

Kathmandu Model Hospital Safe and Sustainable Health Care Waste Management

GGHH Agenda Goals

- Leadership
- Waste

Progress Achieved

Leadership

- Kathmandu Model Hospital, established and managed by PHECT, a non-governmental organization, has a fully operational health care waste management system since December 2014. This safe and sustainable system was designed and implemented with technical support from Health Care Foundation Nepal (HECAF) over a two-year period (2012-2014).
- The need for a safe and sustainable health care waste management system was recognized by Dr. Bharat Pradhan, Executive Director of PHECT-Nepal. He saw how the system worked when he was employed at Bir Hospital, also a member of the Global Green and Healthy Hospitals (GGHH) Network (see case study at <http://bit.ly/2cWblOZ>).
- Dr. Pradhan's leadership was critical to the successful roll out of the health care waste management system at the hospital, and he chaired the newly established Waste Management Committee. PHECT also manages another hospital—Kirtipur Hospital, which is currently establishing its health care waste management system with support from HECAF.
- Dr. Pradhan is leading the Association of Non-Governmental Hospital of Nepal, a network of seven hospitals in Nepal. Under Dr. Pradhan's guidance, a workshop on safe and sustainable health care waste management was held in 2015 to raise awareness on the importance of this issue among the seven hospitals.

Waste

- Currently, the percentage of risk waste generated is about 15%, which is within the range expected by the World Health Organization (WHO) if there is proper segregation of waste. Prior to the implementation of the waste management system, the percentage of risk waste was 76%.
- Previously, the waste generated were either sent to landfill or burned. Now infectious waste is treated using steam-based autoclave technology that has been validated by experts.
- 28% of total waste is recycled and 28% of total waste is food waste that is composted. This means a total of 57% of waste diverted from landfill.

- On average, the monthly revenue generated from the selling of recyclables is around NPR 20,000 (USD 190).
- 7% of the total waste includes sharp glass, sharp metal and leftover liquid such as water into water bottle and saline bottle.
- Proper segregation of waste in wards has resulted in less chances of epidemic. Waste transportation and handling is carried out according to WHO guidelines, reducing the risk of exposure to infectious waste.
- Waste is segregated at source with improved sharps management, reducing needle-stick and sharps injuries at the hospital.
- At Kathmandu Model Hospital, waste segregation is everyone’s responsibility. With the four-bucket system in each ward (Figure 2), and the medication trolleys custom-designed to promote waste segregation at source (Figure 3), waste is segregated by the hospital staff or visitor who generates the waste.
- The new waste management system has not only benefited the staff of the hospital but also the community living in the vicinity of the hospital, as the hospital waste is no longer burned or disposed of haphazardly on the streets.
- This waste management system is robust enough that the hospital was able to continue treating its waste through the devastating 2015 Gorkha Earthquake.



Figure 1. Nurse demonstrates the cutting of syringes with needle cutter



Figure 2. Four-bucket system in the wards for waste segregation at source



Figure 3. Waste handler at the hospital with personal protective equipment collects waste from the ward



Figure 4. Risk waste being transported to the waste treatment and storage center using elevator dedicated to the transportation of waste

The Issues

The management of health care waste was a major challenge for Kathmandu Model Hospital. The hospital did not have a system to segregate waste, risk waste was mixed with non-risk waste, and risk waste was not treated. Waste handlers at the hospital were not provided with proper personal protective equipment. This exposed hospital staff, municipal waste handlers and the community to risk of disease transmission, injury, chemical exposure and other health-related concerns.



Figure 5. Collecting recyclables from the dumped waste prior to the implementation of the safe health care waste management system



Figure 6. Improper handling of waste

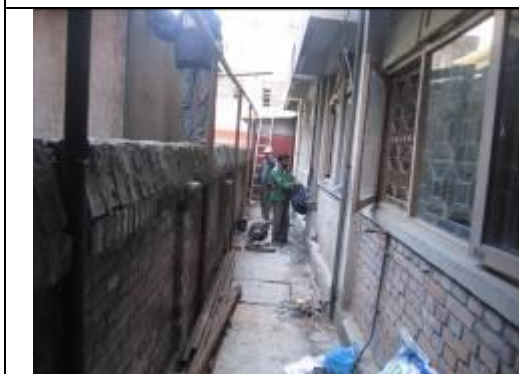


Figure 7. Waste storage area prior to the implementation of the safe health care waste management system



Figure 8. The same area (in figure 7) has been transformed into a waste treatment and storage center, with separate bags for different types of recycled waste, and a steam-based autoclave for the treatment of risk waste

Sustainability Strategy

Since the enactment of Nepal’s 2011 Solid Waste Management Act that provides the legal basis and regulation for health care waste management, and a strict notice has been

published for all hospitals to manage their waste within the hospital periphery, hospitals are paying more attention to the safe management of health care waste.

The main objectives of the Solid Waste Management Act are to:

- Make arrangement for the systematic and effective management of solid waste by minimizing the solid waste at source, re-using, processing or disposing of the solid waste; and
- Maintain the clean and healthy environment by minimizing the adverse effects of solid waste on public health and the environment.

At Kathmandu Model Hospital, its strategy to sustain the health care waste management system is through continuous training of staff, including orientation on the health care waste management system for new staff, and refresher training for existing staff. The revenue generated from recycling could contribute to the cost of these trainings, as well as to the organization of awareness raising events on the 3R (reuse, reduce, recycle) approach that involves all staff members.

Implementation Process

The hospital team, with technical support from HECAF, rolled out the safe health care waste management system through a step-by-step process.

Firstly, a waste coordinator to lead the implementation of the safe health care waste management system at the hospital was assigned.

Secondly, a waste management committee was established to make decisions on waste management issues at the hospital.

Thirdly, a model ward was chosen to implement the safe health care waste management system. A waste coordinator for the model ward was assigned to coordinate, monitor and report on the waste management activities at the ward.

At this model ward, waste segregation at source was introduced. The segregated waste was then transported to the waste treatment and storage center where risk waste was treated using steam-based autoclave, and recyclable products stored.

After a month of implementation at the model ward, a review was held to assess the waste management system, and improvements were made accordingly.

At the same time, HECAF provided training on safe health care waste management to both medical and support staff at the hospital.

The space within Kathmandu Model Hospital was limited, and finding a suitable area for the establishment of a waste treatment and storage center was a big challenge. At first, during the implementation of the system in two wards, a passage in the mortuary area was selected for the waste treatment and storage center, but this space was insufficient once the system was replicated to additional wards. An alternative larger space was needed for the system to function.

By chance, the HECAF team encountered a space where scraps were piled up all over the area. The hospital management cleared out the whole space and reconstructed the area for waste treatment and storage.

The construction of the waste treatment and storage center and the roll out of the safe health care waste management system hospital wide in all the wards took almost two years to complete. From time to time, the waste management committee meets to discuss any problems, areas of improvement and issues of sustainability.



Figure 9. Demonstration of the safe health care waste management system at the model ward



Figure 10. Training session to sensitize doctors

Tracking Progress

- A recording tool collects data on daily waste generation. The record gives a clear indication of the amount of waste produced by each ward, and what happens to the waste—including the amount of waste that goes to the landfill and the amount that is recycled.
- A monitoring record sheet logs the status of waste management.
- A waste sale record sheet keeps details of the amount of recyclables sold.
- An autoclave log sheet records the autoclave parameters each time that it is used.
- These record sheets for data collection were developed with support from Health Care Without Harm (HCWH).

Challenges and Lessons Learned

After developing the waste management system in the hospital, the main challenge was to change the behavior of the people that visited the hospital, whether it was the patient or the patient's visitor. When the waste segregation was first introduced, patients and visitors were unwilling to segregate waste and complained about it. But with regular orientation for the patients and visitors, waste segregation has now become a part of regular practice in the wards and throughout the hospital.

As mentioned previously, a key issue that the hospital faced was the lack of space. As the hospital is located at the city centre, it is difficult to expand. It was a challenge finding adequate space for establishing the waste treatment and storage center. In the end, a

solution was found, and a key takeaway from this experience is the importance of flexibility in the design of the safe health care waste management system that is based on context and resources available, and the participation of staff members to come up with solutions.

“Through the process of establishing a safe health care waste management system at Kathmandu Model Hospital, employees have been empowered to solve issues together, as a team. The key to successful health care waste management is the bringing together of team work, supportive management and relevant technical guidance. This combination is not easy to accomplish, but it is possible and we are evidence of it.”

~ Ms. Radhika Ghimire, Nursing Supervisor and Waste Coordinator, Kathmandu Model Hospital

“The main problem was not the space, but the proper management of space. If managed properly, any reliable space can be utilized.”

~ Ms. Urukshya Dongol, Program Coordinator, Health Care Waste Management Program, Health Care Foundation Nepal

Next Steps

The health care waste management system is now fully operational hospital wide. HECAF has handed over the system to the hospital to manage, but continues to monitor the system together with the waste management committee of the hospital.

Next steps include:

- Reform of the waste management committee.
- Provision of refresher training to the staff of the hospital.
- Use of the GGHH Hippocrates Data Center to measure actions toward reducing the hospital's environmental footprint.

About Kathmandu Model Hospital and HECAF

Kathmandu Model Hospital, located in Pradarshani Marg, Kathmandu, is a tertiary-level hospital with 135 beds, established and managed by a non-governmental organization—PHECT-Nepal. It provides patients with both diagnostic and curative services, including 24-hours emergency care, laboratory testing, pharmacy service, radiology and ambulance service. Kathmandu Model Hospital became a member of the GGHH Network in 2013. For more information see <http://web.phectnepal.org/kathmandu-model-hospital/>.

At the request of the hospital, HECAF started implementing a health care waste management system at the hospital in 2014.

HECAF, established in 1994, is a national non-governmental and not-for-profit organization with a mandate to work in three core areas: (1) health care, (2) environmental health and (3) emergency health. HECAF established the National Kidney Center in 1997, offers technical support in developing a safe and sustainable health care waste management system, and provides capacity development and training in emergency management and disaster risk reduction. For more information see <http://www.hecaf.org>.