

Chapter 3

Space Medicine and International Cooperation: The Necessity of Codify International Space Medicine Standards

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ABSTRACT

The paper highlights the urgent need for international standards in space medicine to ensure astronaut safety as space missions grow in complexity. Current legal frameworks lack comprehensive healthcare guidelines for space, posing risks due to inconsistent protocols across nations. The paper advocates for a global effort led by organizations like UNOOSA and WHO to harmonize regulations, integrate advanced medical technologies, and address ethical considerations. Establishing these standards will enhance collaboration in space exploration and contribute to healthcare innovations on Earth.

1. INTRODUCTION

According to the international approach, the term “Space Medicine” on the global stage could be interpreted as “International Cooperation” in the medical field in the context of public international law and outer space policy. In international law,

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space medicine is not discussed clearly, neither hard law nor soft law. The term “Space Medicine” was first used officially in the early days of space exploration, particularly during the development of the United States space program in the late 1950s and early 1960s. It emerged as a specialized field of medicine focused on the health and well-being of astronauts and space travelers. The term's origins coincide with the need to understand and mitigate space travel's unique physiological and psychological challenges. The concept of space medicine became more formalized as the National Aeronautics and Space Administration of USA (NASA) and other space agencies began planning manned space missions, such as the Mercury¹ and Apollo² Programs. These programs required dedicated medical research and expertise to ensure astronaut safety and performance in the extreme environments of space. One of the key figures in the early development of space medicine was Dr. Hubertus Strughold³, often referred to as the “Father of Space Medicine.” He and other medical researchers and professionals contributed significantly to the establishment of this field during the pioneering years of space exploration. Therefore, “Space Medicine” found its earliest and most significant usage in preparing for and supporting manned space missions, primarily in the United States and later globally, as international cooperation in space exploration grew. International cooperation is frequently used in international documents, such as the United Nations Charter⁴, Outer Space Treaty⁵, Liability Convention⁶, and Moon Agreement⁷. Based on the different doctrines in international law, this term in space law and policy context can express “Sovereign nations working together in the pursuit of mutual benefit.” This term may also refer to individuals, companies, non-governmental organizations, and others from different nations working together.

1.1.1. Overview of Space Medicine

Space medicine constitutes a critical component of human space exploration, imperative for ensuring astronaut survival, functionality, and optimal performance within the hostile and potentially lethal extraterrestrial environment. This specialized field has evolved through the collaborative endeavors of professionals from diverse medical disciplines, reflecting its inherently multidisciplinary nature. Incorporating elements from occupational health, primary care, emergency medicine, and aviation medicine, operational space medicine is primarily dedicated to sustaining and safeguarding human life and physiological functions through sophisticated life support systems. The convergence of this focus with the exigencies of critical care in remote settings underscores the substantial overlap with anesthetic practice, necessitating the indispensable contributions of anesthesiologists to this field. Space medicine constitutes a comprehensive field encompassing preventive medical practices, including health screenings, healthcare provision, optimization of human performance within

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