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Is Space R&D Truly Fostering A Better World For Our Future? (2)

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THE CANADIAN SPACE AGENCY'S HEALTH BEYOND INITIATIVE

Abstract

Space exploration has always been a very powerful source of motivation for achieving technological excellence, due to the extreme challenges encountered during space travel. Extending human presence in low-Earth orbit has spurred innovation in nearly every facet of modern existence. As international ambitions for space exploration extend to deep space, the new challenges to ensure crew health and safety have become increasingly complex, which has the potential to galvanize innovation in the health sector. Traveling beyond low Earth-orbit implies longer communication delays, rendering ground-based medical support impractical. Furthermore, resupply missions and emergency evacuations are no longer possible. As current operations related to astronaut health are essentially Earth-centric, these challenges give rise to a paradigm shift in operational space medicine. The crew will be required to be medically self-sufficient; onboard systems will have to ensure end-to-end health coverage – from health monitoring to medical treatment. On Earth, technological progress in this field could help bridge the urban-rural gap in terms of access to quality care, as remote communities generally lack the expertise and the resources necessary for medical autonomy. For instance, innovation for deep space astronaut health could be co-developed in partnership with terrestrial stakeholders to help minimize the reliance of remote and medically isolated communities on medical evacuations, which often contribute to negative health outcomes for the members of these communities and come with considerable financial burden. In this context, the Canadian Space Agency's Health Beyond Initiative aims to develop innovative, relevant, and sustainable health solutions for deep space missions while considering the many similarities with the health challenges that arise in remote communities on Earth. This proposal will outline in detail how Health Beyond's strategic direction could act as a catalyst for a paradigm shift in medical care delivery both on Earth and in space.