HEALTH CARE WASTE
MANAGEMENT IN MONGOLIA

SUMMARY

Health care waste management (HCWM) in Mongolia has been gradually improved during the years and reflected in policy and regulation framework, good collaboration with stakeholders, partners and strengthened capacity to plan, implement and evaluate HCWM. Pilot projects on improvement of health care waste management were successfully conducted at primary, secondary and tertiary levels. Main positive outcomes, experiences and lessons learned were considered while scaling up the projects nation-wide.

Establishing the right legal environment was essential for an improvement of health care waste management in Mongolia. Cost of health care waste treatment and transportation was included in the state and local budget of health care facilities. Training for health care workers and awareness raising activities among stakeholders were important in improving the best and safe practices. The strategic coordination of national stakeholders and international organizations involved in HCWM projects proofed to be essential for cost-effective utilization of the limited resources.

Besides the adoption of legal framework and regulations which are now in place, there are some areas that require further strengthening. These are revising existing guidelines, setting up of national management system, treatment, training, and monitoring and inspection system on health-care waste management.
INTRODUCTION

GEOGRAPHY/DEMOGRAPHY

Mongolia is located in the center of Asia, neighboring with the Russian Federation in the north and with the People’s Republic of China in the south. The country has a total land area of 1,564,1 thousand square kilometers and is one of the 20 largest nations in the world. It is the least densely populated country with an overall population density of 1.7 people per square kilometer.

The total population reached 2,780,900 in 2010, 48.6 % are male, and 51.4 % are female. Children aged up to 15 years old make up 27.3 %, people aged 15-64 yrs 68.9 % and people aged 65 yrs or over make up 3.8 % of the total population.

Mongolia has sharp continental climate with four distinctive seasons. January is the coldest month of the year when average temperatures may reach to -30 -40 °C, while July is the hottest month when temperatures may reach as high as +44 °C.

The low population density and nomadic lifestyles of many inhabitants result in further challenges for public provisioning.

ORGANIZATION OF HEALTH SERVICES

The country is administratively divided into 21 aimags (provinces) and the capital city (Ulaanbaatar). The aimags are further divided into soums (329) and bags (1568), while the capital city is divided into 9 districts, and 132 khoroo’s.

Health care services are delivered by family group practices, soum, inter-soum hospitals, rural general hospitals, district general hospitals, aimag general hospitals, tertiary hospitals, specialized centers and private hospitals.

Table 1. Health Care Facilities in Mongolia

<table>
<thead>
<tr>
<th>Health Care Services</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Specialized centers/tertiary hospitals</td>
<td>16</td>
</tr>
<tr>
<td>Regional diagnostic and treatment centers</td>
<td>4</td>
</tr>
<tr>
<td>Aimag general hospitals</td>
<td>17</td>
</tr>
<tr>
<td>District general hospitals</td>
<td>12</td>
</tr>
<tr>
<td>Rural general hospitals</td>
<td>6</td>
</tr>
<tr>
<td>Inter-soum hospitals</td>
<td>37</td>
</tr>
<tr>
<td>Soum hospitals</td>
<td>274</td>
</tr>
<tr>
<td>Family group practices (FGP)</td>
<td>219</td>
</tr>
<tr>
<td>Delivery center</td>
<td>3</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>171</td>
</tr>
</tbody>
</table>

HEALTH CARE WASTE MANAGEMENT

The safe and sustainable management of health care waste is a public health imperative and responsibility of all. Improper health care waste management poses a significant risk to patients, health care workers, the community and the environment.

The risk occurs at every step of hazardous waste segregation, classification, collection, storage, transportation, disposal and treatment. The health care workers are at risk of injury and the transmission of the blood borne pathogens, such as Human immunodeficiency virus, hepatitis B and C.
The WHO core principles require that all associated with financing and supporting health-care activities should provide for the costs of managing health-care waste. The management of health care waste is an integral part of a national health care system. A holistic approach to health care waste management should include a clear delineation of responsibilities, occupational safety and health programs, waste minimization, and segregation, the development and adoption of safe and environmentally-sound technologies, and capacity building.

Baseline survey was conducted in 2004-2005 to find out the characterization of municipal household waste and health care waste in Ulaanbaatar. Those results of the study were a starting point for actions to improve management of health care waste in the country.

Table 1: Main findings of the baseline study, 2004-2005

- A total of about 2.65 tonnes of healthcare waste were produced each day in Ulaanbaatar (about 0.78 tonnes of medical wastes and 1.87 tonnes of general wastes).
- The contribution of medical waste to the total waste stream produced in a particular type of facility varies from about 13.56% to approximately 98%.
- In general, the major concentration of materials in the medical waste stream consisted of syringes and gloves.
- The present management of healthcare wastes produced in Ulaanbaatar was not adequate. Wastes were not properly segregated and they were burned in the open air on-site at the healthcare facilities, burned at the disposal sites, or buried.
- A very limited amount of training was conducted at healthcare facilities with regard to waste management.
- A lack of coordination between the local and central governments with respect to the selection and installation of treatment facilities for healthcare wastes.

- None of the personnel at the facilities evaluated segregation of medical waste into infectious and non-infectious categories.
- All medicines were stored at each healthcare facility and at the end of the year (one time) conduct an inventory of all medicines were expired are disposed.

The national assessment on health care waste management that was conducted in 2006-2007 showed that there are 90 percent of the health care facilities burn medical waste in small scale, low temperature incinerators without any air filter or practicing open burning. Examples of incinerators are in below photos.
Baseline study on sharp injury and prevalence of hepatitis B and C was conducted among health care workers in 2009-2010. Main finding of the study showed that Mongolia has one of the highest rates of the prevalence of hepatitis B and C among health care workers. It revealed that Hepatitis B was 28.4%, hepatitis C 20.8% among health care workers. It was higher than general population (Prevalence among population is 10% and 10.7% respectively). The finding showed that there was high rate of injury by needle and sharps in the health care facilities (average 5-8 times per year per person). Total of 85.9% (n=304) of the respondents were injured by sharps at their workplace. The frequency of sharps injury in HCWs was relatively high. It was 6.13±3 times/year and 2.73-4.05 times in last three months. After this study, small grant was given to some hospitals to improve sharp waste management and provide training on sharp waste management among health care workers under the environmental health programme of WHO. Mandatory vaccination programme for health care waste management was also initiated and introduced in 2012.

**ACHIEVEMENTS IN HCWM**

**POLICY, STRATEGIES AND PLANS**

Approval of “caw on waste” (2012), Including HCWM and National Strategy on improvement of Health Care Waste Management and Action Plan for 2009-2013 the Order of Minister of Health in 2009 was important milestone to move towards environmentally friendly and non-incinerating technology which represent the beginning of the improvement of Health Care Waste Management in the country.

**LEGISLATION AND REGULATIONS**

To implement the National Strategy, several regulations were developed to manage health care waste.


Ministerial Order №.165 specifying the minimum standards for implementing infection prevention and control in health care facilities (2010).

Regulation for calculation of cost of health care waste treatment and transportation and budget for health care waste management was developed and approved (Ministerial order No: 93) in 2011. It is regulated cost estimation of the budget for medical waste treatment and transportation. By the regulation, budget for health care waste management is based on the amount of waste generated per bed per day plus the waste generated by outpatients. It is calculated separately for treatment and for transportation costs.

Those newly developed guidelines are being used as a reference to improve health care waste management at three levels of health care facilities in the country.

Mongolia has been initiating mercury free hospital since 2010 with technical and financial support of WHO. The Joint Order of the Minister of Health, Director General of the National Emergency Management Agency 07/27 from 11 January 2011 banned the procurement of mercury containing thermometers, sphygmomanometers, dental amalgams allowing Mongolia to join the world wide mercury free health care initiative and become one of the few countries to ban mercury in the health sector. Also in this order “Regulation on safety operations with mercury-containing health care equipment” and “Regulation on response action during mercury spill from breakage of equipment in health care organizations” were endorsed.

**STANDARDS AND GUIDELINES**

Guideline on health care waste classification, segregation, collection, storage, transportation, disinfection, disposal and registration form for health care hazardous waste, the guideline for transportation
of health care waste were developed (Ministerial order No: 158) in 2011.

- The guideline has regulated segregation of health care waste and included requirements for it
- The guideline contains effective and efficient advice on transportation of health care waste on the public streets. It is following the UN recommendation for the transportation of potentially infectious healthcare waste (UN 3291)
- The guideline also includes sample forms for the registration of medical waste at healthcare facilities, for transportation and disposal for infectious & sharps waste treatment.

Guideline for the aimag/provincial health care waste storage facility, the guideline for the soum, inter-soum health care waste storage facility, the guideline for placenta pit, list and technical specification of the basic equipment for sound health care waste management in aimag, soum, inter-soum hospitals were developed and approved by Ministerial Order No.179 in 2011.

RESOURCES MOBILIZATION AND STAKEHOLDERS

Following the support for non-incineration technology in 2008 a total investment of US$240,000 was allocated from the Government budget for procurement of basic equipment, such as pulsed vacuum steam type autoclaves, medium scale 2 chamber system incinerator for anatomical waste, water softener, shredder, electric generator, waste trolleys, waste bins and consumables for the capital city, Ulaanbaatar. A public-private partnership model was developed and tri-partiate agreement was reached with “Element LLC”. The Ulaanbaatar city Governor provided a 0.5 hectare site for medical waste at the newly developed municipal landfill (Narangiin enger).

The central treatment facility for health care waste was functioned since January 2010. After its function, use of incineration for health care waste was banned in Ulaanbaatar city by the Minister of Health’s Order 73 in 2010. By 2012, the central treatment facility in Ulaanbaatar city has been collecting and disposing health care wastes from 1000 public and private healthcare facilities in the capital city. Photos of the central treatment facility for health care waste are below.

To scale up the initiatives for building central facility for health care waste management, two biggest cities, namely Darkhan and Erdenet established central treatment facilities in 2009 with allocated government funding of US$90,000.

In 2011 Government allocated a budget for the Khovd province hospital and 3 remote district hospitals to procure equipment for sound health care waste management of US$60,000.

The Ministry of Health coordinates the activities that are being supported by development partners on improvement of health care waste management. A total of US$1 million investment was made by international organizations in 2010-2011 for sound health care waste management.
Above map shows that by 2012, in total of 33 percent of secondary level provincial hospitals and 41 percent of primary level soum hospitals already shifted to non incineration technology and improved health care waste management at hospital level.

PILOT PROJECTS

Project No1: HCWM improvement at soum health facilities

Case study. Primary (soum) level rural hospital

Background: Mongolia has 329 primary rural (soum) hospitals which serve the surrounding populations for up to 300-500 km, so it was necessary to find specific solutions for medical waste management for such remote areas.

Goal: To improve health care waste management at primary health care level

Objectives: It was piloted non-incineration technology for sound health care waste management, tested different safe options for

sharp waste management and improved overall management of health care waste at soum hospital

Activities: The pilot project on improvement waste management at primary health care facilities and sharp waste management was successfully implemented in Erdene soum, Tuv province from 2009 to 2011. The alternative of the small scale incinerator – a 60 litre vacuum autoclave, autoclave monitoring kits (chemical, biological), balance, needle cutters, needle burners and small shredder were supplied and installed. Several trainings were conducted for health care workers. Database was established based on weighed health care wastes per day.

Outcomes: Capacity of health care workers and health care waste management were improved. Result of pilot study was used for scale up, advocacy and policy and decision making process. Pilot project was helped to determine waste generation amounts and define appropriate solutions for sharp waste management and treatment facility of health care waste at primary rural hospitals.

Lessons learnt: This pilot project showed that the small autoclave is the most convenient solution for the treatment of the infectious and sharp waste, which are the most common types of waste at rural hospitals. The needle cutters and needle burners were good options for sharp waste management, if there is limited budget for safety boxes and low quality box. The pilot project showed that the small shredder is not convenient for rural hospitals, as it needs 380 W electricity and creates additional hazards such as noise and dust.

Project No2: HCWM improvement at Tertiary Level Hospital

Case study: Tertiary level hospital

Background: The pilot project for improving HCWM at tertiary level hospitals was implemented at the National Cancer Center, which has 9 divisions, 10 departments with 206 beds and 362 workers:

Goal: to improve waste management at tertiary level hospital and use main outcomes for advocacy as model.

<table>
<thead>
<tr>
<th>International Organization</th>
<th>Project implementation site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 World Health Organization</td>
<td>28 soum hospitals of 9 aimags</td>
</tr>
<tr>
<td>2 Millenium Challenge Account, Mongolia</td>
<td>35 soums hospitals of 10 aimags</td>
</tr>
<tr>
<td>3 Asian Development Bank HSHP-3 project</td>
<td>5 secondary level (aimag) hospitals 90 soums of 5 aimags</td>
</tr>
</tbody>
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**Objectives:** Health care waste segregation, intermediate storage and sharp waste management were improved at hospital level.

**Activities:**

- The guideline for waste management at the hospital level was approved by the Director in charge of the clinic. According to the guideline, waste segregation and collection was improved in the hospital.
- 90 percent of all bins for general waste and infectious waste were replaced by foot pedal bins. The labelling system was introduced in the hospital.
- Timetable for waste collection was introduced and transportation route designated.
- An interim storage place was designated.
- Practical training was conducted among health care workers.
- An awareness on sharp waste management, mercury free hospital initiatives was raised among all staff.
- The recycling of paper and plastics system was initiated.

**Outcome:** The pilot project was successfully implemented. Thus, National Cancer Center had won the award of the best hospital with HCWM in 2011.

**Lessons learnt:** The results of this pilot project showed that the support of administrative and management staff and commitment of responsible officers were important to implement it successfully.

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**NATIONAL TRAINING SYSTEM ON HCWM**

National training programme on health care waste management was developed for three educational levels (health care technician, health care officer and health care manager) and the provision of national training programs started.

**Levels of HCW Training**

The primary level basic training manual – was developed with technical support from WHO (it comprises a 3 day practical training program)

The secondary level training manual was also developed with the technical support of Millenium Challenge Account, Mongolia (3 day training)

The tertiary level advanced training manual – using the 8 modules on Health Care Waste Management developed by Indira Gandhi National Open University was adopted. Following an agreement with the Indian Indira Gandhi National Open University the distance training on HCWM started in July 2011 with 35 participants.
FURTHER ACTIVITIES

In 2013 the MOH started project with ADB for the Fifth Round of Health Sector Development Project. One of the key components of the Project will be to further establish adequate medical waste management systems. Under this project the centralized treatment facility of Ulaanbaatar city will be upgraded to meet internationally accepted standards; the monitoring and inspection capacity for medical waste will be strengthened; liquid hazardous waste will be improved and systems will be established to recycle certain chemicals and sharp containers.

ACKNOWLEDGEMENTS

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