

Management of Waste from Healthcare Activities with Infectious Risk (DASRI) in Healthcare Facilities in Algeria

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ABSTRACT

Healthcare facilities in Algeria generate substantial waste from daily healthcare activities. Among these, waste from healthcare activities with infectious risk (DASRI) is of particular concern because of the health and environmental hazards it poses. Effective and regulated management is essential to protect patients, healthcare personnel, the wider public, and the environment. Several studies indicate that, despite a regulatory framework, implementation often remains incomplete. This article reviews the regulatory foundations, management stages, responsibilities, and challenges involved before avenues for improvement are proposed.

KEYWORDS: medical waste, regulation, public health, environment, Algeria, hospital management.

INTRODUCTION

DASRIs are waste generated by medical, paramedical, veterinary, or biological research activities that may contain infectious agents. The management of DASRIs represents a major public health and environmental protection issue. In Algeria, this management is governed by Law No. 01-19 of December 12, 2001, on the management, control, and disposal of waste, and by Executive Decree No. 03-478 of December 9, 2003, establishing specific procedures applicable to waste from healthcare activities. Despite this regulatory framework, practical implementation can still be inadequate: inadequate infrastructure, incomplete staff training, nonsystematic sorting, and high treatment costs. However, several Algerian hospitals have recently improved their systems by installing modern pretreatment units and implementing staff awareness-raising programs.

Regulatory Framework in Algeria

Laws and Classifications

- Algerian Law No. 01-19 on the management, control, and disposal of waste classifies waste arising from medical or paramedical activities as “special hazardous” waste.
- An executive decree (2003) classifies healthcare waste into three categories: anatomical waste, infectious waste, and toxic and chemical waste.
- The National Waste Agency (AND) and the Directorate General for Prevention and Health Promotion (DGPPS) developed the *National Guide on the Management of Waste from Healthcare Activities* in 2019 for healthcare waste and DASRI.
- Algeria has ratified, in particular, the Basel Convention on hazardous and transboundary waste.

2.2 General Principles

- Each waste-generating facility is responsible for its waste from generation to final disposal, ensuring the following stages: segregation, packaging, storage, transport, and treatment.
- Source segregation, that is, segregation at the point of waste generation, is a key principle.
- Compliance with approved treatment pathways, traceability, and the prevention of infectious and environmental risks are also needed.

3. Stages in the Management of DASRI in a Healthcare Facility

The main stages, together with their challenges and specific characteristics for a healthcare facility, are as follows.

3.1 Segregation and Collection at the Point of Generation

- As soon as waste is generated, risk waste, including sharps, anatomical waste, and infectious waste, must be identified and separated from “ordinary” waste.
- Specific containers must be used, such as rigid boxes for sharps, as well as bags in the appropriate colours, including yellow for DASRI.
- Staff must be trained and made aware of the proper handling of DASRI. Several studies highlight a lack of training.

3.2 Temporary Storage Within the Facility

- After collection, waste is stored in a secure, well-ventilated area accessible only to authorised personnel.
- The storage period must be limited; some studies indicate that DASRIs should be treated within 72 hours of being generated on site.

3.3 Transport and Routing

- Approved operators must transport under secure conditions, including using sealed vehicles and maintaining traceability.
- The route between the facility and the treatment unit must be planned, and the service provider must comply with hazardous waste standards.

3.4 Treatment and disposal

- DASRI may be treated through incineration or by pretreatment, including disinfection or sterilisation using a pretreatment unit, followed by disposal.
- Disposal must take place in approved facilities that comply with relevant standards, such as modern incinerators.

3.5 Traceability and Documentation

- The facility must keep records, consignment notes, or logs of the quantities generated, transported, and treated. This traceability is essential for monitoring and control.

4. Specific Features of a Healthcare Facility in Algeria

For a facility such as a public hospital in Algeria, several specific requirements apply:

- The facility director is directly responsible for waste management.
- The facility must have a hygiene committee, namely, the Committee for the Control of Nosocomial Infections (CLIN), which may supervise waste management and health safety.
- The budget, training, and logistical resources, including containers, storage areas, vehicles, incinerators, or external partnerships, must be provided within the framework of hospital policy. Several studies have shown that the lack of material and human resources constitutes a major obstacle.

5. Current Situation and Main Challenges

5.1 Current State of Affairs

- Field studies, such as those conducted at the Public Hospital Establishment of Azazga, reveal shortcomings in DASRI management, including insufficient training, inadequate storage facilities, and inconsistent adherence to prescribed pathways.
- In the wilaya of Constantine, Ben Badis University Hospital produced 4 tonnes of DASRI per week, and collection was outsourced to a specialised station.
- The use of modern incinerators is developing, for example, in the wilaya of Ghardaïa, but remains insufficient at the national level.
- A national survey conducted by the National Waste Agency revealed that healthcare waste collection exceeds 98% in certain wilayas, although the situation remains highly heterogeneous.

5.2 Issues and difficulties

- Many facilities lack sufficient financial and logistical resources, including storage areas, containers, vehicles, and incinerators.
- Training and awareness-raising among staff at all levels remain insufficient.
- Traceability and monitoring of waste flows remain incomplete in some facilities.
- Disposal in approved incinerators can be difficult, leading to noncompliant practices.
- The integration of healthcare facilities into the territorial waste management master plan at the wilaya (regional) level remains only partial.

6. Recommendations for Improvement

For a healthcare facility in Algeria, the following actions are recommended to strengthen the management of DASRI:

- An internal DASRI management plan, including the determination of the quantity and type of waste, the definition of responsibilities, and procedures, should be established or strengthened.
- Continuous training for staff, including healthcare workers, cleaning personnel, and internal transport staff, on appropriate practices, segregation, packaging, and risks should be ensured.
- Invest in secure storage areas, appropriately color-coded containers, and internal transport equipment.
- partnerships should be established or strengthened with an approved treatment unit, such as an incinerator or pretreatment unit, and the arrangement should be formalised through an agreement.
- A traceability system that includes registers, consignment notes, quantity monitoring, collection frequency, transport, and disposal should be implemented.
- Raising awareness among facility management and mobilising financial and logistical resources so that DASRI management becomes an integral part of hospital quality and hygiene policy.
- Verify compliance with the National Guide on the Management of Waste from Healthcare Activities developed by the National Waste Agency and the Directorate General for Prevention and Health Promotion (2019), and adapt internal procedures accordingly.
- Students should participate in the wilaya waste management master plan to ensure the territorial coordination of collection, treatment, and monitoring.
- Conduct regular audits of the DASRI chain, from segregation to internal collection, external transport, and treatment, and correct any noncompliance.

7. CONCLUSION

The management of DASRIs in healthcare facilities in Algeria constitutes a major public health and environmental issue. A regulatory framework exists, and a national guide is in place. However, implementation remains uneven owing to organisational and human constraints. As a healthcare facility, it is essential to consider this management as a strategic component of the quality and safety of care. Rigorous application of the stages of segregation, packaging, storage, transport, treatment, and traceability is necessary, together with the mobilisation of resources and expertise. With a clear plan, concrete actions, and regular monitoring, the facility will not only comply with regulations but also improve safety for all.

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