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CHALLENGES AND FUTURE DIRECTIONS OF EVIDENCE BASED AEROSPACE HEALTH CARE THROUGH SCIENCE

Abstract

In all specialties of medicine, we are demanding more evidence to support our decision-making and our development of countermeasures. Within terrestrial medicine, evidence-based medicine (EBM) has taken shape over the past two decades and has become the standard for clinical decisions that are upheld as best practice. For space medicine, the standards can be no different-but the many unique aspects of the space sector pose unparalleled challenges that will need to be addressed as national and international programs grow and set precedents for the era of spaceflight to come. This paper summarizes qualitative research regarding the current working relationships between evidence-based solutions for health care and the delivery of these solutions in aerospace.

This research took place between May 1st and September 1st, 2017. After conducting a general review of the available literature pertaining to interdisciplinary communication, knowledge translation, and the evolution of evidence-based space medicine, pertinent individuals from a variety of space-affiliated fields were identified so that interviews could take place to better understand the practical appearance of these fields within a Canadian context. These experts came from a variety of backgrounds including life sciences, medicine, and administration.

This paper addresses the cultural divide between clinicians and scientists and barriers to evidence uptake as well as evidence generation. A new mental model for risk mitigation in space health is proposed, with a focus on the distinct or overlapping roles of operational space medicine and life sciences research. This is based upon four distinct processes: risk identification, risk characterization, mitigation, and implementation of solutions.

This paper additionally aims to identify and investigate some of the obstacles that pose a challenge to EBM specifically in the space health sector. This was done by the generation of Strength, Weakness, Opportunity, Threat (SWOT) assessments of both EBM applicability to space medicine and collaboration between operational medicine and life scientists. While the issues addressed in this paper are philosophically and pragmatically complex, distilled recommendations for future directions in aerospace evidence-based medicine and collaboration are provided.