

ABSTRACT NUMBER: 001

TITLE (English): AIR EVACUATION OF MASS CASUALTIES IN THAILAND

TITLE (French): ÉVACUATION AÉRIENNE LORS D'UN DÉASTRE EN THAILANDE

SUBMITTED: Yes, on 06/08/08

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Abstract

Air Evacuation of Mass Casualties in Thailand

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Introduction: On 14 March 2006, botulism broke out in Nan province which is 668 kilometers from Bangkok. There were a total of 209 botulism cases diagnosed of which more than 130 were admitted to Nan hospital and 42 cases needed mechanical ventilatory support. There were many problems in taking care of the patients, although essential medical equipments were borrowed and drained from hospitals in Bangkok and nearby provinces and botulism anti-toxin could be obtained from companies in UK, USA, Canada and Japan. Most of the severe cases could receive anti-toxin, either 7-valent anti-toxin (A-G) on 20 March 2006.

Methods: Dealing with a large number of respiratory paralysis patients in the far northern province of Thailand, referral management was difficult task. Management were urgently and carefully planned. These included severity assessment of patients, searching for appropriate referral hospitals and routes and method of transportation. On 22 March 2006, Air Evacuation was arranged by Air Evacuation Center of Institute of Aviation Medicine teams which included physicians, critical care nurses and respiratory therapy technicians from ten hospitals in Bangkok, C-130 aircrew, Airmen and Soldiers. Staffs from Royal Thai Air Force and executive officers of The Ministry of Public Health facilitated the mission and reported to public. Details of the mission will be discussed in the meeting.

Conclusions: By the end of 7th week, all hospitalized patients were safely discharged home and there was no mortality in this series of 209 botulinum intoxicants. The toxin was later identified and proved to be botulinum type A. Since botulinum toxin has been mentioned as a possible future bio-weapon, our logistics in the management of this world largest food born botulism outbreak may serve as a case study for this deadly condition.

ABSTRACT NUMBER: 002

TITLE (English): THE INTERNATIONAL TRANSFER OF CRITICAL CARE PATIENTS

TITLE (French): LE TRANSPORT INTERNATIONAL DE PATIENTS SOUS SOINS INTENSIFS

SUBMITTED: Yes, on 07/04/08

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The international transfer of patients has become a major activity of airlines, air charter companies and of medical service suppliers. The international transport of patients gives rise to problems in many fields such as regulatory, legal, medical and aviation. Many of these patients are defined as critical care patients with special needs.

During the last decade AIRMED® has made 1142 international transfers of which 164 were defined as critical care (B1, P1 by the ICAA criteria).

The average age of the critical care patient was 40 years old (± 28) with a range of 1 day to 90 years. 52 were female and 112 were male. This in contrast with the average for the non-critical patients of 52 (± 21) range 5mo to 93 years ($p < 0.0001$).

94 missions were with an air ambulance with an average flight time of 2.85hrs (± 2.2) range 40min to 9hrs. 71 were on commercial schedule airlines (of which 7 of those were combined commercial and air ambulance) with an average flight time of 7.43hr (± 4.4 hr) range 1.5hr - 17hr. ($p < 0.0001$). There was no significant age difference between the modes of transport.

We shall discuss the differences between the two groups and the advantages and disadvantages of each mode of international transfer of the critical care patients.

ABSTRACT NUMBER: 003

TITLE (English): COOPERATION OF MEDICAL EVACUATIONS BETWEEN ROYAL THAI ARMY AND ROYAL THAI AIR FORCE :

COUNTERINSURGENCY OPERATION IN SOUTHERN OF THAILAND

TITLE (French): LA COOPÉRATION DES ÉVACUATIONS MÉDICALES

ENTRE L'ARMÉE ROYALE THAÏLANDAISE ET L'ARMÉE DE L'AIR

THAÏLANDAISE: OPÉRATION ANTI-RÉVOLTE DANS LE SUD DE LA THAÏLANDE

SUBMITTED: Yes, on 05/05/08

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Medical evacuation (MEDEVAC) is the hardest task for combat health support in a theater of operations. Multi-variations have been involved such as tactical situations, patient's conditions and availability of medical resources etc.

Forward Medical Department Task Force (FMD TF) which is a representative of Royal Thai Army (RTA), has established a medical regulating system for medical evacuation. Since wounded soldiers have been reported, medical personnel provided emergency medical treatments or other treatments as needed. After that, patients were referred to the nearest medical treatment facility for resuscitation surgery. In case of, they needed a definitive care, FMD TF requested for medical evacuation from Royal Thai Air Force (RTAF). RTAF has been supported aero medical evacuation from combat zone to the zone of interior by C-130. All documents have been sent through the chain of command for approving, promptly aviation medicine institute have to approve the patient's condition, especially thoracic and abdominal injury, to ensure there is no harm during the flight.

This kind of operation needs a good coordination between RTA and RTAF. According to insurgency, we sometimes face with circumstance and abandon of casualty, RTA really need a hand from RTAF to send a special flight to collect casualty for the timely and appropriate treatment. In conclusion, RTA and RTAF must keep closely contact to each other to maximize the efficiency of medical evacuation and to keep ultimate goal to keep the fighting strength.

ABSTRACT NUMBER: 004

TITLE (English): EPIDEMIOLOGY OF AERO-MEDICAL EVACUATION IN THE SECOND LEBANON WAR

TITLE (French): ÉPIDÉMIOLOGIE DE L'ÉVACUATION AÉRO-MÉDICALE DURANT LE SECONDE GUERRE DU LIBAN

SUBMITTED: Yes, on 07/05/08

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Background and aims: During the recent war, many Israeli Defense Force soldiers were injured on the Lebanese battlefield. Evacuation of the injured from Lebanon using regular ground means was difficult due to few safe ground channels and the hostile forces. Nearly half of the injured evacuated from the battlefield were by air. We will describe the epidemiology of the air evacuations during the last war.

Methods: Data was gathered from medical notes of front-line doctor and of the airborne medical team, the airborne rescue and evacuation unit flight diary and summaries of post-evacuation investigations. Main outcomes measures were time tables from the initial call for help till the arrival to a tertiary medical center.

Results: Ninety-four medical air evacuation for 332 injured and 16 dead were performed. The average time from call to helicopter arrival at the hospital for severe cases was approximately three hours. Although the duration of flight was relatively short in-flight life saving procedures were performed.

Conclusion: Under the complex conditions of the recent war, air medical evacuations and transport to tertiary medical centers was critical and probably saved many lives.

Abstract Number: 005

TITLE(English): Lessons Learned from Medical Air Evacuation in the Tsunami

TITLE(French): [Les Leçons Tirées des Évacuations Aéromédicales Durant le Tsunami](#)

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In connection with the tsunami disaster in six southern seaside provinces of Thailand, on December 26, 2004, the Royal Thai Air Force sent C-130 evacuation airplanes with air evacuation teams from the Institute of Aviation Medicine (RTAF) to Phuket Airport for the evacuation of patients and survivors to Bangkok. This situation allowed us to learn air evacuation techniques in a chaotic disaster area where doctors and nurses were struggling to cope with the large scale of injured people. There were many challenges such as communication failures in the affected area, difficult assessment of patients in emergency circumstances, and cooperating with other teams in evacuating patients and transferring survivors. Although the air evacuation team of the Institute of Aviation Medicine (RTAF) was faced with many obstacles, we completed our mission thereby reducing chaos in the affected areas and assisting local medical facilities to treat severely injured patients effectively.

Conclusion:

The air evacuation teams of the Institute of Aviation Medicine (RTAF) learned from many aspects of operating air evacuation in the chaos of the Tsunami disaster, which occurred suddenly and catastrophically. We gained experience in cooperating with other agencies involved in the disaster creating many communication networks, and better planning to provide air evacuation during a national disaster.

Abstract Number 006

Title (English): Lessons Learned from Transferring Significant Number of Children with Cleft Lips and Cleft Palates for Plastic Surgery.

Title (French): [Les Leçons tirées des Transferts d'un Grand Nombre d'Enfants Porteurs de Fissures Labiopalatines pour Chirurgie de Reconstruction](#)

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Introduction:

Medical assistance to decrease morbidity and to increase the quality of life has been used to develop hospitality and promote understanding with the people of the three southern most provinces of Thailand. On 24 December, 2005, an international surgeon and nurse team from the USA came to Bangkok to repair cleft lips and cleft palates at Bhumibol Hospital. Royal Thai Air Force medical officers selected cleft palate patients from the three southern provinces. The institute of aviation medicine was assigned to manage the transfer of the patients.

Method:

There were 35 patients between 3 and 10 years of age, who traveled from Narathiwat Airport to Donmuang Airport, and returned after the surgery. The flight time is 1 hour and 45 minutes. The aircraft used was an RTAF C-130, at a flight altitude of 22,000 feet, and a cabin altitude of 3,000 feet. Clinical concerns were ear blocks, feeding problems, vomiting, aspiration, air sickness, and the general issues of travel for children. Our preparation strategies included having children travel with parents, dietary control before and during flight, administration of antiemetic medication in children with a history of previous motion sickness, and a cabin altitude limit of 3,000 feet.

Conclusion:

The mission was accomplished by combining knowledge of clinical aviation medicine with an efficient aircraft and crew. Other positive factors included the personnel and actions of the RTAF, USA International Surgeon and Nurse Team, Bhumibol Hospital, and the Aeromedical Evacuation Team.

ABSTRACT NUMBER: 007

TITLE (English): CASE OF A FIGHTER PILOT WITH A SPONTANEOUS RUPTURE OF CHORDAE COMPLICATING A MITRAL VALVE PROLAPSE

TITLE (French): RUPTURE DE CORDAGE COMPLIQUANT UN PROLAPSUS VALVULAIRE MITRAL CHEZ UN PILOTE DE CHASSE

SUBMITTED: Yes, on 05/15/08

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Les auteurs rapportent le cas d'un pilote de chasse français, asymptomatique ayant présenté une insuffisance mitrale sévère par rupture de cordage compliquant un prolapsus valvulaire mitral. Sa découverte a été fortuite lors d'une visite révisionnelle dans un Centre d'Expertise de Médecine Aéronautique (CEMA). La lésion valvulaire a motivé une valvuloplastie. Après convalescence, la réparation valvulaire a été jugée compatible avec une reprise d'activité aéronautique par dérogation, excluant les avions à haute performance et la voltige.

Relativement fréquent (1,3 % de la population générale), le prolapsus valvulaire mitral est souvent découvert devant un souffle banal et/ou un clic mésosystolique. Il peut aussi être dépisté devant des anomalies électrocardiographiques, à l'occasion d'une échographie réalisée pour un autre motif, ou bien être révélé par une complication comme dans le cas clinique présenté. Il existe un risque d'incapacité subite ou subtile en vol, compromettant la sécurité aérienne et donc l'aptitude.

A partir de cette observation, sont discutés les critères pronostiques du prolapsus valvulaire mitral, les explorations complémentaires recommandées avant une demande de dérogation, les conditions pour une reprise éventuelle des vols, ainsi que l'évolution récente des traitements, tout particulièrement des valvuloplasties. La valvuloplastie est une chirurgie innovante, bien adaptée à ce type de pathologie, permettant d'espérer, sous conditions, une restitution de l'aptitude au vol, même après une complication comme la rupture d'un cordage.

ABSTRACT NUMBER: 008

TITLE (English): DIGESTIVE PATHOLOGY IN AVIATION : SURVEY BY QUESTIONNAIRE. 1ST PARTY : METHODOLOGY AND MAIN RESULTS

TITLE (French): LA PATHOLOGIE DIGESTIVE EN AÉRONAUTIQUE : ENQUÊTE PAR QUESTIONNAIRE. 1ÈRE PARTIE : MÉTHODOLOGIE ET PRINCIPAUX RÉSULTATS

SUBMITTED: Yes, on 05/22/08

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Introduction : The authors present a study on the digestive pathology in aviation. Its goal was descriptive : to assess digestive disease and gastrointestinal symptoms in a sample of crew.

Method : An anonymous self-questionnaire was distributed to 3,000 professional aircrew (civilian and militaries, all qualifications) who applied during the first six month of year 2007 to the Roissy, Bordeaux and Toulon Aeromedical Center for the renewal of their medical certificate. 90.4 % (2,713) of the questionnaires were duly completed and returned. Men were in the majority. The mean age was 38 years and 11 months. Most of the subjects have a civilian activity and were pilots.

Results : Over a third of the study population (35.7 %) suffered or use to suffer from a digestive disease. A clear majority of subjects (55.5 %) reported having experienced over the past twelve months one of the nine gastrointestinal symptoms being studied. They are dominated by events connected with gas (aerophagia, bloating) and those in the epigastric region (pain and difficulties digestion).

Conclusion : The prevalence of digestive diseases are low and reflect a high level of physical health amongst the selected population. By contrast, gastrointestinal symptoms are common and are a fundamental part of the daily flight duty.

ABSTRACT NUMBER: 009

TITLE (English): DIGESTIVE PATHOLOGY IN AVIATION : SURVEY BY QUESTIONNAIRE. 2ND PARTY : REPERCUSSIONS AND DISCUSSION

TITLE (French): LA PATHOLOGIE DIGESTIVE EN AÉRONAUTIQUE : ENQUÊTE PAR QUESTIONNAIRE. 2ÈME PARTIE : RETENTISSEMENT ET DISCUSSION.

SUBMITTED: Yes, on 05/31/08

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Introduction : The authors focus in this second part of the investigation will examine the impact on professional aviation and identify interactions between disabling events, flight and aviation safety.

Method : An anonymous self-questionnaire was distributed to 3,000 professional aircrew (civilian and militaries, all qualifications) who applied during the first six month of year 2007 to the Roissy, Bordeaux and Toulon Aeromedical Center for the renewal of their medical certificate. 90.4 % of the questionnaires were duly completed and returned. Men were in the majority. The average age was 38 years and 11 months. Most of the subjects had a civilian activity and were pilots.

Results : The digestive diseases and gastrointestinal (GI) symptoms identified have an impact on the working life in nearly one out of ten cases for sick subjects as symptomatic patients. Nearly one-third of the total population (31.1 %) acknowledges discomfort directly in connection with a GI symptoms. For 1.7 % of the aircrews, the occurrence is frequent and causes discomfort of high intensity. Over one every two symptomatic patients (57.8 %) self medicates (6.1 % of the aircrews). One person in six acknowledges having ever experienced GI symptoms in flight which in over 80 % of cases are source of discomfort and reduce aeronautical capacity in over 25 % of cases. Bloating and acute diarrhea are deemed responsible for the impairment of the flight safety by 1.4 % of respondents.

Conclusion : The GI events occur with great frequency and are in 45 % of cases exacerbated by the flight. The medical expert should be aware of their importance and focus in particular to seek the prior existence of digestive mucous membrane. It will also ensure better supervision of self-medication and improve the health education of flying personnel on the faecal peril, food hygiene....

ABSTRACT NUMBER: 010
TITLE (English): MALARIA PREVENTION IN AIR FRANCE AIRCREW
TITLE (French): PRÉVENTION DU PALUDISME AUPRÈS DU PERSONNEL
NAVIGANT D'AIR FRANCE
SUBMITTED: Yes, on 06/30/08
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Chaque année, l'entreprise AIR FRANCE déclare 12 à 25 cas de paludisme chez son personnel navigant.

Le renouvellement constant des informations et des mesures de prévention à l'égard de cette population ne semble pas suffire à en réduire ni l'incidence ni la gravité, semble-t-il.

Aussi, les Services de Santé au Travail du PN ont décidé de renforcer les mesures de prévention existantes lors de campagnes de sensibilisation et d'informations auprès des navigants.

La prévention spécifique, destinée à cette population, établie en collaboration étroite avec les spécialistes de médecine tropicale, est régulièrement validée.

Les médecins du Service de Santé au Travail ont été amenés à proposer ces derniers mois des mesures de prévention complémentaires visant à obtenir une meilleure réactivité des intéressés : navigants et représentants de la Direction.

Abstract Number: 011

Title(English): ANALYSIS OF THE MENTAL WORKLOAD IN PILOTS DURING TRAINING FLIGHTS USING PSYCHOPHYSIOLOGICAL INDICATORS

TITLE(FRENCH); ANALYSE DE LA CHARGE COGNITIVE DES PILOTES LORS DES VOLS DE FORMATION A L'AIDE DES INDICATEURS PSYCHOPHYSIOLOGIQUES

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Introduction: We present results of research work focused on mental workload (MW) assessment represented by psychophysiological measures used for pilots during their training flights. Procedural and organizational limitations, necessity to provide proper test methodology by minimization of influence on the training process, require use of simplified measurement systems (SMS). ECG signal was used as a basic signal measurable at flight conditions. The indicators sensitive for mental workload: LF in normalized units and LF/HF ratio were used for the analysis.

Methods: The main components of the SMS used for this study were: ECG signal recording system, on-board flight recorder, Vienna Test System (VTS) and Coping Inventory for Stressful Situations (CISS) form. 24 pilots carrying out flights within their initial training stage were analyzed. It included 138 take-offs with 566 tasks. This stage was assumed as an initial phase for building a system that would support decision-making process within the correctness of training process using SMS. HRV indicators, based on ECG signal, were determined using eight methods. Statistical analysis for assumed significance factor $\alpha=0.05$, was carried out using ANOVA module of the Statistica package.

Results: The results of mental workload at the initial training stage shows the distinct difference between the rest period and the period, when flight task was carried out. Individual analysis of maintaining LF parameters, as well as LF/HF ratio allows classification of subjects, where behavior expressed by these parameters and HR values is different from the mean calculated for the population. There are statistically significant differences for selected types of carried out missions, according to the difficulty scale.

Conclusions:

The analysis using methods specified above allows the assessment of quality of flight tasks carried out by cadets, by observation of HRV indicators. Using this information, the instructor may make an appropriate decision on changing the training process, introduce additional flights etc. Due to the measure complexity and problems associated with complex interpretation, it is required to use the broadest possible indicator range.

Abstract Number: 012

Title (English): CLASSIFICATION MODEL FOR PSYCHOPHYSIOLOGICAL PILOT INFORMATION REGISTERED DURING TRAINING FLIGHTS IN POLISH AIR FORCE

Title (French): [Un Modèle de Classification pour l'Information Psychophysiological des Pilotes Enregistrée Durant les Vols de Formation dans L'Armée de L'Air Polonaise.](#)

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Introduction: The authors present their research work focused on developing classification model for psychophysiological information registered during training process of cadets flying PZL-130 "Orlik" aircraft. Currently, standard training procedures used by the Polish Air Force do not include the psychophysiological cost borne by cadets.

Methods: For the development of classification models the SVM (Support Vector Machines) method has been used which is implemented in the Data Mining module of the statistical package Statistica PL. All measured and determined parameters were assigned to three categories respectively specifying (1) the impulse dynamics of the heart contraction frequency – model_1, (2) performance – model_2 and (3) containing the ultimate parameters obtained from the HRV frequency analysis – model_3. The set of input data contained 182 cases.

Results: As a result of an analysis, independent models were created, purposed for the first two groups of dependent variables. The degree of adjustment of the model_1, under consideration of the training and test data, is within the range of 64.9-82.9%. For the model_2 these values lie in the range of 64.9-80.2%. For the parameters specifying the IBI signal spectrum for eight methods for estimating the spectrum the same number of models and the Burg method was chosen for its parameters allow to design the best fitted model. For HRV parameters the classification correctness of the models lies within the range of 71.1-76.6%. As a result it was possible to define a holistic model considering all groups of parameters, whose classification accuracy is 90.5% for training data, 81.5% for test data and 81.1% for all cases.

Conclusions: The use of the SVM method enabled models corresponding to reality to be developed, which is a major advance in the creation of a decision-making system supporting the training process through current evaluation and classification of a pilot's mental and physical abilities on a specific flying day. The analysis allowed for defining a new set of features that is the most important in solving the classification problem.

ABSTRACT NUMBER: 013

TITLE (English): NEW METHOD OF PILOTS "PUSH - PULL" TOLERANCE EVALUATION USING LBNP EXAMINATION

TITLE (French): NOUVELLE MÉTHODE D'ÉVALUATION DE LA TOLÉRANCE DES PILOTES À LA MANOEUVRE 'PUSH-PULL' EN UTILISANT L'EXAMEN 'LBNP'

SUBMITTED: Yes, on 06/30/08

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Introduction: The original method of our Lower Body Negative Pressure (LBNP) examination was developed for the pilots' pre-selection with low level of +Gz tolerance and Push-Pull (PP) effect tolerance evaluation. This phenomenon is characterized by the rapid and progressive decrease of blood pressure (BP) accompanied by a slower return to normality. At this period pilot's performance is reduced.

Method: A group of 29 Czech Air Force pilots was examined. Push-Pull effect is simulated by means of tilting LBNP device backwards to the -43° HDT (head down tilt) position (corresponds to the plateau of microgravity) for two minutes. There is atmospheric pressure in the LBNP chamber. +Gz load is created by the rapid LBNP exposition (-70 mmHg, two minutes) accompanied with a rapid return of the LBNP device to the vertical position. The second stage LBNP (-70 mmHg, two minutes) is examined only in the sitting position.

Results: BP values were compared at initial 50 s intervals in both examinations: systolic and diastolic BP quiescent values just before an LBNP exposure beginning, minimal attained systolic and diastolic BP values and maximal attained systolic BP value at the 50 seconds interval. Relative minimal and maximal BP values related to their quiescent values were calculated. The statistical test confirmed that all calculated relative BP values were lower in the set with Push-Pull effect.

Conclusion: The new LBNP examination method demonstrates better the impact of the Push-Pull effect on circulatory system efficiency. Negative influence of -Gz acceleration on +Gz tolerance during new examination method is evidently evincible. BP behaviour indicates that the designed examination method is suitable for a pilots training in conditions of PP effect such as a partial substitution of the human centrifuge training.

ABSTRACT NUMBER: 014

TITLE (English): IMPACT OF THE THERMAL DEHYDRATION ON THE EXPRESSION OF HEAT SHOCK PROTEIN (HSP70).

TITLE (French): INFLUENCE DE LA DÉSHYDRATATION THERMIQUE SUR L'EXPRESSION DE LA PROTÉINE DE CHOC THERMIQUE (HSP70).

SUBMITTED: Yes, on 07/01/08

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Introduction: A pilot's organism during performing aerial tasks is often exposed to adverse conditions of high temperatures, which, in combination with increasing dehydration, compromise pilot's ability to execute operative tasks. During physiological response to excessive thermal load, expression of heat shock proteins (Hsp) increases, which protects intracellular structures from damage by stressors.

Aim of the study: The aim of the study was to assess whether dehydration induced by short-term exposition to heat influences Hsp70 expression.

Methods: The study was carried on 24 healthy volunteers (men, mean age 25 ± 4 , body weight 87 ± 7 kg), not acclimated to heat, exposed twice to high temperature in climatic chamber (60 min., $T_a + 50^\circ\text{C}$, $\text{RH} = 30\%$). During the first exposure, the subjects were allowed to drink ad libitum, during the second - access to fluids was limited. Total volume of sweating was assessed on the basis of body mass. Temperature in the external acoustic meatus (T_{ac}) and surface body temperature (MST) were also recorded. The body hydration state was assessed on the basis of laboratory tests results in blood (HCT, ALBP) and urine (SG). Heat shock proteins (HSP70) expression was assessed in peripheral blood lymphocytes by Western blot method, before and after exposition to heat.

Results: During series I, following exposure to heat, a statistically significant increase in T_{ac} (mean $0,89 \pm 0,11^\circ\text{C}$) and MST (by $4,8 \pm 0,27^\circ\text{C}$) values was observed. Total sweating amounted $0,97 \pm 0,17$ kg, which corresponded to 1,2% body mass. While the subjects were allowed to replenish water losses, T_{ac} increased by $0,6 \pm 0,2^\circ\text{C}$, MST - by $4,2 \pm 0,8^\circ\text{C}$, and total sweating resulted in 0,5% of body mass reduction ($0,36 \pm 0,16$ kg). In these conditions, Hsp70 expression following exposure to heat (stage I) increased by 34% as compared to baseline values. In thermal dehydration state (stage II) Hsp 70 increased by 17% (compared to the baseline).

Abstract Number 015

Title(English): THE PERSONALITY TRAITS OF THE ROYAL THAI AIR FORCE PILOTS ASSESSED BY THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE

Title(French): LES TRAITS DE PERSONNALITÉ DES PILOTES DE L'ARMÉE DE L'AIR THAÏLANDAISE ÉVALUÉ PAR LE QUESTIONNAIRE DES SEIZE FACTEURS DE PERSONNALITÉ

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Introduction: The personality traits are one of the most important factors in prediction of pilot success. Personality describes the enduring predispositions which lead an individual to behave in particular ways.

Objective and Methods: The objective of this research was to study the Personality traits of the Royal Thai Air Force (RTAF) pilots assessed by the Sixteen Personality Factor Questionnaire. The population studied comprised of two hundreds thirty pilots (Pilot Selection and Success in period of 2001-2006).

Results: The results indicated that:

1. All two hundreds thirty RTAF Pilots were more emotional stable (Scale C), self-assured (Scale O), relaxed (Scale Q4), venturesome (Scale H), and group oriented (Scale Q2).

2. Ninety three RTAF Pilots who succeeded in Jet Aircraft were more emotional stable (Scale C), venturesome (Scale H), self-assured (Scale O), controlled and self-respecting (Scale Q3), relaxed (Scale Q4), and emotionally detached and disciplined (Scale N).

3. Ninety eight RTAF Pilots who succeeded in Propeller Aircraft were emotional stable (Scale C), venturesome (Scale H), self-assured (Scale O), relaxed (Scale Q4), emotionally detached and disciplined (Scale N), and Group Oriented (Scale Q2).

4. Thirty nine RTAF Pilots who succeeded in Helicopter were emotional stable (Scale C), self-assured (Scale O), relaxed (Scale Q4), venturesome (Scale H), and group oriented (Scale Q2).

Conclusion: Personality traits were found that successful pilots tend to be more emotional stable, self-assured, relaxed, venturesome, and group oriented.

ABSTRACT NUMBER: 016
TITLE (English): ENT CANCER AND FITNESS TO FLY
TITLE (French): CANCER ORL ET APTITUDE AÉRONAUTIQUE
SUBMITTED: Yes, on 05/21/08
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Introduction: Historically, head and neck cancers, due to their location and treatment encompass a number of incapacitating physical symptoms related to eating and swallowing and communication disorders. We have studied the role of this type of cancer among the causes of aeromedical unfitness among flight attendant and civil pilots in France over a 5-year period.

Methods: We have done analysis and review of ENT pathologies identified during renewal visits by AeMC, and decisions taken by the C.M.A.C (AMS) and examination of head and neck cancer cases.

Results: Between early 2003 and end-2007, 155 ENT diseases were submitted to AMS. 48 cases were classified permanent unfitness (30,9%), 107 cases of fitness with waiver (69,1%). We found only 10 Head and Neck cancers cases (6,45%) of which 4 cases showed permanent unfitness (following iatrogenic complications, the initial cancer was considered cured) and 6 cases of fitness with waiver.

Conclusion: New improvement in cancer conservative surgery and chemotherapy allow us to approve cases of fitness with waiver. All of these Head and Neck cancers were easily diagnosed in the clinic but importance of carrying out a clinical examination of pilots and flight attendants during AeMC examination or Health Occupational Medicine visit.

Key words: head and neck cancer, fitness, flight attendant, waiver.

ABSTRACT NUMBER: 017

TITLE (English): AERONAUTICAL INCIDENTS AND PREVENTION OF THE SECONDARY STRESS. CRITERIA FOR A MEDICAL INTERVENTION

TITLE (French): INCIDENTS AÉRONAUTIQUES ET PRÉVENTION DU STRESS SECONDAIRE. CRITÈRES D'INTERVENTION MÉDICALE

SUBMITTED: Yes, on 07/05/08

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IN FRENCH :

Lors d'un accident aérien, l'intérêt d'un débriefing médical est aujourd'hui parfaitement connu comme élément important du pronostic contre les risques, pour les navigants, de développer ultérieurement une névrose post-traumatique ou une phobie du vol.

L'expérience prouve que des incidents moins graves en apparence peuvent pourtant avoir eux aussi un impact défavorable sur les membres d'équipage et générer des angoisses pénibles.

Or, si une angoisse du vol survient, il n'y a pour eux aucune possibilité de réaction d'évitement puisque l'avion est le lieu de travail auquel il n'est pas possible de se soustraire.

Tenter de codifier quelle attitude adopter sur un plan médical vis-à-vis des équipages victimes d'un incident est donc important, autant pour les navigants que pour les personnels en charge de l'exploitation.

La problématique est avant tout de reconnaître, parmi les incidents, ceux qui du fait de la gravité réelle ou ressentie par les équipages, relèvent effectivement d'une prise en charge par les médecins.

Deux écueils sont à éviter:

- médicaliser systématiquement d'emblée tout incident qui ne le justifierait pas, ce qui risquerait d'être néfaste et déstabilisant pour le personnel navigant, contrairement au but recherché: la grande majorité des incidents est en effet parfaitement gérée par les navigants qui sont formés et entraînés à cela.

- en sous-estimer l'importance, ce qui risque d'aboutir tôt ou tard à un état anxio-dépressif et à une phobie du vol.

Le but de cet exposé est de tenter de définir des indices permettant d'évaluer la gravité à sa juste valeur, et ainsi d'aider à l'élaboration d'une procédure applicable à ces circonstances.

ABSTRACT NUMBER: 018

TITLE (English): THE AIR TRANSPORT OF ILL PASSENGERS AIR FRANCE/KLM

TITLE (French): LE TRANSPORT AÉRIEN DES PASSAGERS MALADES AIR FRANCE/ KLM

SUBMITTED: Yes, on 06/20/08

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Introduction :

Lorsqu'un malade ou opéré récent doit voyager et que les conditions de faisabilité sont réunies, l'avion de ligne apparaît comme le moyen le plus sûr et le plus rapide pour effectuer ces transferts.

Méthodes :

Les grandes compagnies suivent la résolution IATA 700 qui organise le transport des passagers malades (ou handicapés) en harmonisant les procédures.

Air France et KLM utilisent des procédures comparables, même si elles ne sont pas identiques.

Résultats :

Les données numériques sont proportionnelles à la taille des compagnies.

Conclusion :

Avec le doublement prévu du nombre de passagers intercontinentaux pour 2020, une augmentation des transports médicaux est à prévoir dans le respect des résolutions IATA et en utilisant les formulaires électroniques récents.

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ORAL powerpoint scientific session

ABSTRACT NUMBER: 019

TITLE (English): AIRCRAFT DIVERSIONS FOR MEDICAL EMERGENCY :
10 YEARS OF ANALYSIS AND WAYS OF IMPROVEMENT

TITLE (French): DÉROUTEMENTS D'AVIONS POUR URGENCE
MÉDICALE : 10 ANS D'ANALYSE ET PERSPECTIVES D'AMÉLIORATION

SUBMITTED: Yes, on 06/30/08

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INTRODUCTION: Les déroutements d'avions pour urgence médicale représentent de nombreux enjeux pour une compagnie aérienne. Cette étude a pour objectifs d'analyser l'évolution, les causes et la pertinence de ces événements sur une durée de 10 ans. METHODE: Nous avons étudié rétrospectivement les déroutements de la compagnie Air France qui ont eu lieu entre le 1er avril 1997 et le 31 mars 2007. Notre analyse porte sur les comptes-rendus des équipages et du SAMU. Des informations complémentaires ont été recueillies auprès des membres d'équipages et des passagers. RESULTATS: 236 déroutements sont survenus au cours de la période étudiée, soit un taux moyen de 6,5 événements pour 10 millions de passagers et 7,88 pour 100.000 vols. Ces 2 taux n'ont pas évolué de façon significative entre 1997 et 2007 ; ils sont plus importants sur long-courrier que sur moyen-courrier avec une différence significative. La cardiologie représente la première cause des déroutements avec 47 % des cas. Dans 25 % des cas la décision de dérouter paraissait injustifiée en raison d'un tableau clinique compatible avec la poursuite du vol ou d'une prise en charge thérapeutique insuffisante compte tenu des moyens disponibles. Dans 9% des cas les déroutements se sont avérés rétrospectivement injustifiés, alors que la suspicion d'un diagnostic de gravité au cours du vol justifiait la décision. Le SAMU n'a été contacté que dans 45 % des cas lorsque l'équipage en avait la possibilité. CONCLUSION: La réduction du risque de déroutement pour urgence médicale doit être avant tout envisagée grâce aux deux actions suivantes : sensibiliser les équipages à contacter le SAMU et ajouter à bord des avions long-courriers un équipement médical avec possibilité de télé-transmission.

[SAMU:ground-based medical assistance]

ABSTRACT NUMBER: 020

TITLE (English): BIPOLAR DISORDER IN THAI PILOTS: LONG-TERM FOLLOW UP OF 4 MALE AVIATORS

TITLE (French): MALADIE BIPOLAIRE CHEZ LES PILOTES

THAILANDAIS: SUIVI À LONG TERME DE 4 AVIATEURS DE SEX MASCULIN

SUBMITTED: Yes, on 06/17/08

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Introduction: Bipolar Disorder is Psychotic Disorder compose of depressed mood and mania or irritable mood. ICAO Regulation does not allow pilots with Bipolar Disorder to fly. Diagnosis of Bipolar Disorder is very difficult, due to no biological marker and consequence are very serious for pilots. We have managed 4 Thai pilots with Bipolar Disorder for 10 years

Methods: Four cases of Bipolar disorder was sent to Institue of Aviation Medicine by theirs commander because of behavior change. Nobody came to see flight surgeons themselves. Diagnosis were done by Psychiatric interviews, Illness histories and Psychological tests. Treatments were Individual psychotherapy, family therapy, psychiatric medications and follow up. The consequences were variety from case to case example:

" The first case request to lose his medical licence.

" The second case committed suicide by hanging.

" The third case did not want to be permanent ground and protested to The Administrative Court.

" The fourth case :

§ The treatment was Anti Psychotic medication, Anti Convulsant, Lithium

§ Permanent grounded.

§ He can do his ground duties and maintain his medication.

Conclusions: Bipolar disorder is very difficult to manage especially on the Aviation medicine because pilot responsibility are great.

ABSTRACT NUMBER: 021

TITLE (English): CASE REPORT: A MILITARY PILOT WITH TUBEROUS SCLEROSIS

TITLE (French): ÉTUDE DE CAS: UN PILOTE MILITAIRE SOUFFRANT DE SCLÉROSE TUBÉREUSE

SUBMITTED: Yes, on 06/21/08

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Introduction: Tuberous Sclerosis is a genetic syndrome that usually manifests as mental retardation, intractable seizures and facial angiofibromas (adenoma sebaceum) at early childhood.

Case report: A 22-years old military helicopter pilot was diagnosed with Tuberous Sclerosis after he completed flight academy. Clinical manifestation included adenoma sebaceum, and hypomelanotic macules on the trunk. Three calcified subependymal nodules were demonstrated on brain imaging

Discussion: To the best of our knowledge this is the only case of a pilot diagnosed with this syndrome, thus representing the extreme range of clinical variation.

We will review this rare condition and discuss the aeromedical concerns of the medical waiver board.

ABSTRACT NUMBER: 022

TITLE (English): SEIZURES ON COMMERCIAL FLIGHTS. A 45-MONTH REVIEW

TITLE (French): CONVULSIONS SUR LES VOLS COMMERCIAUX. UNE REVUE DE 45 MOIS.

SUBMITTED: Yes, on 06/30/08

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Introduction: Epilepsy affects about 6.6% of the general population. In the U.S., every year, up to 28% of all epileptic patients will require treatment in Emergency Departments (ED). Around 150,000 people not previously diagnosed with epilepsy present a seizure episode every year; most often in the ED. Seizures frequently require medical attention in flight and are a common cause for diversion.

Methods: We retrospectively analyzed 1,576 cases of in-flight seizures (IFS) from Jan. 2004 to Sept. 2007, from the MedLink database.

Results: Mean age was 37.7 ± 18.7 yrs, and gender distribution was: Male = 56.3%, Female = 43.7%. 9.5% of the flights were diverted from their original destination. The time of the episode during the flight significantly differed according to the flight expected duration. One hundred forty eight patients (9.4%) were admitted to a hospital and 358 (22.8%) were evaluated at an ED or clinic and released. Medical kits were used for equipment in 14.3% of cases and medications were used in 10.3% of cases. Three patients expired. Odds ratio for diversion was 1.6 (95% CI = 1.1-2.3, $p=0.006$) when a medical person was onboard. Odds ratio for hospital admission was 1.8 (95% CI = 1.3-2.7, $p=0.0007$) when medical personnel were present.

Conclusions: IFS is always a disturbing event for flight crew and other passengers. Hypoxia, fatigue, anxiety and medication schedule disturbance are amongst the flight-related potential factors lowering the seizure threshold in epilepsy patients. The presence of a volunteer medical person onboard significantly increased the chance for diversion and hospital admissions. Prevention measures aimed at risk factors, as well as better use of in-flight resources could help in avoiding the impact of IFS.

ABSTRACT NUMBER: 023

TITLE (English): INTERESTING CASE : A PILOT WITH JAUNDICE WITH BRACHIAL PLEXITIS

TITLE (French): CAS INTÉRESSANT: UN PILOT SOUFFRANT D'UNE JAUNISSE ET D'UNE INFLAMMATION DU PLEXUS BRACHIAL

SUBMITTED: Yes, on 06/24/08

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A pilot with jaundice with brachial plexitis.

49 years old Thai pilot ,Bangkok, Thailand.

The reason for patient visit is complaint of low grade fever,anorexia,nausia for a week. 3 days before admission, he had painful at upper of left arm,weakness of left arm,numbness of thumb,index,middle finger of left hand.

Physical examination: vital sign is normal, icteric sclera,no hepatosplenomegaly.

Neurological examination: good orientation, crainial nerve intact, sensation intact, motor weakness of muscle of left arm and hand.

Investigation: MRI of cervical spine, hepatitis profile, and CSF examination.

Diagnosis: Hepatitis E with brachial plexitis.

Treatment: Immunoglobulin and rehabilitation.

Return to fly: When complete recovery and begin in simulator.

Lesson learned: Hepatitis E is not common in some areas but may cause severe complication. It transmits by fecal-oral route. No commercial vaccination is available.

ABSTRACT NUMBER: 024

TITLE (English): ACQUIRED LEFT BUNDLE BRANCH BLOCK (ALBBB) IN AIRCREW - A DILEMMA REVISITED

TITLE (French): UN BLOC DE BRANCHE GAUCHE ACQUIS CHEZ LE PERSONNEL NAVIGANT - UN DILEMME REVISITÉ

SUBMITTED: Yes, on 06/30/08

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INTRODUCTION: Aerospace Medicine seeks to protect health and fitness of aircrew for a full flying career. Identification of acquired electrocardiographic abnormalities requires the aviator to undergo comprehensive evaluation to determine any underlying cardiac disease posing a risk to flying safety. Presentation of an ALBBB is of concern in aircrew as it implies significant underlying disease. This review was conducted to determine the presentation and prognosis of ALBBB.

METHODS: The US Army Aeromedical Epidemiological Data Register (AEDR) was searched for aircrew with an ICD 9 codes for LBBB. The initial entry ECG was compared to the ECG documenting an ALBBB.

RESULTS: Total number of aircrew in AEDR, established in 1984, is 142,345 with nearly 680,000 FDME records. The search found 59 aircrew with ICD-9 codes of complete, incomplete and intermittent LBBB. Review of ECG reports prior to diagnosis of ALBBB found 14.1% to have Left Axis Deviation (LAD) and 10.5% Incomplete LBBB(ILBBB). The age of diagnosis was found to be primarily the fourth decade. Associated diseases were noted to hyperlipidemia and hypertension as confounders. Comprehensive cardiac evaluation without evidence of coronary artery disease or other structural abnormalities, permitted aircrew to return to flying duty. AEDR records provide followup of 3 to 6 years in those on FD.

CONCLUSIONS: Aircrew with LAD/ILBBB on initial ECG should be followed yearly to determine the earliest development of conduction abnormalities such as rate related LBBB or progression to complete LBBB. Following comprehensive cardiac evaluation including coronary arteriography and non-invasive functional testing without underlying cardiac abnormalities, aircrew can be considered for return to flying duties.

Oral Presentation

ABSTRACT NUMBER: 025

TITLE (English): THE SPECTRUM OF OBSTRUCTIVE SLEEP APNEA IN USAF AVIATORS

TITLE (French): LE SPECTRE DU SYNDROME D'APNÉE OBSTRUCTIVE DU SOMMEIL CHEZ LES NAVIGANTS MILITAIRES DE L'ARMÉE DE L'AIR AMÉRICAINE

SUBMITTED: Yes, on 06/24/08

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Introduction: Because of heightened awareness and more prevalent obesity, obstructive sleep apnea (OSA) has become a common diagnosis, but the presentation and management of this disorder in aviators is not well defined. We examined a database of 113 military aviators who presented with OSA, in order to describe the spectrum of presentation and the results of occupational evaluation.

Methods: We retrospectively reviewed the records of 113 male aviators evaluated for OSA between 1997 and 2007. Work-up consisted of history, physical examination, and neurocognitive testing, followed by polysomnography (PSG) and maintenance of wakefulness testing (MWT) at a local military medical center. Severity was determined by the apnea-hypopnea index scored from the PSG.

Results: Cases of OSA in this population commonly came to medical attention because of heroic snoring and observed apneas, rather than hypersomnolence. There was a poor correlation between polysomnographic findings at local laboratories and those from our reference laboratory. Neurocognitive testing was helpful in identifying impairment in moderate and severe OSA, while it was almost uniformly negative in mild OSA. In pilots and navigators, MWT was usually negative for any scorable sleep, even in those with severe OSA.

Conclusion: The remarkable variability of polysomnographic studies from different laboratories argues for the utilization of one reliable sleep center by the authority charged with determining return to flying status. Although MWT is considered to be the standard test for wakefulness, it was originally validated in a random civilian population, and may be unreliable in an occupational setting. Neurocognitive testing is likely to be of greater value in determining whether aviators with moderate or worse OSA should return to flying.

ABSTRACT NUMBER: 026

TITLE (English): SOMATOFORM AUTONOMIC DYSFUNCTION IN FLIGHT ATTENDANTS

TITLE (French): LA DYSFONCTION SOMATOFORME AUTONOME CHEZ LE PERSONNEL DE CABINE

SUBMITTED: Yes, on 06/29/08

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Background: Symptoms of somatoform autonomic dysfunction are related by the patient as if they were due to a physical disorder of a system that is under autonomic control (cardiovascular, gastrointestinal, respiratory, genitourinary systems).

Objective: To evaluate and treat flight attendants with somatoform autonomic dysfunction. To pursue their recovery for decision to take back the flight.

Method: 21 flight attendants (15 female, 6 male), mean age 41,2 years, diagnosed with somatoform autonomic dysfunction according to ICD 10. They were assessed somatically and declared without organic illness. They were evaluated clinical, Hamilton for Anxiety Scale (HAM-A), CGI-S, CGI-I (Clinical Global Impression, Severity and Improvement Scale) at baseline, 28, 84, 168, 252 days. They received treatment: tianeptine 37,5 mg/day (n=7), sertraline 103,5 mg/day (n=7), escitalopram 12,85 mg/day (n =7).

Results: HAM-A evolution under treatment (total score): baseline-25.10; 28 days- 20.43; 84 days-12.48; 168 days-7.10; 252 days-3.05. CGI-S: baseline= 4.24 , CGI-I at 28 days =3,28 and after 252 days=1,10. Predominant cardiovascular symptoms severe/disabling in 47,6%cases, gastrointestinal symptoms in 30,09%, respiratory symptoms in 19,04%, genitourinary symptoms in 9,52%. HAM A evolution in tianeptine subsample: baseline total score 25,86; 28 days =20; 84 days=11,57; 168 days=7; 252 days=3. HAM-A score in sertraline subsample: baseline= 26; 28 days= 21,42 ; 84 days= 13,14; 168 days= 7,85; 252 days= 3,57. HAM-A scores for escitalopram subsample: baseline-26; 28 days- 19,86; 84 days-11,28; 168- 6,57; 252 days- 2,71.

Conclusions: 1) All the drugs were safe and efficient. 2) It seems that escitalopram has better effect on the symptomatology, but there are few cases to conclude. 3)All subjects have been characterized of fit for flying after 30 days from the cessation of medication.

ABSTRACT NUMBER: 027

TITLE (English): HYPERTENSION AND CARDIOVASCULAR RISKS IN COMMERCIAL PILOTS AND CABIN ATTENDANTS: ONE YEAR EXPERIENCE IN THE AEROMEDICAL INSTITUTE IN ROME

TITLE (French): HYPERTENSION ET RISQUES CARDIO-VASCULAIRES CHEZ LES PILOTES COMMERCIAUX ET LE PERSONNEL DE CABINE: UN AN D'EXPÉRIENCE À L'INSTITUT DE MÉDECINE AÉRONAUTIQUE DE ROME

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Health requirements for commercial and private pilots, as well as cabin attendants, are published by the International Civil Aviation Organization (ICAO) and the European Joint Aviation Authorities (JAA). Hypertension itself does not carry the risk of sudden flight incapacitation, but it represents one of the most important risk factors for strokes and CAD which can be incapacitating.

During 2005, 3477 commercial pilots (Class 1 Licence) and 2422 private pilots and cabin attendants (Class 2 Licence) were examined in the cardiology department of the Aeromedical Institute in Rome. We declared temporarily unfit for flight activity 66 people belonging to the first group (1.8%) and 38 of the second group (1.5%). Rhythm disturbances such as complex ventricular arrhythmias and paroxysmal atrial fibrillation were the main cause of temporary disqualification in both groups (34% and 26% respectively), while hypertension was found responsible in 15% of commercial pilots and 7.8% of private pilots and cabin attendants.

According to the international Guidelines and to Joint Aviation Requirements, all subjects with a blood pressure constantly higher than 140/90 mmHg or the ones who were already under antihypertensive treatment, were evaluated in order to assess the presence of other major cardiovascular risk factors, as well as target organ damage. We performed an ECG and echocardiogram on all patients to detect left ventricular hypertrophy or silent manifestations of CAD. Besides routine laboratory tests were performed. Pharmacological treatment included all the agents commonly used that have proven effective in reducing blood pressure level and cardiovascular morbidity and mortality. A particular attention was reserved to patients treated with beta-blockers, in order to detect possible side-effects not suitable with flight activity.

No subject was permanently disqualified at the end of our observation and the majority of patients (84%), whose blood pressure values were permanently below 140/90 mmHg and who were not showing signs of target organ damage, could resume their activity within a period of 92 days.

ABSTRACT NUMBER: 028

TITLE (English): CARDIAC ARRHYTHMIAS DURING BOTH REAL AND SIMULATED FLIGHTS

TITLE (French): LES TROUBLES DU RYTHME CARDIAQUE AU COURS DES VOLS RÉELS ET SIMULÉS

SUBMITTED: Yes, on 06/15/08

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Introduction: Rapid onset and offset of +Gz acceleration can cause acute hemodynamic changes that activate a number of reflex cardiovascular responses.

In some cases, the result may be cardiac arrhythmias even in otherwise clinically healthy individuals. Type and frequency of cardiac arrhythmias depend on the intensity of precipitating stimulus.

Objectives: This study aimed at indicating similarities/differences in cardiac arrhythmias development in pilots during real training flight (RF) and real flight simulation (SRF) in the human centrifuge.

Methods : The study involved 20 pilots and 20 cadets of 2nd and 3rd year Higher Military School of Air Forces in Poland. All of them performed a real flight in TS-11 Iskra aircraft and test of simulated real flight in the human centrifuge. Programs of both flights were identical in regard to the value and duration of +Gz acceleration. During both flights ECG was registered with Holter monitor. ECG was assessed for incidents of heart rhythm disturbances occurrence.

Results: The ventricular ectopy were observed in 30% of the subjects during RF (10% pilots vs. 20% cadets) and only in 10% of pilots during SRF. The sinus and relative bradycardia occurred in 90% of the subjects during RF (40%pilots vs. 50% cadets) and in 40% of the subjects during SRF. The supraventricular ectopy were observed only during RF in pilot's group. There were statistically significant differences between some kind of heart rhythm disturbances as function to type of flight (RF, SRF) and also as type of group (pilots vs. cadets).

Conclusion: Frequency and type of cardiac arrhythmia are not the same during the real and simulated real flights in the human centrifuge, and seems to depend on the pilot's psychophysical load.

ABSTRACT NUMBER: 029

TITLE (English): GRAPE FLAVOUR INCREASES VOLUNTARY FLUID INTAKE IN HOT CONDITIONS?

TITLE (French): L'ESSENCE DE RAISIN AUGMENTE L'HYDRATATION VOLONTAIRE DANS LES CONDITIONS DE TEMPÉRATURES CHAUDES?

SUBMITTED: Yes, on 07/01/08

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Introduction: Performing of aerial tasks in high temperature conditions can lead to overheating, thermal dehydration and, in consequence, to impairment of ability to pilot an aircraft. Replenishment of water, being lost as a result of sweating, prevents the negative effects of thermal dehydration.

Aim of the study: The purpose of the study was to assess whether the admixture of grape flavour to water increases voluntary intake of fluids during thermal stress.

Methods: The study was carried on 34 healthy men (aged 21-36; mean 27 ± 7), not acclimated to heat, exposed twice (in 48-hours interval) to high temperature in climatic chamber (60 min., $T_g +55^\circ\text{C}$, $\text{RH} = 30\%$). During both expositions, the subjects were allowed to drink ad libitum: during I series - Isostar (WANDER AG, Switzerland), during the other (II) - Isostar with admixture of grape flavour (ZN-97/A-02, Hoffmann, Poland; 1.2 ml/1000ml). Volume of consumed fluid, body surface and internal temperatures, and total volume of sweating assessed on the basis of body mass, were measured during both series. The body hydration state was assessed on the basis of laboratory tests results in blood and urine (HCT, ALBP, SG), performed before and after exposure to heat.

Results: In comparable conditions of thermal stress, the subjects consumed 31% more of fluid aromatized with grape flavour: 1480 ± 225 ml (2nd exposure) as compared with plain fluid 1125 ± 180 ml (1st exposure) ($p < 0.005$). During series II (grape), subjects who drank more fluids, demonstrated significantly lower increase in mean body temperature ($0,44 \pm 0,07^\circ\text{C}$ as compared with $0,55 \pm 0,13^\circ\text{C}$ during series I) and more pronounced total sweating. A beneficial trend was observed for HCT and ALBP. The differences in SG were statistically insignificant.

Conclusion: Admixture of grape flavour increases volume of voluntary fluid intake which results in better tolerance of thermal stress conditions.

ABSTRACT NUMBER: 030
TITLE (English): ESSENTIAL THROMBOCYTOSIS
TITLE (French): THROMBOCYTOSE ESSENTIELLE
SUBMITTED: Yes, on 06/19/08
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Although essential thrombocytosis is a relatively rare illness, it does occasionally occur in aircrew members posing a very difficult challenge regarding aeromedical disposition. With high platelet counts, there is an increased risk of clotting and bleeding that would compromise flying safety. This paper will describe the basics of this illness including signs and symptoms, diagnosis, complications, treatment, and prognosis. Emphasis will be placed on aeromedical considerations concluded by recommendations regarding aeromedical disposition.

ABSTRACT NUMBER: 031

TITLE (English): PRACTICAL APPLICATIONS OF THE RELATIONSHIP BETWEEN PSYCHIATRIC STATUS AND CIRCADIAN HEART RATE

TITLE (French): APPLICATIONS PRATIQUES DE LA RELATION ENTRE L'ÉTAT PSYCHIATRIQUE ET LE RYTHME CIRCADIEN CARDIAQUE

SUBMITTED: Yes, on 06/29/08

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Introduction: An investigation was made of the serial changes in 24 hour or circadian heart rate (CHR) in otherwise healthy individuals receiving treatment for a psychiatric disorder. The aim was to determine the extent to which an analysis of circadian heart rate (CHR) can provide practically useful adjunct information for the diagnosis and treatment of mental illness.

Methods: Serial recordings of 24 hour heart rate were obtained from 60 healthy volunteers and 400 physically healthy individuals undergoing treatment for a psychiatric disorder diagnosed in accordance with DSM-IV criteria. Serial heart rate data were compared with clinician and patient ratings of clinical change.

Results: Comparisons of CHR within and between individuals revealed dimensions of independent variation in CHR. Broadly different disorders such as melancholic depression and generalized anxiety disorder showed distinctly different patterns of CHR, especially during sleep when confounding influences on heart rate are minimal. Serial within-subject data showed that effective (but not ineffective) treatment is associated with a progressive normalization of deviant patterns.

Conclusions: There is a formal, state-dependent relationship between psychiatric status and CHR. An analysis of CHR can add a physiological dimension to the diagnosis of psychiatric disorders and the evaluation of an individual's response to treatment. The objective nature of changes in CHR can contribute to evidence based practice in the diagnosis and treatment of mental illness.

ABSTRACT NUMBER: 032

TITLE (English): C- REACTIVE PROTEIN PLASMA LEVELS IN AIRLINE PILOTS. RELATIONSHIP WITH THE PRESENCE OF METABOLIC SYNDROME

TITLE (French): NIVEAUX DE PROTÉINE C RÉACTIVE CHEZ LES PILOTES DE LIGNES AÉRIENNES. RELATION AVEC LA PRÉSENCE DU SYNDROME MÉTABOLIQUE

SUBMITTED: Yes, on 05/22/08

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Study: C Reactive Protein (CRP) is a reliable marker of cardiovascular (CV) risk that correlates with insulin resistance. The Metabolic Syndrome (MS) is a condition based on insulin resistance which predisposes to CV disease and type 2 diabetes that not includes among its diagnostic criteria the measurement of CRP.

Objectives: 1) To assess the CRP plasma levels in a population of airline pilots; 2) To compare the level of CRP in pilots with MS with those without MS; 3) To assess the levels of plasma CRP according to the number of MS diagnostic criteria.

Subjects and Methods: A cross sectional study was conducted measuring CRP plasma levels in 1.048 male Spanish airline pilots (mean age of 41, 6 ± 10 years). The diagnosis of MS was established using the definition of the National Cholesterol Education Program. Adult Treatment Panel III. SPSS v.15 program was used for statistics.

Results: CRP plasma levels significantly increase in aging pilots from 1.49 ± 0.8 mg/L in subjects under 35 years, to 2.42 ± 1.1 mg/L in pilots with age e 35 and < 50 years, and to 2.72 ± 1.4 mg/L in those with more than 50 years of age ($p < 0.001$). CRP is more elevated in pilots with MS (n:156, $X \pm SD$: 3.22 ± 2.09) than in pilots without MS (n: 892, $X \pm SD$: 2.06 ± 0.91 mg/L) ($p < 0.001$). CRP progressively increases with the number of cumulated MS diagnostic criteria ($p < 0.001$).

Conclusions: CRP a marker of CV risk significantly increases in aging pilots, in pilots with diagnosis of MS in comparison with those without the syndrome, as well as progressively in pilots as they present a greater number of diagnostic criteria of the MS. CRP plasma levels are elevated in pilots with hyperglycemia, central obesity, low HDL-cholesterol, hypertension and hypertriglyceridemia in comparison with those with these parameters within the normal range.

ABSTRACT NUMBER: 033

TITLE (English): LOW TOXICITY TREATMENTS WITH STEROIDS

TITLE (French): TRAITEMENTS À BASSE TOXICITÉ AVEC DES STÉROÏDES

SUBMITTED: Yes, on 06/29/08

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Introduction: Steroids are widely used in medicine as potent anti-inflammatory agents but its toxicities significantly limit their usage. This report proposes new algorithms based on intermittent administration that result in marked reductions of side effects.

Patients: Individuals suffering of conditions where steroids are indicated such as rheumatological, pulmonary, neurological, allergic and miscellaneous disorders.

Intervention: Methylprednisolone 1000 mg in slow IV drip every six hours x 3 once a month; Prednisone in oral pulses up to 150mg twice a week; Prednisone 300 mg in oral pulses once a week; Prednisone 300 m in oral pulses three times a month with gradual tapering once the clinical response is attained.

Results: Significant clinical improvement at times comparable with daily oral administration in most patients and clinical responses not reaching the level of daily administration in others but still yielding relevant improved outcomes and marked reduction of steroids related toxicities as no adrenal suppression, no weight gain in 80 per cent of the cases, no Cushingoid features, no avascular necrosis, reduced rate of osteoporosis, no opportunistic infections, no electrolyte imbalances, rare shifts in blood pressure with the 1000 mg IV doses, very rare mood swings and virtually no steroids related psychosis.

Conclusions: Intermittent administration of steroids are associated with significant improvement of the steroid responsive conditions treated and a marked reduction in the expected toxic side effects. This allows for long periods of administration when needed in chronic conditions without concern for serious adverse effects. These observations date back more than 15 years and if confirmed by others a reformulation of steroids dosage and schedules of administration by the FAA may be warranted.

ABSTRACT NUMBER: 034

TITLE (English): AIRPORT AND BAGGAGE MALARIA - TWO UNUSUAL
WAYS OF TRANSMISSION OF A SERIOUS INFECTIOUS DISEASE

TITLE (French): PALUDISME D' AÉROPORT ET DE BAGGAGE - DEUX
VOIES INUSITÉES DE TRANSMISSION D'UNE MALADIE INFECTIEUSE
GRAVE

SUBMITTED: Yes, on 06/27/08

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With an annual incidence of about 400 millions and an annual mortality of about 2 millions Malaria is the most common infectious disease worldwide. It is not only a serious threat for those exposed in endemic zones, but furthermore in non-endemic areas as imported disease. 500 - 1000 cases are imported to Germany each year. There are discussions, whether air-transport may contribute to the spread of infectious diseases. In this context baggage malaria and airport malaria are two unusual ways of transmission of Malaria. They are caused by mosquitoes that have been displaced by aircrafts from endemic to non-endemic areas. Those are rare incidents with 89 cases in western Europe between 1969 and 1999, primarily in countries and in the vicinity of airports with frequent flights to the main endemic areas in Sub-Saharan Africa. Even though the risk of this way of infection is extremely low, this type of malaria should be taken into account in the differential diagnosis of fever of unknown origin albeit the appropriate travel history seems to be missing.

ABSTRACT NUMBER: 035

TITLE (English): RETINAL VEIN OCCLUSION IN FLIGHT CREW AND AIR TRAFFIC CONTROLLERS

TITLE (French): OCCLUSION DE LA VEINE CENTRALE DE LA RÉTINE CHEZ LE PERSONNEL NAVIGANT TECHNIQUE ET LES CONTRÔLEURS DU TRAFIC AÉRIEN

SUBMITTED: Yes, on 06/30/08

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Introduction: Although, there is a well-recognised association with hypertension, central and branch retinal vein occlusions (RVO) are conventionally managed by aeromedical physicians as ophthalmic conditions only. The systemic associations of RVO has recently been re-visited by the Beaver Dam and Blue Mountain Eye disease studies, drawing attention to the significant association with cardiovascular co-morbidity and the increased long-term risks of cardiovascular mortality in these individuals.

Purpose: The aim of our research was to develop a new evidence based approach to the assessment of aircrew with a history of RVO.

Methods: A systematic review was performed looking at RVO and cardiovascular events. Pubmed, Medline and Embase from the late 1990s onwards, were searched using appropriately selected key search terms. The Cochrane library was also similarly queried. Only good quality relevant systematic reviews and meta-analyses were included. All abstracts were hand searched to establish whether they met our inclusion criteria and for papers included, reference lists were further assessed. Only those studies with data from cohorts comparable to the working pilot population were included.

Results: After RVO, the average adjusted cardiovascular event mortality rate is in the region of 1.56% per annum. This exceeds the acceptable 1% per annum level of incapacitation risk for a solo pilot.

Conclusions: RVO is accompanied by visual loss, which may be irreversible, and an elevated cardiovascular risk. We present an up to date, evidence-based, integrated, ophtho-cardiological method for assessing the fitness of aircrew after RVO.

Preferred mode of presentation: Poster

ABSTRACT NUMBER: 036

TITLE (English): THE RELATIONSHIP BETWEEN INTRA-OCULAR AND PERIPHERAL VENOUS PRESSURES IN VARIOUS BODY POSITIONS

TITLE (French): LE RAPPORT ENTRE LES PRESSIONS INTRA-OCULAIRES ET VEINEUSES PÉRIPHÉRIQUES DANS DIFFÉRENTES POSTURES

SUBMITTED: Yes, on 06/11/08

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Introduction. The intraocular pressure (IOP) is known to be raised on exposure to microgravity and on head-down-tilt (HDT) on Earth. How the increase of venous pressure (VP) influences IOP in these situations is not fully understood. IOP and peripheral VP were measured simultaneously during HDT in order to investigate the relationships between them.

Methods: The forehead and the forearm VPs and IOPs of 9 healthy subjects were measured during the sequence of 10 min supine, 5 min 45 degree head-up-tilt (HUT), 3 min 35 degree HDT and 5 min supine. The measurements of VPs were corrected to the horizontal level of the eye. IOP was measured twice in each posture using a Tonopen.

Results. No differences occurred in the supine VPs and IOPs before and after tilting. Forehead VP and IOP began to increase immediately on rotation from HUT to HDT. The forehead and peripheral VPs attained plateau values after 7.5s and 22.0s in HDT, respectively.

Mean (\pm SD) forehead VP (n=4), forearm VP(n=9) and IOP (n=9) were 0.2mmHg, 0.1 ± 0.5 mmHg and 18.4 ± 4.3 mmHg at 45 degree HUT; 15.5mmHg, 5.0 ± 1.2 mmHg and 26.2 ± 3.3 mmHg at 35 degree HDT at 5s; 22.0mmHg, 20.4 ± 3.5 mmHg and 26.7 ± 3.8 mmHg

at 35 degree HDT at 2.5 min, respectively

Conclusion. Although the changes of plateau VPs were very similar in the forehead and forearm, the VPs followed different time courses. The forehead VP should be employed to study the relationships between pressure in the veins draining the eye and IOP in the first 25s of exposure to HDT or microgravity.

ABSTRACT NUMBER: 037

TITLE (English): POST-FLIGHT OXYGEN BAROTRAUMA: ANALYSIS OF THE INCIDENCE IN ITALIAN AIR FORCE PILOTS AND METHOD OF PREVENTION.

TITLE (French): BAROTRAUMA SECONDAIRE À L'OXYGÈNE APRÈS UN VOL : ANALYSE DE L'INCIDENCE CHEZ LES PILOTES DE L'ARMÉE DE L'AIR ITALIENNE ET MÉTHODES DE PRÉVENTION.

SUBMITTED: Yes, on 06/25/08

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Objective: The aim of this study was to assess the current post-flight incidence of "Oxygen Barotrauma" in Italian Air Force fighter pilots and the development of a simple method to prevent this medical problem. Oxygen barotrauma, defined as "delayed barotitis media" is caused by the oxygen diffusion in the development of a pressure differential after high altitude flight and high altitude training (hypobaric chamber) that require 100% oxygen breathing. The use of a disposable pear of Politzer (Otovent) in the prevention of the oxygen barotrauma is aimed to carry out a complete wash-out of the oxygen contained in the middle ear after the flight.

Methods: A total of 89 questionnaires were submitted to Italian Air Force fighter pilots of three different flight lines (EFA, Tornado and F16) by their flight surgeons. They were asked to report whether they have ever suffered of delayed barotitis media describing symptoms and proceedings. Of the 89 pilots, 52 (58%) reported at least 1 case of delayed barotrauma after the flight. Many of the cases originate after high altitude flight, positive pressure breathing and after nocturnal flight missions. Data from hypobaric chamber included 104 training pilots, 34 of them using a simple method to carry out a complete wash-out of the oxygen contained in the middle ear by means of a disposable pear of Politzer (Otovent).

Results: Data from hypobaric chamber training shows positive results demonstrating how it is possible to reduce the incidence of delayed barotitis media with this type of device.

Conclusions: Even with normal ENT conditions military pilots could experience delayed barotrauma. The Authors demonstrate how this simple technique of wash-out is able to reduce the incidence of the delayed middle ear barotrauma following exposure to 100% oxygen breathing.

ABSTRACT NUMBER: 038

TITLE (English): FUNDUS IMAGING IMPROVES EFFICACY AND SAFETY OF MEDICAL EXAMS.

TITLE (French): L'IMAGERIE DE LA RÉTINE AMÉLIORE L'EFFICACITÉ ET LA SÉCURITÉ DES EXAMENS MÉDICAUX

SUBMITTED: Yes, on 06/27/08

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Purpose of the study: Examination of the ocular fundus requires both: skills and experience. For a non-ophthalmologist it is virtually impossible to evaluate the ocular fundus with undilated pupils. We employed a non mydriatic fundus camera and report our experience.

Methods: We reviewed 956 consecutive photographs of 478 pilots taken with the Nidek AFC-210 fundus camera equipped with a 12.8 megapixel digital camera body (Canon 5D). This camera allows photographs at an angle of view of 45 or 37° (adjustable), sufficient to image optic disc, macula and the major vessels.

Results: On 904 of 956 photographs (94.5%) optic disc, macula, vessels and inner 30° of the retina could be assessed complete, on 43 (4.5%) images only disc and vessels could be assessed, on 9 (1%) images the quality was too poor for assessment of the optic disc. Repetition of those 9 photographs with dilated pupil would have provided usable. The pathologic findings included markedly excavated optic disc (7), definite glaucoma, not yet diagnosed (1), macular changes (7), other pigment changes (3), optic disc drusen (2), choroidal naevus (1), myelinated nerve fibres (1) suspected choroidal osteoma (1), vitreous deposits (1).

Conclusions: Even without pupil dilation fundus photography provided high quality results in 94%. Only 1% of the images could not be evaluated sufficiently. The number of pathologic findings was higher than expected according to our experience. Fundus photography can be done by a technician, takes usually less than 2 minutes per eye, does not require pupil dilation and has additionally the advantage of a reliable documentation. Suspicious findings can be evaluated off line by experts. Therefore this procedure increases both economy and quality of medical licensing.

ABSTRACT NUMBER: 039

TITLE (English): THE INCIDENCE OF BAROSINUSITIS AFTER 12000 FT. SIMULATED FLIGHTS

TITLE (French): L` INCIDENCE DE LA SINUSITE BAROTRAUMIQUE APRES DES VOLS SIMULÉS À 12000 PIEDS

SUBMITTED: Yes, on 06/27/08

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Introduction: every year Egyptian AF cadet applicants attempt an altitude chamber flight to access their suitability as future fighters, in which they ascend to 120FL with rate of ascent and descent 4000 ft /min. In this study the purpose was to detect the effect of the altitude chamber at the previously mentioned altitude and rate of ascent and descent on the incidence of Barosinusitis.

Methods: many healthy male Egyptian AF cadets received a thoroughly ENT examination by Otolaryngologists including Otosopic, pharyngeal & nasal examination. Fitness for altitude chamber includes normal tympanic membrane, no evidence of Eustachian dysfunction, fair nasal anatomy, no signs or symptoms of rhinitis, allergy, sinusitis acute or chronic, no polyps & etc .160 cadet applicants were chosen to be in this study .Those 160 cadets did X-ray Para nasal sinus before and after chamber ride (320 X-ray films), comparison was done between both X-rays for every applicant.

Results: Of the pre-chamber Para nasal sinus X-ray films there were 37 cadets have maxillary and / or frontal mucosal lining abnormalities and 123 have normal X-ray films .comparison between those 37 pre and post chamber films reveals no changes in the already present mucosal changes even minimal changes was not founded, the group of 123 pre and post chamber X-ray reveals no development of Barosinusitis at all.

Conclusion: Since those 37 X-rays have abnormalities before and showed even no minimal changes after chamber ride and because the other pre and post chamber 123 X-ray films were completely normal the Author suspected that this altitude and with this rate of ascent and descent both are not sufficient to induce Barosinusitis

ABSTRACT NUMBER: 040
TITLE (English): MOTIVATIONAL FEEDBACK TOOL IN MOTION SICKNESS DESENSITISATION
TITLE (French): OUTIL DE FEED-BACK MOTIVATEUR POUR LA DÉSENSIBILISATION DU MAL DES TRANSPORTS
SUBMITTED: Yes, on 06/29/08
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Introduction: Airsickness is a common problem that affects aircrew in training. A proportion of trainees who cannot adapt to the provocative motion stimuli during flying training will be put through an intensive motion sickness desensitisation programme for salvage therapy. Motivation is an important, yet difficult-to-quantify component of such a programme.

Method: The motion sickness desensitisation programme by RSAF Aeromedical Centre comprises a 2-week ground-based, progressive desensitisation to cross-coupled stimuli with the turntable. General reports by the trainees revealed that apart from verbal feedback from the trainers, there is no other means to gauge the progress of their rehabilitation. In trainees who are symptomatic during the desensitisation programme, the lack of tangible indicators of improvement may not motivate them towards successful completion of the programme.

Results: A dose-scoring system is devised to track the clinical progress of trainees undergoing motion sickness desensitisation. This system is derived by multiplying the number of sets of head movements with the rate of turntable revolution. The trainees track their progress by tabulating the scores and plotting them on a graph daily. This gives them a visual feedback on their improvement and serves as an additional motivational tool in addition to verbal feedback.

Conclusion: Motivation is an important component in the success of motion sickness desensitisation programmes. More innovative ways have to be devised to improve the success rate and reduce pilot training attrition due to motion sickness.

ABSTRACT NUMBER: 041

TITLE (English): JET LAG AND AIR CREW OF THAI INTERNATIONAL AIRWAYS : QUESTIONNAIRE SURVEY

TITLE (French): DÉCALAGE HORAIRE CHEZ LE PERSONNEL NAVIGANT DES LIGNES AÉRIENNES THAI INTERNATIONALE: UN SONDAGE PAR QUESTIONNAIRE

SUBMITTED: Not yet

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Aircrew sleep is extremely significant in the current scenario of commercial operations. With the given speed and range of current aircraft operations, aircrew fatigue is becoming a limiting factor in aircraft operations. Modern commercial aircraft cross time zones at almost the same rate as the earth rotates, and it is these swift transmeridian transitions that lead to the syndrome commonly referred to as Jet Lag or Rapid Time Zone Change Syndrome. Cabin crew form an important part of the commercial airlines, they form an important part of the flight crew responsible for flight safety. Jet Lag degrades attention, short-term memory, decision-making; briefly the entire job content of cabin crew suffers. In effect, cabin crew can little afford to be jet lagged and present a poor image of the airline. The aim of this paper is to document the incidence and effects of jet lag on the cabin crew of a commercial airline by conducting a questionnaire survey. It also suggests remedial measures in the medical, training and operation spheres. A total of 321 air crew participated in the survey. The average age of the air crew is 40.118 years. Status of air crew were of 16% captain, 4% Inflight manager, 20% pursur, 254 cabin crew. 68.5% of the cabin crew have knowledge about Jet Lag, whereas 85.4% reported symptoms of Jet Lag. The common symptom of jet lag is insomnia (60.7%) poor concentration (56.4%) and daytime sleepiness(48.6) .The most difficult flights were the long haul flights to USA , Coping mechanisms included use of napping (61.4%), exercise (58.6%), sleep hygiene (44.9%) alcohol (8.7%) and drugs (anxiolytics)(12.5%) to induce sleep and combat Jet Lag, often in combination. to. An education and training module on Jet Lag management in flight operations is mandatory to understand physiological mechanisms underlying Jet Lag and fatigue countermeasures. Given the job at hand, they need to be

ABSTRACT NUMBER: 042

TITLE (English): DEVELOPMENT OF A SPATIAL DISORIENTATION TRAINER, MADE IN THAILAND

TITLE (French): DÉVELOPPEMENT D'UN SIMULATEUR POUR DÉSORIENTATION SPATIALE, FAIT EN THAILANDE

SUBMITTED: Yes, on 06/29/08

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Development of a Spatial Disorientation Trainer, Made in Thailand

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Introduction: Spatial Disorientation (SD) is a common cause of aircraft accident. One of many methods of safety promotion is training of aircrews to recognize, prevent, and correct many types of spatial disorientation. The Royal Air Force has been spending large amount of budget buying many training equipments from abroad.

Methods: His Majesty King Bhumibol Adulyadej of Thailand guided his people to live with the middle path, and to spend just to suffice. The Institute of Aviation Medicine started a project in 2007 to build a basic spatial disorientation trainer with material and technology available in Thailand.

Conclusions: With helps from Thai International Airways and Department of Aeronautical Engineering of The Royal Thai Air Force, we built a prototype of the SD trainer which encourage us to develop a more sophisticate system in the coming year.

ABSTRACT NUMBER: 043

TITLE (English): THE PREVALENCE OF CATARACT IN JAPANESE AIRCREW

TITLE (French): LA PRÉDOMINANCE DE LA CATARACTE CHEZ LE PERSONNEL NAVIGANT JAPONAIS

SUBMITTED: Yes, on 06/23/08

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Introduction: Worldwide, cataract is the commonest cause of visual impairment. Despite modern day aviation being increasingly less dependent on human factors, the pilot is still a part of the aircraft systems and good vision is critical for flight safety.

The incidence of cataract increases with age, but the true incidence of early lens opacity is poorly understood as most population studies looking at adults focus on senior age groups and there is little data relevant or comparable to pilots of working age.

Purpose: The aim of our study was to elucidate the prevalence of lens opacity in Japanese commercial pilots.

Methods: A twelve month retrospective cohort study was conducted at the Japan Aeromedical Research Centre from April 2007. In total 3780 pilots attending for professional pilot medical examinations were screened by questionnaire assessment and detailed slit lamp eye examination. Data collected in the study included age, history of known cataract or previous lens extraction surgery, visual acuity and type of cataract.

Results: A total of 105 pilots were identified to have, or have had, cataract. 59/105 were bilateral. 29/105 were congenital type cataract (of which 19 were bilateral). One pilot had traumatic cataract, and one had Harada disease. 12/105 pilots gave a history of cataract surgery. In all 105, visual acuity was acceptable for continuing the privileges of their licences.

Conclusions: Japan is representative of most western nations in terms of the levels of chronic eye disease and this study offers insight into the burden of early cataracts in persons of working age. Decreased visual acuity occurs late in cataractogenesis. Mild and early lens opacities can cause significant glare and haze and compromise pilot visual performance even in the absence of decreased acuity. These symptoms of early cataract have important aeromedical considerations.

ABSTRACT NUMBER: 044

TITLE (English): THE VASCULAR THEORY OF GLAUCOMA: DIAGNOSTIC
POSSIBILITIES IN FLYING PERSONNEL

TITLE (French): LA THÉORIE VASCULAIRE DU GLAUCOME:
POSSIBILITÉS DIAGNOSTIQUES CHEZ LE PERSONNEL NAVIGANT

SUBMITTED: Yes, on 06/30/08

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Purpose: Many details of the pathogenesis of glaucoma are still unknown. Epidemiological studies have shown that only 30 % of patients with increased intraocular pressures will develop glaucomatous optic nerve damage. Two principal theories for the pathogenesis of glaucomatous optic neuropathy have been described - mechanical and vascular theory.

Methods: The measurement of retrobulbar blood flow was performed by CDI. The blood velocity in the ophthalmic artery (OA) and the central retinal artery (CRA) were measured. Using Heidelberg Retina Flowmeter (HRF) the retinal and the optic nerve head (ONH) microcirculation was examined.

Results: Three groups of respondents - pilots were examined. We have found statistically significant difference in the RI (AO, CRA) between the control group and POAG and NTG. The other CDI parameters (PSV, EDV) were not significantly different. At the eyes with POAG and NTG the blood flow in the ONH and in the juxtapapillary retina was significantly reduced to an age - matched group.

Conclusion: There is some evidence that glaucomatous optic nerve atrophy is associated with a decrease of the retinal and ONH macro - and microcirculation.

ABSTRACT NUMBER: 045

TITLE (English): DIFFERENCES IN BURNOUT OF CIVILIAN PILOTS AND FLIGHT ATTENDANTS

TITLE (French): DIFFÉRENCES DANS L'ÉPUISEMENT DES PILOTES CIVILS ET DU PERSONNEL DE CABINE

SUBMITTED: Yes, on 06/23/08

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Introduction: Stress is an unavoidable reaction of the organism to danger, while burnout is a negative reaction to stress and depends on the individual's stress-management capabilities. Both pilots and flight attendants are exposed to numerous stressful situations related to their work and both exhibit higher than usual rates of burnout. However, the burdens placed on them are quite distinct, which is why we find important differences in their burnout incidence rates and signs.

Material and methods: Our analysis included 80 pilots and 80 flight attendants of a Slovenian airline (53% of all employees) who filled out a questionnaire with general six questions on personal burnout, nine questions on occupational burnout and six questions on burnout due to working with passengers. We used the Copenhagen Burnout Inventory First Edition, authorized for use by the author.

Results: Average participant age was 38.4 years with an average 14.5-year period of employment. All pilots and a third of flight attendants had university degrees, while the rest were high school graduates. One third of the individuals who took part in our study had been on sick leave in the past year. We discovered significantly higher rates of burnout among flight attendants than among pilots. Differences between them were particularly marked with regards to burnout due to work with customers and only a bit lower regarding personal burnout. The difference was significantly less pronounced in occupational burnout, indicating a much greater job satisfaction and availability of other resources necessary for quality life among pilots.

Conclusion: Burnout is expressed in various ways, but in the end it always results in decreased job satisfaction, higher rates of absence from work and ineffectiveness. That is why it is important to identify the causes of burnout and institute effective organisational, legal and technical measures to prevent stressful situations and burnout.

ABSTRACT NUMBER: 046

TITLE (English): UTILIZATION OF HYPERBARIC FACILITY IN THE ROYAL THAI AIR FORCE

TITLE (French): UTILISATION DE LA CHAMBRE HYPERBARE DANS L'ARMÉE DE L'AIR THAÏLANDAISE

SUBMITTED: Yes, on 06/30/08

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Introduction: Training of the aircrews in Thailand in Hypobaric Chamber put the crews in risk of decompression sickness (DCS) especially in specific profile that require exposure to cabin pressure equivalent to 43000 feet.

Methods: In August 2002, the Royal Thai Air Force Institute of Aviation Medicine established its first Hyperbaric Facility in Donmuang Air Force Base. The institute provides not only a safeguard for training aircrews against DCS, but also an adjunctive treatment for a variety of medical and surgical patients.

Conclusions: We present statistical data of our Hyperbaric Facility patients from the beginning in 2002 until December 2007

Poster Presentation

Abstract Number 047

Title (English): PERSONALITY PROFILE OF EXPERIENCE ROYAL THAI AIR FORCE AVIATORS BY THE REVISED NEO PERSONITY INVENTORY (NEO-PI-R)

Title (French) : LE PROFIL DE PERSONNALITÉ DES AVIATEURS EXPÉRIMENTÉS DE L'ARMÉE DE L'AIR THAILANDAISE PAR L'INVENTAIRE NÉO PERSONNALITÉ RÉVISÉ (NEO-PI-R)

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Introduction: The objective of this research was to identify the personality profile of the RTAF aviators based upon the personality factors of Five Factors Model. The factors scores were measured by using the NEO-PI-R. Additionally, the study intended to study whether the personality trait levels of these aviators were significantly different type of aircraft (fighters, transporters and helicopters) based on of five factors model.

Methods: The sample includes 154 RTAF aviators during year 2008, and they were divided into 3 separate groups by type of air craft: 71 fighters, 51 transporters and 32 helicopters. The Instrument employed in this study was Thai version of the NEO-PI-R for measuring the Big Five personality factor: Neuroticism (N), Extraversion (E), and Openness to experience (O), Agreeableness (A), and Conscientiousness (C). Data was analyzed by One-Way ANOVA.

Results: The results indicated that:

1. NEO-PI-R personality profile of RTAF aviators revealed high score in facet E6: Positive Emotion, A6: Tender Mindedness and C6: Deliberation and low score in N5: Impulsiveness and E5: Excitement-Seeking
2. The results revealed that no significantly in five personality factors of the 3 groups of RTAF aviators. The facets scores between aviators when grouped by type of aircraft reveled that the transporter aviators differed in N3: Depression facet from others. N4:Self-consciousness facet was significantly different between transporter aviators and fighter aviators. O6 : Values facet was found helicopter aviators differed from others.

Conclusion: Results have revealed that the five personality factors of RTAF aviators; High score in facet E6: Positive Emotion, A6: Tender Mindedness and C6: Deliberation and Low score in N5: Impulsiveness and E5: Excitement-Seeking. The limitations of this study and implication for future research are discussed.

ABSTRACT NUMBER: 048

TITLE (English): CABIN AIR SAMPLING STUDY: FUNCTIONALITY TESTS

TITLE (French): ÉTUDE SUR L'ÉCHANTILLONNAGE DE L'AIR EN

CABINE: TESTS DE FONCTIONNALITÉ

SUBMITTED: Yes, on 07/01/08

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Introduction: There has been a great deal of debate on cabin air quality and the possible health effects of "fume events". The UK Committee on Toxicity (COT) has examined this issue and has stated that it is not possible to conclude whether cabin air exposures (general or following incidents) cause ill health in commercial aircrew. It recommended research to ascertain whether substances in the cabin environment could harm health.

Methods: The functionality study set out to ascertain the optimal methods for sampling cabin air in aircraft of interest i.e. BAe 146 and the Boeing 757 with Rolls Royce 535c engines. The study in the 146 was carried out on the ground and samples were collected as follows: aircraft hangar background, aircraft cabin background, aircraft with auxiliary power unit (APU) and Environmental Conditioning System (ECS) packs on and aircraft with APU and ECS packs on and "unknown" solvent release. The 757 was studied on the ground and during a flight. The sampling was carried out as follows: aircraft background, aircraft background (APU and ECS on), taxi, ascent/climb, cruise, descent, descent/landing/short taxi and on stand (APU and ECS on). The methods used were Solid Phase Microextract Fibres (SPME), Photoionization detectors (PID) and Thermal Desorption (TD).

Results (a) 146: Tributylphosphate was present within the cabin even before switching on the APU. Concentrations were all < 100ug/m³. Higher concentrations of tricresylphosphate (TCP) were found with APU and ECS running but concentrations were low 0.02-50ug/m³.(b) 757: A "fume event" occurred during the flight and there was a sharp rise in ultra-fine particles. TCP concentration was higher in this event than in other phases of flight but similar to background levels and was present in low concentrations (0.01-8ug/m³).

Conclusions: This study has confirmed that the technology for sampling cabin air is suitable, the best method was found to be TD and concentrations of substances of interest were low.

ABSTRACT NUMBER: 049

TITLE (English): CASE STUDIES IN THE IMPROVEMENT IN G-TOLERANCE WITH CREATINE-ENHANCED GYM TRAINING

TITLE (French): ÉTUDES DE CAS DE L'AMÉLIORATION DE LA TOLÉRANCE AUX G AVEC L'ENTRAÎNEMENT EN GYMNASSE ASSISTÉ DE CRÉATINE

SUBMITTED: Yes, on 06/30/08

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Introduction: Pilots of high performance aircraft must perform anti-G straining manoeuvre to counter G-forces. This manoeuvre is physically demanding. As such, major air forces advocate their fighter pilots to undertake weights-training to improve G-tolerance. Studies have shown that the use of creatine may supplement weights training in increasing muscular strength. Creatine is a naturally occurring nitrogenous amine that is stored in skeletal muscle as creatine phosphate. Creatine phosphate is broken down to release phosphate which binds to adenosine diphosphate (ADP) for regeneration of adenosine triphosphate (ATP). ATP is the primary molecular energy source for muscle activity.

Aim: To report the G-performance of 2 pilot trainees who were started on creatine-enhanced weights-training after failing to meet G-qualification requirements prior to flying training.

Method: An earlier study was conducted from 2004-2007 to show the gain in G-tolerance in subjects who underwent creatine-enhanced weights-training versus weights-training alone over a period of 30 days. The results showed that subjects in the creatine-enhanced group had a 0.38G greater gain in G-tolerance than the group with weights-training alone.

Arising from the positive results of the above study, the 2 pilot trainees who failed centrifuge training were given a daily dose of creatine (5mg per day), on top of 3 gym sessions per week, as per the above study protocol.

Results: The 2 pilot trainees' G-tolerance improved after a period of 2 and 3 weeks of creatine-enhanced weights-training respectively, and they subsequently passed their G-qualification assessments.

Conclusion: Creatine-enhanced gym training has shown to be efficacious in improving G-tolerance. Creatine-enhanced weights-training will be an additional enabler in helping fighter aircrew meet the physiological challenge of G-forces

ABSTRACT NUMBER: 050

TITLE (English): EFFECT OF VIBRATION STRESS ON HEART RATE VARIABILITY

TITLE (French): EFFET DES VIBRATIONS SUR LA VARIABILITÉ DU RYTHME CARDIAQUE

SUBMITTED: Yes, on 06/13/08

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Introduction: Vibration is an important stress factor in aviation, especially, exposure to vibration in the frequency range corresponding to the natural frequencies of human body. Therefore, it is important to know the response of the Autonomic Nervous System (ANS) to the vibration stress. Recently, Heart Rate Variability (HRV) measurement has been used as a valuable tool to assess the ANS function. This study is an attempt to explore the effect of vibration stress on HRV.

Methods: 30 subjects were exposed to frequency profile of 4-7 Hz at amplitude of 0.18 g for a total of 25 minutes on a vibration platform and ECG before and after exposing to vibration stress were recorded. These recordings were analyzed, using software which provides the time and frequency domain parameters, for significance in there differences.

Results: The changes in the time domain measures of HRV, i.e., mean RR interval, variance, SDNN, RMSSD and pNN50 were increased by 2%, 46%, 26%, 21%, and 13% respectively. All the differences were statistically significant at $p < 0.1$. The increase in RR interval variability was mainly due to shift in autonomic balance towards parasympathetics. The changes in the frequency domain measures, i.e., total power, LF and HF power in absolute units were found to have increased by 32%, 42% and 18% respectively. The difference in total power was found to be statistically significant at $p < 0.1$ that indicated increased overall variability, mainly contributed by parasympathetic modulations. However after normalization, changes in LF and HF powers were not statistically significant and they did not reflect any changes in the sympathovagal balance.

Conclusion: It appears that the time domain measures are more communicative of the autonomic changes. The post-vibration parasympathetic shift of autonomic balance possibly indicated settlement of pre-exposure psychological excitation of subjects who were anticipating stress. Also ANS response to vibration stress is short lived and reverts back within a few minutes after the stress is withdrawn.

ABSTRACT NUMBER: 051

TITLE (English): OVER THE TOP OF THE WORLD BY TRAIN

TITLE (French): AU DELÀ DU SOMMET DU MONDE EN TRAIN

SUBMITTED: Yes, on 06/14/08

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In 2006 China opened a new route to Tibet by train, topping an altitude of 5070 m at the Tangulla Pass after cruising for almost a day between 3600m and 4200m. There are new pressurized coaches made by Bombardier, but most of the trains between Xining and Lhasa are regular and unpressurized ones.

In summer 2007 during a journey to Lhasa pulse oximetry and altitude measurements were taken during flight, during an adaptation stay at Xiahe (3200m) and in the normal and unpressurized train to find out if there would be any risks on hypoxia for travellers and to make recommendations on use of oxygen and/or medication in a travel clinic at home.

As expected at altitudes above 3000m pO₂ dropped during sleep below 80% saturation, but during the day or moving around not too fast even at higher altitude pO₂ did stay above 80%.

For the safety of the passengers in the train oxygen outlets in the cabins are provided for all seats and medical personnel is supposed to be on board.

Only few passengers suffered hypoxia symptoms such as vomiting or headache and all reached the city of Lhasa after a 26 hours ride.

ABSTRACT NUMBER: 052

TITLE (English): SOME HUMAN FACTORS INCLUDING HYPOXIA AFFECTING BUS DRIVERS IN THE ANDES OF SOUTH AMERICA

TITLE (French): QUELQUES FACTEURS HUMAINS, INCLUANT L'HYPOXIE, POUVANT AFFECTER LES CONDUCTEURS D'AUTOCARS DANS LES ANDES D'AMERIQUE DU SUD

SUBMITTED: Yes, on 06/18/08

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Introduction: A study of Human Factors has led to improvements in safety on the Flight Deck in aviation. Bus drivers have similar responsibilities, if not technical skills, for the safety of their passengers. In the Andean Republics of Columbia, Ecuador, Peru and Bolivia bus routes may rise from near sea level to heights around 13,000ft. in a few hours, or may be continually at altitude as on the Alto Plano (High Plains)

Survey: This paper considers a number of factors affecting the work of bus drivers such as the nature of the Task, the Crew Members involved, Working Hours, Food and Drink and Personality Traits. Environmental Conditions such as Temperature and Humidity and the effects of Earthquakes and Land slips are considered, as are the effects of Hypoxia on both the driver and the passengers at altitudes reached on the mountains. Acute Mountain Sickness as experienced by Climbers to higher altitudes, is not felt to be a problem in these bus journeys.

Discussion: The lack of Accident Statistics is considered together with the implications of both National and International responsibilities for safety in transit.

ABSTRACT NUMBER: 053

TITLE (English): CABIN ALTITUDE IN PASSENGER TRANSPORTATION.
A SIMPLE INDEX FOR COMPARISON OF DIFFERING EXPOSURES.

TITLE (French): L'ALTITUDE CABINE DANS LE TRANSPORT DES
PASSAGERS. UNE INDEX SIMPLE POUR LE COMPARISON DES
DIFFÉRENTES EXPOSITIONS

SUBMITTED: Yes, on 06/23/08

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Introduction. The importance of Cabin Altitude to passengers is traced from early balloon flights that proved fatal, through unpressurised piston engined airliners to the jet age. Airliner Cabin Altitudes are difficult to discover on any given flight and some cabin altitude schedules, as set by the manufacturers are quoted.

Method. A simple Cabin Altitude Exposure Index is described, based on time spent above a cabin altitude of 5000 ft.. This can be used to compare the exposure of passengers and crew in different journeys. Examples are then calculated for a flight in an unpressurised transport aircraft in the 1950's and some current jet flights. To put the results in perspective, an example is given for the decompression chamber experiments of Muhm (2007) and for bus and train journeys in the Andes of South America.

Discussion. Low rates of exposure in current airliners can be expected to be even lower in the next generation of types coming into service.

Conclusion. Present Cabin Altitudes for passengers can be regarded as satisfactory and attention could be directed to other areas of passenger stress such as prolonged check-in times, security procedures and long distance airport walking.

ABSTRACT NUMBER: 054

TITLE (English): THE STATUS OF MAINTENANCE HUMAN FACTORS INTERNATIONALLY

TITLE (French): LE STATUT INTERNATIONAL DES FACTEURS HUMAINS EN MAINTENANCE

SUBMITTED: Yes, on 06/14/08

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INTRODUCTION. There are a number of international approaches to the regulation of human factors programs for aviation maintenance organizations. Transport Canada and the European Aviation Safety Agency have established specific regulations regarding maintenance human factors. The Federal Aviation Administration has not yet established regulations but has created guidance documents and developed voluntary reporting programs for maintenance organizations. The purpose of this study was to assess the status of human factors programs in airline maintenance organizations and independent maintenance and repair organizations.

METHOD. Using input from scientists and representatives from maintenance organizations a 66-item questionnaire was developed. Questions were focused around 8 categories: demographics, error management, human factors (HF) training, fatigue management, proactive HF support, motivation for an HF program, HF metrics, and organizational policies. A list of individuals from national/international maintenance organizations was developed. An online link was sent via e-mail to 630 addresses. Of these, 414 respondents returned a valid questionnaire (66% response rate).

RESULTS. The respondents were a highly-experience group (i.e., over 65% with 20+ years in aviation maintenance) from more than 50 countries. Respondents uniformly showed high level agreement that maintenance HF programs are initiated to help ensure flight safety and worker safety (86% and 81%). HF is a part of training for new maintenance personnel in 67% of the represented companies. Overall, respondents indicated that their organization employed either a formal (65%) or informal (19%) program for their human error investigations.

CONCLUSIONS. The outcomes reinforce the belief that maintenance human factors programs are valuable and important and there are a variety of such programs throughout the world. This survey found that the best targets of opportunity for improvement involve event-data reporting, creation of a fatigue management program, and increased use of data as a means of tracking errors over time to justify the costs of HF programs.

ABSTRACT NUMBER: 055
TITLE (English): AN AVOIDABLE MID-AIR COLLISION
TITLE (French): UNE COLLISION AÉRIENNE ÉVITABLE
SUBMITTED: Yes, on 06/19/08
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A four aircraft formation took off on a medium level tactical mission. It was a clear day and flying conditions were ideal. After the rendezvous the pilots were bringing the aircraft to their respective positions in order to begin the exercise. Suddenly No 3 realised that he was not in visual contact with No 4. Subsequently, without establishing visual contact, No 3 asked No 4 to shift station from his right to left. This decision of No 3 was incorrect and it subsequently resulted in a catastrophe. No 3 collided with No 4 and as a result No 4, which was a fighter ac being flown by a trainee, went spiraling down while the pilot ejected. No 3, the trainer ac, also went out of control. The instructor ejected but the pupil remained in position till the ac impacted ground. Several questions need answering, viz. why did No 4 move to No 3's left when he knew that as per the briefing he was to remain to his right, why both No 3 & 4 did not sense any danger even though cautioned by No 1 that they were too close to each other, why wasn't evasive action taken, why trainee pilot in No 4 failed to eject etc. Although there are adequate safety measures to deal with such situations, the faulty decisions with some deficiencies in the line management and unsafe acts cascaded, resulting in this accident. In the paper, "Human factors" involved in this avoidable mid-air collision between the two fighter aircraft and subsequent actions taken by the aircrew are discussed. The paper highlights the importance of flying discipline, decision making, communication skills, CRM, practice of emergency drills pertaining to the ac type and standardisation of all basic procedures of flying syllabus.

ABSTRACT NUMBER: 056
TITLE (English): ALERTNESS DECREMENTS IN FLIGHT CREW
TITLE (French): RÉDUCTIONS D'ATTENTION CHEZ LES PILOTES
SUBMITTED: Yes, on 06/30/08
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Introduction: Expert consensus is that fatigue is the largest identifiable and preventable cause of aviation mishaps. Although regulatory factors mitigate the impact of pilot schedules on fatigue, circadian disruptions, sleep deprivation, high workload flight routes, and early morning departures can lead to increased fatigue and greater probability of an accident. In response to these concerns, a study was undertaken examining the impact of various factors on fatigue at a major South American airline.

Method: The effects of departure time, altitude, number of flight segments, changes in terrain, and amount of pre-departure sleep on fatigue were assessed through cognitive (PVT, MiniCog CAST), physiological (Actigraph, Cortisol) and self-report (TLX, Mood, Fatigue Level, Sleep Sensation Score, Complaint Index) measures. Participants included 51 pilots who completed measures before and after each flight route for the duration of the study, for a total of 330 individual flights on 45 unique routes.

Results: Overall, the single factor with the greatest effect on all categories of fatigue measurement was time of departure. Pilots departing between 03:00 and 08:00 hours had significantly slower response time (RT), lower Perceptual Reaction accuracy, less pre-departure sleep, lower pre-flight Sleep Quality scores, more complaints, lower Alertness State scores, higher Sleepiness ratings, lower post-flight Self Perception of Readiness, and a greater increase in Mental Workload from pre to post flight, compared to pilots departing 08:00-20:00. Pilots who landed at high altitude airports had a significantly higher Perceptual Reaction RT. Pilots who had more (5-6) terrain changes had a significantly lower Selective Attention: Filtering accuracy. The number of flight segments correlated with Divided Attention RT.

Conclusion: Based on these findings, we suggest schedules that do not combine early morning departures with many flight segments, high altitude airports, or terrain changes. We also strongly suggest increasing the hours of pre-departure sleep for early morning departures.

ABSTRACT NUMBER: 057
TITLE (English): GEMINI - A VITAL MEDICAL LINK TO THE MOON
TITLE (French): GEMINI - UN LIEN MÉDICAL VITAL VERS LA LUNE
SUBMITTED: Yes, on 06/24/08
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Recent media presentations reprising the US, NASA Space Missions have missed the medical importance of the Gemini Missions in allowing humans to walk and work on the moon. Indeed, had the Gemini Missions not succeeded, it is doubtful man would have stepped onto the moon in July 1969. While President Kennedy was visionary to commit us to a goal of a lunar landing after we had accomplished only a single 15 minute sub-orbital flight by Alan Shepard, it was clear that much had to be done by the engineering and medical teams.

The Mercury Program, with a single man capsule, had exposed 2 astronauts to 15 minute sub-orbital flights and then 4 astronauts to orbital flights of approximate durations of 5, 5, 9, and 36 hours. We had limited medical data, and the nation's science community was constantly questioning the capability of humans to fly safely in space.

The Gemini Program, with a 2 man capsule, was launched in March 1965. In our planning, Gemini had to provide us answers as to man's capability to perform effectively for the duration of any contemplated lunar mission. In addition, we needed to prove man's capability to perform effectively in the open space environment outside the spacecraft and then on the lunar surface. Ten manned missions were flown from March 1965 through November 1966. Durations of 4 days, 8 days and 14 days were accomplished, the latter covering the longest lunar mission duration contemplated. The medical data obtained will be summarized and the difficulties recounted. The results gave reasonable assurance of the astronaut's capability to perform a lunar landing. Extravehicular activity (EVA) was attempted on 5 of the missions with failure on 3. The physiological responses to the EVA's will be shown. These data allowed us to commit to lunar landings, even though only 4 astronauts had flown orbital duration flights as long as any contemplated lunar missions.

ABSTRACT NUMBER: 058

TITLE (English): ITALIAN AIR FORCE (ITAF) MEDICAL OFFICER EDUCATION AS SPACE FLIGHT SURGEON AT GAGARIN COSMONAUT TRAINING CENTER

TITLE (French): FORMATION DES OFFICIERS MÉDICAUX DE L'ARMÉE DE L'AIR ITALIENNE COMME MÉDECINS DU PERSONNEL NAVIGANT AU CENTRE DE FORMATION COSMONAUTIQUE GAGARYN.

SUBMITTED: Yes, on 06/25/08

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Understanding biomedical responses to microgravity and space environment and successfully implementing reliable countermeasures, remains challenges to be answered in the future. European physicians supporting manned space flights usually receive education as flight surgeons, rarely attending standardized training in space medicine.

In cooperation with ItAF Aerospace Medicine Department the Gagarin Cosmonaut Training Center (GCTC) developed a dedicated program for ItAF Medical Officers. This program, lasting 40 training days (312,5 hours), included lectures, practical sessions and familiarization with medical and life support systems onboard both Soyuz spacecraft and ISS. After introductory activities, 47 hrs were dedicated to the Soyuz-TMA spacecraft and its medical and life support systems (including familiarization with SOKOL spacesuit). 86 hrs were dedicated to the ISS including: medical support, Russian segment design, onboard health protection, countermeasure systems and environmental monitoring. Other training phases (20.5 hrs.) included Search and Rescue operations and Extra Vehicular Activities (EVA). The final phase was dedicated to medical support of Cosmonaut activities during training (141 hrs.), including physical and psychological preparation and practical sessions (centrifuge rotation, hypoxia training, Kepler's parabola flight). The program was concluded visiting Baikonur Cosmodrome, to attend the final stage of cosmonaut preparation before flight.

As ISS assembly will be completed and facing longer missions such that delivering man to Mars, physicians will continue to play a leading role in man's exploration of space and a standardized training for flight surgeons is paramount in supporting future space activities. Such figure of Space Flight Surgeon would have the task of supporting all the medical aspects of a manned space flight, including medical certification and specialized medical support for astronauts either during their training or the flight and postflight rehabilitation. Furthermore, they would give expert advice for the future manned space flights within the Space Agencies and coordinate experimental protocol to be conducted in microgravity environment.

ABSTRACT NUMBER: 059

TITLE (English): PANDEMIC PREPAREDNESS PLANNING IN AVIATION - A COORDINATION CHALLENGE

TITLE (French): PLANIFICATION PRÉALABLE À UNE PANDÉMIE POUR L'AVIATION: UN DÉFI DE COORDINATION

SUBMITTED: Yes, on 06/23/08

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Introduction: In 2004, the Assembly of the International Civil Aviation Organization (ICAO), representing the consensus view of 190 States (countries), requested that action be taken to develop a preparedness plan for aviation to mitigate the risk to populations and air travellers (aircrew and passengers) from diseases of serious public health concern. It was clear that such work could not be undertaken by ICAO alone and would involve several different organizations.

Methods: Since the main risk of pandemic influenza was, and remains, centred in Asia, the initial work was undertaken in this region. A workshop was held in Singapore that brought together representatives from different expert groups to develop a preparedness plan, including the World Health Organization, United States Centers for Disease Control and Prevention, International Air Transport Association and Airports Council International. Work has now also commenced in Africa.

Results: Guidelines for developing a national preparedness plan for aviation were developed that coordinated the views of several different organizations. In particular, it was found that communication and coordination between the national public health and aviation authorities is essential to develop a satisfactory national preparedness plan, but in most States was not adequately developed. The role of the World Health Organization International Health Regulations (2005) was found to be especially important.

Conclusion: Development of a global preparedness plan for aviation requires the coordinated involvement of many different organizations and such coordination is not yet adequately developed. Aspects such as passenger screening at airports, quarantine, action on discovery of a suspected case on board, use of prophylactic medications by flight crew and air traffic controllers, communication with the media and evaluation of a State's preparedness plan require the involvement of many disparate organizations, representing both the public health and aviation sectors. This presentation will explore the challenges in developing a globally harmonised preparedness plan for aviation.

ABSTRACT NUMBER: 060

TITLE (English): PANDEMIC PREPAREDNESS PLANNING IN AVIATION - ROLE OF THE WORLD HEALTH ORGANIZATION

TITLE (French): PLANIFICATION PRÉALABLE À UNE PANDÉMIE POUR L'AVIATION: LE RÔLE DE L'ORGANISATION MONDIALE DE LA SANTÉ

SUBMITTED: Yes, on 07/03/08

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Introduction: In May 2005 the WHO World Health Assembly adopted the revised International Health Regulations (IHR), which entered into force in June 2007. They aim to prevent and provide a public health response to the international spread of disease, whilst avoiding any unnecessary interference with international traffic and trade. The new regulations address all acute public health risks, rather than the previous list of three diseases (cholera, yellow fever and plague), change the emphasis from preset measures to a tailored response, and support containment at source rather than at borders only, but with many references that are of relevance to transport by air.

Methods: The IHR (2005) are legally binding on all 194 States Parties and involve four main areas of action: the strengthening of national capacity for surveillance, preparedness and response, (including in travel and transport); the prevention, alert and response to public health emergencies of international concern; sustaining rights, obligations, procedures and progress monitoring; and, global partnership and international collaboration.

Results: The IHR (2005) should be implemented by all States Parties by 2012. Compliance should reduce the risk of international spread of diseases, and in the aviation sector, includes ensuring that airports and aircrafts are maintained in a sanitary condition (to reduce the reservoir for pathogens), and to ensure that designated airports have the capacity for routine procedures for risk management of known public health risks and a contingency plan to deal with public health emergencies of international concern.

Conclusion: The IHR (2005) demands a new approach in the area of public health and air travel and it is clear that the coordination of efforts and cooperation between countries, WHO, other relevant United Nations and intergovernmental organizations, industry associations and travel-related professional associations is critical and a major challenge. A coordinated approach between public health authorities and aviation medical specialists should ensure that effective actions are implemented that will mitigate the risks posed by events which may constitute a public health emergency of international concern.

ABSTRACT NUMBER: 061

TITLE (English): PANDEMIC PREPAREDNESS PLANNING IN AVIATION:
THE ROLE OF AIRPORT OPERATORS

TITLE (French): PLANIFICATION PRÉALABLE À UNE PANDÉMIE POUR
L'AVIATION: UN DÉFI DE COORDINATION: LE RÔLE DES AÉROPORTS

SUBMITTED: Yes, on 06/30/08

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Introduction: Pandemics move as fast as the vectors that spread them. In the case of human infectious diseases, spread via ships has been replaced almost completely by today's air traffic. Therefore public health services across the world must focus their attention on the problem of epidemics being spread via this means of transport. The global reach of flight connections is based on many non-stop routes and only a few so-called hubs where up to 50% of their passengers connect.

Methods: Since the main risk of pandemic influenza was, and remains, centred in Asia, the initial work was undertaken in this region. A workshop was held in Singapore that brought together representatives from different expert groups to develop a preparedness plan, including the WHO, ICAO, IATA, CDC, FAA, ECAC and ACI.

Results: Guidelines for developing a national preparedness plan for aviation were developed that coordinated the views of several different organizations. In particular, it was found that communication and coordination between the national public health and aviation authorities is essential to develop a satisfactory national preparedness plan, but in most States is still not adequately developed.

Conclusion: The concept of management of highly contagious and life-threatening diseases must continuously be adjusted to the specific circumstances of air traffic. Apart from development of procedures and checklists for all involved in the process, the provision of quarantine places in a sufficient number (scenario: Airbus A 380 X 550 passengers; one patient suspected of having a highly infectious disease) is a necessity. Regular national and international exchange of coordinated information is essential and should be organized under the auspices of WHO. Consequences of public health measures are immense and will quickly overwhelm even a major airport and the logistics of the health authorities.

ABSTRACT NUMBER: 062

TITLE (English): PANDEMIC PREPAREDNESS PLANNING IN AVIATION:
THE ROLE OF AIRLINE OPERATORS

TITLE (French): PLANIFICATION PRÉALABLE À UNE PANDÉMIE POUR
L'AVIATION: LE RÔLE DES COMPAGNIES AÉRIENNES

SUBMITTED: Yes, on 06/24/08

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Introduction: The Severe Acute Respiratory Syndrome (SARS) in 2003 resulted in attention being focussed on preparedness planning for diseases described by the World Health Organization (WHO) as having potential to cause a 'public health emergency of international concern'. The episode of SARS showed that the aviation industry was not well prepared for an international public health emergency. Amongst other things, it demonstrated the lack of coordination between the aviation industry and the public health authorities. The risk of pandemic influenza was another incentive to improve public health emergency preparedness.

Method: After SARS the International Air Transport Association (IATA) began allocating more resources for public health emergencies that might involve the aviation sector. Even though IATA already had a Medical Advisory Group (MAG), it realized further resources were needed and it created the position of Medical Advisor to establish a working link with WHO, any other relevant public health authorities and the International Civil Aviation Organization (ICAO), to represent and coordinate the airline approach to public health emergencies and to support its member airlines in preparedness planning for such emergencies.

Results: IATA was the first stakeholder in the aviation industry to develop guidelines to respond to public health emergencies. It developed a template for its members to face those emergencies. IATA then became a full participating partner with ICAO, WHO and Airports Council International (ACI), under the leadership and coordination of ICAO, in developing a preparedness plan for the aviation industry.

Conclusion: The coordination work of ICAO in developing a global preparedness plan for aviation was critical, but success demanded significant support from other stakeholders, including IATA. This presentation will demonstrate the key work of IATA and its role in pandemic preparedness planning in aviation.

ABSTRACT NUMBER: 063

TITLE (English): PANDEMIC PREPAREDNESS PLANNING IN AVIATION : THE COOPERATIVE ARRANGEMENT FOR THE PREVENTION OF SPREAD OF COMMUNICABLE DISEASE BY AIR TRAVEL (CAPSCA)

TITLE (French): PLANIFICATION PRÉALABLE À UNE PANDÉMIE POUR L'AVIATION : UN ACCORD AMIABLE POUR PRÉVENIR LA TRANSMISSION DES MALADIES CONTAGIEUSES PAR LE TRANSPORT AÉRIEN

SUBMITTED: Yes, on 06/24/08

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Introduction: The CAPSCA project was initiated by ICAO in 2006 with the aim of reducing the risk of spreading influenza having pandemic potential, and similar communicable diseases, by air travellers through co-operative arrangements between the Participating States/Administrations and airports.

Methods: ICAO State guidelines provide the basic documentation for the project. A seminar/workshop/table-top exercise was held 25 and 26 September 2006 at the Singapore Aviation Academy to launch CAPSCA. The activities of the project involve, for participating States/Administrations, a review of States/Administrations, airports and airlines preparedness plans to ensure that the relevant policies, training and communication procedures are in place. A harmonised approach to preparedness planning and implementation is the main goal.

Results: 11 States and Administrations have approved the project. Evaluation visits have been carried out on 9 State/Administration airports. The 1st Steering Committee Meeting (SCM) was held 30 to 31 August 2007 under the auspices of the Civil Aviation Department (CAD), Hong Kong. The 1st Regional Aviation Medicine Team (RAMT) of CAPSCA meeting was held at the ICAO Regional Office, Bangkok, Thailand from the 10th to 11th Oct. 2007. The 2nd SCM was held in Bali from the 11th to 12th June 2008 and 2nd RAMT is scheduled for 12th Sept. 2008.

Conclusion: The ICAO CAPSCA Project is perhaps one of the few projects that attempts to bring about harmonization of pandemic preparedness plans by interacting directly with the implementation personnel on the ground. The evaluation visits have in many instances been catalytic in bringing together the States aviation and public health sectors and hence a more comprehensive pandemic preparedness plan. This is occasioned by the fact that an essential component of the ICAO Pandemic Preparedness State Guidelines calls for an understanding and application of the WHO International Health Regulations (IHRs). The States evaluated also gained a better insight into the application of the amendments to ICAO Annex 9 : Facilitation.

ABSTRACT NUMBER: 064

TITLE (English): DEVELOPMENT OF AEROMEDICAL RESOURCES TO RESPOND TO HUMANITARIAN ASSISTANCE AND DISASTER RELIEF-- LESSONS LEARNED FROM THE US PACIFIC AIR FORCES.

TITLE (French): DÉVELOPPEMENT DES RESSOURCES AÉROMÉDICALES POUR RÉPONDRE À L'AIDE HUMANITAIRE ET AU SECOURS EN CAS DE CATASTROPHE - LES LEÇONS TIRÉES DE L'ARMÉE DE L'AIR AMÉRICAINNE (PACIFIQUE).

SUBMITTED: Yes, on 06/30/08

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Introduction- Aeromedically trained and equipped personnel can rapidly respond and reach areas of humanitarian crisis. Unlike ship-based relief, personnel responding via airlift must plan to be self sustaining.

Methods- For the past two years, the US Pacific Air Forces, via its subordinate command, 13th Air Force, has conducted humanitarian assistance missions (called PACIFIC ANGEL) employing medical and civil engineering personnel delivered via military aircraft. This mission has evolved to include aeromedical evacuation education as part of the program. The USAF has also developed the concept of employing its air-transportable field hospital system (EMEDS) as part of a disaster relief response. This concept, the Humanitarian Relief Operations-Operational Capability Plan (HUMRO-OCP) was first exercised (called PACIFIC LIFELINE) by Pacific Air Force's subordinate command, 13th Air Force in February 2008.

Results- In the past two years, the PACIFIC ANGEL mission has had two iterations. In those two iterations, 5 countries have been assisted. In PACIFIC ANGEL, numerous patients have been treated, engineering projects such as clinic refurbishing has occurred, and quite importantly medical and aeromedical training and education has taken place. In PACIFIC LIFELINE, Pacific Air Force's proofed the concept of the HUMRO-OCP.

Conclusion- The deliberate development of aeromedically based personnel and equipment to respond to humanitarian assistance and disaster relief missions is an evolving trend in the United States Air Force. This presentation will discuss some the lessons learned and challenges that lie ahead as these concepts are further refined.

Preference: oral presentation

ABSTRACT NUMBER: 065

TITLE (English): BEYOND ORDINARIES - MALAYSIAN APPROACH IN THE ASTRONAUT SELECTION PROGRAM

TITLE (French): AU-DELÀ DE L'ORDINAIRE - L'APPROCHE MALAISIENNE DANS LE PROGRAMME DE SÉLECTION D'ASTRONAUTE

SUBMITTED: Yes, on 06/30/08

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In 2003 through an offset program with Russian, the Malaysian Government was offered a visiting crew seat onboard of Soyuz TMA mission scheduled for launch in October 2007 to the International Space Station (ISS). The RMAF Institute of Aviation Medicine was requested by the government to formulate the appropriate selection methods and criteria to eventually choose two final candidates to be trained at Yuri Gagarin Cosmonaut Training Center, Star City Moscow

About 12 000 candidates applied when it was offered to the public. An efficient and cost effective method has to be formulated without undermining the strict requirement of the Russian Space Agency (ROSCOSMOS) and other partners of the ISS

The select in and select out procedures were used throughout the process utilizing guidelines provided by the ROSCOSMOS tailored to the mission requirement

These include the physical test, physiological test, psychological assessment as well as the aeromedical assessment

After going through various stages of selection procedure and final interview 4 candidates were chosen to undergo another medical selection process in Moscow and two were nominated to start their training as astronaut in Moscow with one of them being launched into space on 10th October 2007

The selection process has its own unique challenge since the candidates come from all walks of life and it is the duty of the selection committee to come up with a proper result and a clear audit trail

ABSTRACT NUMBER: 066

TITLE (English): IN VITRO EVALUATION OF PLACENTAL INDUCED GROWTH FACTOR (PIGF) AS A PREDICTOR OF SUSCEPTIBILITY TO CARDIOVASCULAR DYSFUNCTION IN MICROGRAVITY

TITLE (French): ÉVALUATION IN VITRO DU FACTEUR DE CROISSANCE INDUIT PAR LE PLACENTA COMME MÉTHODE DE PRÉDICTION DE LA SUSCEPTIBILITÉ À LA DYSFONCTION CARDIOVASCULAIRE EN ÉTAT DE MICROGRAVITÉ.

SUBMITTED: Yes, on 06/30/08

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Introduction: Knowledge of the expression levels of key molecules in low gravity and high stress environments such as microgravity, high altitude and other specialized aviation exercises is essential for the development of intervention strategies and prevention of catastrophic aviation events to ensure mission success. The careful study of adaptational responses in both human and closely related mammalian systems will help identify targets and propose interventions for successful aviation and space exploration

Methods: Gene expression analysis of normal subjects in microgravity analog cultures was performed and it was found that PIGf (Placental induced growth factor) , a member of the vascular endothelial growth factor (VEGF) family, a group of potent inducers of tumor angiogenesis with the ability to activate both endothelial cell proliferation and migration, was up-regulated by more than five fold indicating deregulation of cardiovascular signaling pathways indicated by up-regulation of PIGf. PIGf is now clinically considered a more specific biomarker than C-reactive protein for predicting stroke and heart attacks. This was followed by real time PCR and ELISA analysis to corroborate findings.

Results: Both methods indicate that up-regulation of PIGf is consistent in all 17 subjects tested ($p < 0.001$) and this study has been expanded to cardiovascular compromised patients in the VA hospital and normal test subjects at NASA Johnson Space Center.

Conclusions: It is now evident that the shift of fluid toward the head and the unloading of postural muscles together alter the mechanical forces exerted on arteries, the vessels responsible for regulating blood flow and arterial blood pressure. Therefore, long term space travel in actual microgravity could lead to detriment in cardiovascular function in the crew. The need to thus be able to detect this and prevent disastrous cardiovascular events using biomarkers such as PIGf is vital for the future of long term space missions.

ABSTRACT NUMBER: 067

TITLE (English): A HISTORICAL LOOK AT AIR TRAFFIC CONTROLLERS AFTER 20 YEARS

TITLE (French): UN REGARD HISTORIQUE SUR LES CONTRÔLEURS DE LA CIRCULATION AÉRIENNE APRÈS 20 ANS

SUBMITTED: Yes, on 06/25/08

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Introduction: The group of Air Traffic Control Specialists (ATCSs) hired after the 1981 controller strike is nearing retirement age. Approximately 70% of that workforce will retire by 2015. The Civil Aerospace Medical Institute (CAMI) developed several historical databases containing selection test scores, training records, and facility assignments for ATCSs hired after the 1981 strike. Information about their career progression could inform our understanding of how ATCSs being hired now might progress through the system.

Methods: Career status as of 2005 was examined for a group of 2,311 ATCS trainees who successfully completed the FAA Academy screening program during 1984 and 1985. Databases were analyzed that contained information about training status at their first facility and career progression over time.

Results: Twenty-three percent of the 1984/85 cohort is no longer employed by the FAA. Most separations resulted from field training failure. One percent of the original cohort is still with the FAA but no longer in the ATCS career field. Sixty-five percent still actively control traffic, either as ATCSs or supervisors who maintain certification. Seven percent are staff or Traffic Management Coordinators and no longer maintain ATC certification. Four percent are managers at field or other (regional or HQ) ATCS facilities. ATCSs remaining in the occupation changed facilities often, either transferring to lower-level facilities after failing training at higher-level facilities or to transferring to higher-level facilities to advance their careers.

Conclusion: It is interesting to observe how this ATCS cohort moved throughout their FAA careers: The databases we developed to track initial training did not account for the amount of movement they made between facilities. If there is a desire to track the career progression of new hires, then an effort should be made to develop a method to track career-long facility transfers.

ABSTRACT NUMBER: 068

TITLE (English): ABNORMAL CABIN EVENTS AND THEIR IMPLICATIONS TO FLIGHT SAFETY

TITLE (French): ÉVÉNEMENTS ANORMAUX EN CABINE ET LEUR IMPLICATION DANS LA SÉCURITÉ AÉRIENNE

SUBMITTED: Yes, on 06/30/08

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The issues related to cabin safety has been investigated for decades. While most of the research has focused on fire and evacuation events, it has been recognized that some events that might affect flight safety merit special attentions. In the US, FAA has investigated "unlawful events" in the cabin since 1995. The CAA of UK has addressed issues about "disruptive passengers" since 2002. In Taiwan, a broad array of events taking place in cabins which have potential to affect flight safety have been investigated and labeled as "abnormal cabin events". Abnormal cabin events include events such as using cell phone on board, alcohol abuse, smoking on board, and dangerous goods on board. The present research applies the approaches of safety management systems and risk management to investigate the significance of various abnormal cabin events. Empirical data are provided by six Taiwanese airlines. The research results can be used to identify the most significant event that might affect flight safety and appropriate actions may be taken to improve flight safety.

ABSTRACT NUMBER: 069

TITLE (English): EUROPEAN REQUIREMENTS FOR AIRCRAFT FIRST AID AND EMERGENCY MEDICAL KITS - STATE OF PLAY

TITLE (French): RÈGLEMENTATIONS EUROPÉENNES POUR LES TROUSSES MÉDICALES ET DE PREMIER SOINS DANS LES AVIONS - SITUATION ACTUELLE

SUBMITTED: Yes, on 06/27/08

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Air-traffic continuously grows with an enormous pace. Size of aircraft, duration of long-haul flights and average age of passengers rise. The number of medical emergencies may increase as well. Medical care on-board has got into the focus of legislators and airlines for the past years. According to the recommendations of Annex 6 to the ICAO convention medical supplies should comprise of one or more first aid kits and a medical kit. In the JAA Requirements the relevant provisions for instruments and equipment for commercial aircraft are included in the Requirements for Flight Operations (JAR-OPS 1). Guidance material lists the contents of First Aid Kits and Emergency Medical Kits.

As Rulemaking focusses on aviation safety passenger care was not the primary concern of legislators. On behalf of the European Civil Aviation Conference, an associated body of ICAO, a working group developed - inter alia - recommendations for medical equipment and training of cabin crew. Several JAA working groups used these recommendations to draft proposals to include an extended list of contents in the relevant JAA provisions and recommendations for cabin crew training concerning medical aspects. The progress of the relevant amendments will be discussed with regard to the change in rulemaking due to the transition from JAA to EASA. From mid 2008 on EU-OPS is the legal basis for Flight operations in the member states of the EU. Guidance material similar to the recommendations mentioned is not included. However, the recommendations on cabin crew training are included in the latest amendment 13 of JAR-OPS. As those on medical equipment have not made it to an amendment of existing JAR-OPS. Therefore, JAA choose to promulgate them as Safety Information Communication. Operators may use either publication as guidance.

ABSTRACT NUMBER: 070

TITLE (English): ESAM - THE EUROPEAN SOCIETY OF AEROSPACE MEDICINE

TITLE (French): ESAM - LA SOCIÉTÉ EUROPÉENNE DE MÉDECINE AÉRONAUTIQUE

SUBMITTED: Yes, on 06/12/08

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introduction : in Europe there was a need for a coordinated approach of aerospace medicine between the existing national scientific associations, especially since the start of EASA (the European Aviation Safety Agency) as the new pan-European regulator.

methods : ESAM as a pan-European independent umbrella Association for the existing European Associations for Aerospace Medicine was founded in March 2006. It is a non-profit association which works for the health and safety of all those involved in aviation and space operations. Membership is open to all national aerospace medicine associations in all European countries - individual members of the national member associations are automatically members of ESAM and cannot apply for personal membership.

results : In June 2008 there are already 22 regular member associations (representing 3200 professionals in aerospace medicine), 5 associated member associations (representing 100 persons) and 5 upcoming candidatures for membership. Many activities are ongoing : contacts with EASA about rulemaking and risk analysis, developing harmonisation of education in aviation medicine in Europe, setup of a scientific Advisory Board and medical specialists groups to establish harmonised guidelines in European aerospace medicine, commenting on the EASA rules about aircrew certification, participation at various national aerospace medicine congresses. In November 2008 the annual General Assembly in Budapest will elect a new Executive Committee and will be held in conjunction with our scientific ECAM congress to exchange scientific results and experiences within Europe.

conclusion : ESAM is the structured way to coordinate European aerospace medicine interests in the applicable fora.

ABSTRACT NUMBER: 071

TITLE (English): QUALITY OF SLEEP AND MENTAL HEALTH AMONG FLIGHT ATTENDANTS

TITLE (French): QUALITÉ DU SOMMEIL ET DE LA SANTÉ MENTALE CHEZ LE PERSONNEL DE CABINE

SUBMITTED: Yes, on 06/26/08

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Introduction: Poor sleep quality among aircrew in commercial airlines revealed from various factors may affecting to alertness negatively and flight safety operation .The objectives of this study were to evaluate quality of sleep, mental health status and their related factors among flight attendants in the commercial airline

Methods: A cross-sectional study was carried out by the stratified systematic random sampling of 261 flight attendants in Thai airways international public company. The samples completed a Thai version of the Pittsburg sleep Quality Index (T-PSQI), Insomnia subjectively questionnaire, the Symptom checklist (SCL-90) assessing for mental health status and questionnaires including demographic data, flight operational data and environmental factors disturb for sleep. Factors related to quality of sleep were analyzed by Chi Square Test, Independent Sample T Test, Pearson product moment correlation coefficient and Multiple Linear Regression.

Results: There were 57.9% had poor sleep quality, 60.2% and 18.8% of subjects had insomnia and mental health problem. From Univariate Analysis showed that male gender, single status, inadequate income, smoking, caffeine and alcohol consumption, flight operation in short haul day flight and long haul day flight from Europe and Australia to Thailand, day light, low temperature and mental health problem were related to poor quality of sleep. A Multiple Linear Regression Analysis showed that factors predicted of quality of sleep among flight attendants were anxiety, hostility, low temperature, alcohol consumption, inadequate income and male gender.

Conclusion: This study shows that poor sleep quality is commonly found among flight attendants affected by environmental factor, their personal factors and mental health problems.

ABSTRACT NUMBER: 072

TITLE (English): GENDERED AEROSPACE MEDICINE SUPPORT: THE CANADIAN MILITARY EXPERIENCE

TITLE (French): LE SOUTIEN DE MÉDECINE AÉRONAUTIQUE SPÉCIFIQUE AUX DIFFÉRENTS SEXES: L'EXPÉRIENCE MILITAIRE CANADIENNE

SUBMITTED: Yes, on 06/29/08

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Until the 1980s, most of the world's militaries had significant limitations on the employment opportunities for women. By 1989, Canada was one of the first nations to have successfully integrated women into all military aircrew roles. Today Canadian women make up over 14% of all regular serving military members and 20% of reservists. The Canadian military continues to have an operational need for more personnel, including specifically pilots. Research is ongoing to identify gender specific recruitment and retainment factors.

This talk will share some of the Canadian lessons learned to successful recruitment, retainment and integration of women into the cockpit (military or civilian). These lessons will include gender specific aerospace medicine support considerations and will focus on fixed wing operations.