



DACEL

SUSTAINABLE HEALTH CARE WASTE MANAGEMENT IN GAUTENG

PILOT PROJECT – ITIRELENG CLINIC

SURVEY REPORT

This Survey Report gives the results of an intensive study conducted at Itireleng Clinic in preparation for the development of a new Waste Management System for the Clinic

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ABBREVIATIONS:

- HCW** - health care waste
- HCRW** - health care risk waste
- HCGW** - health care general waste
- HCWM** - health care waste management

0. EXECUTIVE SUMMARY

The Executive Summary gives a brief overview of the status quo in Itireleng at the time of the survey. It describes the present situation, lists some critical issues and problem areas and gives some critical recommendations. More details about the findings and support documentation can be found in the other sections of the report and in the appendices.

Description of Present Situation

Both the provincial and local authority shares the same premises that run jointly as Itireleng Clinic.

The health care waste management system at Itireleng often falters because a management control system has never been introduced to sustain the use of the equipment. This has resulted in poor performance in many areas including segregation of waste, housekeeping standards, supervision and enforcement.

Ordering is done through Discoverers and the clinic is forced to accept containers and liners that were not exactly what was ordered. The liners provided are of a variety of colours (red, transparent, black, blue or green) and sizes that are ill suited for the containers. The incorrect lids are often provided for the speci-cans, frequently resulting in leaking and exposed waste. Insufficient quantities of all types of containers and liners are also experienced.

Waste is contained in a variety of plastic and wire containers and the 100 litre cardboard boxes. The condition of the existing containers is poor, with splitting and chipped plastic, broken lids and bent wire baskets.

The sharps containers take a long time to fill and are often found to be dusty with dried blood and stains around the lid. The lids are not always fitted to the containers and many are found loose.

Placentas are placed into 10 litre speci-cans with blue lids. One seal is provided on the lid.

Plastic stands have been fitted to the walls in all the rooms for the health care general waste, but the correct size liners are not available so they are either not used at all, or large liners are hung in an untidy manner on the stands.

There is no clear distinction between the equipment used for health care risk waste and the health care general waste. The colour coding is vaguely practised as red for health care risk waste and black (or green) for health care general waste. The difficulty in obtaining the right liners from Discoverers exacerbates this problem. Health care general waste is placed into 3 x 240 wheelie bins for removal by Pikitup.

The storage requirements for HCW at Itireleng are very limited. There is no central storage area and the general waste is collected at the entrance to the Maternity section.

There are two contracts for the collection of the 100 litre cardboard boxes and the sharps containers, one with Buhle to service the provincial part of the clinic and one with Pikitup to service the municipal leg. The routines for the collection of the waste from the clinic vary considerably, depending on the volume. Buhle come on a regular basis, usually 2-3 times weekly. Pikitup collect on request and the waste boxes and sharps containers accumulate over long periods of time.

Roles and responsibilities are not adequately delegated and accountability is therefore not clearly defined. Problems frequently arise because of inadequate handing over of responsibilities during times of absence.

There are no documented procedures in place for the management of waste.

Knowledge and awareness of health care waste management is low and therefore problem solving in the clinic is weak.

Reasons why waste is not segregated effectively at Itireleng

Segregation is poorly carried out in the clinic. The lack of knowledge and understanding of the requirements for good segregation as well as the proper supervision and enforcement play an important role. There are at Itireleng Clinic also many other factors that negatively impact on segregation practices. These are:

- Different coloured liners for both categories of waste create confusion among the workers.
- The liners provided are inappropriately sized with an unknown micron thickness.
- Inappropriate placing of containers, lack of sufficient containers for both categories, and the inefficient supply of liners all contribute to the present problems in waste segregation.
- Job performance of health workers is influenced by feelings of being unappreciated and disempowered.
- There is no “people” management system to sustain the health care waste system as well as poor staff morale in the health service. The lack of accountability among the nursing staff also contributes to incorrect segregation.

Critical Issues and Problem Areas

There is a contract for the removal of waste using cardboard boxes and sharps containers at Itireleng Clinic. There are, however, many opportunities for improvements in all areas.

Equipment

The correct equipment provided for the containment and disposal of the waste is essential for a good waste management system. The equipment must also be supported by operational systems and documentation. The problems found during the survey have been divided into two main sections:

1. The type, quantity and condition of the equipment supplied

The equipment provided at the clinic for health care risk waste is ill suited and generally of poor quality. Lids on the sharps containers do not fit properly and some containers have broken lids.

The containers are too large for the usage and they therefore stay for extended periods of time in the consulting rooms, collecting dust and becoming a hygiene problem.

The lack of containers, particularly for the collection of general waste leads to miss segregation and mixing of waste.

The use of different coloured liners, caused by inconsistent supplies, causes the staff to deviate from the colour coding standards.

The containment and disposal of placentas remains a critical problem. The clinic runs a 24 hour maternity service to the community. On occasions when the placentas have not been removed due to long weekends, or late collection, the placentas have deteriorated causing unpleasant smells. The speci-cans provided for the placentas have ill-fitting lids and are often not properly sealed, resulting in spills and bad odours.

There are no transportation trolleys, necessitating the staff to find innovative ways to transport the cardboard boxes when too heavy.

2. The management control system to support the use of the equipment

The findings in this research indicate that there is no sustainable management system in place to support the HCWM equipment. The following areas are not clearly defined.

- Roles and responsibilities
- Accountability
- Policy and procedures
- Authority with respect to best practice
- Supervision and enforcement
- Incentives

Policies and Procedures: The procurement of equipment is carried out at the provincial level without any clinic staff having a say concerning the types, sizes and quantities of equipment ordered. There are no formal technical specifications available for the supply of waste handling equipment. There are some generic procedures in place for the ordering of equipment that is driven by Discoverers and the Pharmacy. The documentation is carried out regularly, but the orders are not always fulfilled as requested.

There are no fixed or documented waste management procedures in place for the use of the equipment, the routines for collection and disposal, cleaning routines, and the management of emergency situations etc.

Occupational Health and Safety Committee Function

There is a safety representative at the clinic but the Occupational Health and Safety Committee is largely ineffective and can be developed into a much stronger role. The culture for incident reporting is not entrenched at the clinic. Only Incident reporting of needlestick injuries is done. However, no statistics are kept nor investigations carried out. Incidents are not discussed at the Safety Committee Meetings.

Skills, Knowledge and Training

The knowledge of health workers about health care waste at Itireleng is inadequate. The focus groups found that workers were unsure of categories of waste and of the exact requirements for the safe disposal of waste. This leads to poor problem solving skills that is reflected in the discussions with workers at all levels at the clinic. Presently the clinic places an onus on the service provider to solve all the waste problems. Also nurses understate their role in waste management and, informally, pass responsibility to general assistants and ward helpers.

External Service Provider

Service Provided: The clinic is ill equipped in terms of staffing capacity and knowledge to deal with its waste. The services provided by the two external service providers are very limited and reactive.

Tender specifications and contractual obligations: The present tender specifications are weak and there are no contractual obligations on the service providers to offer training or an advisory / problem solving service. The clinic holds no record of the service contracts and has little knowledge of the contracting procedures. The clinic does not keep any records of the collections of waste carried out by the service providers.

Critical Recommendations

NOTE: This section summarizes the recommendations into four critical sections, viz. management system, the role of the region, equipment and education/training. More detailed recommendations are given throughout the document where it is relevant to a specific section.

Management System

The introduction of management controls to support the use of the equipment for health care waste is critical. In particular roles and responsibilities are crucial. The present system especially relies on the role of the ward helpers and this is not sustainable as they receive little in the way of support and supervision from management.

A new management system however must not be limited to roles and responsibilities but should also include clinic level policy, management structure, lines of accountability, monitoring, supervision and enforcement, job performance and incentives. A culture of consistent supervision monitoring and enforcement of the standards will reinforce the training and ensure that the standards are regularly maintained.

The legal structure provided by the establishment of occupational health and safety committees gives an important framework for the management of health care waste, particularly with regard to monitoring and reporting of the system. Environmental Health Practitioners at the Region can, if appropriate, be equipped to also provide external audits for larger clinics.

The role of the region

The Regional Department of Health is a critical level of management for clinics in Gauteng. As the health service continues to decentralise to a district level health service then the district/ local authority management structures will become more important. The clinic has to rely on the Region for the procurement and the distribution and supply of equipment. It is recommended that improved procedures for procurement, distribution and supply and strengthened management procedures involve collaboration and consultation with the region and local authority as appropriate. Regional management is a critical level for the development of capacity in relation to implementing improvements in the clinic.

Equipment

Standardised equipment to the correct specifications for handling the type of waste is necessary for the system to improve. This must be combined with improved methods of handling and transporting. A refrigerator is critically necessary to resolve the problem of keeping placentas for period of time as there are not sufficient HCRW quantities to warrant daily collection of HCRW and, hence placentas.

The clinic also requires better and more secure storage facilities for HCRW. A new central storage area for only HCRW with proper ventilation, adequate space for the whole clinic's requirements and a refrigerator for placentas is an essential requirement. The current storage of HCRW boxes and placentas is neither practical nor acceptable for today's health care facilities.

Better internal transportation methods are required. There are three 240 litre wheelie bins for general waste. More bins of this size are needed to facilitate the storage and transportation of both general waste and health care risk waste. A separate internal transportation system, in the form of trolleys or another type of wheeled system, is required to reduce manual handling of containerised HCRW transport.

Segregation

Segregation will improve with the provision of new, more easily identified and colour coded equipment, particularly a regular supply of the correct liners. The placing of containers as well as necessary training and instruction of staff in the new system also plays an important role. However, this must be supported by a sound management system of regular supervision, monitoring and enforcement and greater clarity on the roles and responsibilities of the different cadres of staff.

Education and training

The introduction of in-service training in health care waste management for clinic staff is critical. However this should accompany the introduction of a management system so that it reinforces new roles and responsibilities. In particular the role of nurses in health care waste management should be emphasized in training so that they are encouraged to take a more active role in waste management. A programme of awareness activities in the clinic should include patient education to reinforce the correct disposal of general waste in the clinic. Education and training will help elevate the status of waste management.

The External Service Provider

There is opportunity for the service provider to offer a better and more comprehensive service to the clinic. In particular the service provider should be contracted to provide training and to provide consultancy support to clinics. This will help ensure that equipment is used correctly and that it is best adapted to suit the needs of the clinic. Because some of the failures of the present system are related to the procurement, supply and distribution of equipment especially consumables such as liners it is proposed that the service provider should be contracted to provide all equipment and consumables. This will then avoid the DoH buying consumables or equipment that are inadequate for the job or alternatively are incorrectly colour coded.

1. INTRODUCTION

1.1 History

The Gauteng Sustainable Health Care Waste Project aims to improve the management of health care waste in Gauteng. There are presently 29 hospitals and approximately 453 clinics in Gauteng. An essential task in proving waste management at health care institutions like these is to design an improved system of containerisation of waste for public health institutions in Gauteng. For this reason, two pilot sites have been chosen to test new equipment and new procedures. These are:

- Leratong Hospital in Krugersdorp
- Itireleng Clinic in Soweto (the subject of this survey report)

These pilot sites also provide an opportunity to test other aspects of the overall work of the Gauteng Sustainable Health Care Waste Project. In particular the sites will test the following:

- The conclusions of the feasibility study
- Aspects of the Health Care Waste Management (HCWM) strategy
- The policy of HCWM in Gauteng
- The guidelines and the health care waste information system.

1.2 The survey at Itireleng Clinic

What it contains

This report is the conclusion of a survey conducted at Itireleng Clinic to inform the development of the improved HCWM system. It is a consolidated report of technical and non-technical aspects of the present health care waste management (HCWM) at the clinic.

The purpose of the survey

- To establish the status quo within Itireleng Clinic
- To capture the present procedures and processes that are followed
- To obtain information that will inform the decision making for the development of a new waste management system

This document does not describe the recommended new health care waste system. A description of this is found in the Description of the document "New Health Care Waste Management Equipment

1.3 Survey methodology and principles

The survey was conducted with the participation of members of the staff of the clinic. There are three components to the survey.

a) Problem analysis

This was conducted with representatives drawn from all sections of the clinic. The problems were brainstormed in meetings with more than thirty clinic workers.

b) Focus group discussions

Four focus group discussions were conducted with twenty-seven health workers in the clinic including all categories of nursing staff, ward helpers and general assistants. Focus groups were conducted in the local language as well as English to facilitate maximum participation.

c) A detailed equipment and systems survey

This survey was conducted in the following way:

- **Questionnaire:** The clinic management was asked to fill in a questionnaire to identify the types of waste generated by the clinic
- **Detailed system analysis:** This was conducted to identify what documented procedures and routines are in place to support the existing waste management system. This included procurement, segregation, collection, transporting, general hygiene, issue and use of protective equipment, reporting of incidents and disaster procedures.
- **Physical Inspection:** A detailed inspection and analysis of the types, sizes of containers used within the clinic was carried out using a checklist. The degree of compliance of the clinic to the standards and procedures identified during the systems survey, were assessed at the same time.

1.4 Scope of the survey

The survey was conducted on the site of Itireleng Clinic and extended to all the aspects relevant to waste management. The research however, did not extend to a detailed analysis of the standards of the external service providers and suppliers other than to establish the times for collection, quantities of equipment purchased and quantities removed from the site.

2. BACKGROUND INFORMATION OF ITIRELENG CLINIC

2.1 Situation

The Itireleng Clinic is situated in Dobsonville, Soweto, near Krugersdorp in the Gauteng Province of South Africa. The site is situated on the corner of Roodepoort and Stele Roads, Dobsonville.

The Clinic is operated by the Gauteng Department of Health. Both the Provincial and Local Authority share the same premises. The local authority is the owner of the buildings.

The Clinic serves a total population of 100, 672 from the surrounding suburbs of Dobsonville, Dobsonville Extension 1, 2 & 3, Doornkop, Durban Deep, Braamfisherville, Slovoville, Kagisho and Meadowlands Zone 9.

The layout of the single storied building is shown on a plan. The entrance to the Clinic is the outpatient unit and therefore does not have any beds. Renovations have recently been completed for a new maternity ward, kitchen and dining hall. The new Maternity section has its own entrance with an antenatal section, an exercise section, isolation room, preparation room, delivery room, post natal room and first stage room. There is also a photo-therapy area. There are a total of 15 beds in this ward.

The Clinic is open from 8h00 – 16h00 weekdays. The maternity section offers a 24 hour service with three staff members on duty. The patients rarely stay overnight.

The services offered by the provincial clinic are primary health, out patient, maternity, HIV testing and counselling, TB management, Diabetes Support Group, Epileptic Support Group and HIV Support Group. Two doctors consult from the premises.

The Local Authority and the Provincial Authority work in close co-operation with one another. The local authority clinic is smaller and offers well baby, TB and family planning services. Although the pilot project is only with the provincial section, it is difficult to separate the two areas. For the sake of completeness, therefore, the survey will include the Local Authority also and a distinction will be made where necessary.

2.2 Patient Statistics

Monthly Patient Head Count 2002

	Provincial	Local	Total
January	8325 (80%)	2077 (20%)	10402 (100%)
February	8960 (72%)	3447 (22%)	12407 (100%)
March	8807 (76%)	2754 (24%)	11561 (100%)

HIV Statistics – January – December 2001

Month	No. Tested	Positive
January	64	39
February	65	29
March	75	39
April	52	24
May	70	36
June	62	30
July	73	40
August	82	46
September	84	46

Month	No. Tested	Positive
October	80	39
November	99	56
December	-	-
Totals	774 (100%)	441 (57%)
Total HIV Negative	333 (43%)	

2.3 Staffing

The Clinic runs as an outpatient unit and has a total staff complement of 89 on the Provincial side. The categories of staff and distribution are detailed in the table below

Staff Category	Number
Chief Professional Nurse	29
Senior Professional Nurse	8
Professional Nurse.	5
Senior Enrolled Nurse.	2
Enrolled Nurse	2
Senior Auxiliary Nurse	18
Auxiliary Nurse	1
Ward Helpers	3
Administration	8
General Ass.	14
Total	89

3. ORGANISATION INFORMATION

This section outlines the organisational framework at Itireleng Clinic, the provincial and regional framework and the present service provider support.

3.1 Itireleng Clinic Organisation

In summary the clinic is divided into three major sections:

- a general section,
- a primary health care section and
- a midwife obstetric unit including antenatal care.

Management organisation

Itireleng Clinic falls under the Metro Region A

Chief Director - Dr. Mazizi
 Deputy Director - Mrs. Sara Dass
 Assistant Directors - Mr. Mathole and Mrs. R. Ramogayane

There are two Clinic Co-ordinators who manage the clinic at Itireleng. These are:

- Sr. S Mafora - Clinic Co-ordinator
- Sr. C. Mogorosi - Deputy Clinic Co-ordinator.

(See Annexure 1 for more detail)

Committees

The clinic has an Occupational Health and Safety (OHS) committee and a Quality Assurance committee. Sr. Mareletse chairs both of these committees. The quality assurance committee conducts a monthly inspection of the clinic. The OHS committee is largely ineffective, as senior management is not involved.

3.2 Institutional Arrangements

The reporting structure for the clinics is divided into three sections:

a. Gauteng Department of Health

The daily operation of the hospital is governed by the requirements of the Gauteng Department of Health. The provincial health department has recently completed a major restructuring exercise with many previously provincial staff being placed out in the regions and districts to help support the implementation of the district health system. This restructuring has many implications. These include people being in jobs for a short period only, key posts are still unfilled, uncertainty over the future of some key management positions, staff not being sure who holds which responsibilities and some of the inevitable fall out that occurs when major restructuring exercises occur.

The directorates in the provincial department of health that have most involvement with HCWM are occupational health and safety and environmental health. At a provincial level the development of the Gauteng Shared Services Centres will change the tender process. These centres will operate as a central agency for all contracts. The formal training programmes offered through the Department of Health are commissioned at the provincial level. A formal training needs analysis is conducted province wide.

b. Department of Health Region A/ Metropolitan/Central Witwatersrand

The clinic is located in Central Witwatersrand Region A. It is also inside the boundaries of the Greater Johannesburg Metropolitan Council. Mostly the clinic receives instructions and liaison through the Deputy Director Mrs R. Ramogayane who is responsible for the coordination of clinics and clinic facilities for the region. Assistant Director Mr P. Mathole manages the cluster of Soweto clinics that includes Zola, Tladi and Itireleng clinics. Itireleng clinic management is directly accountable to Mr Mathole. Presently an additional ten staff are working at Itireleng clinic from Meadowlands clinic. These people will be at Itireleng until December 2002.

Occupational health and safety issues are also co-ordinated through the region. As are the majority of formal and informal training opportunities. There has been a programme of in-service training in occupational health and hygiene organised by the region at Lillian Ngoyi Centre in Soweto. These have been partly taught by the regional representative, Debora Mothopeng who is actively involved with this project.

Procurement is also facilitated through the regional centre at Discoverers

c. Greater Johannesburg Metropolitan Council

The merger of provincial and local authority staff and clinics is now imminent. This merger will facilitate the development of the district health system. It is planned that from January next year services should merge, but the impacts on organisation, salary structures etc. have not been made public yet.

At Itireleng the provincial and local authority clinic share the same premises. Given the planned merger senior staff from the local authority clinic are willing to participate in the pilot. However the local authority clinic is serviced by Pikitup rather than Buhle, so active participation in the pilot will have to be more formally negotiated with senior management levels in the Greater Johannesburg Metropolitan Council. The local authority clinic manager is Sister Tshukudu.

Environmental health officers (EHOs) based at the clinic are already active in the health care waste management task team at Itireleng. EHOs are local authority staff.

3.3 Service Providers

Various contracts have been signed for dealing with waste as follows:

Company	Responsibility	Period of contract	Contract/ Tender No.	Comments
Buhle Waste C.C.	Disposal of Health Care Risk waste for Provincial part of the clinic	1 April 2000 – 31 March 2003	Provincial contract GT 1059 MI	Contract previously with Skip and transferred to Buhle Waste
Pikitup	Disposal of Health care risk waste For the local authority part of the clinic	Unknown		Different containers and service provider for local authority
Pikitup	Disposal of general waste for both sections of the clinic		Service provided	

3.4 Policies

There are no guidelines for waste management. Although reference is made to quality assurance and occupational health and safety by clinic management, no policy documents are available and no waste management guidelines are in place for the clinic.

3.5 Roles and Responsibilities at Itireleng Clinic

The roles and responsibilities as described here for Itireleng Clinic only relate to those responsibilities that have a direct or indirect influence on the management of waste. It should be emphasized that there is no written document detailing the roles and responsibilities in waste management and so this information is a composite of information arising out of interviews and fragmented documentation available.

Role and Responsibilities of Clinic Management

As Sr. Mafora holds additional responsibilities in the region, much of the daily responsibility for running the clinic is Sr. Mogorosi's concern.

The clinic managers are accountable for all happenings in the clinic including waste. Clinic management must sign all order forms (VA2 forms). However new developments in the clinic can only be introduced with the full support and cooperation of the immediate line managers in the region, Mr Mathole.

Roles and Responsibilities of Nurses

The majority of staff at the clinic is nurses. Nurses are considered the major providers of primary health care services in South Africa. Occupational health and safety and waste management are delegated responsibilities to Sr. D. Mareletse. She is the official safety representative for the clinic. However there are no formal roles and responsibilities for other nurses in the clinic other than to ensure segregation happens at the point of generation. Sr. Mareletse ensures there is ordering of equipment, problem solving and facilitates the occupational health and safety committee. She reports to clinic management.

Roles and Responsibilities of the Ward Helpers

There are only three ward helpers at Itireleng and this group of workers has very specific responsibilities in relation to waste. Although no job description has been made available their present responsibilities in relation to waste includes;

- The sealing of filled boxes and sharps containers.
- Taking out from storeroom and placing of new containers for filling.
- Taking waste from storage areas at the place for collection by Buhle including Buhle boxes, sharps containers and the placenta buckets.

Roles and Responsibilities for the procurement and ordering of equipment

The clinic has no control over the procurement on contract of the equipment for waste containment. The ordering cardboard boxes, sharps containers, protective clothing and chemicals is all done through Discoverers. Sr. Mareletse places an order for the whole clinic. A clerk in administration at the clinic assists with this. The stock received from Discoverers is checked against what is ordered when it arrives at the clinic.

4. PROBLEM ANALYSIS BY ITIRELENG CLINIC STAFF

The problem analysis at Itireleng was brainstormed with thirty participants from the clinic. Participants were also asked to consider strengths and weaknesses in the present system.

a. Strengths

The participants felt that with the present system the strengths are that:

- containers are made available,
- there is a service provider
- there is a budget for clinic waste management.

Participants liked the fact that the syringe and needle are thrown away together and there was a feeling that needle stick injuries have decreased because of this practise.

The relationship with the local authority clinic was felt to be excellent and it was felt that there is some capacity to train staff.

Ordinary cardboard boxes collected at the clinic are going for recycling.

b. Weaknesses

The problems with the current system are summarised as follows:

- The sharps container is not always of an appropriate size for the area where it is deployed.
- Sharps containers are overfilled.
- Needles are left on the floor.
- The correct colour liners are not always available.

- Buhle boxes are sometimes heavy and are pulled to storage and collection areas on a sheet.
- Placentas are sometimes put into the boxes.
- Placentas are not always collected on time.
- The sharps and placenta containers are confusing and the wrong lids are often used.
- Medical waste is put into the black bags.
- Shortage of staff for packing and carrying waste.
- Gloves not always worn by the cleaners.
- No clear understanding of the contract with Buhle.
- Boxes exposed to sun and rain whilst waiting for collection.

5. TRAINING AND AWARENESS

In-service training is organised at Lillian Ngoyi in Soweto. At the end of each year clinics are asked to submit topics for consideration. The training is usually from 13H00 – 15H00 although it can be stretched to three hours duration. The format of most training is a presentation by someone knowledgeable in the subject with discussion. Participants are then given follow-up telephone numbers for further information and support. The in-service training is offered to all categories of nursing staff on Tuesday and primary health care sisters go for in-service training on Wednesday afternoons. This type of training is used to support the introduction of new protocols in the clinic.

The clinic also organises its own internal training as necessary. At these general assistants, ward helpers and others are oriented by another member of staff about an important topic, for example HIV/AIDS. These sessions are scheduled for about two hours. There is never any follow-up after training because of time constraints. Also some internal service education is carried out at the clinic meeting that is held on Thursday afternoons. During this time staff are given important new information. An example was made of cholera where posters provided through the province helped with information dissemination. In general it was felt that posters can be very helpful especially posters that are strikingly African. Pamphlets are felt to be less valuable unless staff read them as part of a training session. The general assistants need print materials and training programmes to be conducted in African languages. The clinic does have access to borrow a video machine through the health promotion staff based at the clinic. A overhead projector has been provided to the clinic as part of this project. Flipcharts, teaching posters and stickers were all felt to be useful. The clinic does not have access to computers, printers, scanners or internet on site and there is a problem associated with getting various consumables for developing training material, such as various office supplies, fax paper, transparencies, overhead pens, etc.

Short courses are made available to staff in the clinic through the region. For this training two/three people are taken out of the clinic at a time. (Refer to the regional short course training programme.) There are also regional trainers who support in-service training programmes in the region. However these trainers are not presently involved in any aspect of waste management and occupational health and safety. There is a mentorship programme at the clinic but this is for students undergoing training.

5.1 Regional short course training programme

The regional short course training programme works very closely with Human Resource Development in the province. At present the province has always provided the training needs analysis and has identified training programmes. The Regional Training Co-ordinator provides the administration for these programmes. Essentially health institutions are

informed of training opportunities and are then invited to nominate candidates to attend. It is the CEO or clinic manager of each health facility that is responsible for the nomination of these individuals. A regional selection committee then decides who will attend the course. As of now the region has no training budget. There is no evaluation of personnel once they return from training programmes. The programmes that are available to staff in Gauteng Department of Health fall into the following broad categories:

- Management development programmes
- Professional development
- Training for Secretaries and administrative Staff
- Support staff training
- Generic skills development

5.2 Awareness Days

Health promotion staff work from the clinic at Itireleng. They have an information desk in the foyer of the clinic where pamphlets are distributed. The health promotion staff is managed by the region and also has a consultative relationship with the provincial health promotion sub-directorate. Most health awareness campaigns are top down and print media is produced either by the region or province.

6. INCENTIVES

The staff at Itireleng did not volunteer anything about incentives for good performance during the focus group discussions. The Khanyisa Awards organised by the provincial health department were felt by clinic management to be a helpful incentive at the clinic. There are no specific incentive schemes for clinics in general or clinic staff in particular.

There is pressure on public health staff to deliver a better service to the public through campaigns such as the “Batho Pele” or “People First” initiative.

7. IMPLEMENTING CHANGE

It is important to see that Itireleng is part of a broader package of primary health care services and therefore the clinic tends to implement what is happening in other clinics through directives coming from the region and province. “Equity” is considered an important principle of health service delivery and therefore most developments happen across all clinics in the region. Often new protocols are supported by in-service training sessions organised at Lillian Ngoyi.

There is a regular programme of meetings at the clinic where important information is shared. In fact every morning for half an hour important memos are read at a meeting attended by all staff before the clinic doors are opened. Each morning there is also a meeting of clinic management and the heads of departments at the clinic to discuss any new developments. It is planned that there should be a regular monthly meeting between the provincial clinic and the local authority staff. Management conduct spot checks to check that new instructions are being carried out effectively.

8. HEALTH CARE WASTE QUANTITIES AND EQUIPMENT

This section of the report deals with the types of waste generated, the quantities of waste generated, the present costs of disposal of waste from the clinic, and the types of containers used for the containment of the waste

8.1 Types of Waste

The equipment required for the safe containment, transport and final treatment of the waste is determined by the types of waste generated within the clinic.

Itireleng Clinic segregates their waste into the following main categories:

- Health Care Risk Waste (general referred to as Medical Waste)
- General Waste
- Recycled Waste

Health Care Risk Waste (Medical Waste) This category is divided into the following sub categories:

Infectious	Sharps	Chemicals	Pharmaceutical
Napkins, swabs, dressings, drip sets, gloves, masks, sanitary pads, bandages, dressings, TB tubes, tissues, gauzes, oxygen masks, intravenous lines/sets, sputum tissues, vaculitres Urine sticks, suturing,	Used needles, syringes, scalpel blades, specimen bottles, vials, ampoules, infusion needles,	Biocide D, g-cide methynol, ethanol, alcohol, ether, hibitane, eusol, savlon. Chlorhexidine, formalin, iodine scrub, benzoic tincture, hydrogen peroxide, cidex, ortuozyme, betadine, bicarbonate of soda, haemocarb, acpril, formula 16 lusirane, formalin, etc.	Expired medication, unused medication
Placentas,			
Foetuses			

Health Care General Waste: The general waste at Itireleng consists largely of the following:

Tissues, food, paper, wrapping, cardboard, cold drink cans and bottles, plastic bottles and containers, plastic bags, peels, bread, envelopes, tea bags, kitchen waste, cigarette ends, etc.

Recycled Waste: Itireleng collects cardboard for recycling



8.2 Quantities of Waste Generated at Itireleng

It was difficult to obtain reliable documentation for the quantities of waste presently generated at Itireleng clinic. The figures used were compiled from information obtained from the present service provider for the provincial section of the clinic. No documents were made available on the quantities leaving the site from the local authority section.

a. Health Care Risk Waste

The table below shows the quantities of health care risk waste that have been removed from the site by the Buhle Waste. The figures are compiled from the records kept at Buhle. They are incomplete and there were no substantiating records available from the clinic records.

ITIRELENG CLINIC - Summary of health care risk waste removal in litres and kgs

Date	ITIRELENG CLINIC - Summary of health care risk waste removal in litres and kgs									
	5 L Sharps	10L Sharps	25L Sharps	10L Specican	50 L Box Sharps	140 L Container	140 L Special	20L Sharp Special	25L Sharp Special	Total
Jul-01	0	4	0	0	10	45	0	0	0	
Aug-01	0	6	1	0	0	76	0	0	0	
Sep-01	0	6	0	0	0	86	0	0	0	
Oct-01	0	10	0	0	3	85	0	0	0	
Nov-01	0	6	3	0	0	80	0	0	0	
TOTAL (5 months)	0	32	4	0	13	372	0	0	0	421
Estimated kgs.		80			78	5580				5738
Estimated litres	0	320	100	0	650	52080	0	0	0	53150
Av. Monthly Kgs		16			15.6	1116				1147.6

Av. Monthly litres	0	64	10	0	130	10416	0	0	0	10620
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Based on the data made available it is estimated that Itireleng Clinic generates 13.7 tonnes of HCRW per year.

b. General Waste

Pikitup removes the general waste from the clinic. No records are kept of the quantities of health care general waste removed from the clinic.

c. Recycled Waste

No records are kept of the quantities of cardboard removed from the premises

8.3 Present Costs of equipment and service

The ordering of liners, sharps containers and cardboard boxes is done through Discovery. The clinic orders their requirements using the VA2 form. Records of the quantities ordered and consumed in the past as well as current stocks kept at the clinic cannot be traced as no records are kept.

The contract with the service provider is based on the provision of cardboard boxes with red liners and lids, sharps containers with lids and speci-cans with a seal. The cost of the collection, transport and treatment is included in the cost of the equipment provided. From the records obtained from the service provider on the quantities of waste removed from the clinic over a five month period, some costs have been estimated. The table below gives the breakdown of costs calculated for the five months.

ITIRELENG CLINIC - SUMMARY OF HEALTH CARE RISK WASTE REMOVAL – COSTS

Month	5 L Sharps	10L Sharps	25L Sharps	10L Specican	50 L Box Sharps	140 L Container	140 L Special	20L Sharp Special	25L Sharp Special
Jul-01	0	4	0	0	10	45	0	0	0
Aug-01	0	6	1	0	0	76	0	0	0
Sep-01	0	6	0	0	0	86	0	0	0
Oct-01	0	10	0	0	3	85	0	0	0
Nov-01	0	6	3	0	0	80	0	0	0
TOTAL (5 months)	0	32	4	0	13	372	0	0	0
Estimated Cost (per 5 months)	0.00	1,342.08	379.96	0.00	339.17	11,569.20	0.00	0.00	0.00
Estimated cost per month	0.00	268.42	76.00	0.00	67.84	2 313.84	0.00	0.00	0.00

Based on the data made available, it is estimated that the cost of HCRW disposal (containerisation, collection and treatment) for the Itireleng Clinic is R 32,713.- per year, or R 2,730 per month)

8.4 Containerisation of health care waste



This section deals with the types, sizes and the quantities of containers used for all categories of healthcare risk waste at the clinic. Both the containers used at the point of generation and what is transportation off the site will be discussed. Each subsection describes the type, size and distribution of the containers and shows a photograph (where possible) of the container and/or liner. Comments are given for each type of container. The recommendations given are divided into two sections as follows:

1. improvements in the construction of the container and
2. deals with the way in which the equipment is used.

Itireleng Clinic uses a number of different types of disposable and re-usable containers. During the survey the individual collection points in each unit were identified and recorded (See Support documentation.) The table below shows the total number of collection points for both health care risk and health care general waste for Itireleng Clinic.

Area	Health Care Risk Waste containers in use											General Waste containers in use					TOTAL	
	5 lt sharps	10 lt sharps	25 l sharps	50 l sharps	10 l specican	12 l pedal	12l other	Coloured liner	140 l box	Nursing trolleys with bags	Delivery pack trolleys	Kickabout trolleys	bracket	12 l pedal	8 - 20 l plastic	8-20 litre 'other'		85 l Black GW Bin
Maternity																		
Reception							1										1	
Urine Room									1									
Cubicle 1		1					0								0.5			
Cubicle 2		1					0								0.5			
Blood Room		1					1						0					
Photo Therapy		0					1						0					
Clean Utility Room													0					
Sluice Room (Storage)					2				1									
Medical Stores room													0					
Delivery Room		1						1		1	2	1	0					
Preparation Room		1					1	1		1								
Isolation room		1					1								1			
Labour Ward		1					1								1			
Post Natal		1					1	1		1				1				
Ante Natal		1					0								2			
Nursery		0					0	1		1					1			
Sub total Maternity	0	9	0	0	2	0	7	4	2	4	2	1	0	1	6	1	0	0
Out Patients																		
Mental Health		2						1		1					1			
Fast Queue		1					0								1			
TB Room			1												1			
Room 8			1					1	1	1					1			
Room 9																		
Family Planning																		
Dressing Room		1						1	1	1					1			
Weighing Room															1			
Urine Room		1					0								0			
Resuscitation Room		1						1	1	1					1			
Injection room		2						1		1					0			
Short Stay		0					0								1			
Immunisation room 12			1						1						1			
School Nurse room 13															1			

Sharps Containers

Container	Examples of usage	
<p>10 litre sharps:</p> <p>This sharps container is used extensively throughout the clinic. Containers placed on trolleys, tables, and the floor</p>	<p>Pikitup container and Buhle sharps on a trolley</p> 	<p>Sharps with different lid</p> 

Buhle Waste cc supplies sharps containers for the provincial clinic. Pikitup provide containers for the local authority. When purchasing the containers, the clinic also pays for the service of collection, transportation and treatment.

Positioning: Sharps containers are not secured to any brackets. They can be found next to trolleys, on top of trolleys, on the floor, table or cardboard box. Because of the size, the containers are frequently not placed close to the source of generation.

Sizes: Two sizes of containers are used, 10 litre and 20 litre. The containers do not fill quickly and can remain in the unit or consulting room for several months before they are discarded. Broken and damaged containers are also found in the store.

Shape and construction: The round shape does not facilitate easy storage and placement. The opening at the top is difficult to use and does not allow the sharps to lie flat. The lids are sometimes ill fitting or a different size lids are provided. This results in containers not being properly closed. Several types of containers are found e.g. Pikitup, Buhle and some old Wastec containers.

Recommendations for improving sharps containers

<i>Construction</i>	<i>Usage</i>
<ul style="list-style-type: none"> ▪ <i>A square or rectangle shape is easier to position and store</i> ▪ <i>Horizontal Opening that allows the sharps to lie flat</i> ▪ <i>Opening must limit spill from container if container tips over or similar</i> ▪ <i>A mark/window to indicate maximum quantity (filling level)</i> ▪ <i>Correct lids provided with a secure fitting mechanism.</i> ▪ <i>A construction that avoids "dirt-catching" by avoiding crevices, protrusions, sharp edges, etc.</i> 	<ul style="list-style-type: none"> ▪ <i>Size according to need to prevent lengthy filling periods</i> ▪ <i>Smaller sized containers so that they are more accessible at the point of generation</i> ▪ <i>Secure placing using brackets.</i> ▪ <i>Investigate separating the needle from syringe</i>

Speci-cans – anatomical waste

A kick about trolley is used in the delivery room for the waste from the birth of a baby. The placentas are placed into a 10 litre round speci-can with a blue lid. The container and lid is provided with a cable tie fitted to one side.



The kick about trolleys are not always used with a liner. The speci-can lids do not fit securely and they do not seal properly resulting in lids coming loose. The one cable tie does not provide sufficient security against spillage.

There is no refrigeration for the storage of the speci-cans resulting in occasions when bad smells are experienced, especially over weekends.

Recommendations for improving speci-cans

<i>Construction</i>	<i>Usage</i>
<ul style="list-style-type: none"> ▪ <i>Leak proof, rigid container</i> ▪ <i>A mark/window to indicate maximum quantity (filling level)</i> ▪ <i>Securely fitting lids provided with a secure fitting mechanism</i> ▪ <i>A construction without “dirt-catching” by avoiding crevices, protrusions, sharp edges etc.</i> 	<ul style="list-style-type: none"> ▪ <i>Size not greater than 10 litre to prevent accumulation of placentas</i> ▪ <i>Preferable smaller and single use</i> ▪ <i>Kick-about trolley must be used with a liner</i> ▪ <i>Placentas placed into single liners before disposal</i> ▪ <i>Provide refrigeration for the storage of placentas</i>

Cardboard Boxes: Infectious Waste

Container	Examples of usage	
<p>140l cardboard box</p> <p>This is the main container used for infectious waste (not sharps). It is used throughout the clinic and is often used in the consulting rooms at the point of generation.</p> <p>It is stored in the 'laundry' area when full</p>	<p>Cardboard boxes used in consulting areas</p> 	<p>Cardboard boxes and sharps containers in the 'Laundry'</p> 

The service provider also supplies the 140 litre cardboard boxes together with a red plastic liner, lid and sealing tape.

So much has been said and documented about the merits of the waste boxes that we will just summarise some thoughts here. The waste boxes cannot be used successfully for wet waste. Should the liner leak or be misplaced in the box, the moisture soaks into the cardboard causing it to lose its rigidity. The 140 litre size is used for all applications and this encourages overfilling when used for napkins and other wet waste which leads to


heavy boxes that are difficult to move. The cardboard provides only a little protection from miss-segregated sharps.

At the clinic the boxes are frequently used at the point of generation. They are often difficult to access and are sometimes found without a lid. In some areas, boxes were closed and goods were piled on top of it.

Recommendations for improvements in the cardboard box

<i>Construction</i>	<i>Usage</i>
<ul style="list-style-type: none"> ▪ <i>A leak proof more rigid construction</i> ▪ <i>Investigate improving the manual handling problems by fitting handles and/or wheels.</i> ▪ <i>Use of re-usable containers. The feasibility report has found reusable containers to be significantly more advantageous environmentally than cardboard boxes.</i> 	<ul style="list-style-type: none"> ▪ <i>Smaller sizes can be used more effectively closer to the source of generation.</i> ▪ <i>Smaller containers are less likely to be too heavy. Filling mark will help to prevent overfilling.</i> ▪ <i>Improve the accessibility of the containers.</i> ▪ <i>Better housekeeping standards are required around the use and storage of the containers</i>

Liners used inside disposable containers

Liner	Examples of usage
Liner inside the cardboard box 940 x 1050 mm	






A red liner of 80 – 100 micron thickness is supplied by the service provider for use inside the cardboard box. Small transparent liners are sometimes available for placentas to be used with the speci-can. Another red liner of 720 x 950 mm with a micron of less than 30 is also supplied for use in reusable containers.

Except for the large red liner of 80 – 100 micron for the cardboard box, the liners are totally inadequate for the purpose as they are either too small or too large for the application. They are of different colours and the micron is too low (less than 30 in most cases)

b. Reusable Containers

Reusable containers do not leave the site and are generally used with a liner. Only the liner is removed for disposal at the treatment plant

Reusable Containers with Disposable Liners




12l Wire Basket	20 l Pedal Bin	8-20 Plastic & Metal	8 – 20 l other	Kick-about trolley
				

Re-usable Containers: The re-usable containers vary in size, colour and construction and are on occasion ill suited for disposal of risk waste, especially when there is a high volume of moisture – cardboard boxes and wire baskets. Many of the bins are broken, cracked and dirty and many do not have lids. There are insufficient numbers of containers and several areas do not have any bins at all. This results in unprotected liners being fastened to trolleys, old brackets and other hooks for the waste.

The containers are not placed close to the point of generation requiring some travel distance to dispose of the waste.

The plastic pedal bin is used extensively in the clinic with a red liner for risk waste

Liners used

Liner	Examples of usage		
<p>720 x 950 red liner This liner is used inside the kick-about trolley, hanging from the nursing trolley or from a bracket on the wall. It is also used with wire baskets, pedal bins, and other metal containers</p>	<p>Over a metal bin</p> 	<p>On trolley in maternity</p> 	<p>Hanging on bracket on wall</p> 

Liners: This size liner is used in a variety of types and sizes of containers and is either too small or too large. The liners are not of the correct micron to carry the volume of risk waste. They tear and split easily.

The colours used are acceptable – red and black, provided that one colour is dedicated to each type of waste, risk or general. Interchanging the colours leads to mistakes in segregating.




The liners are under supplied and shortages are commonplace causing the staff to reuse, overfill and use the containers without any liner. The incorrect colour is also frequently supplied leading to confusion on what the colour coding is. Although the red liner is generally accepted and understood to be only for risk waste, it is used on occasion for general waste.

There is no standard method for closing the liners. They are generally knotted.

Recommendations for improvements in the reusable containers and liners

<i>Construction</i>	<i>Usage</i>
<p><u>Liners</u></p> <ul style="list-style-type: none"> ▪ Use liners of the correct size for the container ▪ Use liners of the correct micron and density to carry the volume and weight of risk waste ▪ Determine minimum specifications for the manufacture of liners, (size, micron, virgin plastic etc.) for tendering ▪ Colour pigmentation to suite the requirements (translucent) 	<ul style="list-style-type: none"> ▪ Dedicate a colour for risk waste ▪ Use correct size liner inside the containers ▪ Have a secure fastening method for liners such as cable ties, steel wire secured with a drill or rubber bands) ▪ Correct specifications determined and ordering procedures properly incorporated into the waste management system
<p><u>Containers</u></p> <ul style="list-style-type: none"> ▪ Standardise on type, size and quality of bins required ▪ Ensure durable construction with a lid ▪ Condemn all damaged pedal bins ▪ Supply good quality bins where none are available. 	<ul style="list-style-type: none"> ▪ Allocate the sizes according to need to prevent long collection periods and ensure sufficient for at least one day ▪ Place containers close to the point of generation ▪ Always use a liner inside the containers

The Nursing (Dressing Trolley)

Trolley	Examples of Usage	
<p>There are different sizes of nursing trolleys used at the clinic.</p> <p>The laundry trolley is also adapted for use, using the rings on the side to hold the stainless steel bucket and the round sharps container.</p>	<p>The laundry trolley adapted for use</p>  	<p>Trolley with hanging red bag and sharps container</p> 

There are different types and sizes of nursing trolleys used at the clinic. They are used for different applications. (dressing / injection trolley, laundry trolley). Although they are found in the smaller rooms, they are used most effectively in the maternity delivery room. Red bags are taped to the side of the trolley for discarding soiled dressings, dressing wrapping, swabs etc. The sharps containers are placed on the trolley, usually on the bottom shelf.

The self-contained trolley with sharps container and waste disposal as one-unit supports the principle of disposal at generation point. The risk waste can be safely disposed of

without risk to patient or worker. However, the practice of tying the bags to the side does not allow easy access to the opening. The liners used are not of suitable micron and they are unprotected from contact.

The sharps containers are difficult to access when placed on the bottom shelf.

The procedure for dressings should support good infection control principles. Cross infection is encouraged by taking the trolley from patient to patient with the soiled dressings discarded in an open bag. The question of whether this practice should continue will need to be further investigated.

Recommendations on improvements on the nursing trolley concept.

<i>Construction</i>	<i>Usage</i>
<ul style="list-style-type: none"> ▪ <i>Design trolley to have a disposal container/liner fixture that is safe.</i> ▪ <i>Ensure easy accessibility, protection and stability</i> ▪ <i>Trolleys must be easy to clean, having no sharp edges, crevices or protrusions. All surfaces (visible and invisible) to be smooth</i> ▪ <i>The wheels must be high quality swivel casters that do not catch lint or other dirt in the bearings</i> ▪ <i>The distance to the floor of the lower shelf should be balanced to avoid dirt and dust from floors to contaminate equipment of shelves.</i> 	<ul style="list-style-type: none"> ▪ <i>Investigate means for improving standard precautions used. e.g. the use of dressing packs with dedicated disposal bag.</i> ▪ <i>Investigate the procedures used for dressings</i>


Containerisation of health care general waste

Health care general waste is disposed of into reusable containers such as black bins, plastic pedal bins or wire baskets, generally with a black liner or directly into black liners supported on a bracket or stand. The waste from these smaller containers is collected into a 240 wheelie bin that is removed from the site for disposal to landfill by the local municipality.

To some extent the containers and liners are interchangeable between risk and general waste that leads to confusion and miss-segregation. There are plastic brackets fixed to the walls, but the special size of liner required to fit the brackets are no longer available. Large, ill-fitting liners are tied to these brackets. There is a shortage of general waste bins throughout the clinic.

Theft of the pedal bins and the 240 wheelie bins has been a problem so there are now an insufficient number to cater for their needs. This results in waste left lying around the bins.



Reusable Containers - 240 Wheelie Bins

240 l Wheelie Bin	Dist.	Examples of usage
Two wheelie bins are kept at the entrance to maternity. There were four, but the two kept at the front entrance were stolen.	2	

Disposable Liners: General Waste

One size of disposable Liners is used for general waste:

- 720 x 950 mm < 30 micron Black Liner

Liner	Examples of usage	
<p>720 x 950 black liner This large liner is used on all sizes of containers such as metal bins, wire baskets and plastic pedal bins. They are tied or knotted and placed inside the two wheelie bins.</p>	<p>Large black liner used alone as no bin available</p> 	<p>A black liner used on a small bin</p> 

There is a gross shortage of containers for general waste. Where containers are not available, black liners are used without support.

The availability of liners is poor. Different sizes and colours are provided by Discovery leaving the clinic with ill-fitting liners and problems keeping to their colour coding standards.

The same comments on type, size and quality of liner for risk apply also for general waste. The micron can be less for general waste, but must still be able to hold the anticipated weight.

Recommendations for improvements in the containers and liners for general waste

<i>Construction</i>	<i>Usage</i>
<p><u>Containers</u></p> <ul style="list-style-type: none"> ▪ <i>Standardise on type, size and quality of bins</i> ▪ <i>Ensure durable construction with a lid</i> ▪ <i>Condemn all broken plastic pedal bins</i> ▪ <i>Using brackets fixed to the walls will reduce the possibility of theft</i> ▪ <i>Provide lids to reduce flies</i> 	<ul style="list-style-type: none"> ▪ <i>Allocate the size of containers to encourage use at source</i> ▪ <i>Size is determined by the need with approximately 1 day's volume</i> ▪ <i>Place containers close to the point of generation</i>
<p><u>Liners</u></p> <ul style="list-style-type: none"> ▪ <i>Provide liners of the correct size for the bins provided.</i> ▪ <i>Provide liners of the correct micron and density to carry the volume and weight of general waste (e.g. >50 micron of good quality PP and preferably 60-80 micron for larger and heavier bags)</i> ▪ <i>Determine correct specifications with regard to size, micron and virgin plastic for tendering</i> 	<ul style="list-style-type: none"> ▪ <i>Dedicate a colour (black) for general waste</i> ▪ <i>Use correct size liner inside the containers</i> ▪ <i>Have a secure fastening method for liners</i> ▪ <i>Use cable ties, wire or rubber bands for closing the bags before disposal</i>

8.5 Storage Areas

The safe storage of waste requires areas to be allocated for the storage of consumable equipment prior to use, temporary storage areas within the units prior to collection by the internal transporters and a central storage area for the accumulation of waste awaiting collection by the external transporters. The clinic is small, so the areas are close together and the need for storage within the units is minimal.

a. Internal storage for equipment

The bulk storage of equipment is waste is at Discovery. The clinic only keep small quantities of liners and sharps containers in a locked storeroom for distribution as required. The key to the store was not available at the time of the audit. We therefore could not evaluate the quantities of containers kept at the clinic.

We were unable to assess the stock levels or the housekeeping standards around the storage of equipment.

b. Intermediate Storage Area for Waste



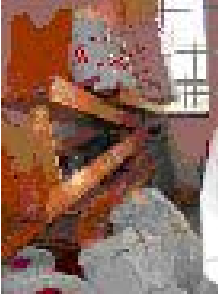
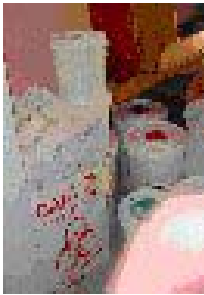
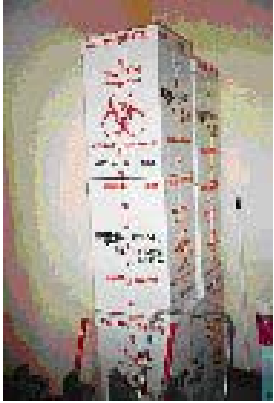
There are two intermediate storage areas for waste. One in the main part of the clinic and is shared by the local authority and the provincial sections of the clinic. The second is at the maternity section.

Storage for the main section: An old laundry is used for storing the full sharps containers and the cardboard boxes. The storage has a door to the outside, which allows for easy removal by the service provider, but there is no immediate access by truck or van because the containers must be carried or wheeled through an outside passage. The area is cluttered with old equipment, benches and cleaning utensils as the room serves multiple purposes.

Storage at maternity: A second storage area for HCRW is the sluice room at maternity. It is close to a door leading out to the same courtyard as the laundry from the OPD area.

The 140 litre cardboard boxes, sharps containers and speci-cans with placentas are stored here awaiting collection by the service providers. The room is narrow and used to rinse bed pans and other utensils that are left to dry on drying racks in the same area.

Intermediate Storage area and access to the outside

Outside of 'laundry'	Inside the 'laundry'	
<p>Exit door into the 'laundry' storage area.</p>  <p>Courtyard leading to the laundry</p> 	<p>Storage inside the 'laundry' storage area</p>  	<p>Buhle boxes in 'laundry' awaiting removal</p> 

The intermediate storage areas presently used are totally inadequate for the needs. The housekeeping practices are negligent. On some occasions the full cardboard boxes are left unsealed in the consulting rooms and are not moved to the laundry area.

c. Central Storage Area

There is no central storage area at the clinic. The waste boxes are dragged or carried to the entrance of the maternity for the service provider to pick up. The service provider also removed the containers from the laundry by driving the truck around to the back door.

The 240 l wheelie bins provided for general waste are also kept at the entrance to maternity for removal by the municipality.

Central Storage Area



The area outside maternity is unacceptable and unsuitable for storing risk and general waste. It is unsightly and unhygienic and allows for unauthorised access to the HCRW.

Recommendations for improvements on the storage requirements for waste

Construction	Usage
<p>Equipment Store:</p> <ul style="list-style-type: none"> ▪ Investigate a dedicated place for the internal storage of new equipment. 	<ul style="list-style-type: none"> ▪ Ensure good housekeeping practises are maintained at all times. ▪ Ensure better stacking and storage practices
<p>Intermediate Storage:</p> <ul style="list-style-type: none"> ▪ Investigate alternative places for the intermediate storage of waste that is both secure and well ventilated. ▪ Dedicated storage room is preferable to be lockable and with direct access from outside to avoid contractors having to enter the clinical wards. Room to be well ventilated and established with easy to clean floors and walls (e.g. tiles) ▪ Clearly labelled to be a dedicated HCRW storage room 	<ul style="list-style-type: none"> ▪ Ensure good housekeeping practises are maintained at all times.

<p>Central Storage:</p> <ul style="list-style-type: none"> ▪ <i>New Central Storage area is required for the storage of both health care risk waste and general waste. This could be a separate building with easy access by the transport trucks..</i> ▪ <i>Establish refrigerated storage for placentas to be placed at the central storage area.</i> ▪ <i>This area must be well ventilated, secure and a minimum size of 4 x 6 metres to cater for 6 x 240 wheelie bins or similar</i> 	<ul style="list-style-type: none"> ▪ <i>Ensure good housekeeping and hygiene practises are maintained at all times.</i>
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8.6 Transportation of health care waste

This section will deal with both the internal and external aspects for the transportation of the waste.

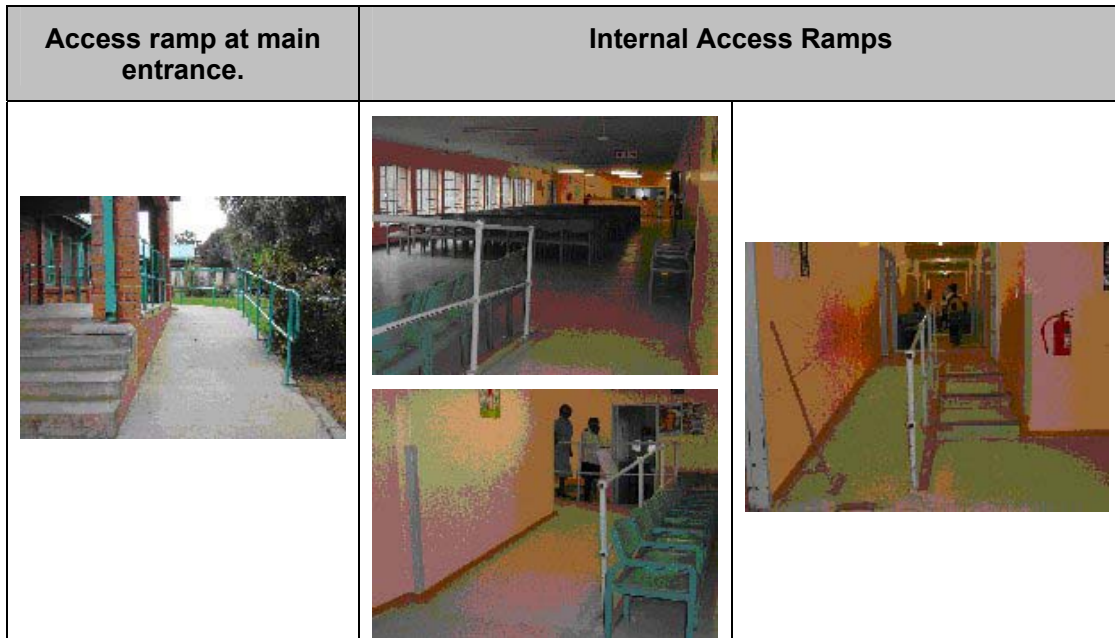
a. Internal transportation of waste

There are no trolleys to transport the waste cardboard boxes and full 10-20 litre sharps containers. The internal collection is done by the general assistants or ward helpers. When the cardboard boxes are too heavy, they are placed onto a sheet and dragged down the passages.

The black liners are removed from the black bins, knotted and carried to the outside storage area where the 240 wheelie bins are kept.

The access inside and around the clinic is well suited to a small trolley or wheelie bin. Ramps are provided throughout.

Internal Transport access areas



Recommendations for improvements to the internal transport

<i>Construction</i>	<i>Usage</i>
<ul style="list-style-type: none"> ▪ <i>Investigate a suitable means for transporting the waste – wheelie bins or trolley</i> 	<ul style="list-style-type: none"> ▪ <i>Introduce good manual handling skills.</i> ▪ <i>Provide suitable personal protective equipment (PPE) to workers (e.g. heavy duty gloves, aprons and good shoes) when transporting</i>

b. External transportation off site

The external transportation of the health care waste is carried out by service providers through contracts. The health care risk waste is collected and taken to incineration by Buhle Waste cc and the health care general waste collected by Pikitup.

Health care risk waste: The cardboard boxes are manually handled and loaded into the back of a small truck. The sharps containers and speci-cans are placed individually with the boxes into the truck. Buhle Waste takes the waste either to Pikitup, Sanumed or on occasion has been know to transport the waste to Klerksdorp for Incineration

The Transportation Truck



Health care general waste: The staff at the clinic wheel the 240 wheelie bins out to the sidewalk where Pikitup truck mechanically lifts the bins and empty them into the back of the compaction truck. The empty wheelie bins are left on the sidewalk for the staff to return to the premises. The cleaning of the bins is therefore the responsibility of the clinic staff

Recommendations for improvements to the external transport to incineration and landfill

Construction	Usage
<ul style="list-style-type: none"> ▪ <i>The manual handling and lifting of the cardboard boxes leads to back injury. A mechanical lifting device on the truck would alleviate this problem.</i> ▪ <i>The transporters are exposed to risk of injury from needles and back injury with the carrying of cardboard boxes. A reusable system with some form of wheels is recommended.</i> 	<ul style="list-style-type: none"> ▪ <i>Introduce good manual handling skills.</i> ▪ <i>Provide suitable personal protective equipment (PPE) to workers (e.g. heavy duty gloves, aprons and good shoes) when transporting</i>

8.7 Treatment of waste

The risk waste is treated off site with Incineration at an incineration plant and the ash is taken to landfill. The survey did not include the conditions of the treatment plants that are used by Buhle Waste cc.

8.8 Protective Equipment

Protective equipment (PPE) such as boots, gloves, masks and aprons are readily available from Discoverers. The gloves provided are latex gloves or reusable yellow gloves. The use and wearing of protective equipment is discussed under section 9.

Sterile and non-sterile Latex gloves are readily available in all the areas for nursing staff and general assistants.

9. HEALTH CARE WASTE MANAGEMENT PROCEDURES AND COMPLIANCE LEVELS

This section first describes the existence of documented and / or practised procedures at the clinic. Section 9.4 described the level of compliance that exists to the documented or stated procedures.

9.1 Existing health care waste operational procedures

Procurement Procedures: The Clinic obtains their equipment from Discovery. Requests for containers and chemicals are received on a VA2 form from the clinic.

The Accounts are handled by T.M.I. in Parktown. The Chief Professional Nurses are responsible for ordering the requirements for the waste management system.

The equipment is kept in a locked storeroom and the Clinic Co-ordinator is responsible for it.

Discoverers procures the cardboard boxes, speci-cans and sharps containers directly from Buhle Waste.

Liners are ordered directly from Discoverers and the clinic has to accept what it sent. No specifications are used for the purchasing of the liners and Discoverers remain the sole decision maker as to what size, colour and quality of liner to purchase. The plastic bags (liners) are found in the list of coded items under dry dispensary. The items listed are as follows:

Code	Description	Unit
46	Blue refuse bags	Single
47	Red refuse bags	Single
48	Yellow refuse bags	Single
49	Placenta Bags	50
50	Transparent Bags	50

Chemicals: The selection of the supplier for cleaning chemicals is managed through Discovery. The clinic has an order form with code numbers and they place their order every two weeks on a VA 2 form. The clinic is not aware of any specifications being used for the purchasing of cleaning chemicals and they have to abide by the decisions made by the staff at Discoverers.

Pharmaceuticals: The Dispensary orders through Hilbrow Pharmacy who in turn places their orders with Auckland Pharmacy. The provincial part of the clinic is in charge of the dispensary

9.2 Existing health care waste equipment procedures

There are no documented procedures for segregation, colour coding and containerisation. What is described here has been compiled through observations from physical inspections, discussions with staff and the view of what fragmented documentation is on file.

Segregation Colour Coding and Containerisation: There is an attempt in the clinic to segregate their waste using word of mouth and there are no written procedures for the correct use of the containers for colour coding. Red liners are for infectious waste (HCRW) and they use the cardboard boxes with the hazard logo with a red liner and lid. Once full, the boxes are sealed with tape. 10 litre speci-cans with blue lids and a cable tie are also supplied for placentas. Black colour coding is used for general waste.

Collection, Transportation and Storage: There are no written procedures for the collection, transportation and storage of waste. There is no defined responsibility allocated for the collection and transportation of waste from the smaller containers into the cardboard boxes and the wheelie bins. The ward helpers carry out the internal collection in the afternoons while they are cleaning. The external collection of the waste by the service providers is carried out at unspecified times.

Cardboard for recycling are collected by the clinic at the entrance where the 240 wheelie bins are stored. There is no formal contract for the removal of cardboard collected. The local church picks them up from time to time.

Disposal Procedures: There are no formal documented procedures for the disposal of waste other than the contract with Buhle Waste cc to take the infectious waste to the incinerator and the general waste to the landfill. Chemicals are thrown down the drain. Pharmaceuticals are the responsibility of the dispensary section. There is a provincial written procedure for the disposal of expired and damaged medicines (SOP 13 DSM). Expired drugs are written off by filling in a VA2 (Out of Stock) form and a VA 27 (Board of Survey) form. The Sr. responsible for the stock identifies expired stock and will initiate the condemning process. The form VA 27 is handed to the Pharmacy who signs the form as proof of receiving. Schedule 7 Substances procedure is recorded in the TPH 37 register and the Pharmacy Schedule 7 Register. The Pharmacy then completes a VA 27 form in triplicate and sends to the inventory clerk who assigns a condemning number. The pharmacy notifies the inspector at Head Office for authorisation to destroy.

9.3 Other procedures or structures related to health care waste management

The procedures and structures discussed in this section should be established in the clinic as part of the general management control of the clinic. As such, these structures and procedures have some part of play in waste management

Infection Control Standards: The lack of good infection control standards impacts quite significantly on good waste management practices. There is at Itireleng clinic no formal structure in place for Infection Control. An old standard for "Infection Control and Sterilisation for HIV infection" is on file issued by the S.A. Institute for Medical Research. On page 7 of this document (Aids ref 7970/3) there is a short section of disinfection and sterilization. The handling of disposal of HIV infected material is documented in section 8 where mention is made for the disposal of sharps infected with the Aids virus, infected linen, human tissue and body fluids and excretions.

Occupational Health and Safety Structure: Occupational Health and Safety also plays a significant part in good waste management practices. A well-run safety structure can assist with the monitoring of the waste management procedures. This legal entity also provides a framework for the reporting and investigating of all incidents that include the incidents related to waste management. There is an Occupational Health and Safety Committee established at the clinic but the structure gives little support to the waste management system.

Personal Hygiene and Cleaning Routines: The personal hygiene standard of all handlers and transporters of waste are essential to prevent the transmission of diseases. There is no written information or procedures for personal hygiene and cleaning. There are also no written procedures for how to clean, use cleaning chemicals, wearing of protective clothing or working with hazardous waste. A colour coded cleaning trolley is used for the floor.

Issue of Protective Equipment: All handlers and transporters of waste must be given the correct protective equipment to protect them against needlestick injuries from miss-segregation and the transmission of infectious diseases found in waste. There is no written standard for the identification, provision and use of protective clothing for particular types of activities at the Clinic.

Incident Reporting Procedures: The reporting of incidents is a legal requirement in accordance with Section 24 of the Occupational Health and Safety Act. With the rising incidence of Aids and other infectious diseases such as TB and Hepatitis, the risk of contamination by these blood borne diseases cannot be ignored when handling waste. There are no written procedures for the reporting of incidents at work other than needlestick injuries. The procedure for the prophylaxis and steps to be taken are documented in a memorandum dated 1 March 1999. Injury incidents are recorded on the WCL1 and WCL2 Compensation Report forms that are submitted to the Compensation Commissioner. Needlestick injuries are to be reported to the Clinic Co-ordinator who is required to keep records in a book. The reporting of needle stick Injuries and the administration of AZT Treatment is clearly laid out. Testing of both the patients' blood (with consent) and the injured person is taken. AZT 200 mg/p.o. and 3TC 150 mg p.o. is administered 4 hourly until HIV result of patient are available. Tests are taken every two months for 1 year after the injury. Counselling and guidance is given if found to be HIV positive. Needle stick injuries are not investigated.

Occupational Health: The legal requirement for monitoring the workers exposure to occupational health hazards has recently been promulgated. The potential exposure to blood borne pathogens is high through miss-segregation, spills and splashes. There is no formal occupational health programme in place to monitor the workers exposure to hepatitis. There is no formal immunisation programme in place for exposure to this communicable disease and no baseline monitoring is done for new or student employees.

Disaster and contingency planning. There is a Disaster Committee in place with a documented plan in the event of a major external disaster within the community. Contingency planning should the service provider not arrive or for the accumulation of placentas over long weekends is not planned in advance..

Inspection and auditing procedures: Regular inspections carried out by both the clinic co-ordinators or inspections carried out by the Occupational Health and Safety Committee can assist greatly in the management of the waste system. There are no documented auditing and inspection procedures in place for the regular inspections and monitoring of the clinic procedures and standards.

9.4 Compliance with the existing procedures

This section deals with the degree to which the staff and the service providers comply with the existing procedures, either documented or verbally communicated at Itireleng clinic.

Procurement/Ordering procedures: The ordering of equipment and cleaning supplied at the clinic is done on a reactive basis. When equipment is low, new supplies are ordered. No stock count is kept and no records are kept of the distribution of the equipment. This system does result in shortages of equipment. In addition, the equipment supplied is often not what was ordered. They are given various colour and sizes of liners and have to make do.

Segregation: Segregation is very poor at the clinic. The sharps are generally placed inside a sharps container and the cardboard boxes with red liners are supposed to be for infectious waste. Black and red liners are used throughout the clinic, but when these are in short supply or they have been issued with other colours, the colour coding is not adhered

to. The segregation of waste is also made difficult in the clinic by poor placing of containers and in many cases, by no container for general waste. There is no active supervision and monitoring of the segregation of waste.

Compliance with the use of waste equipment, procedures and routines: There is a general shortage of pedal bins, wire baskets, 240 wheelie bins for the collection of all types of waste.

Sharps: The round plastic sharps containers used are puncture proof with ill fitting lids and frequently the lids are not securely placed. They do not separate the needle from the syringe.

There are a variety of different types of sharps containers with different coloured lids and mechanisms for closing. Although the containers are the same size and shape (round/cylindrical) the lids are not interchangeable and the problem then arises that the lids of almost identical containers do not seal onto other containers. The lids therefore often remain loose and are a danger to both staff, patients and visitors and the service provider's staff and staff at the treatment plants handling the containers.

The problem is further complicated by the fact that there are two service providers for the removal of sharps containers. Pikitup is contracted by the Local Authority and Buhle by the Provincial Section of the Clinic.

The sharps containers are too big in most cases and they remain in the rooms for long periods of time and tend to collect dust. Pick-it-up in the local authority area provide 25 litre sharps containers and in two areas full, unsealed sharps containers are kept in the room and not removed to the central storage.

Speci-cans: 10 and 20 litre speci-cans are provided for placentas in maternity. The clinic experiences problems with the disposal of placentas. The 10 litre containers take a day or two to fill. When the lid is opened to deposit another placenta, an odour is emitted. Small placenta liners are not available and only occasionally are transparent plastic liners used. There is a problem with the removal of the placenta buckets from the clinic. The removal can be delayed, particularly over a long weekend or when the general assistant goes on leave. No one makes provision for the removal and the bucket is therefore left in the clinic for extended periods. Buhle Waste is only contacted to remove the placenta bins when the smell is too great.

Cardboard Boxes: The infectious waste is dealt with in a variety of ways. Large 140 litre cardboard boxes from Pikitup and Buhle are used both in the rooms and kept at the intermediate storage area (old laundry). Full 140 litre boxes are sometimes left in the rooms. In one room, the full box had been sealed, but not removed. The cardboard boxes have been used for wet waste such as placentas (sometimes) and nappies. This leads to heavy boxes and if the liners are not properly placed, the moisture soaks into the cardboard causing it to collapse

Other containers: A variety of smaller containers from cardboard boxes, plastic, wire or metal containers are used for depositing risk waste with red or black liners. When full, these are deposited into the nearest 140 litre cardboard box.

Plastic brackets have also been fitted to the walls in many of the consulting rooms. No plastic liners are available for these holders and they are therefore no longer used. The staff indicated that they worked well, but when they tried to order more liners, they were no longer available.

Different sizes, colours and types of plastic liners are provided to the clinic and they frequently use black liners for risk waste and red liners for general waste, depending on availability. Large liners are used in small containers.

The female public toilets do not provide sani-bins for the disposal of sanitary pads. Only open wire baskets with various sizes of plastic liners are used.

The Nursing Trolley: Three of the nursing trolleys have a circular holder on the one side and in one area a large black plastic bag had been attached to it. It was used for risk waste. Red, black, transparent and some times green liners are tied to the nursing trolleys. The large sharps containers are sometimes placed on the lower shelf and make access to the top opening difficult. There is a concern that the standard infection control precautions are not followed when dressings and injections are given as the trolleys are taken from patient to patient without cleaning and disposing of the waste between patients.

Collection: There are no regular routines for the collection of waste. It is largely left to one or two ward helpers to ensure that the waste is collected and placed ready for removal by Pikitup or Buhle. Otherwise the bins are left to overflow before someone will attend to it.

Intermediate storage area: The two intermediate storage areas are untidy with other activities also taking place. In the out patient section, there is an accumulation of old benches and other redundant material. Cleaning utensils are also stored here. The area has a door to the outside and it therefore become a thoroughfare to the courtyard. Boxes of infectious waste and sharps containers from the local authority are left for months before collection. The housekeeping and stacking in this area is non-existent. No person made accountable for the area and so anything goes. There is no security around the area.

The service contractors will not remove containers not belonging to them so boxes and sharps containers belonging to another service company have been allowed to remain in the store.

In the maternity section the room is narrow and bedpans, urine jugs and other equipment is washed and dried in the same area.

Central storage area: The area where the 240 wheelie bins are kept is untidy and as there is an insufficient number of bins, waste is overflowing. This is right at the entrance to the maternity section. Cardboard boxes are also stored here for collection by the local church.

Internal Transportation: The containers and boxes are handled manually. No trolley is provided. When the boxes are too heavy, they are placed on a sheet and pulled along the passage to the storage area. There is no definite roster with responsibilities defined for the transportation of waste to the laundry area.

External Transportation: It has been difficult to calculate the quantities and removal times from the clinic, as the statistics available at the clinic is limited. From the period July – November 2001 we can estimate that there is a regular removal of the waste by Buhle every 2-3 days. This is approximately 13-14 times in a month

Buhle Waste collects the cardboard boxes and containers from the front of maternity and from the out patient's intermediate store (old laundry area). There are no documented procedures and the staff are uninformed about any planned collection days and times. Buhle leaves collection slips for the removal of waste. These are not available at the clinic as they are thrown away. No-one is made accountable for signing the collection slips.

General Waste - The Local Municipality removes the wheelie bins. The dates and times are not documented. There is a fixed day for removal and the wheelie bins are wheeled out to the sidewalk for emptying out. The bins are then returned to the clinic.

Disposal Procedures:

Chemicals - Cleaning chemicals are disposed of down the drain, usually in the sluice rooms.

Sharps and infectious waste of disposed of by incineration off the site.

Unused and Expired medication - There is no documentation on how these are disposed of except for scheduled drugs. They say that they are returned to the Pharmacy

General Waste – is taken to landfill

Infection Control Standards: There is no formal infection control committee or Sister at the Clinic. Hand washing posters and information on the wearing of protective clothing is distributed.

Occupational Health and Safety Standards: There is no formal committee at the clinic.

There is a Community Health Committee that meets monthly. Minutes of the meeting are kept. Items that are discussed include dumping next to the clinic – letter sent by Environmental Health Officer to Pikitup to assist. A Suggestion box is also kept. There is, however, no effective Occupational Health and Safety Committee in place in accordance with the legal requirements. Incidents are not discussed during the meetings and no Health and Safety Representative monthly inspections are carried out. There is no formal appointment of Occupational Health and Safety Representatives.

General Hygiene and Cleaning: The three ward helpers do the cleaning of the clinic in the afternoon after the people have left. A colour-coded floor cleaning trolley is used. In-service training is conducted to show them how to use the chemicals. These staff members do a reasonable job within their understanding of their responsibilities.

General Housekeeping: The general housekeeping standards through out the clinic are low. Stacking is unsafe, storage of equipment haphazard, clutter is frequently found in front of the cardboard boxes and books and files can be found on top of the cardboard box.

Protective Clothing: No risk assessment has taken place to identify the basic protective clothing requirements. The general assistants are given gloves. The issue and use of the clothing is not documented. Supervision over the use of protective clothing is not carried out

Incident Reporting: The reporting of injury incidents to the compensation commissioner are known and carried out when required. Needle stick injuries are reported, but not investigated. There is no structure in place for the reporting of Near Miss or damage incidents. No incident statistics are kept or reported on.

The total number of needlestick injuries on file is 10. This appears to cover a period from July 1999 to June 2002 but this is not substantiated. No injuries have been reported since July 2001. This does not necessarily mean that there were no injuries. The reporting of needlestick injuries is not well monitored and it is left to the individual staff members to report an injury. The statistics are therefore un-reliable.

Date	Job Function	Incident
19 March 2001	Nurse	Pricked on soiled needle whilst discarding
17 June 2001	Nurse	Pricked right middle finger on used needle at sharps container whilst discarding
20 July 2001	Nurse	Needle prick
12 Feb 2000	Nurse	Needleprick on thumb when 9 month old baby jumped during procedure
20 March 2000	Nurse	Pricked left index finger
12 April 2000	Nurse	Needleprick by needle from patient
12 April 2000	Nurse	Recapping needle after taking blood from HIV patient. Pricked right index finger
31 July 1999	Nurse	Needleprick whilst withdrawing blood
3 July 1999	Nurse	Needleprick whilst withdrawing blood
14 August 1999	Cleaner	Needleprick

Other injuries reported: Three other injuries were also reported in 1998, 1999 and 2000. It is not really clear why no injuries have been reported since then

Date	Job Function	Incident
10 Oct. 1999	Nurse	Splash of flood on face whilst collecting blood from patient
21 Oct. 2000	Cleaner	Dizzy and collapsed
3 Dec. 1998	Nurse	Tripped by patient crutches – injury to left arm

The investigations in all the incidents reported are weak and there is no follow up.

Occupational Health monitoring and immunisation: There is no programme in place for immunisation for Hepatitis A or B. AZT treatment is available for needle stick injuries, but there is little follow up or documentation on file.

Disaster and / or contingency Plan: There are emergency procedures on file for outbreaks such as cholera. The clinic staff are reactive when it comes to dealing with non-collection of waste, stolen wheelie bins, or smelly placentas. There is no formal system in place to deal with these emergencies.

Inspection and Auditing Standards: There is no culture in place for the regular inspections and monitoring to take place. This results in a weak control over the standards and procedures for the management of their waste.

10. HEALTH WORKER KNOWLEDGE, ATTITUDES AND PRACTICES

The information in this section is a summary of focus group discussions that were conducted at Itireleng Clinic with different categories of health care workers:

- General assistants
- Auxiliary nurses
- Enrolled nurses
- Senior staff and professional nurses

Several focus group interviews were conducted, involving various groups of staff. The purpose of the focus groups was to do the following:

- Explore the range of factors that impact on the behaviour and practices of staff at Itireleng Clinic in relation to waste
- Explore the knowledge of staff about health care waste management
- Explore the attitudes to health care waste management
- Understand the roles and responsibilities in health care waste management

The results of the focus group discussions with health workers at Itireleng is summarised in the following categories:

- Liners and the overall health care waste management system.
- The use of the Buhle boxes
- What happens to waste?
- Sharps containers
- The risks of waste
- Attitudes
- Reasons for miss-segregation and mistakes in health care waste management
- Placentas
- Use of protective clothing
- Chemicals
- Sorting waste
- Staff relations
- Roles and responsibilities
- Problem solving
- Training and communication
- Terminology
- General cleanliness
- Researcher comments

10.1 Liners and the overall health care waste management system

Knowledge of what is general waste (HCGW) and what is medical waste (HCRW) is not consistent and health workers hesitated in their descriptions of the present health care waste system at Itireleng. The use of liners is not consistent and although health workers understand that the cardboard box is for medical waste it is clear many things get put in this cardboard box including food.

“There are boxes where we put everything in. The box is called a red box. Everything goes in there.”
Auxiliary/enrolled nurse

Knowledge about where waste should be disposed of appeared better down the traditional health worker hierarchy, although this comment excludes the two doctors working from Itireleng who were not interviewed for this first round of research at Itireleng. General

assistants and ward helpers gave the best description of the present health care waste system at the clinic. Nurses did not indicate in their comments that they fully appreciated how the waste management system is an important component of infection control or that they understood what is infectious waste,

"In the injection room there is another plastic bag which is used to collect swabs. The hand towels and the swabs are not mixed, they only get mixed in the red box when the cleaners collect the waste."

Auxiliary/enrolled nurse

White liners, black liners and red liners are all used for waste (medical and general) at the clinic. A number of undesirable practices were described by health workers at the clinic, these included:

- The liners used to line bins and on brackets only being disposed of every third day. For two days the contents of the liners are emptied into the Buhle box.
- Black liners regularly "improvising" for red liners.
- Mixed waste left on counters and on the floor is first picked up by general assistants and put in a black liner before it is transferred into the red lined Buhle box.
- Nurses report that they dispose of gloves, spatulas and papers in the general waste before it is then disposed of by the general assistants into the Buhle box.
- The white liners for use on the brackets found on the walls in most of the consulting rooms are often unavailable.

10.2 The use of the Buhle boxes

Ward helpers take responsibility for sealing boxes, taking filled boxes to the intermediate storage area, placing new boxes for filling in the clinic and taking filled boxes out to the collection area. Sometimes the boxes are heavy and then they are pulled from the laundry on a draw sheet before being lifted onto a trolley near the veranda where Buhle collect the boxes. The distribution of boxes and other containers in the clinic is not efficient and this causes boxes to get over filled because staff is not taking out new containers on time. Overfilled boxes are common especially at the weekends when the ward helpers are away.

Wet boxes are sometimes a problem. This is said to happen because of inadequate liners (liners are being cut to fit box when liners are insufficient or are the wrong size.) Placentas are also reportedly disposed of in the boxes. This is thought to happen when nursing staff fails to take out new containers.

" Yes in today's box there should be placentas it is too heavy for the sort of waste that is supposed to be there."

General assistant

Staff reports that Buhle will not take wet boxes and that Buhle arrive late for collection.

10.3 What happens to waste?

Health workers generally know that waste goes to the dumping site and that if there is medical waste then people scavenging at the landfill site are exposed to this. General assistants know that medical waste goes for incineration and general waste to the landfill site. Food waste is taken by nurses for their dogs at home.

10.4 Sharps containers

Professional nurses see the advantage of separating the needle from the syringe. Although it was not clearly articulated as such many of their comments refer to the inadequate design

of the present sharps container. They referred to needles and syringes not lying flat in the container, the need for bigger sharps' containers to avoid needlestick injuries, the problems with lids not fitting properly. The present containers for sharps and the placentas look very similar and therefore often there is confusion about the lid sizes for each container. General assistants report that nurses often do not close the sharps containers or leave them without a lid. It was felt that there is laziness amongst nursing staff to ensure that they have the correct lid for the container in use.

One suggestion from general assistants is that the containers should be better labelled. A recent incident at the clinic was the theft of a filled sharps' container that was left outside waiting for collection by Buhle. The patient emptied the contents and then tried to leave with the container but was stopped at the gate. The general assistants felt that if the container had more effective labelling then the patient would have been deterred from taking it.

10.5 The risks of waste

Pricking yourself with a needle and children playing with used needles and syringes are the hazards of waste. General assistants spoke about having to pick up needles that have not been disposed of properly by others. One respondent spoke about being worried about TB and HIV.

"It is because you don't know the disease the person who used it had. What if he had TB or HIV? So we are supposed to be very careful and be on the lookout."
General assistant

The statement above is reflective of many of the comments made by health workers at Itireleng it demonstrates some basic knowledge about infections and the risks of needle stick injuries but the statement isn't entirely accurate. This demonstrates a knowledge gap. Also general assistants spoke of general hygiene issues such as patients using urine glasses for drinking out of. General assistants felt that they had not been informed about the hazards of separating waste properly but did then go on to describe some of the risks accurately.

10.6 Attitudes

The general assistants had most to say about the attitudes of nurses. In particular their attitude to working with patients,

"When they finish attending the patients, they don't go back to clear up those things that need their attention. They just throw them anywhere." General assistant

"The other day one patient had a miscarriage; there were clots on the floor. The nurse left everything like that." General assistant

The general assistants emphasized their willingness to work for the community and to assist other health workers.

"We are here to work. The reason we are here is to serve the patients to the best of our ability. So, for placentas to be kept there for three days will not only affect us but will also affect the patients and all who might visit the clinic. This gives the clinic a bad name." General assistant

"We do a lot of work because there is a shortage of nursing staff and when they need help we lend a hand." General assistant

10.7 Reasons for miss-segregation and mistakes in health care waste management

In a number of the focus groups patients were held responsible for some of the miss-segregation of waste. Particularly in the injection rooms where swabs are put in the sharps containers. Or that there aren't enough dustbins in the corridors. Also it is felt that patients have the attitude that there are cleaners in the clinic that will clean up and so waste is dropped easily. Nurses talk mainly about patients rather than themselves.

“ There is nothing we can do, we come in after everyone is gone. This is a new way of dealing with these things and they are reminded everyday of the proper procedure of disposing of waste but they don't seem to learn. You can't keep following grown-ups around to correct them on something that they are told about all the time. It's annoying.” General assistant

Some nurses feel miss-segregation is carelessness others feel it is not. There is an attitude of *“Mistakes can happen to anybody and we should remind one another to be vigilant.”* However the general assistants feel that some nurses are not sure of proper segregation and/or that they don't care. They report that sharps are *“often”* found in the wrong containers. General assistants admit that they do let dustbins get too full.

10.8 Placentas

There is an enormous amount of concern at the clinic about the placentas and some detailed descriptions about how problems arise especially from the general assistants. Some of the problems experienced are that the placenta bags run short and placentas are then wrapped in the linen savers and that sometimes sharps containers are used rather than the placenta bucket.

However the overriding concern with placentas is their collection by Buhle. On occasion the clinic has had a serious problem with the storage of decomposing placentas. A general assistant gave a graphic description of how poor management results in a waste management crisis at the clinic because roles and responsibilities are not clearly specified,

“ For instance I was off yesterday so as if there is a disaster in the maternity section. All the waste from Saturday is still there. No one bothered to take out the waste yesterday. So it's smelly and there are flies all over. Buhle were supposed to come tomorrow but because it is a holiday they won't come. It means the waste will only be collected on Friday. There are four buckets full of placentas from Saturday. I had to be off yesterday to make up for the holiday on Saturday. They (nurses) were supposed to have been observant and taken the waste out when Buhle came. It's not as though they don't know what to do but no one was prepared to do the job. It's just sheer negligence.”

General assistant

The lack of accountability also results in workers feeling frustrated with cadres of workers who they feel are not pulling their weight thus poor relations between categories of health workers are perpetuated.

10.9 Use of protective clothing

General assistants report that gloves are available but they do not have access to masks. They use plastic aprons but that these do not protect them from getting wet. (These were introduced two weeks ago.) General assistants use latex gloves and request stronger gloves that are used for cleaning.

Maternity gowns are used by nurses and general assistants to protect their clothing.

10.10 Chemicals

Empty chemical containers used for cleaning are taken by anyone who wants one. There was no discussion about any of the associated risks.

10.11 Sorting waste

General assistants report sometimes taking out a piece of medical waste from the general waste using gloves. Nurses report that they leave miss-segregated waste as is.

“ When you are emptying the bin sometimes you are able to see the object – if you are lucky. When I’m wearing gloves then I will try and retrieve it, if I don’t have gloves –then I’ll let it go. I cannot touch it with my bare hands.”

General assistant

10.12 Staff relations

The general assistants report that “*spiteful behaviour*” is common in the clinic. A general assistant felt that team-work was very unlikely to happen in the clinic,

“Unfortunately there is no team spirit. So it is difficult. I don’t think it will ever happen.”

General assistant

Another general assistant said about the lack of team-work.

“ It is sad because we are all women and this reflects badly on us.”

General assistant

10.13 Roles and responsibilities

A lot was said about the different roles and responsibilities. The general assistants feel that other workers leave all cleaning up to them.

“ There is a problem. Sometimes they spill liquids on the floor and leave it there and tell you that it’s not her (nurse) job to wipe the floor-she is not a cleaner. Which means that our status is lower than theirs. So she has the nerve to say she was not employed as a cleaner.”

General assistant

Nurses pass much of the responsibility for waste to the general assistants and ward helpers. Professional nurses acknowledge some responsibility to close containers and to get new ones out, but they (and auxiliary and enrolled nurses) also feel it is primarily the ward helpers’ role on the whole.

“ They (the ward helpers) are the ones who are directly involved with the management of waste who see to it that it is correctly deposited and sealed ready for collection.”

Auxiliary/enrolled nurses

There are three ward helpers at Itireleng and if someone is absent or sick then the present waste system starts to break down. Although the general assistants do seal boxes in the absence of the ward helpers at the weekend this does not always happen and then boxes become overfilled. Other staff does not take boxes out of the store rooms or take filled boxes out to the area for collection by Buhle Waste.

Although the general assistants refer to their job descriptions they feel that they do many more things than are stipulated.

“ The only problem is that our parameters are extended and we find ourselves doing things which were not stipulated in our job descriptions. Sometimes we don't know what we are supposed to do. We do almost everything that they ask us to do. They score all the time.”

General assistants

The impact of a lack of management structure is reflected in the comment below.

“ It's both the nurses and the sisters. They are supposed to tell one another during change over what the situation is in the clinic, who is on who is off so that they know what to do. Just like a mother would do at home when you delegate duties to your children when one of them is away. They too are supposed to report to each other and say so and so is away please take care of the placenta containers and do such and such with them.”

General assistant

The clinic manager or departmental head is the person who is responsible for problems and to whom problems are reported.

10.14 Problem solving

General assistants and ward helpers clearly try and fix the problems that they see and where they feel they can they report the problem to the sister in charge. However it is reported that staff are not confronted about mistakes and that if staff do report mistakes something spiteful will be done in return,

“We try and fix the mistakes if we see them. However, the best thing would be if there was cooperation among us. If each one of us could do what we are supposed to do the first time round, there would be no need for problems. But here (in this clinic) when you point out a mistake the person will deliberately do something worse the following day to spite you.”

General assistant

Nurses feel they are “scolded” or given a “gentle reminder” about good practice when confronted by nursing seniors. There is a sense that no ones own up when there is a problem and that the sister in charge does not properly follow up. The lack of problem solving is reflected in this comment made by a general assistant, “*It has never happened*” that problems get solved. Urgent phone calls to Buhle are the usual response to the placenta problem at the clinic. No one mentioned refrigeration as a necessity.

Suggestions that were put forward in the focus groups to solve present problems were:

- More bins to help with patient waste.
- Buhle should come daily to collect placentas.

10.15 Training and communication

General assistants and ward helpers report that they have learnt about the waste management system by observation. Better communication between staff is seen as critical. The lack of any systematic teaching is identified as contributing to the present problems.

“If the wastage company can come and teach us and make sure that all of us know about what we should do with waste. Some of us don’t even know how some of the waste is supposed to be separated. For instance there are some of us who if they were to go into a room and find a needle lying around they might not be sure in which container to deposit the waste- in the box or where. Right now I am not sure where to discard the specimen bottles. Sometimes I throw them in the dustbin; sometime I throw them in the needle container. You see it is things like that. I don’t know because I was never taught. I picked up the information as I was going along. In fact I don’t think there is a nurse who is sure where to deposit specimen bottles.”
Auxiliary/enrolled nurses

Community and patient education was identified as important to alert people to the dangers of medical waste. The preliminary establishment of the occupational health and safety committee by Dinah Mareletse and Debra Mothopeng was thought to have helped highlight issues around waste for professional nurses. The orientation to the clinic for new staff does include an introduction to the waste system. However this is the only formal discussion of the waste system for many staff at the clinic. Professional nurses state that they feel in a position to offer training to other cadres of staff in the clinic.

10.16 Terminology

Medical waste is used for infectious and bio-hazardous waste. Health care risk waste is not understood. The Buhle boxes are referred to as the “red box” or “waste station box.”

10.17 General cleanliness

The hygiene and littering of patients is a concern for staff at the clinic. The general assistants spoke about patients not using toilet facilities appropriately and urine glasses left lying in toilets.

10.18 Researcher comments

In the nursing groups there was an air of detachment. It was also noted that at one point talking about communication between staff at the clinic was felt to be intrusive. This is an important observation regarding the implementation of a new health care waste management system.

18. SUPPORT DOCUMENTATION

METRO REGION A

