

Protecting the Health of Astronauts: Enhancing Occupational Health Monitoring and Surveillance for Former NASA Astronauts to Understand Long-Term Outcomes of Spaceflight-Related Exposures

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Abstract : The astronaut community is unique, and may be disproportionately exposed to occupational hazards not commonly seen in other communities. The extent to which the demands of the astronaut occupation and exposure to spaceflight-related hazards affect the health of the astronaut population over the life course is not completely known. A better understanding of the individual, population, and mission impacts of astronaut occupational exposures is critical to providing clinical care, targeting occupational surveillance efforts, and planning for future space exploration. The ability to characterize the risk of latent health conditions is a significant component of this understanding. Provision of health screening services to active and former astronauts ensures individual, mission, and community health and safety. Currently, the NASA-Johnson Space Center (JSC) Flight Medicine Clinic (FMC) provides extensive medical monitoring to active astronauts throughout their careers. Upon retirement, astronauts may voluntarily return to the JSC FMC for an annual preventive exam. However, current retiree monitoring includes only selected screening tests, representing an opportunity for augmentation. The potential long-term health effects of spaceflight demand an expanded framework of testing for former astronauts. The need is two-fold: screening tests widely recommended for other aging populations are necessary to rule out conditions resulting from the natural aging process (e.g., colonoscopy, mammography); and expanded monitoring will increase NASA's ability to better characterize conditions resulting from astronaut occupational exposures. To meet this need, NASA has begun an extensive exploration of the overall approach, cost, and policy implications of expanding the medical monitoring of former NASA astronauts under the Astronaut Occupational Health program. Increasing the breadth of monitoring services will ultimately enrich the existing evidence base of occupational health risks to astronauts. Such an expansion would therefore improve the understanding of the health of the astronaut population as a whole, and the ability to identify, mitigate, and manage such risks in preparation for deep space exploration missions.

Keywords : astronaut, long-term health, NASA, occupational health, surveillance

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