

BRINGING THE FLIGHT SURGEON CONSOLE INTO THE ARTEMIS ERA: CONSTRUCTING A QUICK REFERENCE GUIDE FOR THE ORION VEHICLE

Anderson Carter, MD¹; Quinn Dufurrena, MD MPH²

¹Advocate Christ Medical Center Emergency Medicine Residency, Chicago, IL; ²Space Medicine Operations, Johnson Space Center NASA, Houston, TX

BACKGROUND: Historically, NASA flight surgeons working on control console have had access to a quick reference guide that provides tailored clinical information for a variety of medical conditions, symptoms, and events that crew members may experience on the International Space Station (ISS). With the development of the Orion vehicle and its new medical system intended for the Artemis missions, a new quick reference guide is required to reflect the capabilities of this new medical system.

OVERVIEW: The Flight Surgeon Quick Reference Guide (FSQRG) offers a variety of information to flight surgeons. For each condition/symptom/event, the guide describes what actions and procedures crew members will perform either automatically or at the instruction of the flight surgeon. The guide describes what further information should be collected, lists potential diagnoses, and further actions available to be taken by the Flight Surgeon or crew. The guide also describes what medications are available to the crew, common clinical decision-making tools, and other terrestrial practices. Due to the significant differences between the ISS and the Orion vehicle in both structure and mission scope, Orion's medical system is significantly smaller than the ISS's. When constructing the new guide for the Orion vehicle we began with the ISS version of the guide as a template. We then replaced ISS crew procedure references with their Orion counterpart if one existed. We also added new Orion crew procedure references where clinically appropriate. Reductions or additions to the medical equipment/medication references were made until they were consistent with resources available on Orion. Finally, we constructed a resource matrix that allows flight surgeons to easily identify the location of medications and equipment required for crew procedures.

DISCUSSION: The information provided in the updated FSQRG allows flight surgeons to make quick and clinically accurate decisions that can be accomplished within the scope of the Orion vehicle medical system. This timely and accurate decision making becomes more important as missions go beyond low earth orbit and communication becomes more delayed. Such quick reference guides also have the potential to reflect medical systems on future vehicles, missions, and partner vehicles.

LEARNING OBJECTIVES

- 1).** The reader will understand the structure and information contained within a Flight Surgeon Reference Guide and the functional significance of these guides.
- 2).** The reader will be able to identify the process in which guides are updated to reflect medical systems and the importance of medical system specific guides.