

Infection prevention and control measures for Ebola and Marburg Virus disease: A series of rapid reviews

KQ12 Disinfection vs. incineration of linens- Initial Summary

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Key Question

KQ12: Should heavily soiled linen resulting from care to patients with Ebola or Marburg in health care, ETUs or community settings be incinerated versus disinfected?

Methods Summary

This is one of a series of rapid reviews answering 12 key questions related to three themes on infection prevention and control measures for filoviruses: (i) transmission/exposure (n=3 questions), (ii) personal protective equipment (PPE) (n=5), and (iii) decontamination and disinfection (n=4). Data sources include Medline, Embase, bio/medRxiv pre-print servers, Global Medicus Index, Epistemonikos, China National Knowledge Infrastructure (CNKI) and Wangfang database. We used an automation tool (CAL® tool) for titles/abstracts screening for relevant systematic reviews and primary comparative studies. Full-text screening, data extraction, risk of bias assessment, and GRADE (Grading of Recommendations Assessment, Development and Evaluation) for the certainty of evidence were completed independently by two reviewers with any disagreements resolved by consensus, with arbitration by a third reviewer, when needed.

Findings

A total of 72 studies were screened in the CAL tool software and 20 studies were included for full-text screening. No studies met the eligibility criteria. The majority of studies excluded at the full-text were excluded because they were non-comparative studies that did not compare outcomes for incineration vs. disinfection of heavily soiled linens. Articles that discuss the implementation of current practices for disinfection or decontamination of heavily soiled/highly contaminated waste from Ebola virus or Lassa Fever patients were noted and are discussed in our contextual data. A list of excluded studies with reasons for exclusion can be found in Appendix 1.

Appendix 1. Excluded Studies List – By Reason for Exclusion:

Does not examine Ebola or Marburg (or surrogate viruses)

Rhee SW. Management of used personal protective equipment and wastes related to COVID-19 in South Korea. *Waste Manag Res.* 2020;38(8):820-824. doi:[10.1177/0734242X20933343](https://doi.org/10.1177/0734242X20933343)

Non-comparative study

Cummings KJ, Choi MJ, Esswein EJ, et al. Addressing Infection Prevention and Control in the First U.S. Community Hospital to Care for Patients With Ebola Virus Disease: Context for National Recommendations and Future Strategies. *Ann Intern Med.* 2016;165(1):41. doi:[10.7326/M15-2944](https://doi.org/10.7326/M15-2944)

Edmunds KL, Elrahman SA, Bell DJ, et al. Recommendations for dealing with waste contaminated with Ebola virus: a Hazard Analysis of Critical Control Points approach. *Bull World Health Organ.* 2016;94(6):424-432. doi:[10.2471/BLT.15.163931](https://doi.org/10.2471/BLT.15.163931)

Garibaldi BT, Kelen GD, Brower RG, et al. The Creation of a Biocontainment Unit at a Tertiary Care Hospital. The Johns Hopkins Medicine Experience. *Annals ATS.* 2016;13(5):600-608. doi:[10.1513/AnnalsATS.201509-587PS](https://doi.org/10.1513/AnnalsATS.201509-587PS)

Garibaldi B, Ernst N, Reimers M, et al. Establishing a New Biocontainment and Treatment Unit. *Chest.* 2015;148(4):248A. doi:[10.1378/chest.2268190](https://doi.org/10.1378/chest.2268190)

Hewlett AL, Varkey JB, Smith PW, Ribner BS. Ebola virus disease: preparedness and infection control lessons learned from two biocontainment units. *Current Opinion in Infectious Diseases.* 2015;28(4):343-348. doi:[10.1097/QCO.0000000000000176](https://doi.org/10.1097/QCO.0000000000000176)

Herstein JJ, Biddinger PD, Gibbs SG, et al. High-Level Isolation Unit Infection Control Procedures. *Health Security.* 2017;15(5):519-526. doi:[10.1089/hs.2017.0026](https://doi.org/10.1089/hs.2017.0026)

Herstein JJ, Biddinger PD, Kraft CS, et al. Current Capabilities and Capacity of Ebola Treatment Centers in the United States. *Infect Control Hosp Epidemiol.* 2016;37(3):313-318. doi:[10.1017/ice.2015.300](https://doi.org/10.1017/ice.2015.300)

Haverkort JJM, Minderhoud ALC (Ben), Wind JDD, Leenen LPH, Hoepelman AIM, Ellerbroek PM. Hospital Preparations for Viral Hemorrhagic Fever Patients and Experience Gained from Admission of an Ebola Patient. *Emerg Infect Dis.* 2016;22(2):184-191. doi:[10.3201/eid2202.151393](https://doi.org/10.3201/eid2202.151393)

Le AB, Hoboy S, Germain A, et al. A pilot survey of the U.S. medical waste industry to determine training needs for safely handling highly infectious waste. *American Journal of Infection Control.* 2018;46(2):133-138. doi:[10.1016/j.ajic.2017.08.017](https://doi.org/10.1016/j.ajic.2017.08.017)

McCulloch KL, Michael F, Goren M, et al. Creating an Environment of Safety for the Treatment of Patients with Ebola. *American Journal of Infection Control.* 2015;43(6):S73. doi:[10.1016/j.ajic.2015.04.193](https://doi.org/10.1016/j.ajic.2015.04.193)

Otter JA, Barnicoat M, Down J, Smyth D, Yezli S, Jeanes A. Hydrogen peroxide vapour decontamination of a critical care unit room used to treat a patient with Lassa fever. *Journal of Hospital Infection*. 2010;75(4):335-337. doi:[10.1016/j.jhin.2010.02.025](https://doi.org/10.1016/j.jhin.2010.02.025)

Onoh R, Adeke A, Umeokonkwo C, Ekwedigwe K, Agboeze J, Ogah E. Knowledge and practices of health-care waste management among health Workers in Lassa fever treatment facility in Southeast Nigeria. *Niger Med J*. 2019;60(5):257. doi:[10.4103/nmj.NMJ_161_18](https://doi.org/10.4103/nmj.NMJ_161_18)

Perpoint T, Valour F, Gerbier-Colomban S, et al. Knowledge Attitude and Practice (KAP) on Ebola Virus Disease (EVD) Among Health Care Workers (HCWs) From the Lyon Teaching Hospitals, France. *Open Forum Infectious Diseases*. 2016;3(suppl_1):602. doi:[10.1093/ofid/ofw172.465](https://doi.org/10.1093/ofid/ofw172.465)

Sarti AJ, Sutherland S, Robillard N, et al. Ebola preparedness: a rapid needs assessment of critical care in a tertiary hospital. *CMAJ Open*. 2015;3(2):E198-E207. doi:[10.9778/cmajo.20150025](https://doi.org/10.9778/cmajo.20150025)

Sisler L, Hanlon V. Supporting Emerging Infectious Disease Education Through Utilization of “At-A-Glance” Guides for Infection Prevention and Containment Unit Staff. *American Journal of Infection Control*. 2016;44(6):S124-S125. doi:[10.1016/j.ajic.2016.04.151](https://doi.org/10.1016/j.ajic.2016.04.151)

No relevant comparisons

Garibaldi BT, Reimers M, Ernst N, et al. Validation of Autoclave Protocols for Successful Decontamination of Category A Medical Waste Generated from Care of Patients with Serious Communicable Diseases. McAdam AJ, ed. *J Clin Microbiol*. 2017;55(2):545-551. doi:[10.1128/JCM.02161-16](https://doi.org/10.1128/JCM.02161-16)

PDF not found

Bangura I, Conteh C. The Impact of Quality Improvement Methodology to Improve Infection Control Practices. *Antimicrobial Resistance & Infection Control*. 2019;8(1):P405.

Bustamante ND, O’Keeffe D, Bradley D, Pozner CN. Targeted interprofessional simulation-based training for safe patient management of Ebola virus disease. *Academic Emergency Medicine*. Published online 2015.

Cazares M, Hutson M, Lakhani U, Herndon D. Implementation of an infectious disease control plan requiring category-a personal protective equipment. *Journal of Burn Care and Research*. Published online 2016.

Appendix 2. Eligibility Criteria

Question (12): Should heavily soiled linen resulting from care to patients with Ebola or Marburg disease in health care, ETUs or community settings be incinerated versus disinfected?

Setting	Health care facility, ETU, community (e.g., burial team)
Population	Staff working in Health care facility, ETU, community
Background interventions (Standard of care)	Heavily soiled, contaminated linen should preferably be incinerated or processed by autoclaving. Washing contaminated linen by hand should be discouraged, if washing machines are not available or power is not ensured, take the soiled linen out of the container and empty it into a large drum container of water and soap. Soak the linen in this drum and make sure it is totally covered with water. Use a stick to stir; then throw out the water, refill the drum with chlorine 0,05% (a solution containing 500 ppm available free chlorine) and soak for 15 minutes.
Intervention	Incineration of heavily soiled linen
Comparator(s)	Laundering heavily soiled linen
Outcome	Staff exposure during handling and laundering of linens, transmission of Ebola and Marburg
Potential effect modifiers	Investment in cleaning, decontamination, and sterilization Use of mechanical washers versus manual (by hand) washing, infra-structure for proper laundry Type of disinfectant used (toxicity, corrosion, environmentally safe to use) <i>Quality of linens for re-use.</i> <i>vaccination</i>