

DECLARATION

I Thamaga Hilda Thopola, declare that this research report is my own work. It is being submitted for the degree of Master of Public Health in the School of Public Health at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Signed by .....

On this the 30th Day of October 2009

## ABSTRACT

### **Introduction**

The study of medical waste management practices in Ekurhuleni Metropolitan Municipality clinics in South Africa took place in the absence of the relevant parliamentary law governing such waste, but governed by the final published Gauteng Health Care Waste Management Regulations 3003 of 2003.

In accordance with the Gauteng Health Care Waste Management Regulations 303 of 2003, Medical Waste Management Practices are such that where medical waste is generated, it should be segregated at the point of generation, be properly containerised, labelled, stored, treated and finally be disposed of.

The researcher studied 29 out of 112 clinics in Ekurhuleni Metropolitan Municipality on whether medical waste management practices in these clinics comply with the Gauteng Health Care Waste Management Regulations 3003 of 2003. The study also intended to help practising and managing nurses to reduce occupational health risks, while further increasing the safety of clinic service users from unforeseen infections by communicable diseases.

### **Materials and methods**

The study followed a cross-sectional descriptive survey method wherein data acquisition was by means of interviewing clinic managers with regard to medical waste management

practices in their clinics using a structured questionnaire; and by observations of medical waste management practices through a walkthrough survey checklist.

The study sample composed of 30 clinics selected from a total of 112 clinics, where a total population of 7 maternity and 23 day clinics were included through random selection. A response rate of 29 out of 30 clinics selected was obtained.

The interview questionnaire consisted of six dimensions of measurement of medical waste management practices, while the walkthrough survey checklist consisted of twenty six items measuring medical waste management practices. Both were developed in line with the stipulations of the Gauteng Health Care Waste Management Regulations 3003 of 2003. A pilot study was conducted to further refine the contents of the above two measuring tools.

The study setting comprised individual sections of each clinic such as primary health care, maternity, HIV/AIDS, mental health, antenatal care, family planning and the communicable diseases section, wherein a nurse is assigned per shift to examine patients and to administer injections and medicines. Observations were done on all medical waste management practices in the examination rooms of all sections of the clinics in order to carefully record both negative and positive practices. Such observations made followed the required medical waste management process as per the Gauteng Health Care Waste Management Regulations 3003 of 2003.

## **Results**

The operations of Ekurhuleni municipal clinics revealed a 67 percent (4 out of 6 required documentation) non-existence of the required documentations, predominantly in the areas of medical waste policy; written safe work procedures; a training programme; and conducting of risk assessments. Specifically,

- The majority (65.5%) of clinics in Ekurhuleni Metropolitan Municipality have no medical waste management policy.
- The majority (69%) of clinics in Ekurhuleni Metropolitan Municipality have no safe work procedures.
- The majority (93%) of clinics in Ekurhuleni Metropolitan Municipality have no waste management training programme.
- The majority (69%) of clinics in Ekurhuleni Metropolitan Municipality do not conduct risk assessment for their operations.

Of the 26 medical waste management practices observed, positive medical waste management practices were observed in 46 percent of the observations compared to 50 percent of negative observations, made in operating conditions of clinics.

## **Discussion**

The findings of the study revealed a high degree of non-compliance of Ekurhuleni Metropolitan Municipality with the Gauteng Health Care Waste Management Regulations

3003 of 2003 with regard to the required documents and the acceptable observed practices.

## **Conclusions**

Medical waste management training in Ekurhuleni Metropolitan Municipality does not happen due to both the lack of policy documents and budgetary problems.

Health care workers are exposed to both ergonomic and biological hazards due to a lack of proper medical waste storage, storage signage and incorrect handling of medical waste.

No medical waste management audits and risk assessments are conducted in Ekurhuleni Metropolitan Municipality clinics.

Non accountability over disposal of medical waste may promote illegal dumping of medical waste generated from Ekurhuleni municipal clinics.

## **Recommendations**

Managers of clinics in Ekurhuleni Metropolitan Municipality need to be informed of the stipulations of Gauteng Health Care Waste Management Regulations 3003 of 2003.

Based on the developed policies, clinic managers need to develop medical waste management training programmes wherein the stipulations of Gauteng Health Care Waste Management Regulations 3003 of 2003 will be incorporated.

Designated medical waste management storage facilities to be provided for all Ekurhuleni Metropolitan Municipality clinics.

Clinic management and appointed medical waste management officers to ensure that medical waste management audits and risk assessments are conducted and that corrective measures are implemented in Ekurhuleni Metropolitan Municipality clinics.

## ACKNOWLEDGEMENTS

The words of appreciation and acknowledgement goes to Professor David Rees for his assistance and guidance during the course of research and preparation of this report. Also, acknowledgement goes to the city of Ekurhuleni and the Gauteng Provincial government and their management teams for allowing me the opportunity to study their operating clinics for the purposes of this research report.

I would like to say words of appreciation to the following people for the role they played in putting the whole research project together:

- David Lebelo, Modupi Kgatlake, Grove Prinsloo, Grace Mosia and Nonkululeko Tyilane for their help in data collection in the field;
- Violet Masemola for organising research project meetings and research script typing;
- Ekurhuleni Metropolitan Municipality's Human Resources Management and Development management's support by allocating time to the research team for purposes of this study.
- Alfred Sepirwa for technical discussion and input.

I would again want to thank my family for being there for me during hard times of study, in particular my daughter, Mahlatsi.

## DEFINITIONS AND ABBREVIATIONS

**Medical waste:** A waste from a generator or a health care related facility as outlined in Section IV of Act 150 of 1999, Arkansas Department of Health, which, if improperly treated, handled, or disposed of, may serve to transmit an infectious disease and which includes the following:

- Contaminated items to include dressings, bandages, packings, gauze, sponges, wipes, personal protective equipment, cotton rolls and balls, which cannot be laundered or disinfected and from which blood, blood components, or regulated body fluids drip freely, or that would release blood or regulated fluids in a liquid or semi-liquid state if compressed or are caked with dried blood or regulated body fluids and are capable of releasing these materials during handling.
  - Contaminated disposable, single-use gloves such as surgical or examination gloves shall not be washed or decontaminated for reuse and are to be handled as a contaminated item.
- Contaminated sharps which includes, but not limited to, any contaminated object that can penetrate the skin, e.g., hypodermic needles, intravenous tubing with needles attached, syringes with attached needles, razor blades used in surgery, scalpel blades, Pasteur pipettes, capillary tubes, broken glass from laboratories, and dental wires.



- ‘Consignment’ means each individual load of health care risk waste, comprising of one or more containers containing health care risk waste, transported by a health care risk waste transporters.
- ‘Container’ means a bag, or a puncture resistant or leak proof container in which health care risk waste is placed.

**NIOSH** – National Institute of Occupational Safety and Health

**DACEL** – Department of Agriculture, Conservation, Environment and Land Affairs

<b>Table of contents</b>		
		Page No
Declaration		i
Abstract		ii
Acknowledgements		vii
Definitions and Abbreviations		viii
List of Annexures		xi
List of tables		xiii
Chapter 1	<b>INTRODUCTION</b>	1
1.1	Background Information	1
1.1.1	Ekurhuleni Metropolitan Municipality Clinics	2
1.1.2	Medical waste management practices	3
1.2	Literature Review	4
1.3	Problem Statement	9
1.4	Aim of the Study	9
1.5	Objective of the Study	9
Chapter 2	<b>MATERIALS AND METHODS</b>	10
2.1	Introduction	10
2.2	Study design	10
2.3	Overview	10
2.4	Selection of study sites (sampling)	11
2.5	Development of measurement tools	11
2.5.1	Description of measurement tools	11
2.5.2	Contents of measuring tools	12
2.5.2.1	Interview questionnaire for clinic managers	12
2.5.2.2	Walkthrough survey checklist	12
2.5.2.3	Pilot study	13
2.6	Selection of clinic managers for interview	13
2.7	Data collection	13
2.7.1	Interviews	13
2.7.2	Walkthrough survey checklist	14
2.8	Data quality control	14
2.9	Data analysis and management	15
2.10	Ethics	16
Chapter 3	<b>RESULTS</b>	17
3.1	Introduction	17
3.2	Interview Questionnaire for clinic managers	17
3.3	Presentation of results of walkthrough survey observation	24

	checklist	
3.3.1	Results of walkthrough survey observation checklist	24
3.3.2	Results of a walkthrough survey observation checklist comments	28
3.4	Summary of results	39
3.4.1	Findings on required documentation	39
3.4.2	Findings on aspects of medical waste policy	39
3.4.3	Findings on feedback on medical waste disposal contract	40
3.4.4	Findings on communication methods of safe work procedures	40
3.4.5	Findings on safe work procedures followed during a needle stick injury	40
3.4.6	Findings on training and methods included in skills audit plan	40
3.4.7	Findings on highest recently rated risks	40
3.4.8	Findings on clinics walkthrough survey checklist observations	41
3.4.9	Findings on comments from walkthrough survey checklist	41
Chapter 4	DISCUSSION	43
4.1	Introduction	43
4.2	Limitations	43
4.3	Findings in the context of the literature	44
4.4	Overall conclusions relating to the findings	47
4.5	Recommendations based on the findings	47
References		49

List of Annexures		Page No
Annexure 1	Interview questionnaire for clinic managers	52
Annexure 2	Walk through survey observation checklist	54
Annexure 3	Wits Human Research Ethics committee approval letter	59
Annexure 4	Raw data of comments on walk through survey checklist	60

List of Tables		Page No
Table 3.1	Existence of Required Documentation on Medical Waste Management in 29 EMM clinics in 2007	18
Table 3.2	Aspects of implementing clinics operating medical waste management policy that were problematic	19
Table 3.3	Feedback on medical waste disposal by the contractor to the 29 EMM clinic managers	20
Table 3.4	Methods of communicating safe work procedures used by EMM clinic managers who answered yes to written safe work procedures	21
Table 3.5	Safe work procedures followed during needle stick injury in 29 EMM clinics	22
Table 3.6	Training and method included in skills audit plan in 29 EMM clinics	23
Table 3.7	Recent highest rated risks identified by clinic managers in 29 EMM clinics	23
Table 3.8a	Results of clinics walkthrough survey observation checklist	26
Table 3.8b	Occurrence or non-occurrence of medical waste management practices and their compliance or non-compliance status	27
Table 3.9a	Summary of comments made by researchers during a walkthrough survey: Wheeled push trolleys used for internal transport (practice #6)	28
Table 3.9b	Summary of comments made by researchers during a walkthrough survey: Pathological waste not treated within 24 hours of generation stored at -2°C (practice #7)	29
Table 3.9c	Summary of comments made by researchers during a walkthrough survey: HCRW stored at -2°C take not more than 72hours before collected for treatment (practice #8)	30
Table 3.9d	Summary of comments made by researchers during a walkthrough survey: Re-usable containers disinfected before re-use (practice #11)	31
Table 3.9e	Summary of comments made by researchers during a walkthrough survey: Health Care facility in possession of Health Care Waste Management Plan (practice #12)	32
Table 3.9f	Summary of comments made by researchers during a walkthrough survey: Health Care facility in possession of Health Care Waste Audit Report Signed by CEO (practice #13)	33
Table 3.9g	Summary of comments made by researchers during a walkthrough survey: Storage facility has sufficient	34

	capacity to store up to 8 days HCRW Waste generated at the facility (practice #14)	
Table 3.9h	Summary of comments made by researchers during a walkthrough survey: Health Care facility registered as generator of HCRW has certificate Of Registration (practice #15)	35
Table 3.9i	Summary of comments made by researchers during a walkthrough survey: Health care workers eat elsewhere in the facility (practice #17)	35
Table 3.9j	Summary of comments made by researchers during a walkthrough survey: Central Health Care Waste storage clearly demarcated (practice #18)	36
Table 3.9k	Summary of comments made by researchers during a walkthrough survey: Central Health Care Storage has impermeable slip resistant, Hard –standing floor (practice #19)	37
Table 3.9l	Summary of comments made by researchers during a walkthrough survey: HCRW gets disposed of together with health care general waste (practice #22)	38
Table 3.9m	Summary of comments made by researchers during a walkthrough survey: HCRW loaded on to transportation trolleys higher than the design level (practice #25)	38