A STRATEGY FOR ADVANCING EARTH INDEPENDENT MEDICAL OPERATIONS

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Exploration medical operations to the Moon and Mars present unprecedented challenges for providing in-mission medical care. The greater distance from Earth is the primary hazard that drives the need for a medical operations paradigm shift from low earth orbit mission. Increasingly complex long duration and long distance missions will have resource constraints (ex: mass, power, volume, data), a paucity of resupply or evacuation opportunities, and disruptions in real-time communications.

In order to advance a more autonomous medical approach, a multi-faceted strategy will need to optimize all aspects of human health and performance in space. This strategy will include: increasing onboard medical autonomy through the development of novel crew health and performance systems; decision support capabilities to augment astronauts' abilities in preventing, diagnosing, and treating medical conditions; creating new procedures and training tools for skill maintenance and just-in-time training; and enabling rapid crew access to data from all on-board systems, leading to better-informed, real-time, autonomous decisions. Collectively, this approach can be referred to as "Earth Independent Medical Operations" (EIMO).

The Exploration Medical Capability Element of NASA's Human Research Program has undertaken a longitudinal planning process to consensus around EIMO. Technical interchange meetings will occur with key constituents in late 2022 and again in early 2023 to define EIMO in practical terms and identify key elements of an EIMO system, with greater conceptual articulation and dissemination planned for the second half of 2023.

We will share insights into the strategy for internal and external consensus building around EIMO, with a particular focus on the approach to partner stakeholders within NASA as well as commercial agencies.