NASA SPACE FLIGHT MEDICAL SELECTION, RECERTIFICATION AND MISSION EVALUATION STANDARDS: FORWARD WORK FOR FUTURE LONG-DURATION EXPLORATION MISSIONS

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ABSTRACT

NASA's Office of the Chief Health and Medical Officer (OCHMO) 3001 Standards Team continuously works with subject matter experts, both within NASA and the broader scientific and medical community, to provide the best technical requirements and implementation documentation to support the development of new programs.

NASA's OCHMO-STD-100.1A, NASA Space Flight Medical Selection, Recertification and Mission Evaluation Standards, provides uniform medical requirements for processes, procedures, practices, and methods that have been endorsed as standard for NASA programs and projects, including requirements for selection, annual recertification, and mission medical evaluation for space flight crews. This NASA Medical Standard is applicable to NASA career astronaut candidate selection and annual recertification, private astronauts, and NASA Suborbital Research Specialists (NSRS). This Standard is also applicable to mission specific medical evaluations, which include both clinical and occupational requirements. Revision A of OCHMO-STD-100.1A, released in September 2024, was modified to provide an Agency level document for medical selection and mission medical evaluations for spaceflight crews and streamline accessibility of spaceflight medical requirement information. The document was modified to add Mission Medical Evaluations (MED B) at an Agency level vs. program level; private astronaut selection standards, and NSRS medical standards.

- A private astronaut is defined as: Crewmembers who are not a U.S. government career astronaut or international partner astronaut.
- NASA Suborbital Research Specialists (NSRS) are defined as: Crewmembers who are employed or contracted by NASA to conduct research, technology testing, training, or other activities onboard a sub-orbital vehicle.

Health risk assessment is a complex and dynamic process, and the medical requirements and screening procedures account for the fact that the risk for a medical event is based on mission parameters such as vehicle design, duration, environment, location (low-earth orbit, below low-earth orbit, etc.), time to return to definitive medical care, and individual needs. OCHMO-STD-1001.A retains the flexibility for incorporation of new clinical procedures as a part of the health evaluation process in a preventive, diagnostic, or treatment capacity.

As the future of human spaceflight progresses, missions will become more complex with increased distance from earth making medical evacuation non-viable, limited medical system capabilities, and delayed communication with ground support. The current astronaut medical evaluation criteria is based on decades of research and experience with low-earth orbit mission operations with a robust medical system and real-time ground support. Future missions to the Moon, Mars, and beyond will require discussions on risk-trade analysis of medically selecting and evaluating astronauts for these more complex missions, including potential risk mitigation strategies such as genetic screening and prophylactic surgery (i.e., gallstone or appendix removal).