

TRACKING HUMAN CONTAMINATION IN BRAZILIAN POLAR SHIP OF ANTARCTIC EXPEDITIONS

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RESUMO

Background: The polar research ship Almirante Maxmiano is one of the main protagonists of the Brazilian Antarctic Program. In October 2019 started its journey from Rio de Janeiro to Antarctica and returned in April 2020, completing its summer season expedition. During this period, Punta Arenas - Antarctica route was repeated several times at intervals of 20 to 30 days to exchange teams of researchers. Following One Health concept that considers several approaches to promote health we investigated the occurrence of a human viral indicator in the ship's facilities, in order to assess environmental contamination resulting from the flow of individuals during the different phases of an Antarctic expedition. Viral particles can persist for prolonged periods on surfaces, such as fomites or human skin suggesting that they play an important role in the spread of pathogens, such as enteric viruses. This study aimed to track human contamination by investigating the occurrence of human adenovirus (HAdV) in surface and fomites samples at the polar ship in different times due to the intense circulation of individuals in the seven months of expedition. Methods: Environmental samples were obtained from multiple surfaces and fomites of common areas of the ship, selected by manual contact including door handles, handrail, switches, keyboards, remote control and surfaces of two cabins and their respective bathrooms. Samples were obtained by scraping sterile swabs moistened in PBS pH 7,2. Swabs were kept in 1 ml saline solution in a freezer at 4C until laboratory processing. Samples were obtained in four collection campaigns: at Rio de Janeiro / Brazil, before ship's departure on 10/07/2019; at Punta Arenas / Chile on 03/02/2020; and back in Rio on 04/05/2020. Extra samples were obtained at Comandante Ferraz Antarctic Station (EACF) - Brazilian station in Antarctica on 01/18/2020. EACF has just been inaugurated and received many visitors. For HAdV detection, nucleic acids extracted from swabs were submitted to a quantitative polymerase chain reaction (qPCR) protocols using TaqMan targeting HAdV hexon gene as previously described. Results: A total of 128 environmental surface samples were obtained and tested negative for HAdV. Conclusions: Failure to detect HAdV in these samples should be interpreted with caution. However, it is clear that prevention and biosecurity measures of the ship, such as washes foot with soap at the ship's entrance and the crew's habit to take off the shoes before entering inside the ship can prevent virus entrance. This was the first year of the project and we intended to maintain its sampling during the four years of it. Other molecular methods of viral detection will be used in an attempt to detect other viruses.

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