2021 ABSTRACTS OF THE AsMA SCIENTIFIC SESSIONS

91st Annual Scientific Meeting
August 29 – September 2, 2021

Denver Sheraton Downtown
Denver, CO

The following are the sessions and abstracts with rooms and presentation times for all presentations accepted after blind peer-review—in workshop, panel, slide, or poster sessions—for the 2021 Annual Scientific Meeting of the Aerospace Medical Association. The numbered abstracts are keyed to both the daily schedule and the author index. The Sessions numbers are listed as S-1 through S-77 (including workshops). Session chairs are included in the index to participants. The order of some sessions may have changed (check the Addendum provided at the meeting for the latest information). Abstracts withdrawn are listed as W/D. Presenters are underlined in the text.

SLIDES & PANELS: Each slide presentation is scheduled for 15 minutes (10-min talk and 5-min Q&A). We strive to keep slide presentation on time. Panel presentations have more flexibility and may not keep to a strict 15 minute per presenter format. There will be a discussion period of 15 minutes at the end of each panel.

POSTERS: Poster Sessions may be displayed all day on both Wednesday and Thursday! They will be on display in the Exhibit Hall. Poster authors must be present for the full morning or afternoon session in which their poster is scheduled: **Wednesday 10:00 a.m.–12:00 p.m. or 2:00 p.m.–4:00 p.m.; Thursday 9:30 a.m.–11:30 a.m. or 1:30 p.m.–3:30 p.m.**

EXHIBITS: Exhibits will be open Sunday evening during the Welcome Reception, and 9:30 a.m. to 4:30 p.m. Monday and Tuesday. Please wear your badge and visit every exhibit.

CONFLICT OF INTEREST: All meeting planners and presenters completed financial disclosure forms for this live educational activity. All potential conflicts of interest were resolved before planners and presenters were approved to participate in the educational activity. Any conflicts of interest that could not be resolved resulted in disqualification from any role involved in planning, management, presentation, or evaluation of the educational activity.

TEMPLATES: All Abstracts were submitted according to a certain category and type using provided templates. Not all abstracts submitted fit the mold for Original Research abstracts. We therefore have created an Education category with three additional types: Case Report, Program/Process, and Tutorial. The templates for these are provided for your information.

ORIGINAL RESEARCH TEMPLATE:

This type of abstract describes the results and significance of new research undertaken to address gaps in the current knowledge of aerospace medicine or human performance. It is typically an original analysis of a hypothesis involving data collection and analysis.

INTRODUCTION: <*This section includes the background, including a statement of the problem and why it is important, the status of the current research, and the hypothesis to be tested.*>
METHODS: <*This section includes a brief description of how the study was conducted, the number, type, and gender of the subjects, and how they were selected and grouped. It should also include the metrics collected, how they were measured, and how frequently they were recorded. The types of scales or questionnaires administered should be identified. Environmental conditions and administered medications should be described. In addition, a summary of the statistical methods should be provided. A statement concerning ethics approval for studies using human or animal subjects is also required*.>
RESULTS: <*This section includes a summary of the data and metrics of operational and/or statistical significance. "Results will be discussed" is not acceptable*.>
DISCUSSION: <*This section interprets the meaning of the results in terms of their application to the operational/clinical/scientific community and suggests areas for future research*.>

EDUCATION: CASE STUDY: CLINICAL OR HUMAN PERFORMANCE TEMPLATE:

This type of abstract describes the analysis of an individual clinical or operational case that is not a research study but provides pertinent information directly applicable to aeromedical practices, safety, or human performance

INTRODUCTION: *<This section concisely summarizes the case.>*
BACKGROUND: *<This section describes the importance of the case and provides supporting evidence in the form of a literature review.>*
CASE PRESENTATION: *<This section describes the event.>*
DISCUSSION: *<This section explains the applicability and relevance to civilian and military operations.>*

EDUCATION: PROGRAM/PROCESS REVIEW TEMPLATE:

This type of abstract can describe a new Service thrust, e.g., identifying capability gaps, or reviews of critical areas, e.g., safety. It may be a description of a program or process that is used to solve a problem or accomplish a task.

BACKGROUND: *<This section describes why this is important to AsMA attendees and why this needs to be addressed now.>*
OVERVIEW: *<This section concisely describes the effort and how it applies to current or future gaps.>*
DISCUSSION: *<This section describes (1) the operational or clinical significance, (2) how it will this advance aeromedicine/human performance, and (3) address whether it supports cross Service/International/Military – Civilian spheres.>*

EDUCATION: TUTORIAL TEMPLATE:

This type of abstract describes new tools, models, techniques, methodologies pertinent to civilian and military aerospace medicine and human performance.

INTRODUCTION: *<This section summarizes what will be covered, e.g., list of topics or syllabus.>*
TOPIC: *<Description of new technology, procedure, methodology.>*
APPLICATION: *<This section details how the new material will be implemented and how broadly it applies to aerospace medicine and human performance.>*
RESOURCES: *<This is an optional section to provide citations where additional information can be found.>*

SUNDAY, AUGUST 29, 2021

Sunday, 08/29/2021 ***9:00 AM***
Majestic Ballroom

[S-01]: WORKSHOP: AIRCREW FATIGUE: CAUSES, CONSEQUENCES, AND COUNTERMEASURES

Chair: Jo Lynn Caldwell
Co-Chair: John Caldwell

[1] AIRCREW FATIGUE: CAUSES, CONSEQUENCES, AND COUNTERMEASURES

Lynn Caldwell[1], John Caldwell[2]
[1]Naval Medical Research Unit Dayton, Wright-Patterson AFB, OH, USA; [2]Coastal Performance Consulting, Yellow Springs, OH, USA

(Education - Tutorial/Review)

Workshop Overview: INTRODUCTION: *Human fatigue stemming from lengthy work periods, circadian disruptions, and insufficient sleep poses a serious threat to performance, safety, and general wellbeing. Leaders, healthcare professionals, schedulers, and aircrew members need to understand the causes of fatigue and the scientifically valid strategies for fatigue mitigation.* ***TOPIC:*** *In modern aerospace settings, long work hours, shift work, time-zone transitions, and sleep disturbances are common. These factors often result in personnel reporting for duty in a fatigued state, leading to mistakes, cognitive difficulties, and mood disturbances that can degrade performance and compromise safety. It is possible to effectively mitigate these difficulties if scientifically validated strategies are systematically applied, including the implementation of crew scheduling practices that are based on a scientific understanding about the underpinnings of fatigue. This workshop will provide a fully updated, science-based overview of fatigue factors and relevant countermeasures and will emphasize the importance of implementing educational, preventative, monitoring, and mitigation strategies within the context of a fully-integrated fatigue risk management system.* ***APPLICATIONS:*** *Effective fatigue management is an important key to optimizing operational performance and safety within aerospace contexts. Up-to-date, evidence-based information on this topic is of broad interest to professionals who are in a position to safeguard and augment human performance in today's demanding operational environments.*

Learning Objectives

1. Know how to recognize the dangers of fatigue in various settings
2. Understand the major causes of fatigue (both operational and physiological) and know and apply one or more scientifically valid countermeasures for fatigue in specific industrial/operational contexts
3. Understand the basics of a good Fatigue Risk Management System (FRMS)

Sunday, 08/29/2021 ***9:00 AM***
Governor's Square 15

[S-02]: WORKSHOP: FAM FLIGHT: INTRODUCTION TO AIRCREW SELECTION: TEST DEVELOPMENT, INSTRUMENT VALIDATION, LEGAL ISSUES, AND AEROMEDICAL STANDARDS

Chair: Ray King,
Chair: Henry Phillips IV

Workshop Overview: PROBLEM STATEMENT: *Selecting candidates for aviation careers requires consideration of aptitude, motivation, as well as an assessment of their mental health.* ***TOPIC:*** *Personnel selection is a complex undertaking that optimally involves the expertise of a diverse team of professionals, a team of teams. This workshop offers participants a glimpse into the processes, which involve select in processes designed to identify those with desirable aptitudes and traits, and select out processes based on aerospace medical standards, intended to identify candidates with limitations that warrant their exclusion from consideration.* ***APPLICATION:*** *Desirable aptitudes are identified based on job-relevant Knowledge, Skills, Abilities, and Other characteristics (KSAOs). While the assessment of candidate aptitudes will suggest who CAN become an asset to a flying organization, the assessment of pathological personality domains and motivation can help predict who WILL become an asset. Mental health conditions also need to be considered as they can be incompatible with flight safety. The assessment of mental health for aviation careers is not without controversy as the stakes are very high, both to aviation safety as well as to potential aviators' careers and hence livelihoods. While psychological testing is very useful, off-the-shelf instruments must be used with caution and with occupation-specific norms as those interested in aviation as well as incumbent aviators present themselves in unique ways. For example, successful aviators typically have compulsive, narcissistic, and histrionic personality traits, which can be adaptive. Individuals who have dependent personalities or who cannot effectively compartmentalize their non-aviation concerns need to be identified early. While it is important to have well-defined medical standards in aviation, it is also important to consider individuals who have received treatment and consider waivers, termed "special issuances" by some aerospace medical authorities, in the military and civilian realms. Such an approach will best avoid driving psychiatric information "underground" or discouraging treatment.* ***RESOURCES:*** *Applicable governing regulations, delineated in the accompanying abstracts, will be cited. The presentations will use case vignettes, questions and answers, and video and/or live demonstrations of applicant assessments to illustrate the presented material.*

[2] SELECT OUT: Applying Aeromedical Standards

Ray King[1], Robert Bor[2], Christopher Flynn[1], Elliott King[3]
[1]Federal Aviation Administration (FAA), Washington, DC, USA; [2]Private Practice, London, United Kingdom; [3]The O' Agency, Tijeras, NM, USA

(Education - Tutorial/Review)

PROBLEM STATEMENT: Selecting candidates for aviation careers requires consideration of their mental health to assess their stability; the specific disqualifying conditions are delineated below. **TOPIC:** This portion of the workshop focuses on the screening and assessment of mental health and its importance in aviation safety. The presenters will focus on the SELCET OUT aspect of personnel selection. **APPLICATION:** Mental health needs to be assessed during aviator personnel assessment and include depression, anxiety, substance abuse/dependence as well as personality disorders and maladaptive personality traits, and other conditions incompatible with flight safety. The assessment of mental health for aviation careers is not without controversy as the stakes are very high, both to aviation safety as well as to potential aviators' careers and hence livelihoods. While psychological testing is very useful, off-the-shelf instruments must be used with caution and with occupation-specific norms as those interested in aviation as well as incumbent aviators present themselves in unique ways. For example, successful aviators typically have compulsive, narcissistic, and histrionic personality traits, which can be adaptive. Individuals who have dependent personalities or who cannot effectively compartmentalize their non-aviation concerns need to be identified early. While it is important to have well-defined medical standards in aviation, it is also important to consider individuals who have received treatment and consider waivers, termed "special issuances" by some aerospace medical authorities, in the military and civilian realms. Such an approach will best avoid driving psychiatric information "underground" or discouraging treatment. Mental health professionals recognize that aviators are not immune to life circumstances problems, such as marital and parent/child stressors and financial pressures. **RESOURCES:** This portion of the workshop will explore governing aerospace medicine regulations and will employ slide presentations, case vignettes, questions and answers, and video and/or live demonstrations of applicant assessment interviews.

Learning Objectives

1. Participants will understand that aviators face most of the same life stressors that confront the rest of the population.
2. Participants will come to appreciate the unique personality structure of aviators.

[3] AN INTRODUCTION TO TOOLS, PROCESSES, AND STANDARDS USED TO IDENTIFY THE MOST QUALIFIED CANDIDATES FOR AVIATION TRAINING

Henry Phillips[1], Tatana Olson[2], Brennan Cox[3], Michael Natali[4]
[1]*Soar Technology, Inc, Pensacola, FL, USA;* [2]*Defense Health Agency, Silver Spring, MD, USA;* [3]*Naval Aeromedical Research Unit - Dayton, Dayton, OH, USA;* [4]*Chief of Naval Air Training, Corpus Christi, TX, USA*

(Education - Tutorial/Review)

INTRODUCTION: Aviation training stakeholders and employers have a vested interest in personnel selection and training. This workshop will discuss the steps, processes, best practices, and lessons learned in development and validation of personnel selection systems. **TOPIC**: The development, validation, deployment, management, and defensibility of personnel selection systems are complex processes necessitating highly trained and experienced practitioners familiar with research methods, advanced statistical methods, program management expertise for tracking adherence to cost, schedule, and capability considerations, and an understanding of legal requirements and relevant case law. Steps in the development process to be explored include the necessity of using job-task analysis as a foundation, identifying or developing the right selection tests and tools for incorporation, practical considerations for battery development and evaluation, test validation and psychometric evaluation processes, test fairness, and product development guidelines. Additional topics covered will include applicable laws and standards, including Institutional Review Board governance, necessary skillsets and educational requirements for selection practitioners, and the role of program management in selection system development and delivery. **APPLICATION**: This session will not make its attendees selection experts, but it will make them better informed consumers of personnel selection proposals and products. Attendees will leave with an understanding of the questions that must be considered in development and fielding of these tools, the processes, skillsets, and timelines involved, and the typical scope of personnel selection development and validation efforts. **RESOURCES**: (1) Society for Industrial and Organizational Psychology. (2018). Principles for the validation and use of personnel selection procedures (5th ed.). Bowling Green, OH: Author. (2) Section 60-3, Uniform Guidelines on Employee Selection Procedure (1978; 43 FR 38295 (August 25, 1978)

Learning Objectives

1. Understand the steps and processes involved in developing and validating a personnel selection system.
2. Understand the legal and regulatory requirements governing development, evaluation, and use of personnel selection systems in the U.S. private and public sectors.
3. Understand how to critically evaluate the claims and assertions made in vendor personnel selection proposals.

Sunday, 08/29/2021 ***12:00 PM***
Governor's Square 16

[S-77] WORKSHOP: AEROSPACE MEDICINE FACULTY DEVELOPMENT

Chair: Thomas Jarnot
Co-Chair: David Miller

Workshop Overview: *The Accreditation Council for Graduate Medical Education (ACGME) requires faculty members regularly participate in organized clinical discussions, rounds, journal clubs, conferences, and on an annual basis pursue faculty development designed to enhance their skills. Faculty development is intended to describe structured programming developed for the purpose of enhancing transference of knowledge, skill, and behavior from the educator to the learner. This workshop will offer needs-based programming reflective of recent and upcoming changes to residency training as implemented by the ACGME and demonstrate solutions to current resident educational requirements.*

[418] BECOMING CERTIFIED IN AEROSPACE MEDICINE: AN ABPM UPDATE

Hernando Ortega[1], Christopher Ondrula[1]
[1]*American Board of Preventive Medicine, Chicago, IL, USA*

(Education - Program/Process Review)

BACKGROUND: The American Board of Preventive Medicine (ABPM) is a member of the American Board of Medical Specialties (ABMS), certifying physicians in the specialty of Aerospace Medicine. The primary purpose is to educate program directors and provide knowledge in order to better advise residents on initial certification processes and transition to continuing certification. **OVERVIEW:** This discussion will familiarize Aerospace Medicine program directors with current issues surrounding Board Certification in this preventive medicine specialty. Data will be presented on the relationships required to provide specialized certificates to physicians – specifically current residents, demographics of active Preventive Medicine diplomates, and the specifics on the results of 2020 initial certification examination cycle, to include pass rates. The ABPM will also present updates to the eligibility pathways for initial board certification, as well as the current content outline for AM specific knowledge. Finally, the ABPM will present numerous initiatives in the transition from Maintenance of Certification (MOC) to Continuing Certification. **DISCUSSION:** Board Certification should be the key goal following residency training in Aerospace Medicine. Physician certification is changing to a "continuous certification" model, based on lifelong learning, professionalism and quality improvement. The staff of ABPM stands by to assist all program directors with any questions or concerns. Program directors remain the key individuals in recommending residents for eligibility, and as such, should be well versed in the requirements of Board Certification.

Learning Objectives

1. Be aware of the 3 major pathways for ABPM Certification in Aerospace Medicine - Residency, Complimentary, & Special pathways - their purposes & unique requirements.
2. Understand the pivotal role in the application process that Program Directors play in the validating the completion of training and preparedness to sit for the ABPM Board Certification examination.
3. Become familiar with the demographics of AM diplomates and the changing continuing certification program that ABPM is preparing for all diplomates

[419] A NAVIGATIONAL AID FOR AEROSPACE MEDICINE MILESTONES 2.0

Cheryl Lowry[1]
[1]*Kinetic Adventure Medical Education, Wichita Falls, TX, USA*

(Education - Program/Process Review)

BACKGROUND: In 1999, the Accreditation Council for Graduate Medical Education (ACGME) recognized the need to transform their prescriptive, process-based physician education standards to a system that allowed for individualization, innovation and growth. There was a concurrent shift to focus on training outcomes while minimizing the administrative burden involved in graduate medical education (GME) program management. Through a series of changes, the ACGME introduced six domains of clinical competency as a means of assessing the effectiveness of physician training. This competency-based GME eventually led to the development of common and specialty-specific educational "milestones". These milestones were developed by the ACGME in collaboration with specialty Review Committees, program directors, and medical specialty societies. By 2013, all ACGME-recognized specialties had developed Milestones to assess their physician trainees. In the context of serving multiple stakeholders including residents, program directors, GME faculty and the public trust, ACGME has used Milestones data to update and improve the Milestones for each specialty. **OVERVIEW:** The first Aerospace Medicine Milestones were published in 2015. The ACGME has monitored the utility of these educational Milestones over time. Operational gaps were identified including redundancy, complexity, and lack of clarity regarding the means of assessing competency levels for several educational Milestones. The second version of Aerospace Medicine Milestones is complete and will be implemented in 2021. Despite revision,

the process of using the Milestones to assess resident competence can still be daunting. **DISCUSSION:** Through a discussion of the Milestones updates, evaluation strategies and supplemental tools, this presentation will help faculty develop competency in resident assessment and effective use of the new Milestones for Aerospace Medicine.

Learning Objectives

1. Participants will be able to locate and utilize supplemental tools to find examples of representative competencies for each milestone.
2. Participants will be able to describe several methods for assessing a resident's progression through the ACGME's Aerospace Medicine Milestones.

[420] RELAY RESEARCH FOR RESIDENTS IN AEROSPACE MEDICINE

David Miller[1], Richard Allnutt[2]
[1]*US Air Force School of Aerospace Medicine, Wright-Patterson AFB, OH, USA;* [2]*Retired, Beavercreek, OH*

(Education - Tutorial/Review)

INTRODUCTION: The residency in aerospace medicine is short, sometimes a single year for those given advance standing. The administrative requirements inherent in research may consume much of this available time, making it difficult to produce meaningful research before graduation. **TOPIC:** The path to publication of Aerospace Medicine Research includes many steps, including development of a research hypothesis, review of the relevant literature, design of a research protocol, approval by an Institutional Review Board (IRB), collection of data, analysis of data, and development of a publishable paper and/or presentation. **APPLICATION:** It is useful for residents to be involved in all aspects of research, so they understand both the joys and frustrations associated with the production of new understanding of Aerospace Medicine. A modification of the typical linear (and individual) approach to producing needed research can be developed. In this relay research framework, faculty develops a cooperative environment in which each resident makes meaningful contributions to several research projects at different levels of maturity. Each resident can develop a new idea for a research project and see it through to approval by an IRB. The same resident, for a previously developed protocol, becomes the investigator responsible for data collection and analysis. And, for a third protocol, the resident is the author of a published study. It would be reasonable for this resident to be a listed author for all three research efforts at publication as well as any advisory faculty that made significant contributions. A real advantage of this kind of relay research is the potential for development of significant, evidence-based knowledge which can substantially advance the practice of Aerospace Medicine instead of a "demonstration project" limited by real time constraints to a much smaller effort and limited application.

Learning Objectives

1. The participants will understand basic structure for relay resident research as proposed in the abstract and consider applications and opportunities in their respective programs.
2. The audience will learn about the requirements for scholarly activity, as defined by the Accreditation Council for Graduate Medical Education (ACGME) for residents and faculty.

[421] THE ADULT LEARNER AND GRADUATE MEDICAL EDUCATION, AN OVERVIEW OF CHALLENGES FACED BY RESIDENCY FACULTY MEMBERS IN THEIR JOURNEY INTO ANDRAGOGY

Edgar Rodriguez[1]
[1]*U.S. Air Force, Luke AFB, AZ, USA*

(Education - Tutorial/Review)

INTRODUCTION: Graduate medical education (GME) program staff providers assume the role of teacher and mentor to resident physicians upon appointment as faculty members. Although teaching of underclass students, interns and residency members is part of every physician development and training, not many have formal education with regards to the challenges associated with the adult learner. **TOPIC:** Andragogy has been described as the art and science of adult learning; many scholars have identified multiple areas where adults differ significantly from younger learners. These differences present challenges to GME faculty members as programs try to maximize the learning experience for the resident physician within a fixed timeline. Motivation, experience and decreased attention span are characteristics of adult learning. These require adaptation to the traditional teaching methods used in the education of younger populations. **APPLICATION:** The purpose of this presentation is to highlight the different aspects of adult learning and identify ways to improve the GME faculty experience as an educator and mentor. Faculty members will be encouraged to seek ways to engage and enhance the resident's learning as they gain better understanding of the different needs, learning styles, limitations and expectations observed in the adult learner.

Learning Objectives

1. Enhance the resident's learning as they gain better understanding of the different needs, learning styles, limitations and expectations observed in the adult learner. Highlight the different aspects of adult learning and identify ways to improve the GME faculty experience as an educator and mentor
2. Engage the GME Faculty Staff to enhance the resident's learning as they gain better understanding of the different needs, learning styles, limitations and expectations observed in the adult learner.

[422] ARMY AEROSPACE MEDICINE RESIDENTS SHAPING THE AVIATION MEDICINE COMMUNITY

Albert Lee[1], Jennifer Benincasa[1], John Venezia[1]
[1]*School of U.S. Army Aviation Medicine, Fort Rucker, AL, USA*

(Education - Program/Process Review)

BACKGROUND: Identifying the need to bring the aviation medicine community together for frequent communication, the residents of the U.S. Army Aerospace Medicine Residency program started a global conference. The Operational Aviation Medicine (OAM) Conference is a monthly worldwide conference that started in 2016. **OVERVIEW**: The residents of the U.S. Army Aerospace Medicine Residency program organize, facilitate, and execute a global monthly conference to inform and shape the aviation medicine community. **DISCUSSION:** OAM is on a virtual platform with audio and visual capabilities to inform and shape the aviation medicine community. It brings together all the major organizations of the aviation medicine community in the U.S. Army. Open to combat aviation brigades and other aeromedical providers from regular Army, Army National Guard, and Army Reserve to get updates from Army aviation leadership entities. These major aviation medicine entities, such as U.S. Army Aeromedical Activity, U.S. Army Aeromedical Research Lab, U.S. Army Aviation Center of Excellence, U.S. Army Combat Readiness Center, and School of Army Aviation Medicine participate to push out information to the flight surgeons and answer any questions directly from the field. OAM also offers one credit hour of continuing medical education (CME) with an aerospace medicine relevant lecture from various subject matter experts.

Learning Objectives

1. Understand the importance of effective communication to share aviation medicine knowledge and policies.
2. Learn what the OAM conference does and how to participate.
3. Understand the value of motivating residents to be innovative in solving problems.

[423] FEEDBACK: THE FOUNDATION OF CLINICAL TEACHING

Paul DeFlorio[1]
[1]*USAF School of Aerospace Medicine, Wright-Patterson AFB, OH, USA*

(Education - Program/Process Review)

BACKGROUND: Residency training is long and arduous. Effective feedback is a critical component of a resident's growth. Optimizing faculty feedback is crucial to ensuring a resident's success. **OVERVIEW:** The most basic goal of residency training is to ensure our trainees attain competence in their field. Because medicine is an apprenticeship, competence–and ultimately mastery–is driven by learner-teacher interactions. Feedback is one of the fundamental mechanisms through which teachers can guide the efforts of their learners and optimizing how we deliver it is therefore essential. **DISCUSSION:** This lecture will elucidate the three pillars of effective feedback with didactic and real-world examples and will show how integrating these foundational principles enables an environment where feedback can thrive. The basics

of how to deliver feedback will also be modeled and practiced, so participants in the workshop can practice effective feedback. Finally, identifying barriers to giving feedback will enable participants to mitigate situations that inhibit feedback.

Learning Objectives

1. Learning Objectives 1. Understand the critical importance of effective feedback in resident education.
2. Name the three pillars that establish an environment where feedback can flourish.
3. Learn how to identify and mitigate barriers to feedback.

[424] TARGETED ROTATION COORDINATION TO OPTIMIZE EDUCATIONAL QUALITY AND COMMUNITY EFFICIENCY

Paul Newbold[1]
[1]*USAF School of Aerospace Medicine, Oklahoma City, OK, USA*

(Education - Program/Process Review)

BACKGROUND: Due to the unique curriculum requirements surrounding the specialty, most ACGME-accredited residency programs in Aerospace Medicine require the accomplishment of certain rotations via locations other than their home facility (remote). As a result, multiple residency programs send multiple groups of residents to these locations at various times throughout the academic year. **OVERVIEW:** The community of ACGME-accredited Aerospace Medicine residency programs currently consists of just three military and two civilian programs, which combined graduate less than 40 board-eligible Aerospace Medicine specialists per year. This number is quite small when compared to other specialties such as Family Medicine, or even Occupational Medicine. Most programs include remote experiences such as the Johnson Space Center (National Aeronautics and Space Administration) and the Civil Aviation Medical Institute (Federal Aviation Administration) as core components of their curricula. **DISCUSSION:** The purpose of this presentation is to explore ways for all current ACGME-accredited residency programs in Aerospace Medicine to establish synchronized remote experiences, thereby facilitating the attendance of these rotations by residents from several programs during the same blocks of time. The coordination of remote rotation schedule blocks across multiple programs clearly presents a challenge. However, successful execution driven by proper planning would likely provide a more robust remote educational experience for residents and minimize the frequency of potential workflow interruptions for institutions hosting these rotations.

Learning Objectives

1. The participant will consider which specific remote rotations are common to most residency programs in Aerospace Medicine.
2. The participant will explore the advantages, limitations and challenges surrounding the attendance of a remote rotation by residents from multiple programs.

[425] AEROSPACE MEDICINE IN AN MPH CURRICULUM - NAVIGATING EDUCATIONAL HURDLES OUTSIDE THE CLASSROOM

Thomas Jarnot[1]
[1]*Wright State University, Dayton, OH, USA*

(Education - Program/Process Review)

BACKGROUND: Accreditation Council for Graduate Medical Education (ACGME) Program Requirements for Graduate Medical Education in Preventive Medicine stipulate that "residents must complete a master's degree program in public health (MPH) or another equivalent degree prior to completion of the residency program". Coursework in Biostatistics, Epidemiology, Environmental Health, Health Services Management, and Behavioral Aspects of Health are required components of such curricula. Remaining course work to meet graduation requirements varies among programs and electives in specialized areas of study are common. **OVERVIEW:** Integration of Aerospace Medicine (ASM) centric courses as part of a broader MPH curriculum exits to varying degrees in ASM residencies. Inclusion of such didactics represents an opportunity to introduce specialty concepts and augment the fund of knowledge gained by residents during practicum rotation experiences. **DISCUSSION:** Incorporation of Aerospace Medicine courses in an MPH curriculum provides a flexible yet focused didactic learning environment for residents than can be tailored to the needs of the residency program. These advantages can be of significant benefit during periods of change that affect practicum experiences including rotation availability, mode of delivery, funding, and other modifications beyond the control of the residency program.

Learning Objectives

1. The participant will learn current approaches to MPH curricula for residency programs that incorporate ASM subject material.
2. The audience will be able to Identify opportunities to incorporate areas of didactic ASM study that can augment practicum rotations while striving to meet ACGME graduation requirements.

MONDAY, AUGUST 30, 2021

Monday, 08/30/2021 ***8:00 AM***
Plaza Ballroom

OPENING CEREMONIES & 66TH ANNUAL LOUIS H. BAUER LECTURE
Brig. Gen. Paul Friedrichs
"The Urgency of Doing"

Monday, 08/30/2021 ***10:30 AM***
Governor's Square 14

[S-03]: PANEL: COGNITIVE PERFORMANCE TESTING FOR THE AEROSPACE ENVIRONMENT

Chair: Ryan Mayes
Co-Chair: Richard Arnold

PANEL OVERVIEW: *The aerospace environment poses multiple challenges to pilots and other operators; one of the most important challenges is high cognitive demand. Consequently, tests that accurately capture cognitive performance relevant to the aerospace environment are necessary for use in selection and classification, medical screening, training, and research. This panel will present several different tests used by various U.S. federal aeromedical labs and aviation support functions; for each test, development, validity, and implementation will be discussed. The Naval Air Warfare Center Aircraft Division will present SYNWIN, which is used in aviation research. NASA will present MAT-B. The Navy Medical Center Portsmouth will present the Cog Screen tool used in aeromedical evaluation. The US Air Force School of Aerospace Medicine (USAFSAM) will present Microcog, which it uses in its evaluation of aviators. USAFSAM and the Institute for Human and Machine Cognition will present a newly developed cognitive test designed to aid in sensor development, followed by a comparison of the novel assessment to existing tools. Finally, the panel will lead a discussion comparing the various cognitive tests.*

[4] SYNTHETIC WORK (SYNWIN) PROGRAM TO TRACK COGNITIVE CHANGES DURING HYPOXIC STRESS

Barry Shender[1], Gregory Askew[1], Jeremy Beer[2], Stephen Coleman[1], Carla Mattingly[1], Michelle Warren[1], Phillip Whitley[3]
[1]*Naval Air Warfare Center Aircraft Division, Patuxent River, MD, USA;* [2]*KBR Space & Mission Solutions Group, Brooks City-Base, TX, USA;* [3]*Criterion Analysis, Inc., Miami, FL, USA*

(Education - Tutorial/Review)

PROBLEM STATEMENT: When developing an aircrew monitoring system to mitigate physiologic episode risk, it is critical to relate changes in physiological response to degraded cognitive state. NAWCAD uses SynWin (ver 1.2.39, ARS, Chula Vista, CA) to track this in real time. **TOPIC:** SynWin (3) provides a generic work environment where subjects are required to remember and classify items on demand, perform an arithmetic task, and monitor and react to visual and auditory prompts. It presents four simultaneous tasks on a