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Editorial

Emergence of Antimicrobial Resistant Bacteria Linked to Poor Healthcare Waste Management: A Call to Action

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With rapid urbanization in Africa, solid healthcare waste management is fast becoming a growing challenge. Solid healthcare waste management is a significant public health and environmental issue.

There is evidence that suggests casual linkages between poor healthcare waste management practices and the emergence of drug-resistant bacteria. The recent discovery of drug-resistant bacteria at key pharmaceutical manufacturing sites in India prompted the 2016 United Nations meeting on antimicrobial resistance [1]. These key Indian pharmaceutical manufacturing sites have for a long time, exported antibiotics to developed nations like France, the United Kingdom and United States of America [2].

In India, the river system is classified into the Himalayan Rivers that originate from the Himalayas and the Peninsular Rivers that emerge mainly from the Western Ghats. These rivers either flow eastwards into the Bay of Bengal or westwards into the Arabian Sea, draining into the Indian Ocean.

Regulations for release of pharmaceutical waste into rivers and the environment are negligible in India [3]. This essentially means that the process that permits antibiotic manufacturing plants to release waste containing active pharmaceutical ingredients into the environment, reinforces selection of resistant organisms [2].

In addition to dust, air-borne aerosols and food colonized by bacteria, environmental dissemination routes in particular sewage, travel, water bodies and wastewater treatment plants facilitate dissemination of resistant bacteria [4-7].

From time immemorial, sewage treatment plants (STPs) have generally discharged untreated sewage and their effluent into water bodies; a practice that has evidently resulted into dissemination of resistant bacteria [8].

Alternative practices that have considerably contributed to resistant bacterial spread are that water contaminated by STP effluents is often used for drinking, irrigation and recreational swimming. Furthermore, animals often drink such untreated surface water which could also spread resistant bacteria to humans [9].

The risk of infection with resistant bacteria from exposure to medical and pharmaceutical waste is higher in medical personnel, industrial workers, auxiliary workers, recyclers and scavengers. As much as medical waste necessitates stringent precautions, in many countries it is common practice to find medical waste being handled like ordinary domestic waste [10].

What is also significant to note is that poor medical and pharmaceutical waste practices likewise expose environmental bacteria to varying and sub-optimal levels of antibiotics which is likely to result into production of bacterial variants with higher rates of genetic change and antimicrobial resistance.

Basically, in the near future we will be witnessing common human pathogens not only resistant but also aggressive to most antibiotics which would also be spread more easily between humans. A foretaste of this was documented in China, where hypervirulent Klebsiella pneumonia resistant to all antibiotics was isolated in Chinese hospitals recently [11,12].

Against this backdrop, as generation of solid healthcare waste increases with urbanization and industrialization, the risk of both multi-drug resistant infections and antimicrobial resistant bacteria are also anticipated to increase.

Because this problem has far-reaching consequences, healthcare waste management approaches and frameworks that ensure that all healthcare waste is managed and disposed of safely, must be implemented across industries, institutions of learning and hos-

pitals. Furthermore, countries should be committed to recognizing the gravity of this problem and enforce the adoption of World Health Organization good manufacturing practice guidelines [13] for workplace safety, environmental protection, pollution, prevention, and adoption of cleaner production technology across all relevant sectors.

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Competing Interests

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