ORIGINAL ARTICLE

Hospital Waste Management in Teaching Hospitals of Lahore: System Assessment Using New Tool

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ABSTRACT

Aims: To assess Healthcare Waste management segregation at source, interim storage, transportation, main storage, disposal and safety of waste handlers in teaching hospitals of Lahore.

Study design: Descriptive cross-sectional.

Place and duration of study: Lahore; June 2012 - June 2013.

Methodology: This was descriptive cross-sectional study conducted in five teaching hospitals of Lahore; using convenient sampling technique. A new assessment tool was developed using WHO guidelines in collaboration with a system analyst from LUMS. Data was collected by visiting all five hospitals after due permission, observations and interviews of concerned personnel was the basis.

Results: Waste management team and plans were present in 4/5 (80%) hospital. Segregation of waste at source, interim storage, internal transport, main storage were not up to recommendations of WHO and guidelines of Govt. of Pakistan. Protection of staff was not considered in 80%. Inconsistent supply of resources and poor basic infrastructure for HCWM was seen in 4/5 hospitals.

Conclusion: The new assessment method was quite helpful in detection of gaps in HCWM and advising appropriate corrective measure. HCWM needs urgent attention of all stakeholders: Govt., medical professionals, public in systematic way in order to protect people from deadly infections especially hepatitis B & C.

Keywords: Healthcare waste management, system assessment, World Health Organization.

INTRODUCTION

Hospital waste management is an ever-growing hazard in developing countries like Pakistan. Its poor management has been associated with increased risk of spread of deadly infections like HCV, HBV and HIV1. The dangerous component of hospital waste is the infectious waste that makes about 10% of total waste generated in a healthcare facility. Total healthcare waste generated in most developing countries ranges from 0.5-3kg per person/ year2, while in Pakistani healthcare facilities approximately 2kg/bed/day waste is generated; of which 0.1-0.5kg is infectious waste3, total waste generation in Punjab is 0.65kg/ bed/day. Lahore has 44 hospitals, 500 clinics, (total bed strength 12480)4. Most contagious of hazardous hospital waste are sharps especially used syringes, infusion sets, scalpels, knives, broken glasses. Infectious waste includes dressings, clothes, used catheters, contaminated by blood and body fluids of patients, in addition, chemical, pharmacological and radiological waste is also associated with risks to the population5. 2.4 billion syringes are used in Pakistan every year. Pakistan has highest injection: patient ratio and highest rate of unnecessary injections in the world6. 30% population is using 10 injections/person/year. Main hazard is from re-use of syringes and use of substandard syringes, needle stick injury and recapping7. This is not simply attitudinal problem as people lack in knowledge of the risks of re-use and use of substandard syringes and risks of unnecessary injections8. Existing level of community knowledge about safety of injections is 10%9. Inflicting dose of Hepatitis B & C viruses can survive for up to one week in a droplet of blood in hypodermic needle of a syringe according to Japanese Association for Research in Medical Waste. Strong evidence of HBV, HCV and HIV infections transmission via improper hospital waste management especially through injuries caused by sharps (needles, scalpel etc.) is established10, 11. In addition about 1 million quacks are working in the country contributing to the use of unnecessary and unsafe injections in urban as well as rural areas12. The risk of transmission of serious infections further increases through mixing of infectious waste with the general waste, lack of segregation of general and infectious waste at the source, covered and safe interim storage areas, covered and safe transportation to main storage depot and then to final site of disposal13, 14. Improper HCWM is one of the important causes of failure to prevent and control hepatitis B & C in Pakistan.

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especially hepatitis C is rapidly spreading disease reaching epidemic proportions. It has become indispensable to assess HCWM systematically identifying gaps in the system, their analysis and corrective measures must be taken. For this purpose Rapid assessment tool (WHO), survey Questionnaire for hospital waste management (WHO Regional Office SEA) are available. As according to Blue Book of WHO on HCWM, even a limited survey will provide useful data on local waste generation and management than any estimate based on other countries data. We have devised a new assessment document to ensure systematic evaluation and consistency in reporting adverse events, working as a team, and enabling decision making timely to ensure patient and staff safety at all points of care.

The objective of the study was to assess Healthcare Waste Management (HCWM) segregation at source, interim storage, internal transport, main storage, disposal and safety of waste handlers in teaching hospitals of Lahore.

METHODOLOGY

This descriptive cross-sectional study was conducted in Lahore from June 2012 to June 2013.

<table>
<thead>
<tr>
<th>Category</th>
<th>150-beded Teaching hospital</th>
<th>700 bedded Teaching hospital</th>
<th>Cancer Hospital</th>
<th>500-beded Teaching hospital</th>
<th>200 bedded maternity Hospital</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM-team</td>
<td>Nil</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>80%</td>
</tr>
<tr>
<td>WM-plan</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>80%</td>
</tr>
<tr>
<td>Segregation of waste at site</td>
<td>Patchy</td>
<td>Good in some, casual in others</td>
<td>Best</td>
<td>Casual</td>
<td>Patchy</td>
<td>20%</td>
</tr>
<tr>
<td>Color coded containers</td>
<td>_</td>
<td>Present</td>
<td>Partial</td>
<td>Partial</td>
<td>Partial</td>
<td>40%</td>
</tr>
<tr>
<td>Internal transport</td>
<td>Use of wheel chair</td>
<td>One trolley, unsafe</td>
<td>Adequate covered, Wheel chairs</td>
<td>Unsafe</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Main storage</td>
<td>Filthy</td>
<td>Improper maintenance</td>
<td>Adequate Clean</td>
<td>Insecure</td>
<td>Improved now</td>
<td>40%</td>
</tr>
<tr>
<td>Transport to final destination</td>
<td>Unsupervisioned, vehicles to outside</td>
<td>Vehicles to outside</td>
<td>Incinerator inside</td>
<td>Dumping</td>
<td>By vehicle outside</td>
<td>20%</td>
</tr>
<tr>
<td>Use of protective gears</td>
<td>—</td>
<td>Adequate</td>
<td>—</td>
<td>Partial</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Immunization of workers</td>
<td>None</td>
<td>Partial</td>
<td>Adequate</td>
<td>None</td>
<td>Partial</td>
<td>20%</td>
</tr>
<tr>
<td>Accident/spillage management</td>
<td>None</td>
<td>None</td>
<td>Adequate</td>
<td>None</td>
<td>None</td>
<td>20%</td>
</tr>
</tbody>
</table>

DISCUSSION

Healthcare waste management (HCWM) was according to standards as devised by Govt. of Pakistan and WHO in one of five hospitals, from documentation to implementation of rules & regulations with consistency and devotion by well trained and motivated staff. Conditions were worse in district level teaching hospital, with the exception of some cosmetic measures. Although formation of HWM team, and plan was present formally in other institutions (80%), the implementation of rules
CONCLUSIONS

New assessment method was quite effective in overall assessment and indicating gaps in the system and need for its remedy.

1. Provision of adequate budgets for HCWM to ensure consistent supply of resources.
2. Regular training workshops for medical, paramedical staff,
3. Active Involvement of all those responsible for HCWM according to rules.
4. Efficient record keeping and regular assessment and audit of HCWM
5. Education and training of public through media

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