of. Some hospitals are also generating revenue for plastic waste by selling it to junk dealers.

Centralized BMW Treatment Facility at Okhla

The incinerator installed at centralized waste treatment facility at Okhla is one of the largest incinerators in India with capacity of 300kg/hour.

The liquid waste generated in hospitals is treated in effluent treatment plant and water purified from this plant is used for gardening purpose

Monitoring and Supervision: Monitoring and supervision is not possible unless the job responsibilities are properly defined and regular checks are there. There comes the role of nodal officer BMW management and biomedical waste management committee.

Nodal officer BMW and BMW Management Committee

Sl.No.	Nodal Officer/BMW Mgmt. Committee	No. of Hospitals having Nodal Officer (BMW)/ Committee		
		Government (10)	Private (10)	Total (20)
1	Nodal Officer	8	9	17 (85)
2	BMW Mgmt. Committee	7	8	15 (75)
3	Average No. of Members in the committee	4.3	5	6.2
4	Whether Regular Meeting held	7	6	13 (65)

Nodal officers have been designated by 17(85%) hospitals whereas only 15 (75%) hospitals under study have constituted biomedical waste management committee. No. of members varied from 4 to 11 with an average of 6 members in the committee. Thirteen (65) percent hospitals have reported the regular meetings of biomedical waste management committee.

Maintenance of registers and records for biomedical waste is an important are in monitoring and supervision. All hospitals under study were maintaining the records and registers. Daily supervision is reported in 90 % hospitals. Regular inspection was also reported in 95 % hospitals.

Provision of recording and reporting of biomedical waste:

Sl No.	Special Provisions for	No. of Hospitals having Provision		
		Government (10)	Private (10)	Total (20)
1	Maintenance of Records	10	10	20 (100)
2	Daily supervision	8	10	18 (90)
3	Regular Inspections	10	9	19 (95)
4	Monthly report to DHS	9	0	9 (45)
5	Annual returns to DPCC	9	10	19 (95)
6	Separate Budget Head for BMW management	5	5	10 (50)

Only government hospitals were reporting to directorate of health services. Annual report to Delhi Pollution Control Committee (prescribed authority under the rules) is submitted by 95% hospitals. Fifty percent of hospitals are having separate budget head for biomedical waste management.

Special Provision for Infection control and Hazards Management:

Sl No.	Special Provisions for	No. of Hospitals having Provision		
		Government (10)	Private (10)	Total (20)
1	Spill Management	9	9	18 (90)
2	Heavy Metal Containment	5	8	13 (65)
3	Injury Register	6	8	14 (70)
4	Separate Weighing Machine	8	7	15 (75)
5	Acoustic enclosure	9	9	18 (90)

It is clear from Table 9 that spill management protocol is available in 90% hospitals. Provision for mercury containment is available in 65% hospitals. Separate weighing machine for biomedical waste is available in 75% hospitals. Acoustic enclosures for generators were reported in 90% hospitals.

Provision for quality waste Management in hospitals:

Sl No.	Special Provisions for	No. of Hospitals having Provision		
		Government (10)	Private (10)	Total (20)
1	SOPs/Guidelines	9	8	17 (85)
2	Regular trainings	9	10	19 (95)
3	IEC material	7	4	11 (55)
4	Consent under air and water act	7	10	17 (85)
5	Waste audit	5	8	13 (65)

IEC MATERIAL DISPLAYED IN BATRA HOSPITAL

To improve the quality of biomedical waste management there is provision of standard operating procedures/ guidelines in 85% hospitals under study. Almost 95% hospitals are conducting training programmes for their staff. Only 11(55%) hospitals are displaying awareness material for biomedical waste management. Consent under air and water act has been obtained by 855 institutions. Waste audit has been reported by 65% hospitals.

RECOMMENDATIONS AND CONCLUSION

Recommending strategies is one of the objectives of the current study. These recommendations are based on the study findings of twenty selected major hospitals:

1. Each hospital should have designated nodal officer for biomedical waste management supported by Infection control nurse and data entry operator. The nodal officer should have adequate training in BMW management or certificate courses in healthcare waste management offered by recognized board/university e.g. Indira Gandhi National Open University.

2. In addition to infection control committee there should be a separate biomedical waste management committee under medical superintendent or additional medical superintendent. This committee should have members like microbiologist or pathologist, surgeon, nursing superintendent, sanitary supervisor, infection control nurse and nodal officer BMW management.

3. Medical superintendent should personally ensure the timely authorization from prescribed authority.

4. A separate budget head should be earmarked for biomedical waste management. One to two percent o hospital budget can be kept under this head.

5. Uniform policy of colour coded containers along with colour coded liner/bags should be adopted. The containers/liners used for biomedical waste should have biohazard symbol on them. These bags should be made of non PVC biodegradable material.

6. Colour coded properly labeled wheelbarrows/trolleys should be used for transportation of biomedical waste. The trolleys used for biomedical waste should not be used for any other purpose.

7. There should be separate isolated washing facility for containers/wheelbarrows. The containers used for biomedical waste should never be washed in bathrooms/toilets.

8. A separate biomedical waste storage site should be constructed with provision of gate with lock and key. It should be easily accessible to the vehicle operated by centralized biomedical waste facility operator.

9. Availing services of centralized facility operator for BMW management is advisable and cost effective. However, a contingent plan should always be kept in mind to meet any exigencies.

10. There should be protocol for spill management, mercury containment, provision for personal protective gears, immunization and injury register.

11. Training of staff and awareness activities for healthcare personnel and public visiting to the hospitals is very important. There should be compulsory induction training, refresher training and retaining of health care workers. The awareness messages should be displayed at multiple places along with messages on close circuit television.

12. Regular monitoring by nodal officer biomedical waste and inspections by regulatory authorities is very essential. Waste audit should be carried out by hospitals on regular intervals.

It is concluded that Delhi hospitals are meeting over 90 percent criteria for authorization, collection and segregation, transportation and treatment is concerned. There is a performance decline on criteria like awareness activities, waste audit, injury register, containment of mercury, spill management and SOP/guidelines are concerned. There lot of scope for improvement in biomedical waste management in Delhi.

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INJECTION WASTE DISPOSAL IN INDIA

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ABSTRACT

From its general use in 1920s and worldwide use after World War II injection application has revolutionized the health care. One cannot forget the revolution brought about by discovery of penicillin in the management of infections by use of syringes just after the Second World War. Its discovery led to better and more effective use of medicines. Initially the syringes were used for curative medicines only. On research in the areas of preventive health care the use was extended to immunization, which is quite a large chunk of use of injection. It is estimated that about 16 billion injections are administered-worldwide. 95 % no doubt are for therapeutic use but the rest 5% are for immunization & investigation purposes (1). Till early ’60s only the glass syringes were used for injections. The glass syringes gave way to plastic syringes, and its universal use in India can be said to be in the early ’80s. Now management of injection waste remains a problem in the developing countries due to inadequate implementation of management technique, poor work culture, lose monitoring and lackadaisical approach.

Key Words: Injection, Waste Disposal, Infection, Immunization

INTRODUCTION

The plastic syringes were brought to use to minimize nosocomial infection. This strategy succeeded in the developed world but not in the developing countries due to defective practice of plastic syringes. The waste syringes are perceived as a source of income by the waste handlers in India. There are studies which have revealed that about 30 to 50 % of used glass syringes find their way back to the shops after washing and wrapping. Suburbs of any city have 'BASTIES' where this activity takes place. The used syringes are culled out from the heap of medical waste by rag pickers and taken to the vendors for repacking. This has become a thriving industry (2). In Delhi, it is said to be an industry worth Rs 50 million per year. Hospital waste, and specifically the injection waste have great potential to cause infection and spread of diseases. Population explosion and density has reduced the natural barrier, and the generation of waste of all type has increased exponentially largely due to population growth and urbanization.

DISCUSSION

Hospital acquired infections are more tenacious and more difficult to deal with as the infective organism by and large are the mutated variants. The percentage of MRSA has shown a sharp increase since 1% in '1960s to 4 % in 1969, to 10% in 1984, and 75% in 1999 as claimed by a study carried out in UK (3). Similarly mutated variants have entered the underground water reservoirs. Mutated variants have been found in the aquifer where tetracycline was used in the food for the Livestock in the USA (4). Researchers even claim that HIV virus is a mutated variant of otherwise non-virulent Simian Immuno Deficiency Virus (SIDV) as a result of serial injections administered in Uganda & Somalia to fight yaws during 1950s (5). It has been claimed that the mutation may have taken place by serialization. As an accepted practice the syringes were not disinfected considering the poverty of the country.

Statistics of injections as per WHO report (1) reveals that: -

- Each person in the developing world receives 1.5 injections per year,
- Hospital patients receive 10 to 100 times more injections,
- At least 50% of all injections are unsafe,

- There is convincing link between unsafe injection, and transmission of Hep B&C, Lassa virus, malaria, and recently AIDS has been linked to unsafe injections,
- 20 % of all fresh cases of Hep B in the developing world is due to unsafe injections,
- One billion injections world over are given in course of childhood vaccination program.

Some more information of injuries caused by injection waste is as follows: -

- In PD Hinduja hospital Mumbai, 194 cases of needle stick injury were reported from Jan 1988 to Sept 2000. The cross section of staff affected were 79(40%) Attendants, 77(39.6%) Nurses, 18(9.2%) Doctors, 20(10.3%) Lab technicians. On source analysis revealed that 110 were known sources and 84 were unknown sources (6).
- In Britain, in 1917 an outbreak of Malaria among soldiers was attributed to injection treatment for Syphilis (7).
- Outbreak of Jaundice following injections in 1940s and 1960s amongst RAF personal who received multiple immunization clearly linked infection with injections for which syringes were reused after changing the needle only (7).

It is thus evident that injection wastes play a very dominant role in the incidence of communicable diseases. Each year unsafe injections cause an estimated 1.3 million early deaths – loss of 26 million years of life, and an annual burden of US $ 535 million in direct medical cost (8).

With the universal immunization against Hep B in the offing, a massive increase in the quantum of injection waste is expected. As it is 4.2 billion Injections are given in India out of about 16 billion injections per year-world wide. Addition of injection waste from the immunization program is going to make the disposal of the injection waste even more complex. India is adding 16 million to its population every year. Thus 48 million injections per year will be required under the universal immunization program. This will result in fresh calculation to the percentage of injection waste, which stands at only 1% of total waste of a health care facility. It is true that AD syringes are going to be used in the program, but perception that use of AD syringes answer to all the problems related to management and safe disposal of waste plastic syringes may be misplaced. It must be appreciated that due to negative pressure being generated in the lumen of the syringe a small portion of body fluid is bound to remain as remnant. If the AD syringes are buried this infected remnant will remain and over a period of time will surface as a potent source of infection. The organism contained in the fluid if any, may proliferate & mutate. Autoclave treatment may not be effective since there will be

no place for the steam to enter in that miniscule space. Burning of plastic syringes cannot be eco-friendly, and will not be an option without causing harm to individual or the environment. Shredding without disinfection has its associated hazard to the waste handlers since infection if any in the remnant may cause harm by aerosol formation. Moreover major portion of the injection waste will be in the rural area, where awareness about infection control will be poor to non-existent.

One widely held presumption in support of use of disposables is that it is important in control of infection. Yet infection control studies don't indicate a constant and consistent reduction in nosocomial infection where disposables replaced the re- usable (7). In fact if at all, there may have been increase in the incidence after the plastic syringes replaced glass syringes in India. There has been no comparative study conducted anywhere in India to prove that use of plastic syringes has indeed brought down the incidence. Now, that may be possible, as the State Government of Madhya Pradesh have decided to switch back to glass syringes (9).

Sharps waste may be only 1% of the total health care waste (10) but is most potent source of spread of infection. Additional 48 million injections per year for universal immunization in India will jack up the total injection waste to 4.2 billion + 48 million per year. The expenditure for proper treatment of this waste has not been calculated simply because there is no proper disposal being practiced in India. Bio-medical waste, including the injection waste can be seen strewn all over in the dumping areas with municipal waste, and in many hospitals. Dumping infected waste with general MSW infects whole waste, thus increasing the infected waste 10 times, or to 100% from merely 1-2%. If one tries to calculate expected expenditure on the treatment of injection waste it may be a futile exercise as no definite figure of the waste being generated from all health care facilities are available. But the budgetary requirement to treat the injection waste generated out of the universal immunization program can be calculated since the number of injections required to be administered is known. If all PHCs are planned to have a reasonable system of waste disposal it would cost about Rs 40,000 per PHC. India has over 23,000 PHCs, 3000 CHC, and over 1,000 district level hospitals. The budgetary requirement would thus be over Rs. One billion. The injection waste cannot be burned, nor an effective autoclaving of AD syringes be ensured. So the question arises whether this expenditure is going to be worth while? Is it likely to achieve intended result? Is it therefore going to be cost-effective? For example, if this measure is going to be harmful to either the environment or the human health then it can be said to be not cost-effective. Damage to environment may not appear apparent but it is there. Harm to the human health, or even the animal health will have a value & cost. Impact on health of individuals and the environment and will have to be reckoned to appreciate the cost- effectiveness of any measure.

Health has gradations, and lowered standard has its own disadvantages, on physical & mental health. Health of a rag picker who gets exposed to the danger of needle-stick injury or harmful fumes or smoke cannot be of the same standard as that of a white collar worker. Then there is the cost of treatment, either as OPD or in patient, resulting in loss of man-days & extended occupancy of hospital beds. If the cost of these are taken into reckoning cost to the society on account of improper waste disposal would be enormous. A study done in UK (NHS) on Hospital Acquired Infection (HAI), indicated loss of 8.7 million man-days, and additional expenditure of about 1 billion Pounds per year on account of treating cases of hospital acquired infections (11). It is relevant since improper waste disposal (including injection waste) is responsible for increasing incidence of hospital acquired infection.

30% incidence of Hep B & C can be attributed to reuse of plastic syringes. With immunization program against Hep B, 48 million additional injections will be required every year. This will translate to Rs 3.2 billion per year. One time investment of Rs 1.2 billion will be required for disposal equipment. With this kind of money a safe system to ensure injection safety can be developed. At the same time there is a lot of merit in the concept of going back to glass syringes era.

Before starting the immunization program health care experts as a task group should suggest best, cheapest, and safest way to disposal of injection waste in India.

SUGGESTIONS AND RECOMMENDATIONS

Change from glass syringes to plastic syringes took place in 70s in India. First case of HIV/AIDS was detected in 1982. One needs to ponder whether there could be a link between use of plastic syringes and appearance of AIDS in India! It is certainly not that the plastic syringes by itself may have caused this situation but improper treatment (disinfection) and disposal of the waste plastic syringes may have contributed. It is therefore suggested that:

- Comparative study be undertaken to see the difference in transmission of infections in a centre where only glass syringes is used, and at a centre where only plastic syringes are used,
- Bacteriological study to determine infections carried in used plastic syringe waste,
- Develop protocol for plastic syringe waste in the rural areas covering PHC and CHC,
- Regular awareness programme for waste handlers at hospitals and other healthcare facilities in urban as well as in the rural healthcare facilities,

- Greater and universal use of protective clothing and gear,
- Effective monitoring and control by healthcare authorities besides pollution control boards and committees,
- Periodic waste management audit by independent specialist organisation or body of specialists in biomedical waste management.

New Delhi

September 19, 2011

*President, ISHWM

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BIOMEDICAL WASTE MANAGEMENT IN KARNATAKA

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ABSTRACT

Biomedical waste gained significant importance in India in the last decade and as a result the government of India passed Biomedical waste (Management and handling) Rules in the year 1998 under the Environmental (Protection) Act 1986. The rules was amended twice in 2000 and 2003. As prescribed authority under the rules, Karnataka State Pollution Control Board (KSPCB) is responsible for enforcement of the rules in Karnataka. KSPCB and the Sate Government have taken numerous initiatives to improve the implementation in order to safeguard the environment and in particular the health of people in the state. The efforts by KSPCB included identifying nearly 26,000 HCEs, preparing action plan for solid and liquid bio-medical waste disposal, issuing direction to district authorities to earmark suitable land for Common Bio-medical Waste Disposal Facility (CBMWTF), conducting awareness programmes, issue of show-cause notices, conducting personal hearing, issuing notice of proposed direction, issue of closure order to defaulting hospitals, and authorizing officers to file case against defaulting hospitals. This paper makes an attempt to explain the current situation and future plans to tackle the problems associated with Biomedical Waste Management in Karnataka.

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INTRODUCTION

Medical care is very important for our life and health and in the same way management and handling of the bio-medical waste is also important. It can be detrimental if not properly handled and managed. Improper disposal of infectious bio-medical waste can cause diseases. The main problem with respect to improper disposal of bio-medical waste are: (1) Spread of infection through vectors; (2) Spread of infection through contact/injury (3) Spread of infection through recycling of contaminated items; (4) Contamination due to discarded medicines.

As per the Biomedical Waste (Management and Handling) Rules 1998, biomedical waste means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining there to or in the production or testing of biologicals, and including categories mentioned in Schedule I of the Rules.

As per the rules, it shall be the duty of every occupier of an institution generating bio-medical waste which include Hospitals, Nursing Homes, Clinics, Dispensaries, Veterinary Institutions, Animal Houses, Pathological Laboratories, Blood Banks to take all steps to ensure that such waste is handled without any adverse effect to human health and the environment.

But implementation of rules is quite challenging in India for the following reasons (1) Quacks in the professions; (2) Profession being practiced by numerous doctors without formal trade license; (3) Practice is intentionally not registered in any government organization to avoid income tax; (4) Attitude to discard as it is and where it is; (5) Pressure to increase profits; (6) Poor law enforcement by local bodies which can take action for causing nuisance; (7) The behavior of waste throwing is deep registered in unconscious mind; and (8) Lack of importance given for education in waste management.

The health care sector is mixed bag with ownership lying in the hands of doctors, quacks, non-medical professionals, government and doctors. Health Care Establishments (HCE's) are operated for profit, charity or just because they are paid. The profession does not attract as many laws as other institution/organizations/industries.

Evolution of the rules is dramatic and happened without external influence as it usually happens in case of Environmental Legislation through international treaties. The first standard on Biomedical Waste was brought out in India by the Bureau of Indian Standards (BIS). The standard IS 12625: 1989, 'Solid Wastes- Hospitals-Guidelines for Management' could not bring any improvement curbing impact due to disposal of biomedical waste.

The formulation of Bio Medical Rules was initiated after filing of Public Interest Litigation by Sri. B.L. Wadhera against Union of India and the notification of the 'Biomedical Waste Management & Handling) Rules, 1998' was passed in the year 1998. The Central Govt. has notified these rules on 20th July, 1998 in exercise of powers under section 6, 8 and 25 of the Environment (Protection) Act, 1986.

EFFORTS BY KSPCB

KSPCBs effort since 1998 include (1) Encouraging 14 Common Biomedical Waste Treatment Facilities; (2) Issuing consent for the establishment (CFE) of four New CBMWTF since last year and these facilities will become operational within a year making the total CBMWTF in the state to be 18; (3) conducting massive awareness programmes (Part from Mass Awareness through Television, News Paper, Radio etc), (3) Issue of closure orders to non-complying health care establishments (HCE), (4) Authorizing concerned officers to file cases against defaulting HCEs(5); conducting advisory committee meeting from time to time under the Rules.

The number of health facilities that have linked with common treatment facilities for safe disposal of health care waste have also increased over the years due to identifying and persuing. The number of common treatment facilities that were initially 4 in the year 2003-04 increased to 14 presently in 2009-10.

CHALLENGES FACED BY KSPCB

Till 2007, the institutions generating biomedical waste in Karnataka did not respond favorably with regard to management and handling of Bio-medical waste. After intervention of the Hon'ble Lok Adalath and issue of closure order to 15 major hospitals in the state, there was sudden change and HCE's got interest in attaining compliance to the rules. But many of the small stakeholders kept themselves away from complying the rules as they were not identified by any of the government organizations.

Table 2 Summary of HCE Statistics in Karnataka as on September 2011

Sl.No	Govt Pvt	Type of HCE	No. of HCEs	Total	Grand Total
1	Pvt	>500 Bedded	28		
		200-500 Bedded	30		
		100-200 Bedded	60		
		50-100 Bedded	156		
		<50 Bedded	2,218	2,492	18,420
		Clinics	15,368		
		Path Lab/dia. Centre	387		
		Blood Bank	41		
		Others	132	15,928	
2	Gov	Department of Medical Education	26		
		District Hosp	17		
		Taluk Hosp	146		
		AYUSH – Bedded	103		
		BBMP	50	342	7,180
		Community Health Care Centre	182		
		Primary Health Care Centre	2,154		
		AYUSH-Non Bedded	659		
		Veterinary Hospital	362		
		Veterinary Dispensaries	1,946	6,838	
		Primary Veterinary Centre & Artificial insemination Centre	1,535		
		Grand Total	**25,600**		**25,600**

Bedded Pvt	2,492
Beddded Govt	342
Total	**2,834**

Non Bedded Pvt	15,928
Non Bedded Govt	6,838
Total	**22,766**

Note:

AYUSH : Ayurveda, Yoga, Unani, Sidda and Homeopathy

BBMP : Bruhat Bengaluru Mahanagara Palike (Corporation of greater Bangalore)

The enactment of Karnataka Private Medical Establishment (KPME)Act in 2007 made it compulsory for every private medical establishment to register under the Act thus for the first time making it easy to know the location and extent of private establishments in Karnataka. In spite of innumerable appeals through television, radio, newspapers generators of biomedical waste chose not to comply with the rules even though generators knew it was statutory obligation. The sharing of information with registering body under KPME act revealed existence of nearly 18,000 private medical establishments. **Table 1** gives Summary of HCE Statistics in Karnataka as on September 2011. Increase in HCEs in the records of KSPCB added new responsibility to issue notices to newly identified institutions warning them the consequences of continuing with noncompliance to the Biomedical Waste (Management and Handling) Rules 1998. With increase in HCEs, enforcement took a new challenge as the ratio of HCEs to technical officer also increased thus imposing burden on the monitoring and enforcing staff. This new challenge of monitoring and enforcing along with workload due to complaints, industries, new/amendments to pollution control laws took new route to adoption by hosting online module for issue of authorization. The online module which is open for all offices of the Board was released for testing which proved to be time saver wherein each authorization can be printed within five minutes as against fifteen to thirty minutes.

Karnataka being a diverse state, it has varying features through out the state. Bangalore Belgaum, Mysore, Mangalore, Belgaum, Davangere, Shimoga and Gulbarga are populated more than other cities and have more number of HCEs. Hence, entrepreneurs preferred these cities to install

CBMWTF in the beginning and later spread to 14 locations. Directions were issued to district authorities of those districts where services of CBMWTF are not available. Prospective entrepreneurs were also informed about subsidy provided by state and central government. As a result three more entrepreneurs came forward to set up new CBMWTF and have obtained consent for the establishments.

In order to achieve the objectives of Biomedical Waste (Management and Handling Rules) 1998, Department of Environment and Ecology, Government of Karnataka has sponsored series of training. A team of six trainers in each district for conducting training on Bio-Medical Waste Management has been constituted and this team will conduct series of training programmes in the respective districts.

ACTION PLAN

The Board also prepared an action plan in co-ordination with other departments and as per the action plan, all HCEs which have been identified as on 30.09.2010 shall dispose solid Bio-medical waste through CBMWTF's or have their own captive facilities and shall have liquid Bio-medical waste treatment facilities within 31.12.2011.

TASK AHEAD

The following tasks have been identified by KSPCB

- To ensure compliance from all BMW generators;
- To create maximum awareness with target being fixed at the beginning of financial year;
- To initiate punitive action against defaulters (action in progress); and
- To cover entire state by service of CBMWTFs (as on date two districts are do not have services of CBMWTF).

Apart from KSPCB, there has been tremendous initiative from Department of Health and Family Welfare; Department of AYUSH (Ayurveda, Yoga, Unani, Sidda and Homeopathy); Department of Animal Husbandry; and Drug Controller of Karnataka. All the departments have conducted dedicated awareness programmes through training, circulars and direction to the concerned.

In a unique initiative, Drug Controller of Karnataka has conducted more than 100 awareness programs to retail chemists; drug distributors; carrying and forwarding agencies; and manufacturers in Karnataka to take responsibility to destroy expired drugs as per statute.

CONCLUSION

The experience in Karnataka in implementation of Biomedical Waste (Management and Handling) Rules, 1998 has been a mixed basket of rewards and disappointments with some HCEs cooperating with enforcing agency and fully complying with statutory norms while others showing resistance. In a country with mind set up of people to throw waste wherever it is generated, medical professionals are not an exception. Education and awareness cannot change attitude of waste generators but should be carried out prior to initiating last resort -punitive action/legal action.

LETTERS TO THE EDITOR

Sir,

Healthcare services aim to reduce health problems and to prevent potential health risks. In doing so, however, waste is often generated that is potentially harmful to public health and the environment. In several countries, where many health concerns often compete for very limited resources, the management of healthcare waste may not get the priority it deserves. In this context a journal dedicated itself for the cause of health care waste is worth the effort and I sincerely congratulate the editors for this effort.

In the last few years there has been growing controversies over incineration of health care waste and hence there is more focus on technologies alternative to incineration. Hence I felt that the article on vermicomposting of bio medical waste is really the need of the hour. I also kindly request the editors to publish a compilation on various alternative technologies in management of health care waste in their forthcoming issue which would really be of immense help for those in search of it.

Hospitals and nursing homes must help their key nursing personnels and chief medical officers to do the certificate course on health care waste management and if every such institution has trained manpower, I hope the problem of biomedical waste management would be addressed to a desirable extent.

Though there are well written rules and regulations on health care waste management in different settings, still we are far from satisfactory in the management of same. More research to identify the problems and issues in implementing sound biomedical waste management practices at various levels is needed.

ISHWM is in right direction in addressing the concerns expressed above and I wish that it continues to do so. It will be great if efforts are put in to produce atleast two issues every year and indexed.

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Dear Sir,

At the outset I would like to congratulate the editors for bringing out the 9th volume of the journal of ISHWM. This edition of the journal has brought out interesting articles on various areas of Health Care Waste generation and management which can act as guiding lamps in resource poor settings as rural India.

Waste production in healthcare facilities in developing countries has seen a significant increase in recent years and at the same time has brought about a variety of concerns due to the use of inappropriate methods of managing the waste. Inappropriate treatment and final disposal of the waste can lead to adverse impacts on human and animal health, to the environment, and to occupational health and safety.

Unfortunately, most economically backward countries are restrained by a variety of constraints to adequately manage the waste. Very few individuals in the staff of the healthcare facility are familiar with the procedures required for proper waste management program. Furthermore, the management of waste usually is delegated to poorly educated labourers who perform most activities without proper guidance and insufficient protection.

The principle of "doing something is better than doing nothing" holds good here and underlies any effort to initiate a system for the management of healthcare waste. Increasing awareness for the need of proper healthcare waste management among health professionals through such resource materials can have a huge impact in future environmental safety.

I request you to include a column for medical or health professionals, students, and a column for interns in the journal.

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Hutti village-584115

Dist: Raichur

St: Karnataka

Email: sharan_holyachi@yahoo.com

INDIAN SOCIETY OF HOSPITAL WASTE MANAGEMENT

ISHWM/01/Policy/Corr

PAST ACTIVITIES, COMPOSITE WORK EXPERIENCE, RECOMMENDATIONS, AND FOLLOW UP ACTION
INDIAN SOCIETY OF HOSPITAL WASTE MANAGEMENT (ISHWM)

Indian Society of Hospital Waste Management has been active since its inception. Its recommendations have been taken seriously by healthcare planners & providers, as well the Govt Agencies like MoEF, CPCB, and State Pollution Boards and Committees. It's Founder President, Air Mshl Lalji K Verma, AVSM (Retd) is member in the Steering Committee of MoEF on Hospital Waste Management.
Some of the recommendations made during past few years, and accepted are as follows:

Biomedical Waste Management Issues:

- Based on studies and research projects guideline for hospital waste management in Armed Forces Hospitals were developed which have since been adopted and are operational.

- Based on Recommendations Joint Services Guidelines (Armed Forces) for Hospital Waste Management was finalised, and issued.

- A video film of 30 mts duration was made on hospital waste management system at the Air Force Hospital Bangalore, as a collaborative project with Jain Communications; and is being used for educational purposes by IGNOU.

- Rules have been amended to include DGAFMS as one of the 'Prescribed Authority' in the BMW Rules – 1998

- Its founder President Air Mshl LK Verma applied and was granted research project to develop a monograph on Hospital Waste Management under 'USERS Scheme' by the DST. Project was completed and a book – "Managing Healthcare Waste – a Practical Approach" was published in 2007 (ISBN – 81-87966-61-

0).

- Based on initiative of the Society WHO-SEARO & IGNOU collaborative project was launched for developing a Certificate Course in Hospital Waste Management for the SEA Region Countries on Distance Education Model. The course commenced in January, 2006 and continues in India and countries of SE Asia.

- System Application for hospital waste management has been the core theme of recommendations of the Society. Comprehensive waste management system laid down at the Bangalore Air Force Hospital has been regularly evaluated and maintained based on recommendations of the Society. It was inspected by Parliamentary Committee on Sub-ordinate Legislation (India) and commented upon very favourably. Govt of Karnataka declared the Hospital 'Environmentalist of the Year' in the year 2001.

- Delhi Declaration was issued and sent to all concerned Govt agencies and health institutions consequent to conference in the year 2006.

- The Society has been a catalyst in improving awareness in the subject of hospital waste management in the country by conducting projects, holding regular conferences, workshops, and seminars. Some of the past activities of the society are listed below:

- A training workshop was held at the Sufdarjung Hospital in collaboration with the hospital and Dept of Health of Govt of NCT of Delhi on December 24, 2009.

- Conducted External Audit of waste management in selected 10 hospitals in Delhi as a project granted by Dept of Health, Govt of NCT of Delhi. Project was completed in stipulated six months - September, 2008 to March 2009. Project was completed within the timeframe and report has since been submitted to the Department of health, Government of NCT of Delhi. Main findings were that there was some improvement in segregation and safety measures. Medical staff showed greater concern towards safe handling and associated risks. However, there was lack of structured awareness, training programmes, SOP, protocols, and guidelines resulting in very slow progress towards achieving 'best practices' in the management of BMW. Sharp management was grossly neglected area.

- Department of Health, Govt of NCT of Delhi had constituted an independent committee to look into the complaint of residents of Sukhdev Vihar about alleged pollution being caused by operating a bio medical waste incinerator near their residential colony, and appointed the President, ISHWM chairman of the committee. The committee made several visits to the site of CBWTF, Okhla, as well as the residents of Sukhdev Vihar. The committee examined all relevant papers heard views of the residents, and the CBWTF operator, and

came to conclusion that possible health effects to the nearby population could not be ruled out, and the fear of the residents was not without basis. The committee therefore recommended that the incinerator may be moved out to another alternative location. It came to light that chairman DPCC had already moved papers for allocation for an alternative site. **In the mean time the committee recommended that waste load on the incinerator be reduced by putting category 3 and 6 in red bags (meant for autoclave) and not in the yellow bags (meant for incinerator), and then shredded after disinfection. Only waste category 1 and 2 is put in yellow bags meant for incineration**. The report was submitted to the dept of Health, Govt of NCT of Delhi vide ISHWM/Projects/07/Corr dated January 15, 2008.

- Consequent to some doubt about working of the APL (Automated Programme Logic) system attached with the incinerator, Chairman DPCC has requested ISHWM chairman (with others) to carry out an inspection and submit a report. Inspection was carried out on the 15th of October, 2008 with Dr TK Joshi, and Rep DPCC; and it was found that APL system was working satisfactorily. Report was submitted.

- President ISHWM along with Member Sec DPCC, and Scientific officer, DPCC were tasked to examine some alternate sites to relocate the incinerator from Okhla. The team visited some sites near Narela, and inspected suggested land sites along with the local patwari etc on 24th October, 2008. It was deduced that all sites at the vicinity of Narela shown to the team as possible sites were not suitable due to varied reasons. A report has been submitted.

- Hosted annual conferences - First conference (founding Conference) at the Air force auditorium, New Delhi in 2000, at MS Ramiah Medical College, Bangalore in 2001, at IHHMR Jaipur in 2002, at AFMC, Pune in 2003, at the Army Hospital R & R in 2004, at INHS Asvini, Mumbai in 2005, at India Habitat Centre, New Delhi in 2006 and at the India Habitat Centre, Lodhi Road, New Delhi in September 2007. AGM meetings were held in the year 2008 and 2009. Annual conference 2010 was held in IHC, New Delhi – October 2010.

- Held a mid- term conference in Apr 2004 at the Air Force Hospital, Bangalore.

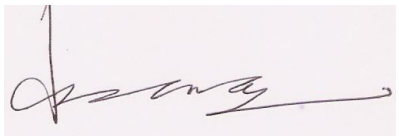
- Issued Delhi Declaration after the annual conference 2006.

- Hosted a workshop jointly with WHO-India in New Delhi on 31st May 2000 where all hospitals who were awarded WHO aided pilot projects (there were 10 civil hospitals apart from the Air Force Hospital, Bangalore from the Armed Forces, granted support from WHO India for the pilot project during 1999-2000 biennium) participated and discussed progress on their projects.

- A representative of the society is in the committee of the DGAFMS (who is a 'prescribed authority' under BMW 1998, as amended), to render advise on authorising healthcare establishments of the Armed Forces.
- One of ISHWM members has set up a Common Biomedical Waste Treatment facility at Mumbai.
- Similarly set up CBWTF at New Delhi and Lucknow.

MSW Projects and Issues:

- One of the members of ISHWM has set up solid waste management at Kolkata,
- Waste water management at Nagpur,
- Waste water management at Bawal Industrial Area in the state of Haryana.



(LK VERMA)
President, ISHWM
Updated July 26, 2010

RESOURCES AND INFORMATION

IGNOU CERTIFICATE COURSE

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Indira Gandhi National Open University (IGNOU), the largest open university in the democratic world, was established by an act of Indian Parliament in 1985, and started offering academic programmes in 1987 (Diploma in Management and Diploma in Distance Education with 4528 students). Today, it serves the educational aspirations of about 1.3 million students in 30 countries, including India, through eleven schools of studies and a network of 57 regional centres; five sub regional centres, 1296 study centres/tele-learning centres, 35 partner institutions overseas. The University offers 101 certificate, diploma, degree and doctoral programmes comprising 900 courses, through a strength of 300 faculty members and academic staff at the headquarters and regional centres and about 33,000 counselors drawn from conventional institutions of higher learning, professionals from various organizations and bodies, among others.

The University has been in existence for only two decades. In such a short time, the University has contributed significantly to higher education and continuing professional development in the country catering to the· education of about 12 per cent of total students enrolled in higher education (and more than 50 per cent of total students in distance education) in the country. As a world leader in distance education, it was conferred the Centre of Excellence Award in Distance Education in 1993.

SCHOOL OF HEALTH SCIENCES

The School of Health Sciences was established in the year 1991 as one of the eleven schools of the University. Its prime objective is the development and delivery of programmes in the field of medicine, nursing, paramedics through distance education mode and the maintenance of their academic standards. The Certificate Programme in Health Care Waste Management is one of the latest programmes developed in the School for the South-East Asia Countries.

CERTIFICATE IN HEALTH CARE WASTE MANAGEMENT

The concern for bio-medical waste management has been felt globally with the rise in deadly infections such as AIDS, Hepatitis and indiscriminate disposal of health care waste. The United Nations through UN Basel Convention on the control of transboundary movements of hazardous wastes and their disposal has classified health care waste as most hazardous waste, after radioactive waste.

According to WHO, the eleven South-East Asia countries together produce some 3,50,000 tons of health care waste per year, close to 1000 tons a day. As it is not segregated at source, all of it is to be considered hazardous despite the fact that only 10-20 per cent is infectious in nature (Health Situation in the South-East Asia Region, 1998· 2000, WHO, 1999).

The main bottleneck to sound health care waste management programme is lack of training and appropriate skills, insufficient resource allocation and lack of adequate equipment. The need to educate different health care professionals/ workers, NGOs and other stake holders was thus identified as a priority. To cater the needs of these health care professionals, IGNOU and WHO, SEARO decided to develop and launch Certificate Programme in Health Care Waste Management in the South-East Asia Region Countries. This programme is a 14 credit 6-month certificate programme, through open and distance learning.

This certificate programme has been developed to create essential knowledge and skills in health care waste and equip the leaders to manage it effectively and safely and also safeguard the community against adverse health impact of health care waste.

OBJECTIVES

- Sensitize the learner about health care waste and its impact on our health and environment
- Acquaint the learner about the existing legis1ation, knowledge and practices regarding infection control and heath care waste management practices in South· East Asia Region Countries.
- Equip the learner with skills to manage health care waste effectively and safely.

BENEFICIARIES

Doctors, Nurses, Paramedics, Health Managers and other professiona1 workers with a minimum of 10 + 2 Qualification.

PROGRAMME PACKAGE

It is a multimedia package consisting of print material in the form of booklets called blocks, audio-visual materials, teleconferencing and providing counseling by contact sessions where the learners are invited to the Programme Study Centres in India and Partner Institutions in other countries for hands on training. The package will have eight theory blocks, a project and programme guide.

BHM-001 Fundamentals: Environment and Health,

Health Care Waste Management Regulations

Block 1: Understanding Our Environment 1

Unit 1 Introduction to Environment

Unit 2 Environmental Pollutants

Unit 3 Interrelationship of Environment and Health

Unit 4 Waste Management

Block 2: Health Care Waste: Definitions 1

Unit 1 Definitions, Types and Categories of Waste

Unit 2 Principles of Health Care Waste Management

Unit 3 Handling Health Care Waste

Block 3: Need for a Sound Health Care Waste Management 1

Unit 1 Impact of Health Care Waste on Our Environment

Unit 2 Impact of Health Care Waste on Human Health

Unit 3 Safety Methodology, worker Safety and Precautions

Block 4: Current Status of Health Care Waste 1 Management legislation in SEAR Countries

Unit 1 Rules and legislations

Unit 2 Regulatory Mechanisms

Unit 3 Current Status in India. Thailand. Indonesia. Sri Lanka. Bangladesh

Unit 4 Current Status in Bhutan, DPR Korea, Timor Leste, Maldives, Myanmar, Nepal

BHM·002 Health Cart Waste Management Concepts, Technologies and Training

Block 1 Practical Aspects of Health Care Waste Management 2

Unit 1 Managerial and Administrative aspects

Unit 2 Integrated Infection Control Management

Unit 3 Disinfection and Transportation

Unit 4 Capacity Building. Training and Monitoring

Block 2: Systems and Technologies in Health Care Waste Management 2

Unit 1 Systems Options

Unit 2 Treatment and Disposal of Health Care Waste: Burn Technologies

Unit 3 Treatment and Disposal 01 Health Care Waste: Non burn technology

Unit 4 Innovative Concepts and Possibilities

Block 3: Health Care Waste Management and Emerging Issues 1

Unit 1 Managing Waste Water from Health Care Facilities

Unit 2 Management of Wastes from Immunizations

Unit 3 Occupation and Patient Safety

Unit 4 Success Stories

Block 4: Training Manual for Waste Handlers 1

BHMP-001 Project 4

CREDIT SYSTEM

In IGNOU parlance, the study hours are measured in credit system. One credit is equivalent to 30 learning hours. For example, 14 credits of Certificate in Health Care Waste Management programme means an average student will be required to give 420 hours (14 X 30) of input for this programme which includes theory reading, undertaking a project, hands on training, video viewing, counseling etc.

IMPLEMENTATION PLAN 2006

The programme will be implemented through a network of Programme Study Centres (PSCs) in India and Partner Institutions (Pls) located in other South-East Asia (SEA) and other countries. These Programme Study Centres and Partner Institutions will be located in health care institutions like medical colleges, hospitals, district and private hospitals, rural health centres, etc. A team of trained teachers called counselors will be identified and trained for providing academic counseling and supervising the Programme Study Centres/Partner Institutions. The administrative control will be through the Regional Centres (RCs) of IGNOU located usually at state capitals nationally, by the Partner Institutions, and Indian Consulate in other countries and the School of Health Sciences (SOHS) located at the IGNOU Headquarters, Delhi. India.

EVALUATION

Evaluation will be through theory and project evaluation. 70 per cent weightage will be kept for theory term-end examination and 30 per cent for project evaluation. 50 per cent minimum pass mark in each component separately is required for successful completion of the programme.

Term-end examination of theory will be held twice in a year i.e. June and December. There will be no practical examination.

ADMISSION INFORMATION

Admission Fee : Rs. 2000/- in India
US$ 150 for other SEA countries

Eligibility : Doctors, Nurses, Paramedics, Health Managers and other professional workers with a minimum of 10 + 2 Qualification

Duration : Minimum 6 months
: Maximum 2 years

Launched : January 2006

Session : January to June
July to December

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GUIDELINES FOR AUTHORS

JOURNAL OF THE INDIAN SOCIETY OF HOSPITAL WASTE MANAGEMENT

1. Journal of Indian Society of Hospital Waste Management publishes original articles, case reports, review articles, editorials, contemporary issues / agendas book reviews and other related scientific information towards Safe Management of Health Care Waste.

2. Articles are accepted for publication with the understanding that their contents (all or in part) have not been published and will not be published elsewhere, except in the abstract form or with the consent of the Editor. Journal of Indian Society of Hospital Waste Management does not accept any responsibility for the statements made by the authors. The Editorial Board has the right to introduce such changes in the write up as may be considered necessary for effectiveness of communication.

3. Following CERTIFICATES (Original Single copy) must accompany the articles.

(a) Certificate from Authors

(i) Certified that I/we have not used any information or material from official documents graded 'restricted' and above or any 'classified' information obtained in any my/our official capacity in the preparation of the article/of the article title .

(ii) Certified that this manuscript contains no matter that is libelous or otherwise unlawful, or invades individual privacy or infringes on any proprietary rights.

(iii) All authors certify that they have made substantive and intellectual contributions to the article and assume public responsibility for its content.

(iv) It is also certified that none of the material; in this manuscript has been published previously or is currently under consideration for publication elsewhere.

First author	Second author	Third author
Date	Date	Date

4. **MANUSCRIPT** must be typed in double space throughout, on one side of good quality white bond paper of size 22x28 cm or A4 size with margin on both sides. Words should be hyphenated at the end of a line. Three copies, sets or hard should be submitted along with 3 sets of illustration and the entire text in MS Word format on a 1.44 MB floppy. Authors must retain a copy of all the above material, as the Journal cannot be held responsible for its loss due to any reason. The material should be enclosed in a large envelope, superscribed 'Article for publication Not to be Folded', and sent under

registered cover to Executive Editor, Journal of Indian Society of Hospital Waste Management, Health Care Management Cell, Department of Community Medicine, M. S. Ramaiah Medical College, Bangalore - 560 054. (Karnataka).

5. **PROCESSING**: Material received for publication will be acknowledged. The article may be reviewed by referrers. When required, one copy of the typescript, suitably modified, will be sent to the principal author for revision and resubmission in duplicate. Accepted articles will be published in their turn. Reprints (at least 10) of each article will be sent free cost to the FIRST author. Articles not accepted for publications will be returned by ORDINARY post.

6. **AUTHORSHIP: Should be restricted to persons who have made sufficient contributions to (a) conception and design (b) drafting the article or revising critically (c) final approval of the article to be published. All conditions must be ideally met. The order of authorship should be joint decision of all the coauthors.**

7. **TYPESCRIPT: the typescript comprises (a) title page (b) abstract and key words (c) text (d) illustrations.** All these must start on separate pages and in the above order. Pages should be numbered consecutively beginning with the title page.

(a) Title page: gives the title of the articles a short title for page heading, type of article (original article, case report etc), name(s) of the author(s), affiliations of author(s), place of work, names and address of the authors (including PIN Code and FAX). Ideally, the title should be of about 60 characters. It should have no abbreviations. Names of all the authors with highest academic degree must be typed one below the other with proper footnote marks after the name. Affiliations (with corresponding footnote marks at the beginning) and addresses of authors should be typed as footnotes only.

(b) Abstract and keywords - The abstract is a synopsis of the main article in about 200 words and gives an opportunity to the author to induce the reader to go through the article. It must give the purpose, methods, results and conclusions of the study, giving facts and not descriptions. Speculative surmises, and references to other works on the subject should be included. Avoid abbreviations. No abstract is required for case reports. Below the abstract give not more that 5 key words using terms from Medical Subject Headings list of Index Medicus.

(c) Text - The text should be divided into sections, e.g. Introductions, Materials and Methods, Results and Discussion. Each should have it individually and must not be mixed with other. Ensure that all references, tables and figures are cited in the text.

(d) Reference - The Journal follows the Vancouver style as used by Index Medicus system of references.

(e) Legend - illustrations should be brief (rarely exceeding 40 words), but must explain the salient features of the illustrations.

(f) Illustrations - should be presented only if they depict something new or unusual. They should be serially numbered in the order of their mention in the text, irrespective of their nature. Viz. Photograph, drawing or chart, using only the word 'figure' and not diagram, graph etc. Type a label indicating the top ( ), the short title of the article and the figure number on a piece of paper and past in on the back of the illustrations.

Photograph L Unmounted black and white, glossy (not matt) printers of excellent and clarity and contrast should be selected. Their size ideally should be of post card. Do not write anything on the photograph, either on the back or on the front. Do not use pins, staples or even paper clips to put the photographs together. Enclose the photos in the thin cards, so that they do not get mutilated. Avoid identification, photographs, unless you have obtained the patient's permission to reproduce them (a copy of high definition must accompany the article). Coloured photograph are accepted only if inescapable.
Diagrams and Charts: These should be drawn on thin, white, smooth or glazed care in black ink, and not in any other colour.

8. **MISCELLENEOUS:** Use metric measurements -<:m, m.g.kg.nl.L., No periods, no plural (eg. 'IDem' not '10 cms'). 'Significant' should be reserved for use in the statistical sense. Avoid name and initials of the patients and dates. Avoid unfamiliar abbreviation, medical jargon and passive voice. Avoid duplication and repetition of material in results and discussion, in tables and text and in legends.

Please address all your correspondences to:
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NQ.DIT (E) I 2011-12/ DEL - IE23021 - 23082011 /1081 Dated 23/08/2011

NAME &. ADDRESS: INDIAN SOCIETY OF HOSPITAL WASTE MANAGEMENT
FLAT NO 253 SEC 7 PLOT NO-11 PAPANKALAN N D

Legal Status : Society
PAN NO : AAATI5716P
GIR NO : I-864

Sub:-ORDER UNDER SECTION 80G (5)(vi) OF THE INCOME TAX ACT, 1961

On verification of the facts stated before me/hearing before me, I have come to the conclusion that this organization satisfies the conditions u/s 80G of the Income Tax act, 1961. The institution/Fund is granted approval subject to the following conditions:-

(i) The Donee institution shall forfeit this benefit provided under the law, if any of the conditions stated herein is not complied with/abused/whittled down or in any way violated.

(ii) This exemption is valid for the period from **A.Y.2011-12 onwards till it is rescinded** and subject to the following conditions

Conditions:

(i) You shall maintain your accounts regularly and also get them audited to comply with sec. 80G (5)(iv) read with section 12A(b) and 12A(c) and submit the same before the assessing officer by the due date as per section 139(1) of the Income tax Act 1961.

(ii) Every receipt issued to donor shall bear the number and date; of this order and shall state the date up to which this certificate is valid from **A.Y.2011-12 onwards till it is rescinded.**

(iii) No change in the deed of the trust/association shall be affected without the due procedure of Law and its intimation shall be given immediately to this office.

(iv) The approval to the institution/fund shall apply to the donations received only if the fund/institution, established in India for charitable purpose, fulfills the conditions as laid down in section 80G(i), (ii), (iii), (iv) & (v) of the Income Tax Act 1961.

(v) This office and the assessing officer shall also be informed about the managing trustees or Manager of your Trust/Society/Non Profit Company and the places where the activities of the Trust/Institution are undertaken/likely to be undertaken to satisfy the claimed objects.

(vi) You shall file the return of income of your fund/institution as per section 139(1)/(4A)/(4C) of the Income Tax Act, 1961.

(vii **No fee or any other consideration shall be received which comes under the proviso to section 2(15) of the Income Tax act**

Copy to:
1. The applicant as above
2. The Assessing Officer

Income Tax (Exemptions) Delhi

(S. K. Dash)
Director of Income Tax (Exemption)
DELHI

Director of Income Tax
(Exemptions) Aaykar Bhawan Distt Centre
Laxmi Nagar, Delhi-110092

(Satendra Kumar)
Income Tax Officer (Exemption) (Hqrs.)
For Director of Income Tax (Exemption) DELHI

Income Tax Officer H.Q. (E)
Aayakar Bhawan, IIIrd Floor, Distt. Centre,
Laxmi Nagar, Delhi-110092

INDIAN SOCIETY OF HOSPITAL WASTE MANAGEMENT

(Founded – 2000, registration under the Societies Registration Act XXI of 1860, Reg No. 36939 of 2000)

The Government of India published a Gazette notification on 20 July 1998 making all personas who generate, collect received, store, transport, treat, dispose or handle medical waste in any form responsible for handling the medical; waste without and adverse effect to human health and the environment. Consequent to the publication of above Gazette Notification on Bio-Medical Waste Management. It is mandatory for all hospitals and health institutions to implement the rules.

Since Hospital Waste Management is a perpetual problem, it was felt that there should be an all India Organization/Society comprising of experts/specialists from various disciplines involved in Hospital Waste Management. This Society should provide conceptual guidance and oversee scientific research for further development.

With this important aspect in mind, the Registrar of Society at Delhi was approached for registration of the 'Indian Society of Hospital Waste Management (ISHWM)' and the Society came into existence on 10th April 2000 and registration under Societies registration Act XXI of 1860 with Registration Number 36939.

The aims and objectives of the Society are as follows:

(a) To promote and advance the knowledge in Environmental Protection with special reference to Hospital Waste Management/ It also envisages promotion and improvement in public health. Protection to the environment, hospital and 'individual through the practice and education in the subject's dealings with the said subject.

(b) The subject of Environmental Protection and Hospital Waste Management involves multidisciplinary approach and involves active participation by specialists of various disciplines such as pathology, Microbiology, Hospital Administration, Preventive & Social Medicine. Therefore, it will function to bring together specialists from various disciplines under a roof with a common goal a personal and environmental protection.

(c) To propagate education and inculcate awareness in hospital as well as general population.

(d) To advance research in various field, connected with Environmental Protection and Hospital Waste Management.

(e) To function as an interface with Industries involved in designation/manufacture of bio-medical waste disposal equipment/appliance for R&D development India.

To fulfill and further the above objectives the Society shall

(a) Hold periodically meetings, seminars, workshops, training courses and annual conference of the members of the Society.

(b) Conduct workshops, training courses etc. separately for the benefit of the beneficiaries such as general public, hospital waste handlers, patient & their relatives.

(c) Publish and circulate a journal on Hospital Waste Management and Environmental protection.

(d) Maintain a Library at the location of the permanent officer as a when established.

(e) Generate funds from all possible sources. The funds so generated will be utilized for advance in the knowledge of disposal of waste and environmental protection. Scholarships and Awards for outstanding contributions will be judged on merit by a special board of officers nominated from time to time.

(f) Propose to the Government the laws and regulations in respect of disposal of waste from the hospitals and environmental protection.

(g) Create and assist State-wise branches to propagate the objectives all over the country in a methodical and systematic manner.

EMBLEM & LOGO

The Emblem of the Society has been aptly designed to convey the message of environmental protection by confining hazardous hospital waste. The concept of the Emblem is:-

Hospital waste management uses four colours namely – Green, Black, Yellow and Red (Coding colours) used for bags to collect and dispose off hospital waste.

Hands: The two figures over the top and bottom denote the hands in light brown outlined with black to denote the hands, which stand for the control and management of waste.

Syringe: The syringe has been used as a symbol to represent hospital waste due to its extensive use in clinical practice.

Biohazard: Hospital waste is a serious biohazard hence the universally accepted logo for biohazard appears in the backdrop.

Tree & the Blue background: denote the Eco friendliness, which is very important while disposing of hazardous, waste.

Summary: the Logo depicts the hospital waste (syringe), which is a biohazard to the community being efficiently managed (by hands) in an environmental friendly (tree and blue background) manner.

ISHWM: Indian Society of Hospital Waste Management.

Please visit our website: medwasteind.org for details including memberships forms.