
HOSPITAL WASTE MANAGEMENT - A GROWING HEALTH CONCERN

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In this era of startling developments in the medical field there remains a serious worry about the hazardous potential of various by products which if not properly addressed can lead to consequences of immense public concern. Hospitals and other health care facilities generate waste products which are evidently hazardous to all those exposed to its potentially harmful effects. Need for effective legislation ensuring its safe disposal is supposed to be an integral part of any country's health related policy. This issue is of special importance in developing countries like Pakistan which in spite of framing various regulations for safeguarding public health, seem to overlook its actual implementation. The result unfortunately is the price we have to pay not only in terms of rampant spread of crippling infections but a significant spending of health budget on combating epidemics which could easily have been avoided through effective waste disposal measures in the first place.

Waste classified under the heading 'bio-hazardous' includes any infectious or potentially infectious material which can be injurious or harmful to humans and other living organisms. Amongst the many potential sources are the hospitals or other health delivery centres which are ironically supposed to be the centres of infection control and treatment. Whilst working in these setups, health care workers such as doctors, nurses, paramedical staff and sanitation workers are actually the ones most exposed and vulnerable to these challenges.

Biomedical waste may broadly be classified into Infectious and toxic waste. Infectious waste includes sharps, blood, body fluids and tissues etc while substances such as radioactive material and by-products of certain drugs qualify as toxic waste. Furthermore health institutions also have to cater for general municipal waste such as carton boxes, paper and plastics. The World Health Organisation has its own general classification of hospital waste divided into almost eight categories of which almost 15% (10% infectious and 5% toxic) is estimated to be of a hazardous nature while the remaining 85% is general non hazardous content.¹ A recent study from Faisalabad, Pakistan has estimated hospital waste generation around 1 to 1.5 kg / bed /day for public sector hospitals in the region,² while figures quoted from neighbouring India are approximately 0.5 to 2 KG / hospital bed /day.³ Elsewhere in the world variable daily hospital waste production has been observed ranging from as low as 0.14 to 0.49 kg /day in Korea⁴ and 0.26 to 0.89 kg/day in Greece⁵ to as high as 2.1 to 3.83 kg/day in Turkey⁶ and 0.84 to 5.8 kg/day in Tanzania.⁷

Ill effects of improper management of hospital waste can manifest as nosocomial infections or occupational hazards such as needle stick injuries. Pathogens or spores can be borne either through the oro-faecal or respiratory routes in addition to direct inoculation through contact with infected needles or sharps. Environmental pollution can result from improper burning of toxic material leading to emission of dioxins, particulate matter or furans into the air. The habitat can also be affected by illegal dumping and landfills or washing up of medical waste released into the sea or river. Potential organisms implicated in diseases secondary to mismanagement of hospital waste disposal include salmonella, cholera, shigella, helminths, strep pneumonia, measles, tuberculosis, herpes virus, anthrax, meningitis, HIV, hepatitis and candida etc. These infections can cause a considerable strain on the overall health and finances of the community or individuals affected. The basic principal of Public health management i.e 'prevention is better than cure' cannot be more stressed in this scenario as compared to any other health challenge. Health facilities must have a clear policy on hazardous waste management. To ensure a safe environment hospitals need to adopt and implement international and local systems of waste disposal. Hospital waste management plan entails policy and procedures addressing waste generation, accumulation, handling, transportation, storage, treatment and disposal.

Waste needs to be collected in marked containers usually colour coded and leak proof. Segregation at source is of vital importance. The standard practice in many countries is the Basic Three Bin System i.e to segregate the waste into RED bags/ boxes for sharps, YELLOW bags for

biological waste and BLUE or BLACK ones for general/ municipal waste. All hospital staff needs to be trained in the concept of putting the right waste in relevant containers/ bags. They need to know that more than anything else this practice is vital for their own safety. The message can be reinforced through appropriate labelling on the bins and having posters with simple delineations to avoid mixing of different waste types. Sharps essentially should be kept in rigid, leak and puncture-resistant containers which are tightly lidded and labelled. Regular training sessions for nurses and cleaning staff can be organised as they are the personnel who are more likely to deal with waste disposition at the level of their respective departments.

Next of course is transportation of waste products to the storage or disposal. Sanitary staff and janitors must be aware of the basic concepts of waste handling and should wear protective clothing, masks and gloves etc, besides ensuring regular practice of disinfection and sterilization techniques.⁸ Special trolleys or vehicles exclusively designed and reserved for biomedical waste and operated by trained individuals should be used for transportation to the dumping or treatment site.

Biomedical waste treatment whether on site or off site is a specialised entity involving use of chemicals and equipment intended for curtailing the hazardous potential of the material at hand. Thermal treatment via incinerators, not only results in combustion of organic substances but the final product in the form of non-toxic ash is only 10 to 15% of the original solid mass of waste material fed to the machine. Dedicated autoclaves and microwaves can also be used for the purpose of disinfection. Chemicals such as bleach, sodium hydroxides, chlorine dioxide and sodium hypochlorite are also effective disinfectants having specialised indications.

Countries around the world have their own regulations for waste management. United Kingdom practices strict observance of Environmental protection act 1990, Waste management licensing regulations 1994 and Hazardous waste regulations 2005 making it one of the safest countries in terms of hazardous waste disposal. Similar regulations specific for each state have been adopted in United States following passage of the Medical Waste tracking act 1988. In Pakistan, every hospital must comply with the Waste Management Rules 2005 (Environment Protection Act 1997), though actual compliance is far from satisfactory. It is high time that the government and responsible community organisations shape up to seriously tackle the issue of bio hazardous waste management through enforcement of effective policies and standard operating procedures for safeguarding the health and lives of the public in general and health workers in particular.

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