



# A qualitative study of the causes of improper segregation of infectious waste at Nemazee Hospital, Shiraz, Iran

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## KEYWORDS

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Waste management;  
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waste;  
Waste handling;  
Focus groups

## Summary

**Background and objectives:** Medical waste management is a major concern for healthcare facilities. One important element is the segregation of infectious waste from domestic, non-infectious waste. The aim of this qualitative study was to identify factors that negatively affect proper segregation at Nemazee Hospital, which is affiliated with Shiraz University of Medical Sciences.

**Methods:** Study data came from focus groups involving hospital workers. Participants expressed their opinions regarding barriers to proper segregation of medical wastes. The participants gave their permission to have their comments recorded. Data analyses were based on a grounded theory approach.

**Results:** The results indicated that managerial weakness was an important factor in suboptimal disposal of medical waste. It appears that hospital authorities should pay better attention to educational planning, organizational resources and supervision. Together, these considerations should help reduce waste-management errors. The results also suggest that healthcare worker training needs improvement. In general, patients and their companions, as well as the local population, did not appear to have sufficient knowledge concerning disposal of infectious medical waste.

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*Conclusions:* Hospital authorities should conduct a broad review of medical waste management, including improved employee training. This step should have a positive effect on local health, as well as the environment. Improvement is also needed in the infection prevention performance of hospital healthcare workers. This approach should reduce additional production of infectious waste and costs associated with healthcare.

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## Introduction

Rapid population expansion has resulted in the need for additional healthcare facilities and diagnostic laboratories, leading to the generation of larger amounts of medical waste worldwide. One factor affecting this increase is the wider employment of single-use disposable devices [1].

Medical waste is a type of waste generated during diagnosis, treatment or immunization of patients in healthcare settings [2]. Based on epidemiologic data, medical waste can be divided into two categories – infectious and non-infectious. Some infectious and non-infectious waste can also be hazardous – potentially harmful because of the presence of dangerous chemicals or pharmaceuticals or radioactivity or otherwise able to cause an adverse reaction [3].

Infectious medical waste has the proven ability to transmit disease among healthcare workers (HCWs) and other exposed individuals. Infectious waste accounts for approximately 15–25% of all medical waste; however, it has the potential to negatively affect human safety and health [4,5]. If medical waste is not managed correctly, it can cause serious infectious disease such as hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV) and respiratory, enteric and soft tissue infections [6].

A clear definition of infectious waste is needed to assist HCWs to correctly separate different types of waste. One definition of infectious waste includes anything potentially infectious, such as body fluids or secretions (e.g., blood, pleural fluid, semen, vaginal secretions, vomit, feces or urine), contaminated sharp objects (e.g., contaminated needles, syringes and surgical blades), biological laboratory waste (e.g., cultures, stocks and growth media), pathological waste (such as human tissue, organs or body fluids), and single-use disposable equipment, utensils and instruments soiled with potentially infectious agents.

The definition of waste is also influenced by the location of disposal, such as veterinary clinics or

hospital areas (e.g., isolation wards or rooms, operating theaters, emergency rooms, intensive care units, pathological and biological laboratories and autopsy rooms) [2,7,8]. Non-infectious waste is usually considered infectious after being mixed with infectious waste [7].

The amount of medical waste generated depends on various factors, including the size of the healthcare facility, number of beds, occupancy rate, segregation procedures and types of services provided [1,4]. The quantity of infectious waste can also be affected by the level of insurance reimbursement [9].

Stages of medical waste management include segregation, collection, packaging, storage, treatment, transport and disposal. Infectious waste must be segregated from non-infectious waste and treated by incineration or autoclaving prior to disposal. A lack of appropriate labeling can result in improper segregation of medical waste and increased associated costs [4].

Generation and handling of waste differs worldwide [7,10]. Medical waste management is a special concern in areas with severely limited resources. In parts of Asia, proper management is generally thought to be inadequate [7]. Developing countries often pay less attention to waste management, resulting in mixing of regulated medical waste with non-infectious waste [11,12]. The WHO indicates that 64% of hospitals in 22 countries do not perform correct waste procedures [13]. Factors associated with improper segregation include inadequate awareness, poor HCW attitudes and practices and inadequate management by facility leadership [2,7,14]. Physicians are usually aware of the need for proper infectious waste management and the associated risks for disease transmission; however, they are often unfamiliar with the tenets of the rules and regulations [15].

WHO reports indicate that the level of infectious waste generated is higher in developing countries, including Iran. This can be attributed to a lack of awareness by HCWs concerning correct definitions for infectious medical waste, as well as a poor

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