SPACE LIFE SCIENCES SYMPOSIUM (A1)
Poster Session (P)

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SPACE AND PUBLIC HEALTH

Abstract

Introduction: Human Health dictates almost every action on and off Earth (where the go-ahead of manned space missions depends upon ensuring human health and safety are maintained). Public health and preventive medicine (PHPM) and space impact each other. Space technology has played an important role in many aspects of public health on Earth. These include Earth observation for the environment and infrastructure; and remote sensing assisting disaster management. Additionally, PHPM has had an important role in space exploration. Several policies are in place for astronauts(ensure they are healthy, policies to prevent/reduce bone and muscle loss; vaccinations, etc.). Studies have indicated the environment in space favours bacterial growth and infectious disease spread, particularly on long duration space flights.

Objectives: • Identify areas where PHPM and space impact each other. • Review existing literature on PHPM policies and protocols for space exploration. • Provide policy makers and stakeholders with recommendations to address PHPM (both space exploration and Earth based recommendations).

Methods: Key informant discussions and literature review were conducted. Observations and experiences were collected and analyzed to identify our objectives and formulate recommendations.

Results and Conclusion: We identified three broad areas of public health issues related to space:

1) Space Assets to assist Earth based public health issues: I.e. utilizing tele-epidemiology, remote sensing and tele-medicine for better detection; early warning; surveillance and management of infectious diseases, natural disasters and other public health issues.

2) Potential Contamination Issues: This involves earthborne bacteria contaminating other planetary bodies and spaceborne microorganisms contaminating Earth. Spaceborne microorganisms include those from Earth that are transported to space and return to Earth in a potentially more virulent form. Studies have found common bacteria on Earth such as Salmonella become more virulent in space. This area also includes microorganisms or other not yet discovered life form that could have existed or currently exist on other planetary bodies. Pathogenic or not, there would be a critical need to isolate these microorganisms to prevent their spread on Earth.

3) Protecting astronauts and space flight participants (space tourists/passengers on private space flights and future space explorations): Studies have indicated that, apart from bacteria becoming more

virulent in space, the conditions in space also lead to weakened human immunity. The combination of both (along with other factors) provides an environment that has the potential for infectious outbreaks to occur during long duration space flights and/or prolonged missions.