MOTIVATION: Airsickness is a common response for individuals to experience during flight. During United States Air Force Undergraduate Pilot Training (UPT), airsickness can affect the ability of student pilots to progress and ultimately result in removal from the program. Preventative measures that are put in place prior to UPT are critical to the retention of student pilots. This poster will describe specific preventative measures taken at Vance AFB for student pilot populations identified as high risk for airsickness during UPT. **OVERVIEW:** Vance AFB has a comprehensive airsickness management education and acclimation program in place to help student pilots identify, manage and overcome many of the factors that may be contributing to their airsickness. Airsickness management includes Aircrew Rotational Training (ART), which utilizes multiple 10 or 2 minute sessions in the Barany Chair, commonly referred to as "spins," to desensitize the semicircular canals. Identifying students who are at a higher risk of airsickness and targeting ART training prior to the start of UPT may expedite vestibular acclimation and reduce the number of students who are removed, or fall behind during pilot training. The Vance AFB student registrar identifies students who experience active airsickness at the USAF Initial Flight Training course which is conducted prior to UPT. This student population is offered a preventative 3 day ART program in addition to general education all students receive prior to their first UPT flight. **SIGNIFICANCE:** Since the beginning of CY 2016, 10 students have been given preventative 3 day ART training prior to their first flight in the T-6A. Since the beginning of CY 2016, zero students who received this preventative treatment have been removed from UPT due to airsickness. Although not yet statistically significant, this preventative approach may improve pilot training graduation rates while saving the government money and contributing to military readiness.

Learning Objectives:

1. In concert with other treatment modalities and behavior modification, sessions in the Barany Chair have been effective in decreasing airsickness rates, via vestibular system desensitization, in military aviators.

Wednesday, May 03 ***4:00 PM***
Plaza F

S-076: SLIDE: FUTURE OF SPACE MEDICINE: PT. 2

Chair: Mark Campbell
Paris, TX

Co-Chair: Keith Brandt
Houston, TX

[395] MEDICAL OPTIMIZATION NETWORK FOR SPACE TELEMEDICINE RESOURCES

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INTRODUCTION: Long-duration missions beyond low Earth orbit introduce new constraints to the space medical system such as the inability to evacuate to Earth, communication delays, and limitations in clinical skillsets. NASA recognizes the need to improve capabilities for autonomous care on such missions. As the medical system is developed, it is important to have an ability to evaluate the trade space of what resources will be most important. The Medical Optimization Network for Space Telemedicine Resources was developed for this reason, and is now a system to gauge the relative importance of medical resources in addressing medical conditions. **METHODS:** A list of medical conditions of potential concern for an exploration mission was referenced from the Integrated Medical Model, a probabilistic model designed to quantify in-flight medical risk. The diagnostic and treatment modalities required to address best and worst-case scenarios of each medical condition, at the terrestrial standard of care, were entered into a database. This list included tangible assets (e.g. medications) and intangible assets (e.g. clinical skills to perform a procedure). A team of physicians working within the Exploration Medical Capability Element of NASA's Human Research Program ranked each of the items listed according to its criticality. Data was then obtained from the IMM for the probability of occurrence of the medical conditions, including a breakdown of best case and worst case, during a Mars reference mission. The probability of occurrence information and criticality for each resource were taken into account during analytics performed using Tableau software. **RESULTS:** A database and weighting system to evaluate all the diagnostic and treatment modalities was created by combining the probability of condition occurrence data with the criticalities assigned by the physician team. **DISCUSSION:** Exploration Medical Capabilities research at NASA is focused on providing a medical system to support crew medical needs in the context of a Mars mission. MONSTR is a novel approach to performing a quantitative risk analysis that will assess the relative value of individual resources needed for the diagnosis and treatment of various medical conditions. It will provide the operational and research communities at NASA with information to support informed decisions regarding areas of research investment, future crew training, and medical supplies manifested as part of the exploration medical system.

Learning Objectives:

1. The participant will understand the MONSTR tool to evaluate the trade space of what resources will be most important in an exploration mission.

[396] EXISTING PROVISION FOR EMERGENCY MEDICAL SERVICES AT CANDIDATE SITES FOR A UK SPACEPORT

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INTRODUCTION: The UK government is currently deciding on the location of a national British spaceport, which is intended to be operational by 2018, with the aim of becoming the European centre for space tourism. The government is following a systematic process for selecting the spaceport location from among competing sites based on key operational, safety, meteorological, environmental and economic criteria, and has narrowed down the list of possible sites to six candidates. Wherever it is located, the spaceport will require a robust emergency medical plan, and we hypothesised that there is significant variation in the current provision for emergency medical services across these sites, which has not yet been considered as part of the ongoing selection process. **METHODS:** Existing emergency medical services were investigated for each of the candidate sites: Campbeltown Airport, Glasgow Prestwick Airport, Llanbedr Airfield, Newquay Cornwall Airport, Stornoway Airport and RAF Leuchars (temporary candidate only). All hospitals within a large radius were surveyed in order to develop a comprehensive picture of available emergency medical resources surrounding each site, and road and air ambulance transfer times to relevant facilities were estimated. As UK trauma services aim to achieve primary ambulance transfer to a major trauma centre within 45 minutes, this capability was specifically investigated. Site bidding teams were also invited to provide relevant information on medical services. **RESULTS:** More than 30 hospitals were identified and surveyed in this analysis. There is wide variation in current provision for emergency medical services across the candidate spaceport sites, both onsite and with regards to proximate hospital facilities. Road ambulance times to the nearest 24-hour Emergency Department range from ~10 minutes to ~90 minutes. Only two permanent candidate sites, Glasgow Prestwick Airport and Newquay Cornwall Airport, are located within 45 minutes of a major trauma centre. **DISCUSSION:** Existing provision for emergency medical services, which will be an important element of the spaceport's emergency medical plan, varies greatly between the candidate sites and this may be worthy of consideration as an additional factor in the government's selection process.

Learning Objectives:

1. Outline standard requirements for medical service provision at candidate spaceport sites.
2. Identify criteria for comparison between spaceport sites, sources of information, and methods for collection of these.
3. Recognise gaps between ideal service provision and existing service provision, to guide spaceport planning teams in future site development.