

JUNE 1999

Long-term aviator health (British Airways Health Services, Harmondsworth, UK): "A Standardized Mortality Ratio study (SMR) using England and Wales as the comparison population was carried out for 6209 male pilots and 1153 male flight engineers employed for at least 1 yr between January 1, 1950 and December 31, 1992. Internal relative risk comparisons were made between shorthaul and longhaul operations defined broadly as flights within Europe and beyond Europe, respectively ... The all-causes SMR for pilots of 61 (592 deaths) and 56 for flight engineers (127 deaths) confirmed the expected Healthy Worker Effect. In pilots apart from the known excess of deaths from aircraft accidents (SMR 14694), most of the comparisons showed significant deficits in mortality... The SMR of 333 for melanoma was significantly raised in pilots but was not evident in flight engineers. Life expectancy for longhaul pilots and flight engineers was 4-5 yr better than England and Wales for ages 55-65 while the advantage for shorthaul pilots was reduced to between 2-3 yr. Cases of leukemia and aleukaemia in pilots were less than expected and less than the positive excess predicted from modeling based on radiation dose... The study confirms that flightdeck crew live longer than the England and Wales population and do not exhibit patterns of death that could be directly attributable to occupation."¹

JUNE 1974

Computer-aided diagnosis (St. John Hospital, Detroit, MI): "Application of computers to diagnosis of congenital heart lesions, epigastric pain, and others began to appear in the mid-50s. For a number of reasons, their application has been limited but all have raised interesting possibilities for the future and have served as provocative studies of the diagnostic process. Some have used a pattern recognition technique for diagnosis, others have used an analysis of variance approach, and all of them have brought to light deficiencies in the current statistical base generated by the study of disease – all finding that we do not always know with accuracy the incidence of a given symptom or sign in a particular disease nor, indeed, its significance for diagnosis, which may be more important than its frequency. The data for this study were collected over a period of 4 years from the charts of several Detroit area hospitals: Henry Ford Hospital, Saint John Hospital, and Providence Hospital. The weight summation analysis appears to be a reliable computer-aided medical diagnostic method, comparing very favorably with the Bayes theorem program. It must be emphasized that, for either method the data base is an important governing factor as to the program's reliability. The practical application of these methods in assisting physicians in diagnostic procedures appears to have a potential in increasing the accuracy of medical diagnosis and the saving of a physician's time to be used for the more 'clinical' demands upon him."²

JUNE 1949

Aviation hearing standards (Air Medical Service of the Royal Netherlands Army Air Force, Ypenburg, Netherlands): "New hearing

standards are developed, based on the fact that hearing deficiencies in aviation are caused by noise ...

"The proposed standards can be applied in ordinary medical centers with the usual equipment. They give sufficient guarantee for the necessary safety of flying. If the lowest hearing standard, No. 4, cannot be reached in a medical re-examination, it ought to be possible to refer the pilot to a special center, equipped with suitable instruments under the care of an expert audiologist.

"It is emphasized that prevention of aviation noise deafness is a very urgent problem in preventive aviation medicine."³

Antimalarial toxicity (School of Aviation Medicine, Randolph Field, TX): "The search for chemotherapeutic agents against malaria was tremendously catalyzed by the war and the necessity for overcoming an acute quinine shortage. In an attempt to find drugs superior to quinine and quinacrine (which was then being tested), over 14,000 compounds were screened. Over 6,000 new compounds were synthesized for this program. About 100 were promising enough to warrant clinical trials in human malarials, and three have shown outstanding promise ...

"No toxic effects, other than occasional gastrointestinal disturbances resulted from therapeutic regimes of chloroquine or paludrine.

"With quinine, a significant decrease in auditory acuity between 512 and 2,048 cycles per second was observed. Occasional gastrointestinal and auditory symptoms appeared. In five of twenty-three subjects, possible allergic dermatitis was noted.

"Pentaquine plus quinine showed the greatest toxicity. Persons receiving this regime complained of severe subjective symptoms. Their times of useful consciousness at 25,000 feet were significantly decreased. Evidence of liver damage was reported. The auditory acuity was decreased. Methemoglobinemia was evident. The electrocardiograms and electroencephalograms showed changes ...

"Paludrine and chloroquine do not seriously influence flying efficiency."⁴

REFERENCES

1. Irvine D, Davies DM. British Airways flightdeck mortality study, 1950-1992. *Aviat Space Environ Med.* 1999; 70(6):548-555.
2. Birk RE, Endres L, McDonald JC, Proctor LD, Rinaldo JA, Rupe CE. Approach to a reliable program for computer-aided medical diagnosis. *Aerosp Med.* 1974; 45(6):659-663.
3. Pothoven WJ, Schuringa A. Hearing standards in airline transport pilots. *J Aviat Med.* 1949; 20(3):171-178.
4. Chinn HI, Ferber CJ, Flickinger DD. Toxicity of anti-malarial drugs on flying personnel. *J Aviat Med.* 1949; 20(3):161-170, 192.

This column is prepared each month by Walter Dalitsch III, M.D., M.P.H. Most of the articles mentioned here were printed over the years in the official journal of the Aerospace Medical Association. These and other articles are available for download from Mira LibrarySmart via <https://submissions.miracd.com/asmaarchive/Login.aspx>.

Reprint and copyright © by the Aerospace Medical Association, Alexandria, VA.

DOI: <https://doi.org/10.3357/AMHP.6457.2024>