

Hospital Waste Causing Havoc with Human Health

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Hospital waste has become a particularly important source of spreading infection in the society. It is not that it was not so early, but the population explosion has reduced the natural barrier and made the spread of infection that much easier. Moreover, the generation of waste – per-capita has grown exponentially. Hospitals of today, which were always considered a seat of healing, have become seat of infection.

Apart from the above consideration, infection contracted in a hospital is more difficult to treat as hospital acquired infections exhibit drug resistance mostly by undergoing mutation. Bacterial flora in the infected waste strewn all over would undergo mutation, which will be in proportion to the time the waste was left before disinfection. There have been doubts whether mutation in vitro is a known phenomenon. Many literatures have been consulted and it is now well established that mutation is very much possible in vitro as well.

Regeneration is a basic instinct of any living species. So when the bacterial flora has to grow against an impinging atmosphere of antibiotic presence, where it cannot grow in its nascent form it has to acquire certain new features or property. That is precisely what must be happening. That would lead to mutated variant of microbial which would then dissipate as aerosol.

If the abovementioned hypothesis is accepted, then it would be explainable as to why the hospital acquired infections are more difficult to treat.

It is a well-established fact that mutated varieties of microbial flora have been found in the underground water where terramycin has been used as a food supplement of the chicks. Most glaring possible example of mutation in the viral flora is that of the AIDS, which has probably developed as a result of serialization of the otherwise non-virulent simian immunodeficiency virus (SIDS). It has been brought out by a researcher and published in the Lancet - December 8, 2001 (The Injection Century”, - Drucker et al, Source-Down To Earth, Mar 31, 2001, page 23). During 1950s mass scale inoculation was given in Uganda and Somalia to fight yaws. As an accepted practice, the syringes were not disinfected considering the poverty of the countries.

How and why this so far neglected topic has caught the attention of everyone in India suddenly? And if so it is certainly not too late. With the population explosion the natural barrier, which existed due to sparse population, has reduced. Spread of infection would therefore be that much easier and that much faster. At the same time the waste generation has become voluminous as per the increasing population since generation of waste is directly proportionate to the growing population. Rural to urban migration has caused havoc to the old civic amenities, which were laid out decades ago. So the population overload is one of the very important reasons for the condition of today. Most of the

urban sewage systems are at the breakdown point, and are on the verge of collapse. The society does not have the budget for replacing the age-old systems. One thing leads to another, and the result is that the situation is becoming bad to worse, by the day.

A large portion of resources in terms of money or trained manpower is devoted to treating diseases, and for clinical preventable measures but hardly any concerted efforts are in the offing to improve the conditions where occurrence of these preventable disease itself, becomes a remote possibility. Hospitals are supposed to be the seat of healing but with the present trend it has become a seat of infection. At the same time hospital acquired infections are more tenacious and difficult to deal with since the infection is by drug resistant strains. Hospital acquired infections have gone up from 1960 to the present.

Similar is the case with other infections. The society spends an exceptionally large portion of its resources on the treatment of patients who have been afflicted by disease process but not much is being done to root out the cause of spread of nosocomial infection. Cross infection in a hospital and hospital acquired infection have remained an area of great concern. Many deliberations take place the year around, but no one pay much heed to the root cause. Hospital waste strewn all over the hospital compound is a major source of the spread of infection but still most hospitals barring the ones in the metros have established scientific system of hospital waste management. Rag pickers are still as active as ever. Studies done in a major hospital has brought out clearly that heaps of plastic syringes are carted away to a slum area and washed, repacked, and brought to their collaborators in the city. These are then stocked as new ones and sold to the unsuspecting buyers. In certain cases, the nexus between the rag pickers, the medicine shop owners and some of the nursing homes as well as hospitals are well-established (Sujana Krishnamurthy, Thesis work, 2004).

On an average about 30% of the plastic syringes come back into the circulation without disinfection. In fact, the plastic syringes were encouraged and introduced to eliminate nosocomial. Plastic syringes were meant for single use. However, that has not happened, at least in the developing countries. An explanation offered by the WHO states “whereas introduction of the plastic syringes had the desired result in reducing the nosocomial infection in the developed countries it did not have any effect amongst the developing or the underdeveloped countries”. It has been attributed to the wrong practices in the lower income group countries. It is estimated that in and around Delhi itself the total trade value of the recycled plastic ware (used in the medical management) is about INR 50 million per year.

About one billion syringe waste is generated in the USA by diabetes patients taking domiciliary treatment. Each plastic syringe cost about \$ 1 to 1 and half. So that is a lucrative

trade of about one to one and half a billion dollars. However the better part is that in the US the regulatory authorities, general awareness of the public is such that reuse of used plastic syringes is limited to the group of drug abusers or drug peddlers. Unfortunately no such statistics is available for India, but it must be matching (of course in rupees). This being the monetary attraction effective measures will be required to deal with this menace.

In an urban area in India not all the nursing homes are registered, besides the umpteen numbers of quacks practicing and flourishing at every nook and corner of these cities. In Delhi alone there are about 5000 nursing homes and hospitals registered. But there would be an equal number unregistered. Apart from the nursing homes there would easily be about 10,000 quacks in Delhi. Also there are domiciliary patients to cater to. Thus taking a comprehensive care of the biomedical waste in an urban area like Delhi would be a nightmare. The task may appear insurmountable. But with elaborate planning this can be planned and executed.

The WHO reports¹ :

- 1) Each person in the developing world receives 1.5 injections per year on the average. Hosp patients receive 10 to 100 times more injections.
- 2) At least 50% of all injections were unsafe
- 3) There was convincing link between unsafe injections and transmission of Hep B&C, Lassa virus and Malaria.
- 4) 20-80% of all new Hep B infections were due to unsafe injections.
- 5) In the world it is estimated that 16 billion syringes are sold every year, out of which 1 billion injections are given in the course of childhood vaccination program.
- 6) In Britain, an outbreak of Malaria took place in 1917 among soldiers who were given injections for Syphilis.
- 7) Introduction of disposable syringes largely reduced the problem in the developed world but not in the developing countries.
- 8) In India, 96% of injections were for antibiotic, vitamins and analgesics (in 1987).
- 9) 20% of 67 million new Hep B infections, each year in the developing world are due to unsafe injection.
- 10) Annual estimate of infection due to unsafe injection, worldwide is
 - a) Hep B -----8-16 million
 - b) Hep C ----- 2.3 – 4.7 million
 - c) HIV -----80,000-160,000

Of all hospital acquired infection the largest group is of upper respiratory tract infection-49.01% in the study carried out at an ICU at BHU, Varanasi.

The above-mentioned research findings are indicative of mutation taking place in the infected discards of the hospital waste. More work is required to be undertaken to find out and establish on scientific platform the damage the untreated or uncared for hospital waste is causing to the society.

Though it can never be tangible, the advantage the society will gain out of proper hospital waste management are

tremendous. Perhaps the prevention of communicable diseases in number and quantity can never be specified, perhaps not even the number of cases thus prevented but the fact would remain that managing the hospital waste in a proper and scientific manner can bring about a very substantial change. This not only may save the resources of the society but also improve health status.

As per Theo Colborn, a wildlife expert, the human body carries more than 500 additional chemicals today than it carried in the 1920s, and it is not known how these additional chemicals are interfering with the health or degrading health of the human beings. Could the chemicals also contribute to the changed behavior and the mental outlook? It would be an interesting study if such a study could be undertaken.

¹ Monreal. J , WHO/PEP/RVD/94.1(1991), Page-10