

CHALLENGES TO HEALTH DURING DEEP SPACE EXPLORATION MISSIONS

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Long duration missions outside of low Earth orbit will present unique challenges to the maintenance of human health. Stressors with physiologic and psychological impacts are inherent in exploration missions, including reduced gravity, increased radiation, isolation, limited habitable volume, circadian disruptions, and cabin atmospheric changes. Operational stressors such as mission timeline and extravehicular activities must also be considered, and these varied stressors may act in additive or synergistic fashions. Should changes to physiology or behavior manifest as a health condition, the rendering of care in an exploration environment must also be considered. Factors such as the clinical background of the crew, inability to evacuate to Earth in a timely manner, communication delay, and limitations in available medical resources will have an impact on the assessment and treatment of these conditions. The presentations associated with this panel will address these unique challenges from the perspective of several elements of the NASA Human Research Program, including Behavioral Health and Performance, Human Health Countermeasures, Space Radiation, and Exploration Medical Capability.

Panel Chairs: Sharmila Watkins, M.D., Lauren Leveton, Ph.D.