TITLE: THE EXPLORATION CREW MEDICAL OFFICER OF THE FUTURE

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INTRODUCTION: The current paradigm for Crew Medical Officer (CMO) credentials and training in Low Earth Orbit medical operations is likely to be insufficient for exploration-class missions. Long duration lunar surface stays and Mars missions will require increasing levels of autonomy of the CMO. This presentation will investigate the roles and responsibilities of the CMO of the future, including a discussion of clinical competency and training needs.

TOPIC:

Future exploration missions to Mars will be of longer duration and involve notable communication delays. Additionally, evacuation to obtain definitive medical care is not plausible for such exploration missions. Resupply will be limited, and the medical system will have notable mass and volume constraints. Given these realities, the responsibilities of and decision-making burden on the CMO will likely increase, requiring additional skillsets and autonomy.

The current training pathway for the CMO will need to expand. Increased emphasis will need to be placed on autonomous evaluation, diagnosis, and treatment of conditions based upon likelihood and severity. The current operational concept of Private Medical Conferences (PMCs) and Private Psychological Conference (PPCs) will need to change as these become asynchronous. In addition, during emergency scenarios, the CMO will need to be able to respond and initiate care in autonomous fashion without initial assistance or cognitive offloading from the ground. Accordingly, the CMO will likely need additional medical and behavioral health training to better support the crew.

According to NASA-STD-3001, a planetary mission requires that at least one physician be included on the crew. Many physician astronauts are practicing clinically in some fashion prior to selection. However, training within the Astronaut Corps strongly favors other skillsets (e.g. EVAs) and may not allow physicians to maintain clinical skills in the way that, for example, a pilot astronaut maintains flight proficiency with T-38 training.

APPLICATION: This presentation will discuss the various needs of the CMO for exploration missions of the future. An in-depth overview of the additional training elements and methods of maintaining clinical competency will be included.

LEARNING OBJECTIVE: Compare and contrast the demands of the ISS Crew Medical Officer of today with the exploration Crew Medical Officer of the future.