



2020 ABSTRACTS OF THE AsMA SCIENTIFIC SESSIONS

91st Annual Scientific Meeting
May 17 – May 22, 2020

Hyatt Regency Atlanta
Atlanta, GA

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 2020 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-87 (including workshops). Session chairs are included in the index to participants. The order of some sessions may have changed (check the Addendum and the App 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 Abstracts withdrawn are listed as W/D. Presenters are underlined in the text.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: Posters 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.

PLEASE NOTE: FAA AME Sessions will be held in the Miranda 1/3 Room all week. The schedule is printed elsewhere in this program.

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.

ENDORSEMENTS: Last year we introduced endorsements to highlight outstanding submissions. We are continuing this designation again this year. You will see “Endorsed by:…” under the title of certain panels and abstracts. **Endorsement** of a poster, slide, or panel by the Fellows or Associate Fellows Group, a Constituent or Affiliate organization, or other aeromedical group or committee is a recognition of excellence. Professional, applicable, completed projects that are well-written in their abstract form but are felt to exceed expectations are recommended after masked review and unanimous agreement by usually at least ten peers, followed by concurrence of the leadership of the endorsing group.

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, MAY 17, 2020

Rooms for Workshops will be listed on the App. Search for ASMA Events in the App Store for your device.

Sunday, 05/17/2020**8:00 AM****[S-1]: WORKSHOP: INTRODUCTION TO AEROSPACE MISHAP EPIDEMIOLOGY****Chair: Pete Mapes****[1] INTRODUCTION TO AEROSPACE MISHAP EPIDEMIOLOGY**Pete Mapes

International Association of Military Flight Surgeon Pilots; Uniformed Services University; Oscoda, MI, USA

(Education - Program / Process Review Proposal)

WORKSHOP OVERVIEW: BACKGROUND: Aerospace Mishap Epidemiology is a unique application of epidemiology to the study of aviation and space mishaps. Since these events are rare, the mathematical evaluation of the data is relatively unique. Sampling is often not an option & many times the entire universe of events must be studied over a prolonged time interval to obtain statistical adequacy. Due to low frequencies, sometimes decades of data are required to show statistical significance. **OVERVIEW:** This workshop takes the learner through many of the methodologies associated with the manipulation of parametric data associated with aerospace mishaps. It also teaches the learner to calculate power to ensure adequate sample size. Nonparametric data is discussed and a number of the tools for nonparametric analyses are listed for the participants. The workshop addresses modeling and regression. Modeling considerations are discussed. The workshop includes roughly 6 hours of classroom instruction in the form of lecture and discussion. Two hours of supervised problems are also made available. **DISCUSSION:** The techniques presented in the workshop should be considered whenever the analyses or meta-analyses of aerospace mishaps or other rare events is undertaken. Learners will review the criteria for parametric data, calculate *P*-values, parse data, conduct power calculations, identify significant distributions and learn the methodologies commonly applied to the study of rare events. The material covered is frequently found in the materials candidates for Board Certification by the American Board of Preventive Medicine confront during the board examination. **RESOURCES:** Learners will be provided with a printed slide set for the course and a learner's guide. All participants should bring a fully charged computer (PC) loaded with the appropriate version of EPI INFO (TM) loaded onto it. Of particular interest will be the STAT CALC (TM) subroutines. Practice problems will also be provided for use during the course. An MOC question review will also be provided. The MOC question review must be completed, returned and corrected to 100% before MOC credit will be awarded.

Learning Objectives

- Learners will comprehend the nature of aerospace denominators and be able to select appropriate denominators for use in studies of aerospace events. They will understand and be able to identify confounding and bias. They will know what both internal and external reliability are and when they are important.
- Learners will understand the difference between parametric, non-parametric and Bayesian analyses. They will be able to use EPI INFO (TM) to conduct calculations. They will be able to calculate power, *P*-values, confidence intervals, relative risks, odds ratios and other descriptive functions from parametric data.
- Learners will identify when to use 2 by 2 tables, Analyses of Variance (ANOVA) & regression. They will know the differences & capabilities of each of these parametric forms of analyses. They will learn the nine Bradford-Hill criteria for causation & understand the difference between association & causality.

Sunday, 05/17/2020**9:00 AM****[S-2]: WORKSHOP: AIR CREW FATIGUE: CAUSES, CONSEQUENCES, AND COUNTERMEASURES****Chairs: Jo Lynn Caldwell
John Caldwell****[2] AIR CREW FATIGUE: CAUSES, CONSEQUENCES, AND COUNTERMEASURES**Jo Lynn Caldwell¹, John Caldwell²

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

(Education - Tutorial Proposal)

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

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

Sunday, 05/17/2020**9:00 AM****[S-3]: WORKSHOP: FAM FLIGHT: AN INTRODUCTION TO AIRCREW SELECTION TEST DEVELOPMENT, INSTRUMENT VALIDATION, LEGAL ISSUES, AND AEROMEDICAL STANDARDS****Chairs: Henry Phillips
Ray King**

WORKSHOP OVERVIEW: INTRODUCTION: Consistent with the theme of this year's conference on personnel selection and training, this workshop will discuss the steps, processes, best practices, and lessons learned in development and validation of personnel selection systems, including aeromedical standards for mental health evaluation. **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. Criteria for mental health evaluations and standards for select-out decisions will be discussed. 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 workshop 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).

[3] SELECTION TOOL DESIGN AND VALIDATION

Heidi Keiser¹

¹Naval Aerospace Medical Institute, Pensacola, FL, USA

(Education - Tutorial Proposal)

INTRODUCTION: The design and validation of personnel selection tools is governed by considerations involving the development, validation, psychometric evaluation, and deployment of personnel selection tools. Multiple strategies and best practices exist to meet validation requirements and developmental standards. **TOPIC:** Relevant considerations for selection design include the psychological constructs or job content to be targeted, and existing types of selection test, such as g-driven selection tools, work samples, non-cognitive measures, biodata, interviews, and assessment centers. Test development is also influenced by practical constraints on administration time, test duration, length, development or licensure costs, administrative controls, test security, and parallel forms development and equivalence. Test validation considerations include the availability of examinee samples, and those samples' correspondence to the relevant population(s) of interest, test reliability, statistical power, sampling error and cross-validation, validity estimation techniques, the availability of criterion data, and predictive versus concurrent validation strategies. Different statistical techniques exist for the assessment of instrument psychometrics based on test structure and volume of available data. **APPLICATION:** A broad understanding of the variety of tools, techniques, and requirements involved in developing and validating selection tools will make organizational stakeholders better informed consumers of selection products and proposals, and help them make more informed decisions when faced with personnel selection decisions at the organizational level. **RESOURCES:** (1) Putka, D. J., & Sackett, P. R. (2010). Reliability and validity. In J. L. Farr & N. T. Tippins (Eds.), Handbook of employee selection (pp. 9–49). New York, NY: Routledge. (2) Guion, R. M. (2011). Assessment, measurement, and prediction for personnel decisions (2nd ed.). Mahwah, NJ: Erlbaum.

Learning Objectives

1. Understand the most commonly used types of personnel selection tests.
2. Understand the purpose of test validation.

[4] LEGAL AND ETHICAL ISSUES IN SELECTION TEST DESIGN AND UTILIZATION

Sabrina Drollinger¹

¹Naval Aerospace Medical Institute, Pensacola, FL, USA

(Education - Tutorial Proposal)

INTRODUCTION: Selection tool design and utilization is governed by multiple legal and ethical guidelines that must be met or performed to meet legal and ethical requirements, and avoid civil liability. **TOPIC:**

Title VII of the Civil Rights Act of 1964 and 1991 prohibit discrimination based on race, color, sex, national origin, and religion. Industry ethical standards also prohibit discrimination based on sexual orientation, though these requirements are still evolving at the state level. Discrimination against members of these classes may result in legal liability regardless of whether the discrimination is intentional, per the definitions of disparate treatment versus disparate impact (unintentional). Adverse impact is another consideration, defined by the Uniform Guidelines on Employee Selection Procedures of 1978, which results when the selection ratio for a protected group is less than 80% of the ratio for the majority group. Adverse impact is not prima facie evidence of discrimination, but it does necessitate evidence of criterion-related validity. Differential validity, defined as differential predictive accuracy for members of protected groups than for the majority, is considered prima facie evidence of discrimination and can only be remedied by test revision or replacement. There is also significant relevant caselaw establishing legal requirements and employee rights and protections regarding the use of selection systems. The Age Discrimination in Employment Act and Americans with Disabilities Act have implications for the use of such tools as well. Finally, when conducted by researchers for purposes that include any form of publication, promotion, or public disclosure, selection research must be conducted under the supervision of an Institutional Review Board or Committee for the Protection of Human Subjects.

APPLICATION: Researchers, developers, human resource professionals, and organizational stakeholders must have a strong understanding of the legal and ethical requirements for the use of personnel selection tools, given the enormous consequences of failure to do so. **RESOURCES:** (1) Hartigan, J. A., & Wigdor, A. K. (Eds.). (1989). Fairness in employment testing. Washington, DC: National Academy Press. (2) Section 60-3, Uniform Guidelines on Employee Selection Procedure (1978; 43 FR 38295 (August 25, 1978).

Learning Objectives

1. Understand the definition of differential validity.
2. Understand the definition of adverse impact and its implications for test use.

[5] NECESSITY AND PURPOSE OF JOB-TASK ANALYSIS IN SELECTION TEST DESIGN

Brennan Cox¹

¹Naval Postgraduate School, Monterey, CA, USA

(Education - Tutorial Proposal)

INTRODUCTION: Any tool intended for selection of the optimal personnel for performance on a specific job or in a particular training environment must be developed based on a thorough understanding of the content and demands of that job or environment. **TOPIC:** A job analysis is a systematic process for collecting, analyzing, and documenting information about a job, and generally describe the work, tasks, or duties involved in doing that job. Job-task analysis describe the major job functions, activities in which incumbents regularly engage to perform their duties, and the reason why the job exists. Job tasks can be prioritized based on importance, frequency, difficulty, level of precision required, consequences if not performed, and utility for differentiating between good and poor performers. Additional considerations included the human attributes needed to perform the job, context in which the work is performed, and methods for capturing the needed information about each job. **APPLICATION:** The absence of a relevant and thorough job-task analysis as a first step in the development of a selection system is likely to severely limit the validity of that tool for the prediction of performance on that job, as the information yielded by the job-task analysis is used to ensure that the content of the test is designed based on the content and requirements of the job. **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) Sanchez, J., & Levine, E. (2010). The Rise and fall of job analysis and the future of work analysis. *Annual review of psychology*, 63, 397–425. DOI 10.1146/annurev-psych-120710-100401.

Learning Objectives

1. Understand the purpose and function of job analytic techniques.
2. Understand the consequences of an omitted job analysis for personnel selection tools developed in its absence.

[6] PROGRAM MANAGEMENT, BARRIERS TO ENTRY, AND BEING AN INFORMED CONSUMER (PHILLIPS)Henry Phillips¹¹Naval Aerospace Medical Institute, Pensacola, FL, USA*(Education - Tutorial Proposal)*

INTRODUCTION: Personnel selection is one of the core focus areas of the discipline of Industrial/Organizational Psychology, a discipline that represents 5% of all practicing psychologists. An understanding of the principles of job analysis, test design, research methodology, inferential statistics, psychometrics, legal requirements based on Title VII, USC, and relevant caselaw, and ethical requirements established and maintained by SIOP are critically relevant for the design and implementation of any large-scale selection system. **TOPIC:** The consequences of failure to rely on developers with the right skills can be enormous liability (particularly in the private sector), training and performance expenses in the tens of millions of dollars, and even loss of life depending on the job environment in question. Skill and experience at program management, for this as well as any large-scale effort involving critical path or tiered development, large budget, and a multi-year schedule requirement, is critically important. Timelines and schedules for enterprise-level selection systems are frequently in the millions of dollars, and can require multiple years for design, data collection, validation, test and evaluation, and transition. **APPLICATION:** Human resources professionals, stakeholders and leaders responsible for personnel selection requirements and project oversight would be well-served to maintain awareness of the requirements, procedures, best practices, and legal and ethical requirements involved in this discipline. Understanding of the processes and issues involved can help decision-makers better evaluate vendor claims and assertions about system capability, design requirements, costs, and timelines. **RESOURCES:** (1) American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). Standards for educational and psychological testing. Washington, DC: American Educational Research Association (2) Cascio, W. F. (2000). Costing human resources: The financial impact of behavior in organizations (4th ed.). Cincinnati, OH: Southwestern.

Learning Objectives

1. Understand the criticality of methodological and analytic expertise in the design of personnel selection tools.
2. Understand the importance of program management skills for delivery of validated personnel selection systems that meet cost, schedule, and effectiveness requirements.

[7] PERSONALITY/PSYCHOLOGICAL TESTING, CLINICAL INTERVIEWING, AND AEROMEDICAL STANDARDSRay King¹¹FAA, Washington, DC, USA*(Education - Tutorial Proposal)*

PROBLEM STATEMENT: Selecting candidates for aviation careers requires consideration of mental health, as defined by published aeromedical standards and applicant motivation, as well as applicant aptitude. **TOPIC:** This portion of the workshop focuses on the assessment of a candidate's motivation to succeed in an aviation career as well as a screening of their mental health, according to established aeromedical standards. **APPLICATION:** While the assessment of aptitude will suggest who CAN become an asset to a flying organization, the assessment of personality and motivation can help predict who WILL become an asset. Mental health areas also need to be considered 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. **RESOURCES:** This portion of the workshop will employ slide presentations, case vignettes, questions and answers, and video and/or live demonstrations of applicant interviews.

Learning Objectives

1. Participants will understand the difference between SELECT IN and SELECT OUT in personnel selection.
2. Participants will come to appreciate the unique personality structure of aviators.
3. Participants will understand that aviators face most of the same life stressors that confront the rest of the population.

Sunday, 05/17/2020

12:00 PM

[S-4]: WORKSHOP: AEROSPACE MEDICINE FACULTY DEVELOPMENT

Chair: Edgar Rodriguez

WORKSHOP OVERVIEW: This workshop will present current information on various topics of interest to Aerospace Medicine faculty members. The Accreditation Council for Graduate Medical Education (ACGME) requires as part of its residency program accreditation process that faculty members participate in regular faculty development. This may include not only CME-type activities directed toward acquisition of clinical knowledge and skills, but also activities directed toward developing teaching abilities, professionalism, and abilities for incorporating Practice-based Learning & Improvement, Systems-based Practice, and Interpersonal and Communication Skills into medical practice and teaching. This can be accomplished via both didactic (conferences, grand rounds, journal clubs, lecture-based CME events) and experiential (workshops, directed QI projects, practice improvement self-study) types of activities. This conference-based workshop is presented toward the fulfillment of this requirement.

[10] THE ADULT LEARNER AND GRADUATE MEDICAL EDUCATION, AN OVERVIEW OF CHALLENGES FACED BY RESIDENCY FACULTY MEMBERS IN THEIR JOURNEY INTO ANDRAGOGYEdgar Rodriguez¹¹USAF School of Aerospace Medicine, Tinker AFB, OK, USA*(Education - Tutorial Proposal)*

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. Understand the different needs and styles of the adult learning process.
2. Identify ways to integrate the most effective adult learning style for each resident.

[8] 5 YEARS OUT FROM THE 10-YEAR ACGME PROGRAM SELF-STUDY/ NEW EDUCATIONAL INITIATIVES: AN ARMY AEROSPACE MEDICINE RESIDENCY UPDATE

Joseph Pavelites¹, John Venezia¹

¹U.S. Army, Fort Rucker, AL, USA

(Education - Program / Process Review Proposal)

BACKGROUND: The Accreditation Council on Graduate Medical Education (ACGME) directs all residencies to complete a required Self-Study every 10 years. The Self-Study is an objective, comprehensive evaluation of the residency or fellowship, with the goal of improving the program. Underlying the Self-Study is a longitudinal evaluation of the program and its learning environment. This is facilitated by sequential annual program evaluations that focus on the required components that emphasize a program's strengths and "self-identified" areas for improvement. **OVERVIEW** With 5 years remaining before the Site Visit of the U.S. Army Aerospace Medicine Residency, this presentation will discuss what steps are being taken at the midpoint to help steer its program towards success. **DISCUSSION:** Self-identified areas of improvement include the need to codify Fort Rucker aerospace medicine resources, such as flight simulators and the altitude chamber, into educational opportunities that enhance the training of residents at all levels of preparation. These educational experiences are formulated, in part, with feedback from learners who enter residency programs at the School of Army Aviation Medicine with various backgrounds, experience and interests.

Learning Objectives

1. Participants will learn about the ACGME 10-year Self-Study as applied to an Aerospace Medicine Residency.
2. The audience will learn about the resources available for aeromedical education at Fort Rucker, AL.
3. Participants will familiarize themselves with the steps that the director and faculty members of the U.S. Army Aerospace Medicine Residency Program are taking to assure success in the ACGME Self-Study.

[9] RELAY RESEARCH FOR RESIDENTS IN AEROSPACE MEDICINE

David Miller¹, Richard Allnutt¹

¹USAF School of Aerospace Medicine, Wright-Patterson AFB, OH

(Education - Program / Process Review Proposal)

BACKGROUND: The Residency in Aerospace Medicine is short, sometimes a single year for those given advanced standing. The administrative requirements inherent in research may consume much of this available time, making it difficult to produce meaningful research before graduation. **OVERVIEW:** 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. **DISCUSSION:** 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 Objective

1. The participant will be able to understand how sharing research projects among authors across several years can help achieve a better research and publication completion rate.

[S-4-A] OPTIMIZING LEARNING CLIMATE IN GRADUATE MEDICAL EDUCATION

Paul DeFlorio¹

¹USAF School of Aerospace Medicine, Wright-Patterson AFB, OH

(Education Program / Process Review Proposal)

BACKGROUND: Learning climate is critical to the success of any residency program, and the ACGME formally evaluates it via the Clinical Learning Environment Review. Establishing an optimal learning climate in your residency will enhance resident performance, well-being, involvement, and faculty/learner satisfaction. **OVERVIEW:** Faculty and staff define the learning climate in GME programs by setting the tone of the residency through interactions with learners and each other. Therefore, understanding the principles of effective teaching in the adult learner environment is key. **DISCUSSION:** After defining terms, this lecture will elucidate the deliberate steps necessary to optimize your residency's learning climate. This starts with residency-wide efforts to formally prioritize the learning climate throughout the program. Faculty will learn how to use stress-learning theory to tailor individual resident interactions to differing clinical situations. By reflecting on their inherent teaching strengths and weaknesses, faculty can use the general precepts of effective teaching help hone their skills. When these techniques are informed by adult learning concepts and delivered with respect and empathy, the learning climate can be enhanced.

Learning Objectives

1. Define learning climate and understand how the ACGME evaluates it.
2. Model the basic principles of adult learning.
3. Understand the stress-learning curve and how to apply it to individual learners in differing clinical scenarios.

[S-4-B] FEEDBACK: THE FOUNDATION OF CLINICAL TEACHING

Paul DeFlorio¹

¹USAF School of Aerospace Medicine, Wright-Patterson AFB, OH

(Education Program / Process Review Proposal)

BACKGROUND: Residency training is long and arduous. Effective feedback is a critical component of a resident's growth. Optimizing faculty feedback is a critical part of ensuring a resident's success. **OVERVIEW:** The most basic goal of residency training is to ensure our trainees attain competence in the 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. 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.