

FUTURE IMPROVEMENTS TO IMPACT FOR LONG DURATION EXPLORATION SPACEFLIGHT

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BACKGROUND: While NASA currently uses the Integrated Medical Model (IMM) to model spaceflight medical risk for Low Earth Orbit missions, IMPACT (Informing Mission Planning via Analysis of Complex Tradespaces) was created to improve the fidelity of medical risk analysis for exploration missions involving the Lunar surface and beyond.

OVERVIEW: While completion work continues on the initial version of the IMPACT tool, work has already begun to investigate ways to further enhance the fidelity of the model and its utility to stakeholders.

DISCUSSION: Future additions leveraging the more robust and flexible IMPACT architecture include analyzing mission segments to account for segment-specific environments (ie. Lunar surface or microgravity), clinically tracible outcomes based on partial treatment of conditions, the ability to model mission outcomes based on provider Knowledge, Skills, and Abilities (KSAs), and the ability to affect the incidence of conditions based on the occurrence of related conditions (e.g. UTI progressing to sepsis). IMPACT also enables the addition of new conditions to its database as required to meet future risk assessment needs. Ultimately, the desire is to broaden IMPACT from a tool that models/trades medical risk to one that does so for all crew health and performance relevant systems (e.g., food, exercise, etc.).