

[204] SELF-REPORTED FLIGHT CREW FATIGUE IN COMMERCIAL AIRLINE OPERATIONS, 2009-2011

M. O'Connor, J. Lincoln
AK Pacific Office, Anchorage, AK

INTRODUCTION: Development of fatigue by flight crews is often insidious; symptoms of pilot fatigue may not be recognized until a deviation, violation, or an incident has occurred. Self-assessment may be difficult, but may provide insight into events that occur with fatigued flight crews. The purpose of this study was to evaluate characteristics and outcomes from self-reported fatigue-related incidents and situations. **METHODS:** Reports from the National Aeronautics and Space Administration's Aviation Safety Reporting System (ASRS) involving operations under FAR part 135 or part 121 submitted during 2009-2011 were searched using the word "fatigue" in the text or the synopsis. Only reports from flight crew members regarding flight crew fatigue were included. **RESULTS:** Three hundred and seven reports from ASRS were identified that involved flight crew fatigue. Reports mainly consisted of descriptions of 1) proactive calls to management, calling in fatigued, or a refusal of flights by crews, 2) an admission of fatigue after an assessment of mistakes or review of handling of challenging events, or 3) narratives describing flight conditions or policies that had potential to cause fatigue. The descriptions were analyzed for proactive (calling in fatigued or reporting fatigue-causing conditions) or reactive (fatigue was realized after an incident or situation occurred) responses to fatigue. Outcomes were categorized into 1) fatigue calls and reports with no further action and those with management interaction and 2) characterization of reactive situations, such as altitude deviation, missed communications, non-adherence to standard operating procedures or evasive actions required. **DISCUSSION:** Reports involving fatigue provide qualitative information on flight crew recognition and assessment of fatigue and a lack of awareness of potential consequences of fatigued flight. These reports suggest that 1) comprehensive support for feasible policies that address flight crew fatigue are needed and 2) education and awareness are still needed to prevent fatigued flight, as fatigue is often recognized retrospectively.

Learning Objectives:

1. The audience will gain information about voluntary reports involving fatigue submitted by commercial flight crews.

Tuesday, May 14 10:30 AM
Sheraton 4

[XVIII] PANEL: AEROSPACE MEDICINE GRAND ROUNDS: PART II

Moderators: D. Rhodes

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

R. Allnutt

USAFSAM, Wright-Patterson AFB, OH

PANEL OVERVIEW: This panel consists of a series of clinical case presentations from the residents in Aerospace Medicine. Each of the clinical cases will be presented by two residents. One will present the case concentrating on pertinent history and physical findings with supporting lab data leading to the diagnosis, the clinical outcome and finally the aero medical disposition. The second resident will describe the actual disease with usual presentation, natural history and treatment. The emphasis of these clinical cases is the aero medical disposition. Cases will be presented by Residents in Aerospace (RAM) from each of the four accredited residency programs in the United States: USAF School of Aerospace Medicine, Wright-Patterson AFB, OH; Naval Aerospace Medical Institute, Pensacola Naval Air Station, FL; University of TX Medical Branch, Galveston, TX; Wright State University, Dayton, OH.

[205] RESIDENT PRESENTATIONS

D. Rhodes, R. Allnutt

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

INTRODUCTION: This panel will consist of pairs of aerospace medicine residents presenting clinical cases of aeromedical interest or significance. **METHODS:** During their residency practicum year, residents provide evaluations of patients with diverse medical problems. Residents choose one of the patient presentations they have come into contact with for presentation. **RESULTS:** One resident of each pair presents the history of the current problem. The other resident presents the physical findings and a discussion of aeromedical policy associated with the condition. **DISCUSSION:** Learning aerospace medicine at the specialist level involves understanding of the impact on mission and personal health of many medical conditions. The cases presented will not only be interesting, but also illustrate decision making principles used in determination of potential continuation of flying status.

Learning Objectives:

1. Improved understanding of clinical aerospace medicine

Tuesday, May 14 10:30 AM
Sheraton 5

SLIDE: HYPOXIA II

Chairs: Andrew Woodrow

Randolph AFB, TX

Peter Hodkinson

Henlow, Beds., United Kingdom

10:30 AM [206] STUDY OF CARBON MONOXIDE LEVELS IN F-22 PILOTS PRE AND POST FLIGHT

E. Combs

Joint Base Elmendorf Richardson, Anchorage, AK

INTRODUCTION: Hypoxia is a known threat to pilots. The F-22 community is no different but has been experiencing hypoxia-like symptoms more frequently than other aircraft. Some theories suggested there was a possible contaminate in the oxygen system. The purpose of this study was to determine the levels of carbon monoxide (CO) pre and post flight to determine if there was a correlation or if carbon monoxide was possibly the contaminate. **METHODS:** The analysis used two Breathe EZ carbon monoxide testers. Participation was voluntary and participants were contacted via email by their squadron commander. Testing was accomplished while pilots were donning flight equipment approximately 30 minutes before engine start. Participants were required to hold their breath for 15 seconds and then exhale into one of two CO detectors through a manufactures cardboard tube. The highest CO reading digitally presented during the 40 seconds post exhalation was documented. The CO meters were allowed to reset for 5 minutes prior to next pilot air sample being collected. **RESULTS:** The survey captured a total of 104 sorties with an average flight time of 1.5 hrs. Mean preflight CO was 3.35 ppm (SD=1.003) and mean post flight CO was 2.18 ppm (SD=.932) resulting in a difference of 1.17 ppm, a difference which was statistically significant using paired sample t-test (t(103)=9.958, p <.001). None of the pilots experienced abnormal physiological symptoms during the sorties captured. **DISCUSSION:** Pilots had significantly lower levels of CO post flight. The study suggests an inverse relationship between the levels of CO and flight. No pilots in the study experienced hypoxia-like symptoms during the two week survey.

Learning Objectives:

1. Identify relationship between witness CO levels pre and post-flight in F-22 pilots.

10:45 AM [207] THE SIMULATED FLIGHT ENVIRONMENT AS AN ADJUNCT TO HYPOXIA AWARENESS TRAINING

A. Smith

RAAF Institute of Aviation Medicine, Edinburg, South Australia



2013 ABSTRACTS OF THE AsMA SCIENTIFIC SESSIONS

84th Annual Scientific Meeting
May 12–16, 2013

Sheraton Hotel & Towers
Chicago, IL

The following are the sessions and abstracts with rooms and presentation times for all presentations accepted after blind peer-review—in slide, poster, or panel sessions—for the 2013 Annual Scientific Meeting of the Aerospace Medical Association. The numbered abstracts are keyed to both the daily schedule and the author index. The Panels are listed with Roman numerals. A separate Index for Session chairs with page numbers is included. The order of some sessions may have changed (check the Addendum provided at the meeting for the latest information). Abstracts withdrawn are listed with a box marking them as canceled.

SLIDES & PANELS: Each slide presentation is scheduled for 15 minutes. 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.

POSTERS: Posters will be on display in the Exhibit Hall from 10:00–12:00 and 2:30–4:30 on Monday, and from 9:30–11:30 and 2:30–4:30 on Tuesday. Poster authors should be present for at least 90 minutes and are encouraged to be present, or have a representative attend the poster, during the entire session.

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 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.

Saturday, May 11
Sheraton 1

09:00 AM

[001] OPPORTUNITIES FOR NURSES IN SPACE OPERATIONS & RESEARCH

C. DiBiase

InoMedic Health Applications, Inc., Titusville, FL

[I] WORKSHOP: AEROSPACE NURSING CAREERS AND RESEARCH OPPORTUNITIES

*Sponsored by the Corporate & Sustaining Affiliate
and The Aerospace Nursing Society*

Moderator: Y. DeBois
Chicago, IL

WORKSHOP OVERVIEW: Designed for nursing students and professionals from a variety of backgrounds, Aerospace Nursing Careers & Research Opportunities Workshop is a unique educational and networking experience that offers insight into the contributions of nurses in aeromedical settings and facilitates involvement in related research, pivotal for the advancement of the field. Leading aerospace nursing professionals introduce the role of nursing in air evacuation and readiness, hyperbaric oxygen therapy, occupational nursing process, and space operations. Presentations emphasize the physiology, clinical, and operational considerations that necessitate health and safety support in the air, sea, and space. They provide context for a focused review of topical research issues, highlighting the interdependence of technology on progress in aerospace nursing science and the distinctive responsibilities of nurses within aerospace medical teams. An introduction to research ethics and design provides a foundation for a comprehensive survey of basic statistical methods and analysis. The review facilitates participation in ongoing aerospace nursing research activity, as panelists offer mentoring and provide details for involvement in eligible research projects.

INTRODUCTION: Space Operations offer a myriad of opportunities for nurses to contribute, ensuring health and safety for those in support and traveling in this extreme environment. An introduction to the role of nurses in this setting, describing clinical, research, environmental and safety functions, is provided as an overview. The need for specialized nursing skills in space operations is illustrated through a focused review of space physiology and pharmacology with vignettes. Research opportunities are presented, concentrating on issues important for the transition to civilian space tourists and long duration space travel. The presentation offers career insights for nurses, considering unique operational settings and challenging environments.

[002] THE FUTURE OF AEROMEDICAL EVACUATION AND MEDICAL READINESS FROM AN EVIDENCE-BASED PERSPECTIVE

M. Sides

Educational Enterprises, Grayslake, IL

INTRODUCTION: The evacuation of the critically ill and the maintenance of our readiness for their transport have placed heightened demands upon highly skilled nurses. The development of cutting edge research and science is essential in both military and civilian arenas to ensure best practices in the care and safety of patients. This presentation will frame the research challenges, regarding medical readiness and skill development necessary to effectively meet these demands. **METHODS:** The physiological stresses of flight, including partial pressure of oxygen, humidification, barometric pressure,