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Assessment of Microbial Contamination in the Veterinary Hospital Environment

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Hospital-acquired infections represent a persistent concern in both human and veterinary medicine, contributing to increased morbidity, mortality, and healthcare costs. In veterinary hospitals, microbial contamination of the environment poses a significant risk to the health of animal patients, veterinary personnel, and even pet owners. Understanding the sources and dynamics of such contamination is essential for preventing nosocomial infections and improving infection control strategies. The objective of this study was to assess and characterize microbial contamination within different areas of a veterinary hospital, including treatment rooms, surgical suites, isolation wards, diagnostic areas, equipment, and contact surfaces. Environmental samples were collected from various surfaces and instruments to identify potential reservoirs of pathogens. The results revealed the presence of bacterial pathogens such as *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Enterococcus faecalis*, as well as fungal species including *Aspergillus spp.* and *Candida spp.* These findings confirm the circulation of opportunistic microorganisms in clinical environments, emphasizing the potential for cross-contamination and nosocomial infection development. The study highlights the importance of implementing rigorous disinfection and sterilization protocols, ensuring adequate ventilation, and using appropriate antiseptic agents. Moreover, continuous staff education and training in hygiene and infection prevention are essential to reduce microbial burden and enhance overall biosafety standards in veterinary hospital environments.

• Introduction

Microbial contamination is widespread in various areas of the veterinary hospital environment, particularly on high-contact surfaces such as treatment tables, cages, and door handles.

Environmental screening is an effective tool to identify contamination hotspots and assess the efficacy of cleaning and disinfection practices. The study emphasizes the importance of staff training and awareness regarding infection control measures to prevent the spread of pathogens between animals and humans (zoonotic transmission).

• Material and method

The tests had been performed using sampling technique, with sterile swabs on various areas of the hospital. After that, we incubated on simple and selective media: blood agar, TSA, MacConkey and agar Sabouraud. The identification was done via mass spectrometry (MALDI-TOF).

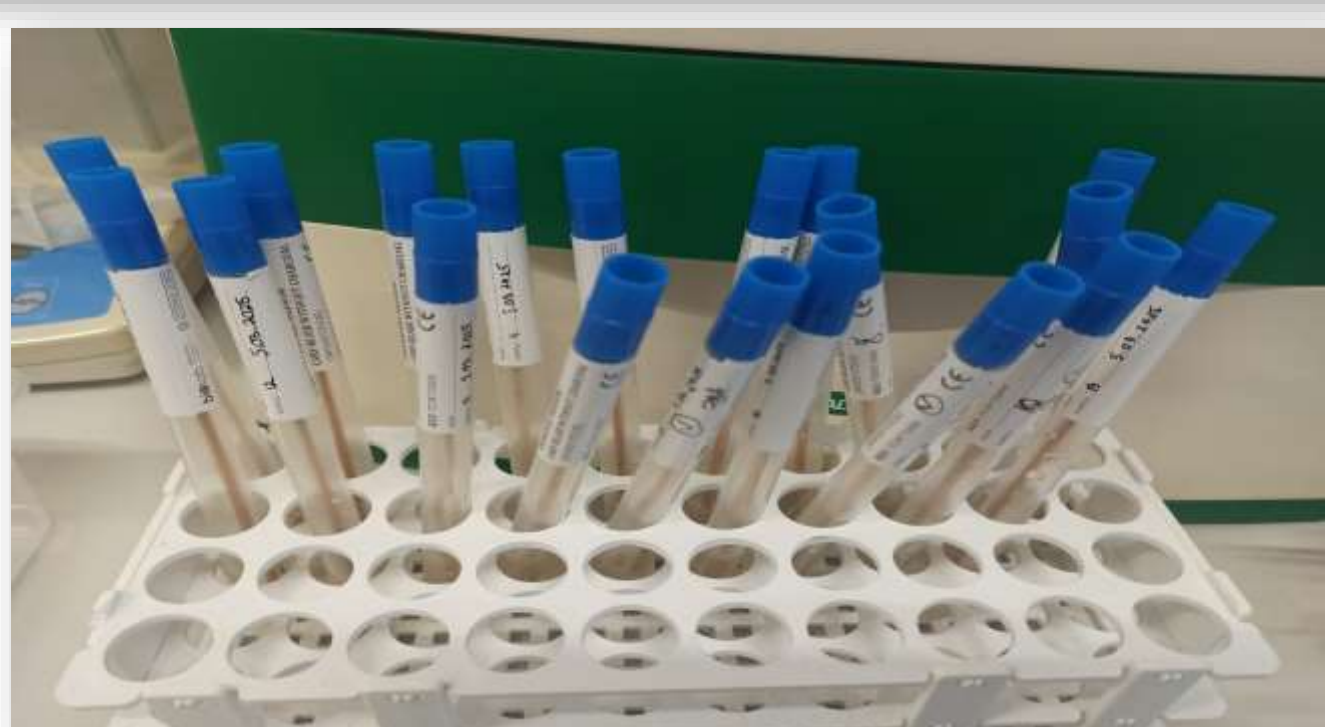
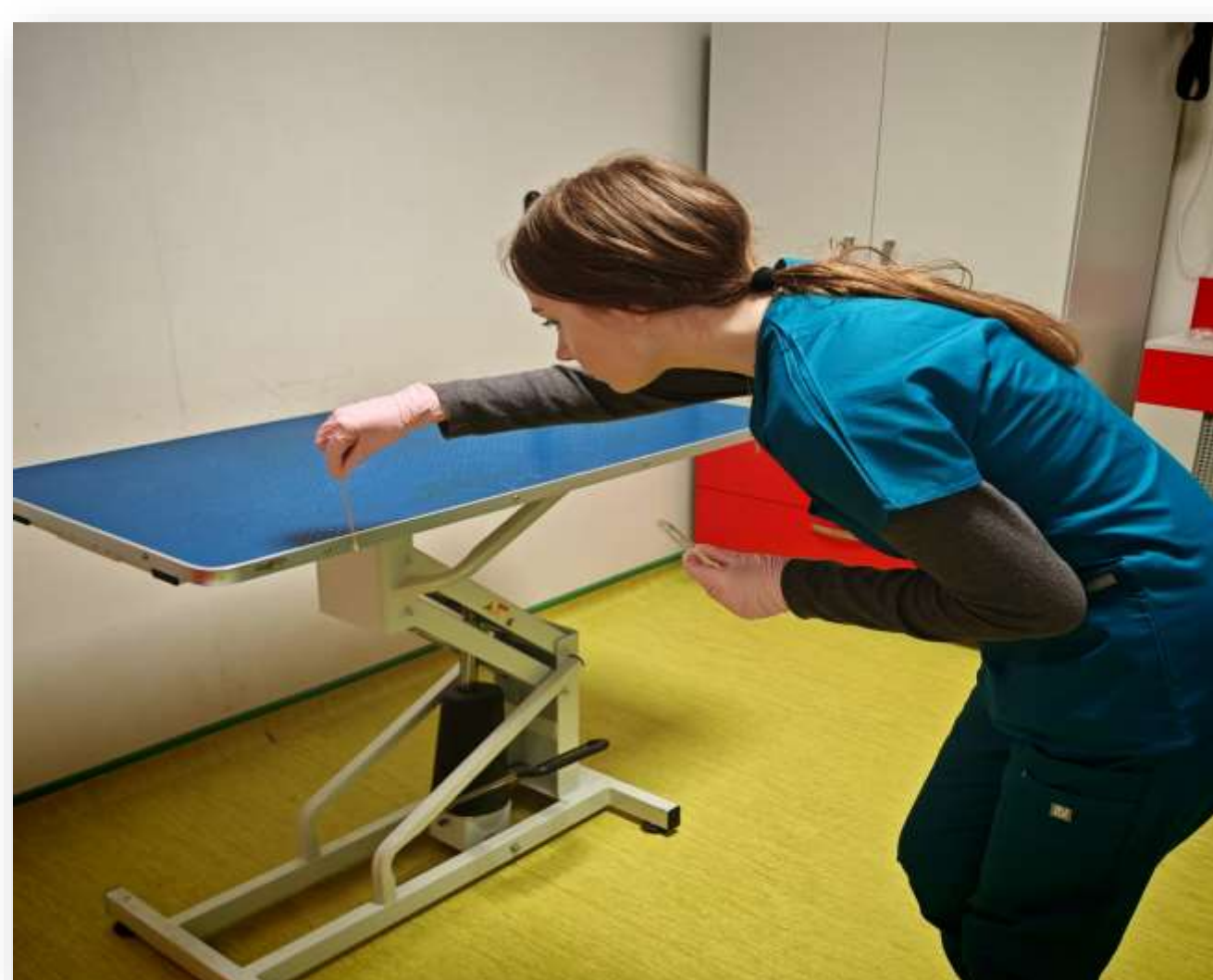
• Results and discussions

The results revealed the presence of bacterial pathogens such as *Acinetobacter baumannii*, *Bacillus cereus*, *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus capitis*, *Staphylococcus equorum*, *Pseudomonas aeruginosa*, and *Enterococcus faecalis*, as well as fungal species including *Aspergillus spp.*, *Malassezia spp.*, *Rhodotorula spp.*, and *Candida spp.*

• Conclusions

In conclusion, the areas that had been studied were divided into 3 types of zones: red, orange and green zones. *Red Zones* require strict sterilisation protocols, use of high-efficacy sporicidal disinfectants, and air control systems. *Orange Zones* should be disinfected multiple times daily with attention to PPE compliance and staff training and in the *Green Zones* we need to Maintain standard hygiene, with periodic monitoring.

In the end, we did some infection control recommendations: strict cleaning protocols, ventilations and air filtration improvements and staff hygiene training.



Acknowledgement: This was the first study of its kind in Romania. It emphasized the importance of staff training and awareness regarding infection control measures to prevent zoonotic transmission, delayed healing of animals and antimicrobial resistance emergence.