

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)  
Astronaut Training, Accommodation, and Operations in Space (5)

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ASTRONAUT SELECTION AND TRAINING RELATED TO MEDICAL CARE FOR DEEP SPACE  
MISSIONS

**Abstract**

At present, telemedicine and Earth based support plays an essential role in monitoring and managing the health of astronauts. Recent publications have even highlighted how telemedicine and Earth based physicians have been helpful to assist medical care of astronauts with various health issues including blood clots. But what about deep space missions where time-delays, limited supplies, limited/delayed communications and little to no support from Earth are likely factors?

This paper looks into underlying factors that need to be considered during both astronaut selection and astronaut training to ensure astronauts for deep space missions are adequately prepared and ready to address any medical emergency that may arise.

Would all astronaut crews selected require to have a physician crew member or would all astronauts need to undergo medical training? As deep space missions may likely involve multi-cultural and international teams then would education and training of astronauts also involve ensuring selected crew are well versed in medical terminology in different languages?!

Astronaut crew autonomy in regards to healthcare is an important area that needs to be explored and incorporated as part of astronaut selection and training for deep space missions. During a deep space mission, astronauts could possibly face medical emergencies which they would need to manage on their own. This medical management may include making difficult decisions such as making a medical diagnosis (based on the limited resources and diagnostic tests at hand) and initiating treatment without a second opinion from Earth.

Additionally, other difficult decisions during medical care may also arise which involve triaging the ill, deciding who would need to be treated first, and in worst case scenarios extremely difficult decisions such as to withdraw treatment may need to be made (if nothing else could be done to save the injured and/or to ensure limited resources are not used up in the process). Such decisions would require training (and/or selecting) astronaut candidates to have the medical skills and know-how to accomplish such care. It is also important to ensure the astronauts selected are also psychologically/mentally aware, trained and have the ability to carry out such decisions and accept the aftermath.

Our recommendations will highlight several key areas pertaining to medical care and management of astronauts on deep space missions. These can then assist space agencies and private partners during astronaut selection and training.