a cognitive error. A recently published article adapts the FAA's 3-P and DECIDE decision making models for use in the clinical setting. In this article, Stiegler and Ruskin have proposed a novel "Rule of Three" that can be used to prevent fixation errors. The PAVE risk assessment tool can also be used to accurately assess and manage hazards. **RESULTS:** This panel discusses ways in which ADM can be used to prevent medical errors. **DISCUSSION:** Effective decision-making and risk management are critically important parts of any clinical risk reduction strategy. Tools such as the Rule of Three, 3P, and DECIDE can help a physician to choose the correct course of action by creating a decision making checklist. Educating trainees in the clinical environment presents multiple challenges: The learning process is frequently interrupted by clinical events, the attending physician may be pressured to assume care before the patient is harmed, which prevents the trainee from seeing the consequences of his actions. These simple tools are easy to teach and to practice, and may improve clinical care.

Learning Objectives:

1. Adapt aeronautical decision making tools for clinical use
2. Understand why healthcare providers are at risk to make cognitive errors
3. Use simple risk management tools to minimize the impact of hazards in the clinical environment

[500] AVIATION HYPOXIA, COGNITION AND HUMAN PERFORMANCE

T. Smith
University of Oxford, Oxford, United Kingdom

INTRODUCTION: The neurological effects of severe hypoxia are well known and include gross impairment of psychomotor and cognitive performance and, ultimately, loss of consciousness. Mild hypoxia can cause more subtle effects that are sometimes overlooked. Hypoxia equivalent to altitudes of up to ~ 10,000 ft is encountered in routine aviation operations in pressurised and unpressurised aircraft. Over this range of hypoxia, studies have demonstrated a degree of impairment in neurological functions including memory, performance of novel tasks, vision and hearing. Detrimental interaction between mild hypoxia and neuro-cognitive function could influence crew/crisis resource management, with potential safety implications in both fixed-wing and rotary-wing operations. In general, the aviation and healthcare paradigms do not share this potential for mild environmental hypoxia to impact on dynamic decision-making, interpersonal behaviour, and team management. However, the specialty of aeromedical critical care bridges this gap, and flight doctors are presumably just as susceptible as pilots to any negative effects. This presentation will explore the possible contribution of mild hypoxia to in-flight human performance.

Learning Objectives:

1. To understand how hypoxia can influence cognition and human performance in the aviation setting

Thursday, May 16 ***01:30 PM***
Chicago 9

SLIDE: ENVIRONMENTAL HAZARDS: HOW MUCH DO WE KNOW? HOW FAR DO WE GO?

Chairs: Philippe Souvestre
Neurokinetics Health Services, Vancouver, BC, Canada

Chris Kleinsmith
Ogden, UT

01:30 PM
[501] THE HEALTH RISK OF AN UNCLEAN COCKPIT ENVIRONMENT

H. de Ree[1], M. Flameling[1], T. Hekker[2]
[1]KLM Royal Dutch Airlines, Schiphol, Netherlands, [2]VU University Medical Center, Amsterdam, Netherlands

INTRODUCTION: KLM operations on Boeing 737 are characterized by short turnaround times. This means that there is little time for cockpit cleaning and meals in between flights. Pilots often eat during the flight. The 737 cockpit is crammed with instruments. Many spots in the floor and on the panels are hard to reach. Cleaning often takes place at night or in a hangar under less than optimal light conditions. A survey showed that more than 80% of pilots found the hygienic situation unsatisfactory. Using a checklist various areas were selected that contributed to the sense of uncleanliness. **METHODS:** Sampling was performed to assess the health risks involved. These involved dust samples from surfaces and in the air. Mainstream tests were done for presence of bacteria, viruses and fungi, as well as for dust mites. **RESULTS:** Dust samples showed no unexpected or worrisome results. Composition of the dust is comparable to what can be found in offices. A high percentage of textile fibers was found, probably from sheep skin seat covers. Skin scales were found on the glare shield where pilots lay their hands and arms. The presence of organic material on the floor can be explained as being bread crumbs. Tests for bacteria, viruses and fungi showed very low concentrations and no remarkable strains. Tests for dust mites showed relatively high concentrations coming from the seat. **DISCUSSION:** The health risk associated with unclean cockpits was low. However, persons with increased sensitivity to dust or dust mites may have a greater chance of allergic reactions such as stuffy nose, sneezing, eye irritation, and skin rash. It was decided to increase frequency of cleaning and to vacuum the sheepskin covers. A poll among pilots has shown significant improvement.

Learning Objectives:

1. Cleanliness of the cockpit is an issue at major airlines.

01:45 PM
[502] ALCOHOL WON'T SOLVE YOUR PROBLEMS

S. Falder, **J. Reid**
SkyTexus International, Forney, TX

INTRODUCTION: Alcohol continues to be the chemical of choice to clean aircrew oxygen masks, and has been for so over 100 years. It may be time to evolve. A state of optimum health of aircrew is essential for the optimal operation of aircraft. Equipment that comes in close contact with the crew, particularly the face, must combine excellent design for function with maximum hygiene to prevent infectious disease. Currently the processes of cleaning and maintenance involve chemical agents, such as alcohol, that may damage the apparatus and/or only partially sanitize the equipment. Advanced antimicrobial hygiene technology may solve this problem. **METHODS:** Detailed microscopic inspection using SEM comparing cleaned and new components of an industry standard US Navy Oxygen mask illustrate the degradation through cleaning and use. Plates and swabs were incubated highlighting the increased potential for microbial contamination following conventional hygiene protocols. The current mask cleaning technical order T.O. approved process was compared with a new generation residual micro-biocide. **RESULTS:** Following the treatment of both old and new components with advanced water based antimicrobial technology, the tested swabs and plates demonstrated a significant reduction in both damage and microbial colonisation potential. **DISCUSSION:** As an alternative to alcohol, new and simplified hygiene protocols could be deployed to both reduce damage to aircrew and hardware.

Learning Objectives:

1. According to APIC (Association for Professionals in Infection Control and Epidemiology), ethyl alcohol and isopropyl alcohol are not effective in sterilizing equipment and instruments because they lack sporicidal activity and can't penetrate protein-rich materials. Isopropyl alcohol also lacks the ability to kill hydrophilic viruses. For these reasons, alcohol is classified as a low- intermediate level disinfectant. The activity of both alcohols, however, drops sharply when diluted below 60%.
2. Advanced antimicrobial technology offers broad-band biocide effects on viruses, bacterial cells & spores, fungi and algae. It inhibits the re-growth of biofilm for extended periods of time, remains active even after it has dried and provides a long- lasting active protection for extended periods.