

4:15 p.m.

**[275] PROPOSED GUIDELINES FOR ASSESSING FITNESS TO FLY IN SICKLE CELL DISEASE PATIENTS**F. Wood<sup>1</sup>, J. Howard<sup>2</sup>, and D. Gradwell<sup>1</sup><sup>1</sup>Aviation Medicine, King's College London, Watlington, United Kingdom; <sup>2</sup>Haematology, Guy's and St Thomas' Hospital, London, United Kingdom

**INTRODUCTION:** Sickle Cell Disease (SCD) affects 12-15,000 people in the UK. It is associated with anemia and cardiorespiratory disease which mean that even the mildly hypoxic environment of a commercial airliner cabin can pose a potential risk to SCD patients leading to an increased risk of acute pain crisis and acute chest syndrome. Despite this, current guidance to use supplemental oxygen is not routinely followed in practice. A review of current data was followed by the development of new guidelines to assess fitness to fly. **METHODS:** A Medline search of the published literature yielded information about potential risks. This was corroborated by reference to the Guy's Hospital SCD clinic. A clinical guideline to identify those SCD patients that require fitness to fly assessment using pre-flight procedures which may be acceptable in clinical use was produced. **RESULTS:** For many SCD patients the risk of experiencing a sickling crisis related to a commercial flight is low and unpredictable but current guidance (e.g. from AsMA and the Civil Aviation Authority) advocates the universal use of supplementary oxygen. Commonly, this guidance is not followed and many may fly without supplementary oxygen until they encounter problems. There is currently no means to assess which patients should use supplemental oxygen. **DISCUSSION:** Since the first occurrence of air travel related complications is potentially fatal, vulnerable patients may be put at an unacceptable level of risk. A potential guideline, which provides an algorithm for clinicians to identify at-risk SCD patients, a framework to assess fitness to fly and consider if other steps are available to mitigate the risk, will be presented for discussion. There is a need for further work to derive a consensus regarding their specificity and effectiveness.

**Learning Objectives:**

1. Practical advice for assessing fitness to fly in SCD patients.
2. An appreciation of the further work required in this area.

4:30 p.m.

**[276] EFFECT OF AGE ON THE PULMONARY ARTERY PRESSURE RESPONSE TO SIMULATED AIR TRAVEL**B.E. Turner<sup>1</sup>, P.D. Hodkinson<sup>2</sup>, A.C. Timperley<sup>2</sup>, and T.G. Smith<sup>3</sup><sup>1</sup>Stanford University, Stanford, CA; <sup>2</sup>Royal Air Force Centre of Aviation Medicine, RAF Henlow, United Kingdom; <sup>3</sup>University of Oxford, Oxford, United Kingdom

**INTRODUCTION:** Hypoxia-induced elevation in pulmonary artery pressure during air travel may contribute to the worldwide burden of in-flight medical emergencies. The pulmonary artery pressure response may be greater in older passengers, who are more likely to require flight diversion due to a medical event. Understanding these effects may ultimately improve the safety of air travel. **METHODS:** Sixteen healthy volunteers were studied, consisting of a younger group (aged < 25 years) and an older group (aged > 60 years). Using a hypobaric chamber, subjects undertook a two-hour simulated flight at the maximum cabin pressure altitude for commercial airline flights (8,000 ft/2,438 m). Higher and lower altitudes within the aeromedical range were also explored. Systolic pulmonary artery pressure (sPAP) was assessed by Doppler echocardiography. **RESULTS:** There was a progressive increase in sPAP which appeared to be biphasic, with a small initial increase and a larger subsequent rise. Overall, sPAP increased by  $5 \pm 1$  mmHg from baseline to  $35 \pm 1$  mmHg at 8,000 ft ( $P = 0.002$ ). Over two hours at 8,000 ft, sPAP increased by 19% in the older group compared with an 8% increase in the younger group ( $P = 0.024$ ). **DISCUSSION:** This study confirms that pulmonary artery pressure increases during simulated air travel, and provides preliminary evidence

that this response is greater in older people. Advancing age may increase in-flight susceptibility to adverse pulmonary vascular responses in passengers, aircrew and aeromedical patients. Until further evidence is forthcoming, it may be prudent to consider using supplementary oxygen routinely in elderly air ambulance patients, at least for longer flights.

**Learning Objectives:**

1. To gain greater understanding of the physiological effects of aircraft cabin hypoxia, particularly the pulmonary vascular response.

4:45 p.m.

**[277] PULMONARY HYPERTENSION IN AIRLINE PASSENGERS: A LARGE CASE SERIES FROM OCEANIA**L. Brown<sup>1</sup>, P. Prasad<sup>3</sup>, T.G. Smith<sup>2</sup>, and B. Johnston<sup>3</sup><sup>1</sup>University of Auckland, Auckland, New Zealand; <sup>2</sup>University of Oxford, Oxford, United Kingdom; <sup>3</sup>Flight Operations and Safety, Auckland, New Zealand

**INTRODUCTION:** The current guidelines available to the medical community to assess a patient's fitness to fly with pulmonary hypertension are less than ideal. The evidence for the guidelines from bodies such as the British Thoracic Society have been inferred from animal studies or from patients with primary cardiac disease and have significant room for error in interpretation. The current guidelines stratify patients based on symptoms from classes developed from the NYHA and WHO. The assessment from the aviation physician is to decide on the patients' need for oxygen in-flight, further investigation with a hypoxic altitude simulation test (HAST) or advised not to fly. An airline operating in Oceania has had a significant number of patients present with pulmonary hypertension for assessment for fitness to fly. The aim of this paper is to present these cases with discussion around the difficulty of the current guidelines. **METHODS:** A retrospective review was undertaken of patients presenting for assessment for fitness to fly with pulmonary hypertension from May 2014 - current. Patient's medical background and physician decision making around the case was sourced. **RESULTS:** A total of 14 patients were assessed. Of these, 9 were approved to fly, with 5 declined. Patients were generally approved based on good functional class and declined due to co-morbidities. There was heterogeneity in decision making between physicians which reflected the ambiguity of the current guidelines. **DISCUSSION:** Pulmonary hypertension is a serious disease for aviation physicians to understand. The current guidelines are ambiguous and further investigation is required to develop more appropriate guidelines.

**Learning Objectives:**

1. To appraise the current guidelines for assessing patients fitness to fly with pulmonary hypertension.

5:00 p.m.

**[278] IN-FLIGHT MEDICAL EVENTS AND FLIGHT DIVERSIONS: SIX AIRLINES EXPERIENCE IN IRAN FROM 2006 - 2013**K. soleimani<sup>1</sup> and N. Mercado<sup>2</sup><sup>1</sup>Air Medical Section, Civil Aviation Organization & Mahan Airline, Tehran, Iran; <sup>2</sup>Centro de Hematologia y Medicina Interna de Puebla, Clinica Ruiz, Mexico., Universidad Popular Autonoma del Estado de Puebla, Mexico

**INTRODUCTION:** Commercial aviation in-flight emergencies are relatively common. Flight diversion due to medical emergency transport incurs a significant financial and legal cost. An aging population combined with the increasing mobility of people with acute and chronic illnesses could make an increase in the frequency of in-flight medical events aboard commercial aircraft likely. The aim of this study is to determine the incidence of each type of in-flight medical illness, the appropriateness of medical equipment in flight, which factors lead to aircraft diversion, and which factors affect the suitability of the decision to divert. **METHODS:** A review of in-flight