IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Medicine in Space and Extreme Environments (4)

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MEDICAL STANDARDS IN VARIATIONS OF ANALOG MISSIONS

Abstract

Introduction: The total number of Astronauts since Yuri Gagarin flight is less than 600. Only twelve have been to the moon. With commercial spaceflight industry now looking to commence flights, these numbers will exponentially increase. Medical data from Astronauts are not widely available due to the classified nature. Medical standards have evolved over the years from the era of exclusion to be more inclusive. Due to the sheer low numbers of human space missions, it is imperative to develop analogs or simulations to understand the complexities of human interaction and response to missions. Classification of Analog Missions: Every analog mission is unique and has different selection processes. Based on the remoteness and other factors, these missions could be classified as low, middle and high fidelity. Analogs could also be classified as Functional and Planned simulations. Functional analogs are those scenarios which provide useful data based on their existing work profile. For example, people working in submarine, aircraft carrier, polar areas are naturally isolated due to their work profile. Planned analogs are those occurring in purpose-built habitats in various locations. For example, MDRS, Polares, D-Mars, F-Mars, etc. The analogs could be classified as planetary and space based simulations. Based on the study criterion, the analogs could be classified as simple with one parameter being studied, for example isolation; and complex where multiple parameters are studied. Medical criteria for selection: Medical fitness has traditionally required participants be free from disease/illness. With the evolving landscape of commercial spaceflight, these criteria may need adjusting to be more inclusive, for practicality and viability of the industry. Most participants are volunteers with little or no financial compensation, and provides quite a variation in demographics of those participants. Discussion: Based on financial resources available, onsite and remote support would vary with each analog. This helps develop efficiencies in use of resources in field, which is vitally important in planetary and space missions. Every analog presents with planned goals, with expected and unexpected events, helping in the evolution of current medical support provided. Isolation and confinement are one of the most common studied parameters. Previously unknown participants coming together for a specific Analog mission provides unique insights and presents unique medical needs for their successful integration. Planned missions with known and prepared subjects are more organized and have good medical support post mission. Conclusion: Medical support for every analog mission is unique considering the parameters investigated, and these variations offer opportunities in collating knowledge of the required medical support to conduct safe and optimal analog missions. It should be considered to be a continued learning process, similar to the evolution of both the medical and space industry.