[297] MILITARY AVIATOR PEER SUPPORT PROGRAM: FOSTERING A CULTURE OF MUTUAL SUPPORT – WINGMEN, ALWAYS

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(Education - Program / Process Review)

BACKGROUND: Military aviator culture has historically endorsed a persona of an always ready, unwavering, and healthy. Pilots suffering from stress or mental health conditions may worry about seeking medical care due to potential professional or social repercussions, including losing their medical certificate and facing expensive evaluations. A 2019 study reported that 78.6% of pilots felt worried about seeking medical care, and 60.2% delayed care due to concerns about their pilot status. 2023 Stiftung Mayday data finds that 92.5% of stressful events can be completely resolved through a timely discussion with an empathetic and understanding peer. The Andersen Behavioral Model of Health Services Use suggests that pilots' attitudes, social norms, and perceived control may contribute to their reluctance to seek care. Most often, military aviators discuss problems with trusted peers, rather than trained professionals, to prevent any impact of an issue on their ability to fly. OVERVIEW: This presentation discusses establishment and utilization of a Military Aviator Peer Support Programs within the USAF, based on those that exist in the United States and European Union civilian aviation. This will include a discussion of the volunteer selection, training, and utilization within the 86th Operations Group at Ramstein Air Base. It will highlight some of the metrics monitored to identify success and challenges and trends in perception, trust, resource utilization and impact on the mission. Finally, we will look at potential short- and long-term considerations if MAPS programs were implemented across the military flying force and how that may build a stronger wingman culture within the USAF. DISCUSSION: The operational significance of aircrew culture on mission readiness and aviation safety is one of perception. By training wingmen who are already the social center of their aviation peers to be empathetic listeners armed with knowledge of the many resources available to handle problems of daily life, we may begin to see increased peer connectedness, resilience, and decreased stress index. Applying lessons learned from civilian culture and sharing knowledge with the aviators who already advise their peers, may provide a way for aviators to help each other, and triage those who need professional assistance.

Learning Objectives

1. The participant should be able to describe cultural challenges aviators meet when requesting assistance for non-flying issues.
2. Audience members should understand the key differences between peer support programs and other types of mental health medical care.
3. Participants should be able to discuss the specific reduction in risk of long-term mental health problems gained through early contact with peer support.

[301] SUBJECTIVE VS OBJECTIVE MEASURES OF WORKLOAD IN AN EXPERIMENTAL FUTURE VERTICAL LIFT PARADIGM

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(Original Research -)

INTRODUCTION: Managing cognitive demand is critical for aviation safety, yet accurately assessing pilot workload during complex flight maneuvers remains challenging. This study evaluated an integrated methodology combining real-time cognitive engagement indicators to provide a comprehensive assessment and assess the reliability of physiological and subjective measures for monitoring operator state. METHODS: Six experienced U.S. Army rotary-wing pilots completed simulated high-workload flight scenarios consisting of low-altitude, reconnaissance, and air threat avoidance maneuvers. Continuous wireless electroencephalography (EEG), heart rate data, and subjective workload ratings were recorded during the flights. These were then analyzed to assess the coherence of subjective and objective measures of workload. RESULTS: EEG engagement indices and heart rate variability metrics demonstrated reliable within-subject consistency across trials for individual pilots, with mean intraclass correlation coefficient values ranging from 0.59–0.69. Both measures exhibited synchronized fluctuations across pilots at key events, increasing during high workload segments and decreasing in lower demand periods. Subjective ratings also showed good within-subject reliability, with mean intraclass correlation coefficient values ranging from 0.74–0.85. DISCUSSION: The findings of this study provide strong support for the feasibility of using a multi-measure approach that integrates EEG, heart rate variability, and subjective ratings. This approach can continuously monitor real-time cognitive workload fluctuations during simulated rotary-wing operations. While objective measures showed within-subject consistency, substantial between-subject variability highlights the importance of individualized neurocognitive profiling. The integration of neurophysiological, autonomic, subjective, and environmental data holds great promise for the future of pilot workload assessment despite the challenges posed by individual differences.

Learning Objectives

1. Demonstrate an understanding of real-time physiological monitoring techniques in complex simulated flight environments
2. Describe the aeromedical and human factors challenges associated with Future Vertical Lift (FVL) capabilities, with emphasis on cognitive state monitoring.
3. Discuss individual responses to flight stressors and apply self-referencing methods for assessing workload and performance.

[299] HIGH CONSEQUENCE INFECTIOUS DISEASE PATIENT MOVEMENT: NEW FRONTIERS IN A PERSISTENT CHALLENGE

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(Education - Program / Process Review)

BACKGROUND: Paraphrased from Department of Defense (DoD) Joint Publication 4-02, a high-consequence infectious disease (HCID) includes any infection that either: leads to hazardous waste as categorized by the Department of Transportation, or can cause a high mortality rate among otherwise healthy people and at least some types of direct clinical specimens pose risks to laboratory personnel or poses a known risk of secondary airborne spread within health care settings or unknown mode of transmission, or no effective countermeasure exists. Not all facilities are qualified to treat HCIDs, therefore patients must be moved. Air movement benefits from speed, however, incurs risks to the patient, to the healthcare team, to the aircrew, and to populations at the destination and any enroute stops. As the internationally recognized authority in aerospace medicine, members of the Aerospace Medical Association should stay abreast of new developments in HCID patient movement (PM). While capabilities have existed for decades, a succession of different diseases have shown technology, and processes must continually evolve to reduce the risk of this necessary intervention. OVERVIEW: Commander, U. S. Transportation Command is the DoD single manager for PM providing DoD global PM through Defense Transportation System in coordination with other Combatant Commands, and as directed, appropriate U.S. Government agencies. Analyzing existing capabilities for HCID PM, the Command Surgeon (TCSG) initiated a program review and planning process to reduce risk and expand existing capabilities to a wider range of pathogens. Corona Virus 2019 pandemic response confirmed utility and safety of PM using the Negative Pressure CONEX. However, respiratory viruses pose different challenges from other pathogens, such as viral hemorrhagic fevers. Aware of Marburg Virus Disease (MVD) cases in Rwanda, TCSG co-hosted a working group to improve existing capability to safely move HCID patients. DISCUSSION: High quality HCID PM improves patient outcomes while reducing risks to population at origin, population at destination, healthcare workers, and aircraft crew members. The ability to operate in any environment regardless of infection risk while maintaining an HCID PM capability enhances operational options for the DoD.

Learning Objectives

1. The participant will be able to define High Consequence Infectious Diseases.
2. The audience will learn about U.S. Transportation Command's role in patient movement.
3. The learner will better understand risks associated with High Consequence Infectious Disease Patient Movement.

[303] FACTORS ASSOCIATED WITH PRESCRITPION STIMULANT USE FOR FATIGUE MITIGATION IN MILIARY AVIATION

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(Original Research -)

INTRODUCTION: Fatigue management is critical for aviation safety, but there are knowledge gaps regarding the operational use of prescription stimulants by military pilots. This cross-sectional study aims to characterize stimulant use patterns and associated factors in a deployed fighter aviation unit over 5 months. METHODS: The study will analyze data from 37 single-seat fighter pilots who flew 1,098 sorties during a deployment. Using de-identified pharmaceutical records, flight schedules, and unit rosters, the research will examine relationships between stimulant use and factors such as mission duration, circadian disruption, deployment length, rank, age, and secondary duties.Key hypotheses include: 1. Pilots flying sorties >4 hours are more likely to use stimulants 2. Greater takeoff time variation increases stimulant use likelihood 3. Stimulant use is not affected by deployment duration 4. Lower-ranking pilots use stimulants more frequently 5. Younger pilots use stimulants more frequently 6. Secondary duties impact stimulant use 7. Pilots become physiologically addicted to stimulants during deployments 8. Pilots become physiologically addicted to stimulants during deployments RESULTS: Statistical analysis will assess associations between the binary outcome of stimulant use and various predictor variables. This will illuminate factors influencing pilots' decisions to use prescribed stimulants. DISCUSSION: The findings will provide valuable insights into real-world stimulant utilization patterns in an operational military aviation setting. Results can inform evidence-based policies on fatigue countermeasures, guide commander decision-making on pharmaceutical interventions, and identify opportunities to mitigate pre-existing fatigue factors. Ultimately, this research aims to enhance aviation safety while optimizing pilot performance in demanding operational environments.

Learning Objectives

1. Identified the conditions and regulations regulating pharmaceutical fatigue medication in the US Air Force
2. Described which factors are associated with pharmaceutical utilization during flights
3. Identified which concepts regarding pharmaceutical fatigue medication are supported by this research.

[300] AERIAL DELIVERY OF FRESH AND STORED BLOOD PRODUCTS

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(Education - Program / Process Review)

BACKGROUND: This presentation discusses standard operating procedures for airdrop as a potentially viable method to deliver blood products to medics treating hemorrhaging patients in austere environments when timely transport to higher levels of care or regular resupply are not feasible. Comprehensive mortality studies of the Afghanistan and Iraq conflicts suggest that 91% of survivable deaths are related to hemorrhage. Mortality increases by 5% with every minute delay. Whole blood (WB) is the preferred resuscitation product for prehospital treatment of patients in hemorrhagic shock. There is an increasing effort to have medics administer WB to massively hemorrhaging patients as soon as possible to the point of injury. However, not all ground medics will have WB on hand. Additionally, the collection of WB from unit-prescreened type O blood types is time-consuming and resource-intensive. Lastly, prescreened type O blood may be difficult to obtain in sufficient amounts to treat massively hemorrhaging patients, to treat multiple patients in a mass casualty, or in a prolonged field-care setting. OVERVIEW: Aerial resupply provides a potential platform to deliver WB to medics when CASEVAC is not possible. Air superiority is not guaranteed in future near peer conflicts, further limiting timely evacuation requiring a shift toward prolonged field care. As military operations shift to more austere and denied areas of operation potentially spanning wide geographic arenas, FDA-approved blood products will not always be readily available. Additionally, Large Scale Combat Operations will result in large numbers of casualties, the inability to evacuate patients, or to medically resupply by the conventional means developed during the War on Terror. Prolonged Critical Care is nearly a certainty. DISCUSSION: A review of the literature utilizing various aircraft and unmanned aerial systems as well as different types of blood products overall demonstrated feasibility of airdrop delivery/airdrop. All airdropped and control blood units met criteria for blood transfusion per transfusion guidelines as outlined by the Joint Trauma System Whole Blood Transfusion Clinical Practice Guideline and the Association for the Advancement of Blood and Biotherapies Circular of Information for the Use of Human Blood and Blood Components. Acceptable levels of hemolysis for stored PRBC units is <1%.

Learning Objectives

1. The participant should be able to describe the reasoning behind the need for guidance for airdrop delivery of blood products
2. Audience members should be able to discuss various delivery systems and data outcomes from published studies supporting the feasibility of blood airdrop.

[302] PREVELENCE OF MENTAL HEALTH SYMPTOMS AMONG US ARMY AVIATORS: THE IMPACT OF MISSION TYPE

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(Original Research -)

INTRODUCTION: Aviation flight operations require constant vigilance where pilots must perform under significant physical and psychological stress. Prolonged or intense stress events can lead to mental health issues, even among those with formal resilience training. While the impact of stress within the aviation community has undergone increased scrutiny, little is known about the effects of specific aviation mission sets on mental wellness. METHODS: Quantitative survey responses were collected from a larger study of current and former U.S. Army Aviation personnel recruited via social media and snowball sampling between October 2023 and February 2024. This study utilized the four-question Public Health Questionnaire (PHQ-4) and the four-question Posttraumatic Stress Checklist for DSM 5 (PCL4-5) to determine pilots meeting the screening criteria for Generalized Anxiety Disorder (GAD), Major Depressive Disorder (MDD), and Posttraumatic Stress (PTSD) by the aircraft mission types of Unmanned Aerial Systems (UAS; N=60), Cargo (CH; N=33), Utility/MEDEVAC (UH; N=142), and Attack/Reconnaissance (AH; N=59). RESULTS: A total of 294 valid responses were received to determine the selected mental health screening criteria. Among pilots, UAS operators had the highest propensity for meeting screening criteria for all three conditions (61.7% ≥ one condition), followed by Cargo (42.4%), Attack/Reconnaissance (40.7%), and Utility/MEDEVAC (33.1%) aviators. When compared by individual conditions, UAS operators' responses were statistically more likely to meet the anxiety (55.0%) and PTSD (31.7%) screening criteria than all other mission types. DISCUSSION: The results indicate a high percentage of current and former US Army flight crews experience discernable levels of anxiety, depression, and PTSD. UAS operators' symptom levels were statistically higher than other pilots for anxiety, PTSD, meeting any condition, and meeting all three screening criteria. UAS operators undergo unique stressors from other mission sets. Some missions require operators to follow targets' patterns of life for days before conducting kinetic operations, allowing pilots to see them as individuals. Additionally, operators are not at personal risk, which may increase moral injury. Finally, distinctive barriers to care may impact mental health seeking among this career field. Future research should focus on specific causes for these increased mental health symptom rates and methods for reducing them.

Learning Objectives

1. Participants will gain additional insight into the prevalence of GAD, MDD, and PTSD symptoms among U.S. Army Aviation Pilots.
2. Attendees will be familiar with the higher prevalence of mental health symptom levels among UAS operators when compared to other US Army aviators.
3. Participants will better understand the gaps in knowledge that need to be researched regarding mental wellness among military aviators.