

Biosafety in Patient Air Transport from Lampedusa to Sicily

"HOSPITAL MANAGEMENT AND EMERGENCY COORDINATION"

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Introduction

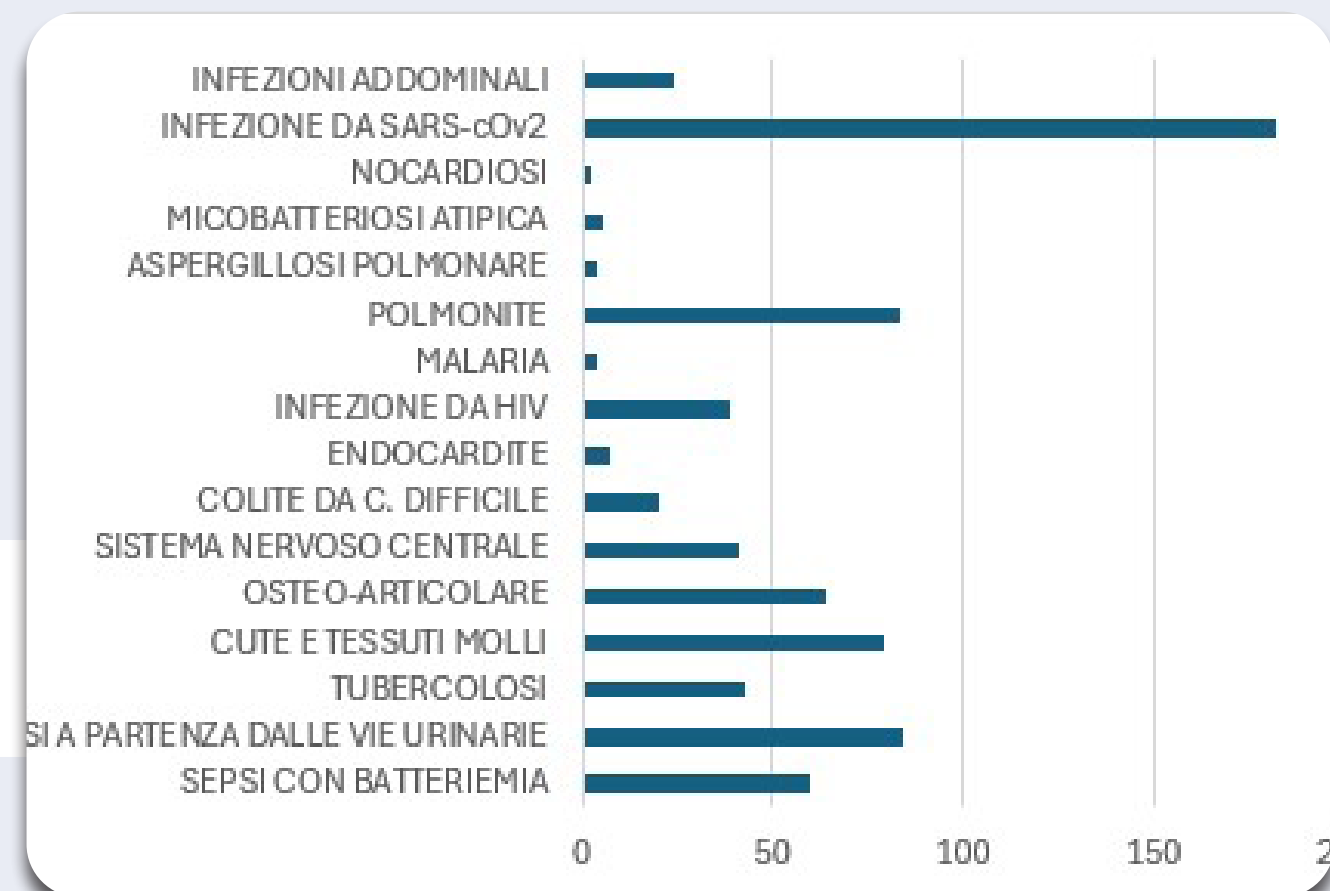
The transport of patients with potential infectious diseases from the island of Lampedusa to ARNAS Civico in Palermo presents a logistical and healthcare challenge. This study analyzes transfer procedures, hospital management, and infection risk containment strategies.

Special attention is given to the training of healthcare personnel to ensure safety and efficiency. The results highlight the importance of structured protocols to optimize emergency response.

Method

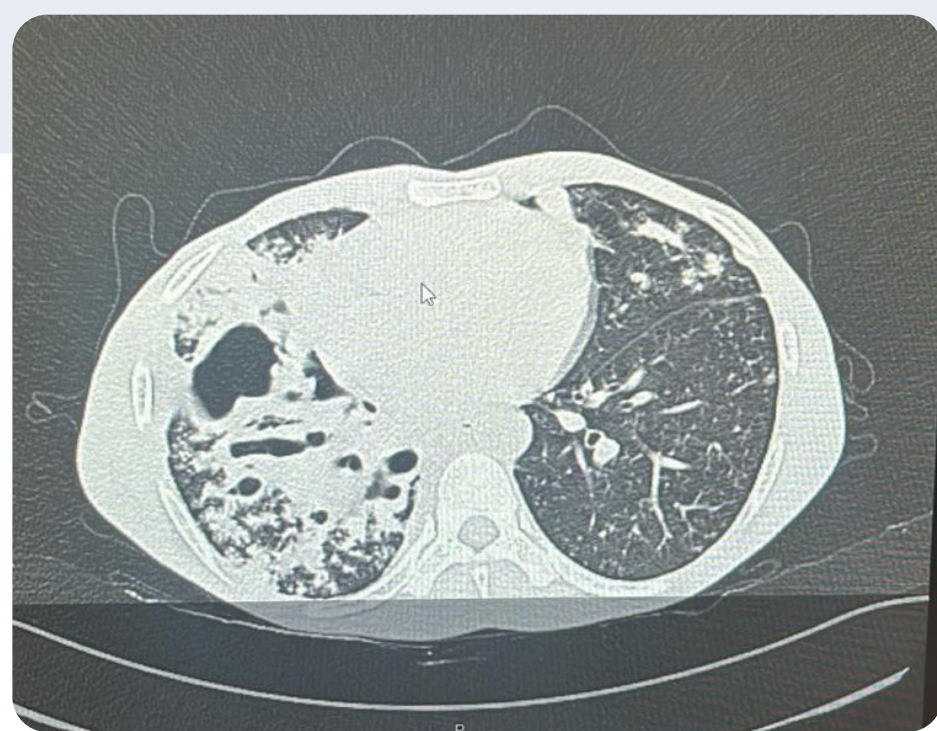
The Infectious and Tropical Diseases Unit (UOC) of ARNAS Civico in Palermo, directed by Dr. Iaria, is dedicated to combating infectious diseases, both communicable and non-communicable. With 22 beds, including 2 single rooms and 6 spatial isolation beds equipped with semi-intensive respiratory care (with the possibility of high-flow oxygen therapy), it has also served as a reference center in the fight against COVID-19. Since January 2023, the unit has managed 880 standard hospitalizations, including 43 for tuberculosis, 42 for central nervous system infections (including one case of meningococcal meningitis), 39 patients with HIV infection and opportunistic infections (such as typical and atypical mycobacteriosis, P. jirovecii pneumonia, and Kaposi's sarcoma), 4 for malaria, and 182 admissions for SARS-CoV-2 infection. Additionally, there have been 85 pneumonias of other causes, 8 atypical mycobacterioses, 84 cases of sepsis originating

from the urinary tract, 60 cases of sepsis with bacteremia, 79 skin and soft tissue infections (including fasciitis, abscesses, and phlegmons), 64 osteoarticular infections, 7 endocarditis cases, 24 cases of sepsis of abdominal origin, and 20 Clostridioides difficile colitis cases. Meningococcal meningitis is an infectious disease emergency requiring respiratory isolation and antibiotic prophylaxis for all healthcare workers in contact with the patient. Therefore, rapid diagnosis and tracing the patient's journey—from the initial emergency alert to hospitalization—are crucial, as well as identifying close contacts at home.



Fifteen patients were airlifted from the Lampedusa Hotspot in emergency conditions due to suspected infectious diseases. Among them: 1 was diagnosed with varicella, 8 with cavitary pulmonary tuberculosis, 2 with newly diagnosed HIV infection, 1 with septic shock due to extensive burns, 2 with pneumonia, and 1 with scabies. The most emblematic case of managing highly complex infectious disease patients was that of C.A., a 20-year-old woman from Guinea. She arrived at the Lampedusa hotspot after spending at least two years in Libya, during which she reported suffering various forms of abuse. She was airlifted to the Civico Hospital in Palermo due to fever, anemia (Hb 6.4 g/dL), and extensive burns in the gluteal region. Malaria and Leishmania were ruled out through rapid and molecular diagnostics, but due to the detection of Salmonella group D bacteremia, an HIV test was performed, which came back positive. The patient also presented

with widespread violaceous skin lesions, predominantly on the limbs and in the oral cavity. A diagnosis of disseminated Kaposi's sarcoma was confirmed by gastrointestinal involvement detected through endoscopic examination. Due to persistent fever, pancytopenia, and multiple lymphadenopathies, a mycobacterial culture on bone marrow aspirate was conducted, revealing M. tuberculosis infection. Months of anti-tuberculosis therapy and initiation of chemotherapy with doxorubicin for Kaposi's sarcoma were necessary to stabilize her clinical condition.



Cavitary Pulmonary Tuberculosis



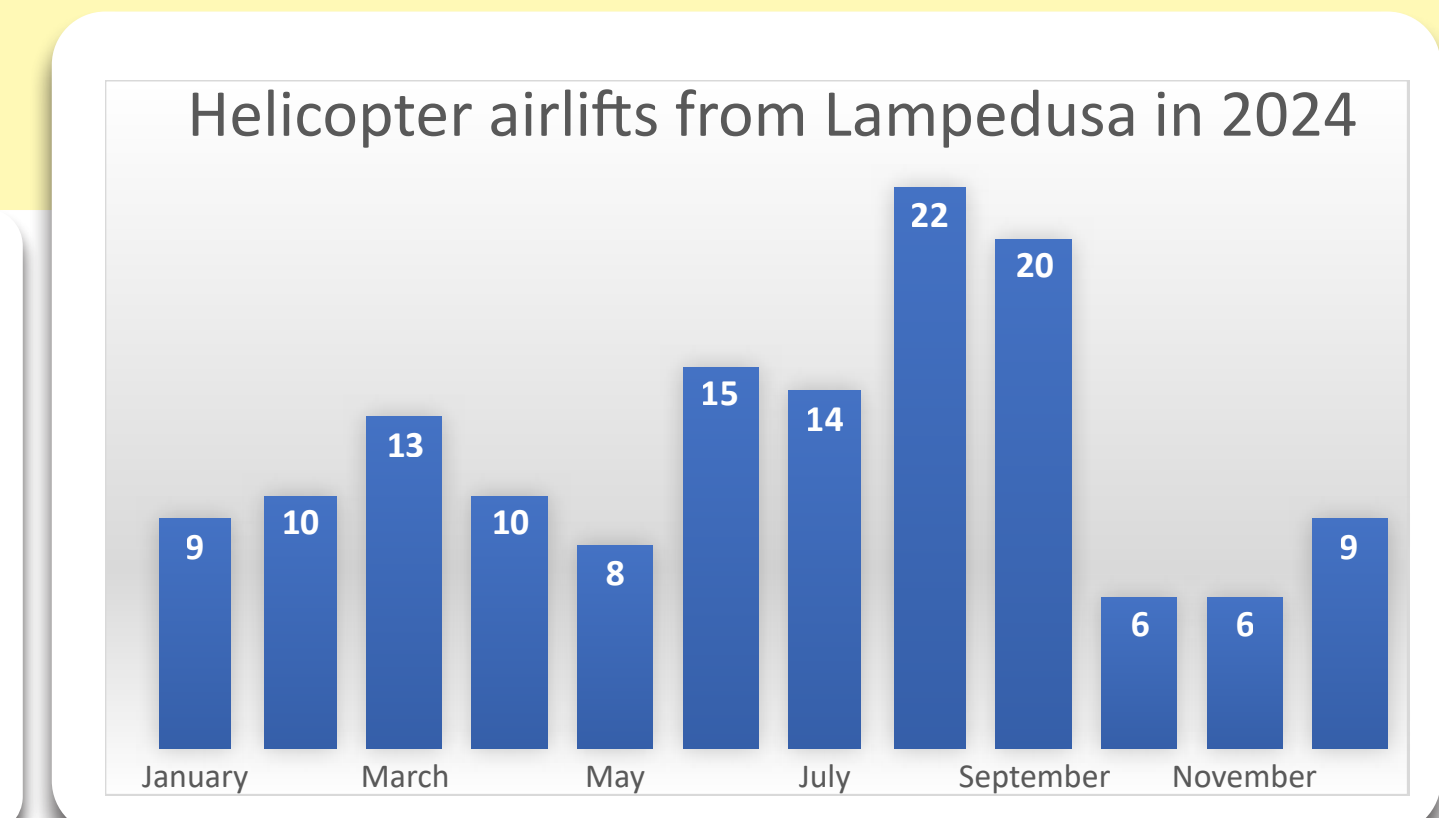
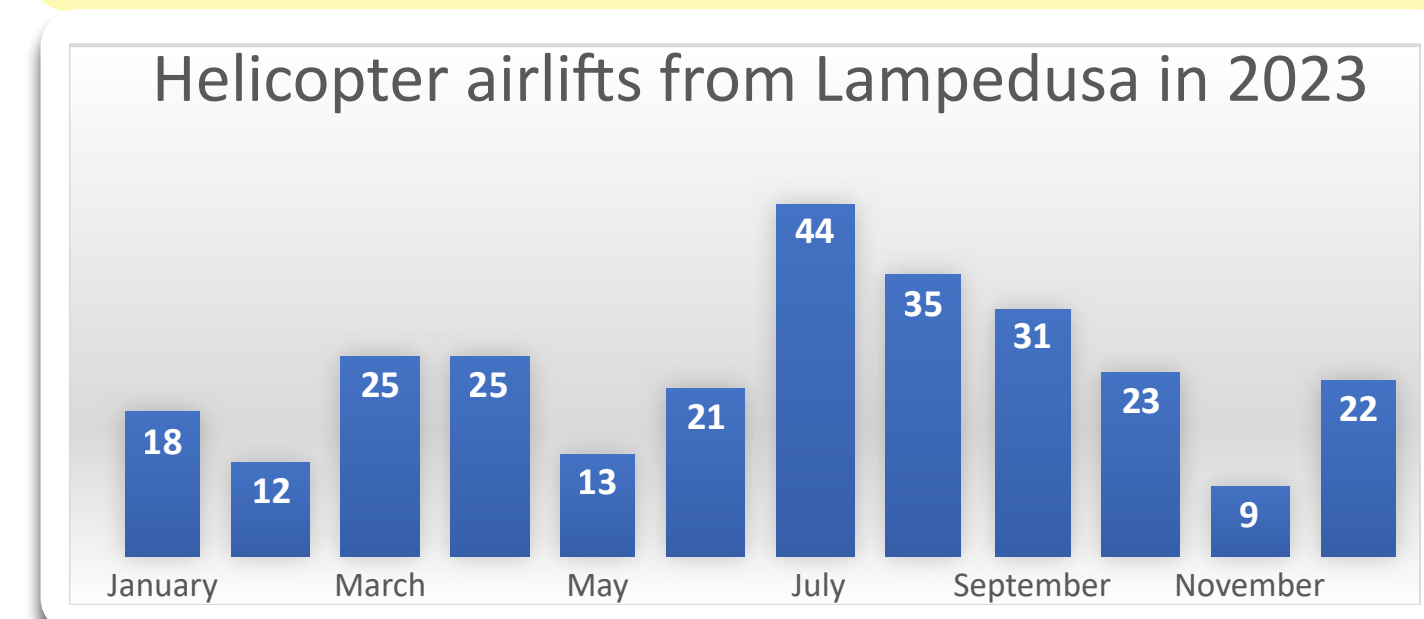
Cutaneous Kaposi's Sarcoma in HIV of C.A. (Guinea)

The transport of patients with potential infectious diseases from the island of Lampedusa to ARNAS Civico in Palermo, carried out by helicopter and coordinated by the 118 Palermo Trapani Operations Center of the Regional Health Department of the Sicilian Region, requires rigorous preparation to ensure the safety of the patient, healthcare personnel, and the community. Preparation begins with a preliminary assessment of the patient's clinical condition and infectious risk, followed by the implementation of appropriate protective measures, such as respiratory isolation and the use of suitable personal protective equipment (PPE). The rescue teams

in Lampedusa are coordinated, taking care of the transport, along with the hospital personnel at ARNAS Civico, to plan a timely and safe reception. During the flight, the patient receives continuous medical assistance, with monitoring of vital signs and management of complications. This process ensures a safe and effective transfer in emergency situations, reducing the risk of contagion and improving patient outcomes. Dr. Fabio Genco, head of the Operations Center, along with Dr. Marco Palmeri and Dr. Biagio Bonanno, have been coordinating transport operations for years, including in biocontainment settings, with particular reference to migrant

populations arriving on the island of Lampedusa through irregular migration flows. The 118 Operations Center uses the Global Biohazard Management GBTS® format as a training model and has trained healthcare personnel in its application. This training focuses on the management of biohazardous situations, ensuring that staff are prepared to respond effectively to emergencies involving infectious diseases, while prioritizing safety and containment protocols.

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Recent national and international health emergencies have demonstrated that adequate responses require a multidisciplinary approach, where the planning phase must be shared by decision-makers, and the action phase must be well-known before the event occurs. The Global Biohazard Management format, already ISO 9001:2015 certified with its procedures, allows for the identification of priorities and the implementation of a process of integration between various components of healthcare and logistical support, continuously analyzing the rapid translation of scientific

knowledge into practical solutions through exercises that are essential for addressing emerging biological risk threats. The format was developed by Dr. Francesco BONGIORNO, Dr. Ulrico ANGELONI, and supervised by Col. Marco LASTILLA. GBTS® employs a multidisciplinary approach, recognizing the cross-cutting nature of biological risk management and involving all relevant stakeholders, including government agencies, public health institutions, healthcare workers, non-professionals, civilian and military personnel, and the scientific communities.



Sicily 118 Exercise: Rotating Wing Transport with Biocontainment Stretcher



Biocontainment Training on the Island of Lampedusa



Sicily 118 Exercise: Rotating Wing Transport with Biocontainment Stretcher

Conclusions

In conclusion, the transport of patients with potential infectious diseases from Lampedusa to ARNAS Civico in Palermo requires careful coordination and specialized training. The collaboration between healthcare teams and the Military Air Force ensures safe and efficient patient transfers, while robust hospital management protocols are in place to handle infectious cases. Ongoing training in biohazard management strengthens the preparedness of personnel, ensuring optimal care and safety during high-risk emergencies.