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Medical Care for Humans in Space (3)

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ESTABLISHING A MEDICAL CLINIC/HEALTH CENTER IN SPACE

Abstract

Healthcare and ensuring the sustainability of health is crucial for any human space mission (especially long-duration space travel). NASA, CSA, ESA and other space agencies are now focusing on travelling back to the moon and eventually Mars. Emphasis is also being made towards ensuring appropriate healthcare for astronauts. An expert advisory group to the Canadian Space Agency recommended heavily investing in healthcare, play a lead role in healthcare for deep space missions and contributing to healthcare technologies for such deep space missions. The feasibility of long-duration/deep space travel would require greater medical autonomy and minimal reliance on Earth base care.

We investigate and evaluate the need of establishing a medical clinic/health center in space that would enable us to assess, diagnose and treat medical conditions in space. This would help provide immediate care for astronauts in deep space and not wait to hear back from Earth. Additionally, such measures also provide the ability to reassess and monitor the care of astronauts that may spend sometime on the lunar gateway or a possible lunar base prior to proceeding further to Mars. Another advantage of having such a medical facility is that it can help reduce the likelihood of entire missions being jeopardized if there is a medical emergency involving a crew member (who can then be treated at the health center rather than everyone returning back to Earth.

We found a number of challenges in developing such an undertaking which includes focusing on the likely and unexpected medical emergency scenarios that could arise; establishing the infrastructure for the health center; the technology and medical equipment required; the challenge of replenishing medical supplies and medications; developing policies and laws involving medical care in space; implementing medical/surgical procedures in deep space, etc.

This paper aims to be a roadmap and guideline to help support space agencies and private/public entities towards establishing a medical clinic in space that can support long-duration and deep space human missions.