Survey on Health Care Waste Management for HIV/AIDS prevention & Control project in Vietnam

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Abbreviation

DoH: Department of Health, DoHs: Departments of Health
DOSTE: Department of Science, Technology & Environment
EIA: Environmental Impact Assessment
MP: Master Plan
MoH: Ministry of Health
HCSW: Healthcare solid waste
HCSWM: Healthcare Solid Waste Specialist
Hz HCSW: Hazardous Healthcare Solid Waste
URENCO: Urban Environmental Company
RC: Rehabilitation centre

Introduction

The report on HIV/AIDS health care waste management concerns to the component F of the HIV/AID Prevention and Control Project. The output of this report is the following:

- A detailed survey/assessment of HCWM (liquid and solid waste) generation in health care centres especially in the Rehabilitation centres.
- A training course.
- Action Plan.

The report aims at, not only at the 03 project Rehabilitation Centres in Hanoi, Hai Phong, Khanh Hoa, but also at the hospitals and health care centres where the HIV/AIDS patient are being curried.
There are firstly 03 Rehabilitation centres called 05 Rehabilitation Centre (Hanoi 05 RC) have been involved in the studies.

The questionnaires were delivered to the 02 rehabilitation centres. The generation of Hz HCSW discharges from medical district centres also is evaluated and predicted.

The study includes activities such as interviews and field trips, questionnaires, review of existing data and regulation.

The activities were commenced in 10 November, 2004 and are expected to continue until the end of November. Ms. Ngo Kim Chi (Hospitals Waste Consultant), Ms Le Kim Dung-Assistant and Mr. Le Van Khanh was at Hanoi RC in 22 November, at Haiphong RC in 23 November and Khanh Hoa RC in 29 to 30 November, 2004 aiming at assessment of HIV/AIDS HCWM at 02 project RC to evaluate:

+Current HCWM practices at project RC

+ Identification of risk associated with the current HCWM practices

This report is the Inception report done by Ms Ngo Kim Chi health care waste specialist.

• Activities performed
  • Meeting with Department of Health:
  • Meeting with and field trip to Hanoi RC: 22 November, 2004
  • Meeting with and field trip to Khanh Hoa 29. – 30. November 2004.
  • Meeting with and field trip to Dong Da Hospital – Hanoi Capital
  • Meeting with specialists of Department of Therapy, MoH
  • Meeting with specialist of Institute of Epidemiology, MoH

A questionnaire aimed at the hospitals and RC where the HIV/AIDS are being received, was elaborated by Ms. Chi and filled out during the visits to the visited 02 project RC: one in Hanoi and one in Hai Phong.

The problems revealed in relation to health care waste management at the 02 RC were discussed in the project team (3 local consultants) as well as possible solutions. Furthermore, options for training activities were discussed.

• Output of the activities
  • Minutes of meetings
• Visiting form and survey results, filled questionnaires
• HCWM assessment report

Healthcare waste management in Vietnam

2.1 Healthcare network in Viet Nam

By the year 2001, Vietnam has over 970 hospital of central, provincial and regional level account for over 117562 beds (1.5% of which are private hospitals, the rest is state hospitals). There are 29 central hospitals, 198 provincial hospitals in which 84 general provincial hospitals, 114 specialization hospitals. In addition, there are 511 district hospitals and 48 sector's hospitals. This number of inpatient beds is expected to be more than 200,000 for years to come. The public & private healthcare establishments are including hospitals, general and special clinic, medical institutes, the specialization hospitals, maternity clinics.... Generally, comparing with other countries in South East Asian Region, the amounts of healthcare establishments and healthcare network of Vietnam is abundant and considerable. However, environmental sanitation issues are extremely bad. There are not enough healthcare waste treatment facilities in most public and private health establishments. Several exist in big cities, however, almost HCSW facilities are out of date and do not meet the technical and environmental demands.

<table>
<thead>
<tr>
<th>Type of healthcare facilities (HCF)</th>
<th>2001</th>
<th>Total beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central general hospital</td>
<td>11</td>
<td>6430</td>
</tr>
<tr>
<td>Central specific hospital</td>
<td>20</td>
<td>5510</td>
</tr>
<tr>
<td>Provincial General hospital</td>
<td>107</td>
<td>35 639</td>
</tr>
<tr>
<td>Provincial specific hospital</td>
<td>188</td>
<td>23 463</td>
</tr>
<tr>
<td>District hospital</td>
<td>569</td>
<td>41 805</td>
</tr>
<tr>
<td>Branch hospital</td>
<td>75</td>
<td>4 715</td>
</tr>
<tr>
<td>Total</td>
<td>970</td>
<td>117 562</td>
</tr>
<tr>
<td>In which: Private hospital</td>
<td>14</td>
<td>928</td>
</tr>
<tr>
<td>Community station</td>
<td>10 257</td>
<td>45 303</td>
</tr>
</tbody>
</table>

The average bed per 10 000 habitants is 15.
2.2 The National Master Plan of the healthcare network of Viet Nam up to 2010

By the Decision of 1047/QD-BYT dated 28/03/2002 by Ministry of Health the healthcare network of 2001-2010 is following:

<table>
<thead>
<tr>
<th>Type of HCF</th>
<th>Number of HCF</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (mill. People)</td>
<td>79mil.</td>
<td>82 mill</td>
</tr>
<tr>
<td>Central general hospital</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Central specific hospital</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Provincial General hospital</td>
<td>107</td>
<td>115</td>
</tr>
<tr>
<td>Provincial specific hospital</td>
<td>188</td>
<td>224</td>
</tr>
<tr>
<td>District hospital</td>
<td>569</td>
<td>586</td>
</tr>
<tr>
<td>Branch hospital</td>
<td>75</td>
<td>72</td>
</tr>
<tr>
<td>Total</td>
<td>970</td>
<td>1027</td>
</tr>
<tr>
<td>Private one</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>Growth up</td>
<td>+6%</td>
<td>+2,3%</td>
</tr>
<tr>
<td>Average beds/10000 pers.</td>
<td>14.8</td>
<td>16.4</td>
</tr>
</tbody>
</table>

2.3 Rehabilitation Centres in Vietnam

There are about 70 Rehabilitation Centres in Vietnam belonging to local Department of Labours and Social Invalid – Ministry of Labours and Social Invalid. Hanoi has 5 Rehabilitation Centres, one is in Socson district and others in Bavi – Hatay provinces. Hai phong has 3 Rehabilitation Centres, one is in Cat Bi district-Haiphong City, others in Thuy Nguyen District. Khanh Hoa has 2 centres.

It is report that in 05 camps (Rehabilitation Centres for Drug users) the number of HIV positive trainees is accounting for 30-35% in Hanoi 05 camp and 70% in Haiphong 05 camps and 75% in Khanh Hoa 05 Camp.

2.4 Treatment of HIV/AIDS patients at Healthcare Facilities & RC

The MoH’s Instruction numbered 10 dated on 24 Sep., 1999 has regulated that the provinces have HIV/AIDS patients must follow three ways of treatment and consulting for HIV/AIDS patients:

- Must has patient rooms at Infectious Department of Provincial General Hospital or at related Department such as T.B Department or Dermatological Department.

- Treatment at home for not very serious HIV/AIDS patients. Department of Preventive Medical Centre has to consult the patient go to the general hospital or district/ward medical centres to follow up.
In addition, RCs at provinces have medical services consulting and curing HIV/AIDS patients amongst the drug users are being trained in the camps.

3. Methodology

3.1 Review of existing of data, regulation on HCSWM

The following documents were used as a basis for survey report and for elaboration of the Strategy as well as Action Plan on HCSWM.

+ Regulation on HCSW Management 28. August 1999
+ Report of Master plan on HCSWM, 5/2005
+ Published studies on HCSW generation rate in Vietnam.
+ Juridical documents related to the HCSWM.

3.2 Field Survey

The purpose of this survey is to study the healthcare solid waste management and actual solutions in 02 RCs. The following issues are addressed:

- main features of the RC’s medical centers: number of beds, structure, characteristics of the department, number of staffs, bed occupation.
- to identify the generation rate of healthcare solid waste from RC’s medical centers.
- to observe the practices of the implementation of the Regulation of the MoH on HCWM
- to evaluate sanitary risks in relation to the actual practices
- to observe the main features of HCW treatment and to reveal major needs, and to define first proposals for improvement of the sanitation condition and potential treatment devices and management structure.
- to identify the persons in charge of HCSW to be trained in the future for the training course aiming at improvement of HCSWM.
4. Healthcare waste solid management

4.1 Healthcare solid waste (HCSW)

Healthcare waste refers to any waste that generate in healthcare facilities (laboratories) includes surgical waste, pathological waste, infectious waste that require special handling.

*Healthcare waste is hazardous waste:* the people is potentially at greatest risk: firstly, their living environment suffers as a result of local poor healthcare waste management and secondly, many medical staffs are forced to work with waste. It is believed that the highest risk groups are those involved in the medical service, in recycling and reusing used healthcare waste material. This includes the medical staff, the waste pickers who collect the recyclable portion of the waste, itinerant waste buyers who purchase the recyclable elements of the waste. Awareness of the risks is generally low amongst all of them.

4.2 Classifications of HCSW

The Ministry of Health classifies healthcare waste according to the categories in the Regulation on HCSWM in year 1999 and strongly recommends that healthcare waste should be separated, packed in leak-proofed, color code plastic bag/barrel to facilities for identification, handling, storage, decontamination and transportation. HCSW includes general, clinical, chemical, radioactive, pressurized containers. **General waste:** Waste arises from offices, corridors, patient’s room, dinning room... or wastes arise from surrounding areas: leaves, dust, pieces of stone... **Clinical waste** is divided into 5 groups

*Group A:* Infectious waste consists of soiled surgical dressings, cotton wool, gloves, swabs, all other contaminated waste from treatment areas; plasters, bandaging which have come into contact with blood or wound; cloths and wiping materials used to clean up body fluids and spills of blood; material, other than reusable line, from cases of infectious disease (e.g. human biopsy materials, blood, urine, stools).

*Group B:* Sharp items such as used syringes, needles, cartridges, broken glass, scalpel, blades, saws and any other sharp instruments that could cause a cut or puncture. These may be either infected or not.

*Group C:* Clinical waste arising from laboratories (e.g. laboratories for pathology, hematology, blood transfusion, microbiology, histology) such as: gloves, test tubes, cultures and stocks of infectious agents, blood bags...

*Group D:* Pharmaceutical wastes consists of expired drugs that have been returned from wards, drugs that have been spilled or contaminated, or are to be discarded because they are no longer required; and cytotoxic wastes

*Group E:* Pathological waste, including human tissues (whether infected or not), organs, limbs, body parts, placenta and human fetuses, animal carcasses and tissues from laboratories
Explosive and pressurized items: compressed gas cylinders, aerosol cans and disposal compressed gas containers. They are inflammable and explosive hence they are handled carefully and separately.

Radioactive solid waste: is waste emitted from activities of diagnosis, therapy & research such as needles, syringes, compress, glassware, absorbent paper, swabs, bottles.. that are disinfected with the radioactive material

A hazard has the potential to become a risk depending on the local conditions. If HCSW is properly managed, the hazards are controlled and the subsequent risks to the health both of those who work with HCSW, local communities, and environment are minimal. These risks are considered greater such as the contamination sources and include: - Spread of disease by vectors and other animals;

- Air and water contamination caused by HCSW; and

- Local fire risks from the production of methane during the degradation of organic matter from dumping site.

4.3 Healthcare liquid waste

Liquid infectious waste generate from the hospital contaminate the liquid waste stream with diseases germs. The Contamination sources may come from the patient body fluid, blood testing, from digestion systems (urine or manure..). The hospital wastewater contains germs will widely spread the contamination to receiving water bodies.


Opposite to other low-income countries, the awareness of the risks from HCSW is generally high in the top management level of DoHs and hospitals and medical staffs. Healthcare waste receives special attention because it is contamination waste.

Awareness of the risk of contaminating of infectious diseases is now increasing by medical responsible people, as the results of number of current efforts from MoH since the year 1999 when The Regulation on HCSW issued, from environmental institutions & communication program and from HIV/AIDS Prevention and Control Program.

5.2 The Generation Rate and the Amount of HCSW

In Vietnam, during the last year, there has been an increasing trend towards the use of single use material, which now accounts for significant amounts of healthcare solid waste generated daily. Depending on the hospital’s specialization, central hospital or provincial/district hospitals, the waste generation rate can vary substantially from hospital to hospital. Especially HIV/AIDS HCSW vary from the hospital and Rehabilitation Center depend on the number of patient and the living standard of the provinces.
5.2.1 Generation Rate: general waste and Hz HCSW

Recent survey of the National Master Plan on HCSW management (MP) during the year 2002 identified higher values of HCSW generation rate compare with the results carried out in 1998 by MoH which has shown the average generation rate of general provincial hospitals is 0.25 kg/bed/day and other defined generation rate of each hospital/medical center (see table 2a, table 2b)\(^2\).

5.2.2 HIV/AIDS HCSW

In addition, the questionnaire has been designed to get information on daily HCSW to be evaluated at 02 project Rehabilitation Centers. Based on this data, the average rate of HIV/AIDS Hz HCSW is estimated about 0.05-0.07 kg/bed/day for Rehabilitation Centers (Table 3).

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**Table 2a: Review on related HCSW generation rate studies in Vietnam**

<table>
<thead>
<tr>
<th>Surveyed hospital</th>
<th>HCSW kg/bed/day</th>
<th>Hz HCSW Kg/bed/day</th>
<th>% Hz HCSW in total HCSW</th>
<th>Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 representative hospital in VN (1998)</td>
<td>0.916</td>
<td>0.152</td>
<td>16.5</td>
<td>Thuy (1998)</td>
</tr>
<tr>
<td>17 medical centres in Thainguyen (2001)</td>
<td>0.913</td>
<td>0.14</td>
<td>15.3</td>
<td>VCC (2001)</td>
</tr>
</tbody>
</table>

(VCC-DANIDA Report- Project on Environmental Protection of Thai Nguyen Province)

**Table 2b: Generation rate of Hz HCSW in various type of hospital in Viet Nam reported by Master Plan on HCSWM (2002)**

<table>
<thead>
<tr>
<th>Type of medical centre</th>
<th>Average number of bed</th>
<th>Rate of General waste (kg/bed/day)</th>
<th>Amount of Hz HCSW</th>
<th>Rate of Hz HCSW (kg/bed/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central General Hospital</td>
<td>600</td>
<td>0.85-1</td>
<td>175</td>
<td>0.3</td>
</tr>
<tr>
<td>Provincial general hospital</td>
<td>325</td>
<td>0.7-1</td>
<td>85</td>
<td>0.25</td>
</tr>
<tr>
<td>Provincial Specific Hospital</td>
<td>125</td>
<td>0.8-0.95</td>
<td>25</td>
<td>0.15-0.25</td>
</tr>
<tr>
<td>District hospital</td>
<td>75</td>
<td>0.6-0.85</td>
<td>15</td>
<td>0.15</td>
</tr>
<tr>
<td>Branch Hospital</td>
<td>65</td>
<td>0.6-0.85</td>
<td>5</td>
<td>0.15</td>
</tr>
<tr>
<td>Polyclinic</td>
<td>5</td>
<td>0.7-0.9</td>
<td>&lt;0.5</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>


**Table 2b: Generation rate of Hz HCSW in 02 project RC (11/2004)**

<table>
<thead>
<tr>
<th>Type of Rehabilitation Centre</th>
<th>Average number of bed</th>
<th>Rate of General waste</th>
<th>Amount of Hz HCSW (Kg/day)</th>
<th>Rate</th>
</tr>
</thead>
</table>

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\(^2\) Master Plan on HCSW, Ministry of Health, 2002
5.3 Current Status of HCWM in 02 RC

HCSW management begins with source separation and collection, then transport and finally disposal. Currently, most Rehabilitation centres have been carrying out controlled source separation, collection and transport: that is, hospital wastes are being segregated at their point of generation by putting in the plastic bags and then transport to the disposal site. The disposal step requires special attention and caution since it involves technical details and needs appropriate technology, as well as supervision.

The HCSW management practised in Hanoi Rehabilitation centre is described below.

5.3.1 HCSW management at Hanoi RC

- **5.3.1.0 General description:**
  Hanoi Rehabilitation centre number 05 is located in Socson district, 52 km far from Hanoi, 7 km from the Namson Landfill site.

  The centre has the administration building located out site the Centre. The others building for medical service, kitchen, physical and training building and dormitory building are in the camp.

  There are 1200 drug users (trainees) are being curried and rehabilitated in the centre. Total RC’s staff number is 130 of which there are 18 medical staffs. The curing and training time in the centre is about 24 months for each trainee.

- **5.3.1.1 Medical services**
  The trainees have been test HIV when they have just entered and 2 times during the time staying at the centre. According to Mr. Thuc, the Director of the centre, the ratio of HIV positive of 900 blood samples of the new trainees of this year is 35%. Total HIV positive trainees are 30-35% of which there are 10% having disease symbol of AIDS. Each month there are 2 trainees convert to heavy AIDS and have to transport to Dong Da General hospital.

  Medical centre of Hanoi Rehabilitation Centre has 18 medical staffs to take care about 340-360 trainees with HIV positive, of which 84 trainees have to leave in isolate room to take care and 20 trainees are being in very serious symbol of non stopping fever, rapidly loose weigh and chronic diarrhoea, skin infection, Tuberculosis and hepatitis B .. are being in intensive curing.

- **5.3.1.2 General domestic waste generation rate**
  At present, Hanoi Rehabilitation Centre daily collects and disposes over 1100 kg of general waste (0.9 kg/person/day). Although from the centre to the Hanoi – Nam Son- Soc Son sanitary land fill is about 7 km but there is no service for transportation of general waste from the centre to the land fill. General waste is dumped in site the centre’s area and causing leakage during rainy season.
At dumping site for general domestic we could see the several cotton and tissue with blood were mixed in general waste.

5.3.1.3 Hazardous healthcare solid waste (clinical solid waste) and generation rate
It is estimate that about 5-7 minor operation and 30 times of medical consultancy per week. In addition, the RC often invites medical staff of Preventive Medical Centre come to do blood testing every month.

It is estimate that about 6-7.5 kg of HzHCSW generated per week or 30 kg of hazardous HCSW generates at the medical centre per month. It means that the hazardous HCSW is about 0.02 to 0.06 kg/person/day/bed in Hanoi RC.

5.3.1.4 HCSW Management Board, personnel, and guideline
It is easily seen the attempts for implementing MoH & DoH guideline for waste management although the RC does not have the specific HCSW management Board and written internal guideline for managing HCSW. All medical staff involved in waste separation, collection and handy- carry the waste to the incineration site. There is one new installed incinerator located in the camp. The incinerator has been working 5 or 6 times since it is installed (about 1 year ago).

There are 1 person were trained in HCSWM field with DoH but it is not obviously that the one is in charge in supervising the waste management at the examination room and patient room.

5.3.1.5 Waste segregation, transportation and HCWM practices
Hz HCSW is separated right at source at the main medical examination room. All the needles with cylinders are put into plastic waste bin. Cylinders/sharp items and dressing, swabs.. were reported to put in the same plastic waste bin.

We reveal that the medical staffs have segregated the cylinders, bandage, and swabs ...in one plastic waste bin in the main medical examination room. They use the same plastic bins (without the lids) for both kind of waste (domestic and clinical wastes). The plastic bag for HzHCSW is seemed to be not available and if they do not forget to put into the waste bin they are often enormously thin and wrong colour coded plastic bags is used to segregate hazardous HCSW.

The nurse collects HzHCSW by using the very thick plastic bag or waste bin to the collection site and brings to the incinerator. No standard collection waste bin for HzHCSW with coded color and symbol for Hazardous Clinical waste are used and seen.

In the patient room, especially the room for isolated trainees there are not have the plastic waste bin for hazardous HCSW. There are no notice boards to remind the patient to separate the hazardous waste (cotton, dressing, swabs with blood or fluid/sputum from the patient). At the patient room, many types of waste bin for disposal of waste. All kind of waste are mixed.
5.3.1.6 Hazardous HCSW treatment at incinerator

There is one medical incinerator installed in Hanoi 05 RC to incinerate HCSW.

It is report that the temperature of the two chamber of the incinerator (20kg/h without gas cleaning device) is respected (over 1000°C) at the secondary chamber. One burning batch consumed about 25-30 l of DO. It is fuel consumption for 20-30 kg of HCSW.

+ Incinerator usage
It is reported that 1 staff is assigned to operate the medical waste incinerator. He collects medical waste from the big collection waste bin (without the lid) at the corner out site of the medical centre then handy carries the waste bags into the incinerator, one after another. The incinerator is run only one or twice a half-month. No person knows about the hazardous aspect of the ash from the incinerator and how properly treats the ashes.

+ Incineration effectiveness and emission quality
It is report that the incinerator has the certificate to use at the hospital and medical centre, but when one of our delegation asked for the air emission quality and economical - technological parameters (complete combustion, the gas residence-time, air emission quality..) document of the incinerator it was said that they were now sealed.

No complaint of the smoke from the incinerator because of incinerator is far away enough from inhabited areas.

+ Small capacity incinerator operation notices
- Functioning periods no longer than 3h/per batch so that the advice on one possible and important way to avoid numerous starting and cooling phases that respectively low down efficiency and damage the refractory shielding is not followed.

- Strict implementation of designer operation guidelines (preheating time, monitoring of fuel, air and waste admissions, of temperature evolution) has to be carefully carried out.

- Strict design on the height of the chimney is not respected.

- Ash should be encapsulated in cement while metal oxides and toxic organic matters (as dioxins) would thus be trapped in solid gangue).

These reflections lead to the propose of the training course for HCSWM as well as the need supplying the collection tools (colour coded plastic bags/ waste bin/ box for sharp items ….) for the RC not only the incinerator to enhance the whole process.

+ Disadvantage of incinerator onsite
On the other hand, there are drawbacks onsite incinerators at Hanoi RC:
- Lack of proper flue gas cleaning device even the wet spray gas clean or dry cleaning device.

- High fuel consumption thus related costs (1.1-1.3 gasoline/1kg of waste) due to under capacity operation and high frequency of starting phases.

- Unawareness of the polluting impact of remaining cinders and ash

- Attempts to save fuel lead to unsuitable operation and thus poor efficiency.

5.3.2 Liquid infectious waste and wastewater treatment

No solution for segregation of the liquid infectious waste and liquid expired pharmacies were being used at the medical centre of Hanoi 05 RC with 100 beds and often facing with overloading status (some time over 200 patients). No wastewater treatment system or simple solution (chlorination) in order to disinfect the wastewater before discharging to the paddy field next to the camp.

5.3.3 Water use at the 05 Hanoi RC

It is reported that Hanoi RC uses deep drilled water well onsite the camp. The water capacity is 10m³/h is filtered and chlorinated. Water is then supplied enough for drinking and cooking and for medical centre. Surface water from the lake is used to satisfy the other demand of water use such as bathing, washing…

- 5.3.4 Sanitary environmental

General waste is collected in plastic waste bin and then handy carried by trolleys to the storage room. Some recyclable waste (cartridge, paper…) is separately shorted to recycle. Then the rest waste goes to the dig hole (dumping site) onsite the camp. No plastic bottom liner is used for the dig hole. The dumping hole is not often covered daily until the hole is full. The lime is rarely sprinkled except when ever there are too much butter flies.

Latrines:

Over 1000 of the trainees use the 2 two latrine located out site the buildings. It is very simple latrine with the limited volume of the septic tank (about 4 – 5 m³). One latrine serves for 700 trainees. We could see the fresh manure discharge to the open sewage system. Bad smell and polluted wastewater stream go directly to the paddy field. There are often complaints from the farmers on the damages of the paddy causing by the discharge stream from the camp.

5.3.5 Risks of un proper HCWM:

The poor HCW management as well as the lack of proper plastic bag, cotton boxes for sharp items, basic collection equipment, trolleys and notice boards guiding medical staff, trainees/patients to respect the Regulation on HCSW management, to separate the waste right at source to prevent the risk of spreading out infectious diseases.

There are several claims of the exposure of HIV positive during the medical consulting time for patient. Supplying protective tools for medical staff with glass,
thick gloves, suitable clothes.. is very necessary. There have been several cases of Hepatitis B infection of the medical staff in Hanoi RC.

It is reported skin infectious diseases and eye disease were contaminated from the trainees to the centre’s staffs.

5.4 HCW Management at Hai Phong RC

5.4.1 General information

Hai Phong RC located at Cat Bi district, Haphong city. The Centre was established in 1992 and continuously develops year by year with increasing number of trainees. The total RC’s area is about 6000 m2 with 300 trainees and 29 staffs.

It is reported that 70% of the trainees having illegal behaviours or violating the legal issues. The ratio of HIV positive is about 70%.

5.4.2 Medical service

There is not medical centre at Haiphong RC. Only 2 medical service rooms in the centre with 4 medical staffs taking care of the 70% HIV positive trainees of which 8-10 trainees have been take care in isolated room. It is reported that about 4-5 HIV/AIDS trainees having serious symbol of disease have been transported to Infectious Department of Viet Tiep general Hospital per month.

5.4.3 Waste generation rate

It is report that about 2m³ of generals waste per day is generated and collected in the corner of the yard. The centre has signed the contract with Haiphong URENCO to transport the waste with the fee of 300,000 VND/month. There is no service for HCSW. and the general waste.

5.4.4 Hazardous HCSW generation rate

It is estimated that the average 0.5-0.7 kg of clinical waste group A and sharp items generates daily at the medical service room of the centre.

5.4.5 HCSW Management Board, personnel, and guideline

The attempts for implementing MoH & DoH guideline for waste management an easily be seen although the centre does not have a specific HCSW management Board. 4 medical staffs have been involved directly HCWM or no internal guidelines for managing HCSW. There are 1 persons that have been trained in HCSWM field. They are in charge of segregation of the cylinders at medical consultancy room and handy carry the wastes to the corner of the yard to burn by pouring alcohol.

5.4.6 Waste segregation, collection and transportation

HCSW is separated right at the source. The clinical waste and sharp items are collected separately and put into the plastic waste bin. There is one needle destroyer made in China but non-longer used.

There is one isolated room with 4 beds for the sick HIV positive trainees. The other trainees are living together 15 trainees per room with simple bathroom and toilet in the room. It seems it is the best solution to keep the sanitary because trainees have to talk each other to keep the common sanitary if one uses the toilet.
There is not special plastic waste bin for the clinical wastes in each trainee’s rooms. Only common wastes bin for domestic waste in the corridors of the building. We could see many trainees having skin infection and wondered that the dressing or cottons with body fluids (the things are considered as clinical waste or hazardous HCSW) were mixed with general wastes.

In addition, the plastic bags have been rarely used do collect the waste. Waste bins do not follow defined colour, label or notice for only Hz HCSW or biological waste. Red colour plastic waste bins is used for infection waste is not allowed for example to use for general domestic waste. The infectious waste should have been in the thick, yellow colour plastic bag with bio-hazardous symbol and the notice line “do not put waste over this line” to prevent the overflow of waste so that the medical staff or the collector can not tie the bag tightly.

- 5.4.7 Liquid infectious waste and wastewater treatment
  No solution for segregation of the liquid infectious waste and liquid expired drugs/pharmacies.

  No wastewater treatment system or simple solution (chlorination) in order to disinfect the wastewater before discharging to the city drainage system.

- 5.4.8 Water use at the 05 Haiphong RC
  Haiphong RC uses tap water from the water supply factory. Water consumption is about 45 m3/day.

- 5.4.9 Risk of HCWM in Hai phong RC
  There are 2 staff reported having hepatis B and 6 others complained with HIV exposure.

5.5 Problem of Regulation and Monitoring and awareness raising

The Ministry of Health has issued a regulation on health care waste management in the year 1999. It is the duty of the provincial Department of Health to monitor and inspect that the hospitals comply with the regulation.

DoH visits each RC once a year. DoH cannot issue any fees or enforce any punishment with the hospitals or RC did not strictly follow the Regulation.

According to DoHs the hospitals or the RCs cannot comply with the regulation as their financial capability is very limited. So it is like a dead end, DoHs cannot force the hospitals to manage waste according to the regulation and on the other hand hospitals do not have sufficient money to improve the waste handling conditions.

The regulation states some specific equipment to be used for storage and collection of health care waste. Most likely this equipment will be very difficult for the hospitals to procure as it is not directly available from medical equipment.
supplying companies, shops etc. or must have been ordered (e.g. thick yellow plastic bags and yellow plastic boxes with labels and lids).

There is no regulation forcing hospitals and health care centres/Rehabilitation centres to use the waste collection services from Hanoi URENCO or Haiphong URENCO. As known, Hanoi has one centralisation medical incinerator in TuLiem district and has service of hospital hazardous wastes collection and transportation for Hanoi hospitals. But Hanoi Rehabilitation centre at Son Son could not use that kind of service because of the financial issues or lacking of co-operation (in case the collection/transportation is designed only for Hanoi hospitals). In order to save money and lacking controlling, monitoring of HCSWM, this can be avoided and accordingly waste is treated onsite the centre or un-control burning open air.

DoHs are responsible for arranging training course for medical staffs at the hospitals and rehabilitation centres in relation to waste management. However this is only partly carried out and participants are normally top level persons and not the ones taking care of the daily waste handling. In addition, HCWM is not only the duty of the medical staffs without the participation of the trainees/patients and the population.

5.6 Storage and Collection of HIV/AIDS Health Care Waste

In general, storage of HCSW takes place plastic waste bin with wrong defined colour and without any notices. Waste stored in bins are collected and carried by hand to one corner of the building. No equipment is used.

None of RC has HzHCWS waste bins are placed in each patient room.

Sanitary nurse/or medical staffs carry out waste collection in the medical service room. They have often not participated in training courses on HCWM.

In general accidents are often reported for staff in relation to needles and sharp items.

5.7 Treatment and disposal of HIV/AIDS Health Care Waste

Treatment and disposal of waste takes place in two various ways. Domestic waste is collected by Hai phong URENCO at Hai Phong 05 RC in Hai Phong or dumped in the backyard in Hanoi 05 RC.

Clinical/infectious waste or Hz HCSW is burned in an incinerator (at Hanoi RC) and at the ground in the corner of the RC.
In the long term, burial pits for domestic without plastic liners at Hanoi RC will be polluted point due to the huge amount of waste were dumped. Frequently monitoring of water quality from drilled well is necessary.

6 The Risk of HCW

Hazards of HIV/ADIS HCSW at RC can become risks to population (for the trainees, staff and others) at large throughout several main pathways. The possible pathways include:

- Direct contact; contact through vectors (flies, rodents, animals); airborne transmission; and
- The pollution of water sources, especially, in the medical centres where tap water is not available or uses the dig well or local environment.
- Throughout contact with the Hz HCW

Whilst these theoretical risks can be foreseen, health workers know little of the actual risks; waste workers/waste pickers and the trainees and ground water are exposed.

There are about 1% of medical staffs in RC at Hanoi and Hai Phong reported that having contamination of Hepatitis B and several cases of infectious skin.

The risk to the community will be higher at Haiphong RC because the RC is very close to the habitant’s area.

7 Recommendation of Key Actions to Reduce Hazards

Reduce the actual hazards, which result from the nature of the waste by:

- Efficient separation from the waste stream at the point of generation; this reduces the total volume of hazardous waste and hence reduces the costs of the specialised treatment or disposal;
- Disinfect before disposal, e.g. chemical treatment, steam/heat treatment;
- Incineration to destroy the hazard; priority to the use of cluster incinerator.

7.1 Recommendation of Key Actions To Cut the Pathway

Eliminate direct contact between people and hazardous HCSW by:
• providing personal protective equipment e.g. heavy duty gloves, safety glasses, thick clothes;
• designing systems to minimise contact e.g. good onsite storage, bagging of waste, use of boxes to store waste sharps, more effective transportation or trolleys, no putting clinical waste into domestic waste bin without lids;
• restricting access to healthcare waste dumping site;
• improving education of dangers of healthcare waste.

Eliminate indirect contact between people and hazardous waste by:
• applying vector control methods e.g. covering waste;
• protecting water supplies from contamination;
• implementing good hygiene practices when dealing with waste e.g. hand washing; and
• create a dedicated budget line for waste management;
• implementing final disposal by effective sanitary landfill.

7.2 Actions to Protect the medical staffs and other non HIV/AIDS trainees

Introduce measures that offer increased protection to the populations most at risk by:
• Improving education, training and awareness raising for those dealing with healthcare waste which targets safety and recognition of risks;
• Immunising those in contact with healthcare waste against certain diseases e.g. Hepatitis B and tetanus;
• Provide better access to healthcare for those in contact with waste e.g. in order to stop infections from deteriorating.
• Provide for 02 RCs enough equipment and analytical to detect the HIV positive trainees having TB or Hepatitis B so that they can protect them and protect others from contamination.

8 Concluding remarks

Poor healthcare waste management in the two visited Rehabilitation centres. The main findings are the following:

- All of the medical staff in the 02 RC attempts to follow the Regulation on HCWM of the MoH and do the best way do right segregation the waste at source and to separate the clinical waste to the general domestic waste.

- all most of Rehabilitation Centers only consider and pay much attention to Hz HCSW and less attention to the liquid infectious waste, waste water treatment.

- burning Hz HCSW in under loading incinerator in Hanoi 05 incinerator. Un-properly treat Hz HCSW by open air burning onsite in Haiphong 05 RC.
- the need of the building capacity on HIV/AIDS HCWM at the 02 RCs including supplying waste collection/transportation/storage tools and consulting the 02 RCs on safe disposal of waste/using URENCO services/proper operate the incinerator.

- need to supply for the 02 RCs hospital wastewater systems (including treatment of the discharging liquid from the septic tanks).

- organizing the training course on HIV/AIDS HCWM amongst the RC’s staffs

- organizing training course on HIV/AIDS HCWM amongst the trainees/patients in order that they can do the best ways to prevent the spreading of infectious diseases for the others or to the community.

- Improving sanitary environment for the 02 RCs

- It is necessary to choice one or three Rehabilitation Centre to demonstrate best practice way to the hazardous & risk reduction at Rehabilitation Centre in the whole country. The “best practice” lessons will be learned on how to improve healthcare waste management will be well spread to others.

- Create a dedicated budget line for waste management for 02 RCs;

- Provide all staff with training on handling waste; and

- Work out detailed procedures for storage, handling, transfer and disposals of waste according to its characteristics and potential risks.

- Providing all the trainees/patients with training on HCWM to prevent risk of HCW to the community.

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