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Role Of Aviation Medicine Specialist in Commercial Airlines

R R KAPUR

(Wg. Cdr. Classified Specialist in Aviation Medicine)
Institute of Aviation Medicine, IAF Bangalore-560017

Many commercial airlines in the world utilize the services of Aviation Medicine Advisors looking after their crew and to advise the management regarding various problems which are peculiar to Commercial Airline. In India Air India has also taken a step in this direction and have created a full time post for an Aviation Medicine Specialist. The author who spent more than two years with Air India on deputation as an Aviation Medicine Specialist highlights the scope and areas of interest where aviation medical specialist can play an important role in commercial airline.

The areas covered in this paper deals with selection and maintenance of the crew, their indoctrination in the subject of Aviation Medicine and aircrew first aid; advising the management regarding aircrew fatigue, time zone change and crew duty scheduling; acceptance and carriage of sick passengers on board the aircraft, advise and supervision regarding food and water uplift on board; indoctrination and advice to ground staff regarding toxic hazard of industrial materials and noise; to establish a basic crash rescue and emergency set up for airline and other related aspects.

Introduction

In the early years, potential of the civil aviation was not properly realised till in 1930 when large passenger aircraft was first introduced to provide a high degree of passenger comfort, pre-cooked meals in flight and special insulation lining in the cabin walls. Since then the aviation industry has advanced to the supersonic age with present day aircraft cruising over twice the speed of sound.

The doctor in civil aviation works in a highly competitive, rapidly changing technological world. However only few airlines of the world have some type of full time or in-house medical department. Many of these departments are still of World War-II vintage, not technologically but operationally mostly catering for routine jobs of attending their sick staff members, without having any expertise

in the subject of aviation medicine and uniform regulations. A positive step has been taken by Air India our national carrier, who have recently set up an aviation medicine sub-centre in their Medical Services Department. The author while on deputation to Air-India for two years as a specialist in aviation medicine studied the scope of a specialist in the aviation industry which have been highlighted.

Medical selection of aircrew and the maintenance of aircrew health and efficiency

Standards and practices of aviation medicine in different countries may vary, but the goal is common to select, monitor and regulate the aircrew and prevent him from causing an unsafe situation in flight. He can therefore do much to prevent accidents by the proper medical supervision of aircrew and by trying to reduce stresses where they exist. The supervision is used in the broader sense of taking a personal interest in the individual and in the factors which could cause a breakdown in his skill, either due to ill health or due to mental stress of one sort or another.

The specialist's participation in aviation safety should be more functional from an operational view point and should not be confined to observations of abnormalities during medical board like ECG abnormalities or hypertension. He should be more involved in the daily working relationship with the flight operations and flight training departments. Today's airline doctors have little or no daily contact or efficient communication with the pilots regarding the safety problems or their daily working environment. By establishing a daily working relationship with the flight-training and flight operational departments, many unsafe health conditions which may be potential aviation safety hazard may be detected. United airline medicine Department at Denver had detected in 5 years with good inter-departmental coordination many pilots who were thought to have operational and proficiency difficulties but subsequently by close association were found to be having undetected medical causes like cortical cerebral atrophy, brain tumour,

psychiatric disease, hypoglycaemia etc. Similarly, many problems exist which are assumed by management to be purely operational but which are in reality the problems in the domain of aviation medicine. The more common examples of this type are the crew flight-time, the length of flight-leg, the number of takeoffs and landings, the number of consecutive days on duty which can all be specified and limits laid down, usually on the basis of the response to such stresses.

How can an aviation medical specialist be aware of aviators problem in a meaningful manner or much less relate them to medical standards and practice when they are rarely, if ever, in the cockpit? How can a pilot feel that the aviation medicine specialist is interested in him if he only sees him once every year to determine his medical fitness for flying. The solution to such problems lies with doctor's adequate exposure to the pilot's daily working environment. This has been a standard function in our country in military aviation. Flight experience in a flight-deck as a physician-pilot can be an added asset to the aviation medicine specialist. The civil aviation medicine specialist must fly as an observer with the flight crew a minimum number of hours per year. Such a close relationship will allow operational people to understand our general aeromedical and human factors practice and philosophy. The new ICAO's regulations are a positive step in this regard.

In our country the airline medical department has no control on pilots licence renewal medical examination which is basically controlled by Air Force medical boarding centres under DGCA's authority. This management, in my opinion is causing complacency. As monitors in basic function i.e. to assess medical fitness to continue to fly, we possess two incompatible traits, i.e. rigid regulations and lack of knowledge of flight environment and conditions of civil aircrew. To have a better and efficient system it is necessary that these Air Force doctors should also fly with the civil crew in the flight-deck to have a better liaison and understanding of these stresses and strains. Such an arrangement may result in liberalization of cer-

tain medical standards when research result may show that within a reasonable medical or operational [certainty a safety hazard does not exist. Conversely, standards may become more restrictive when a safety hazard is found to exist.

II. Occupational health and safety supervision :

Commercial airlines are required to have large infrastructure facilities involved in the maintenance and operation of aircraft. A large number of engineering and industrial staff are employed for these activities. Some of these people may be exposed to risk in hazardous jobs such as chrome-plating process where cyanide gas poisoning is a potential hazard. paint-spraying, industrial radiography, microwave radiation, stripping down of radioactive engine components and maintenance of high voltage equipment. In addition, the ground staff are also exposed to high noise level. Frequent change of shift duty pattern causes additional stress on these individuals.

It is necessary that aviation medical specialist should be aware of these inherent professional hazards. He should monitor as well as supervise these activities at various stages and render suitable advice wherever considered necessary. The health-maintenance programme, for such category of staff, should be planned on a realistic basis. The doubtful cases should be screened at initial engagement itself. A medical examination and indoctrination at specified intervals, depending on the type of hazard, should be done for early detection and prevention of some of these occupational health hazards. A close liaison with an Industrial Health Officer is required for proper execution of such occupational health maintenance programmes.

III. Passenger Comfort

(a) Disinfection of aircraft :

Chemical insecticides are used before departure and at times on arrival of an aircraft to disinfect it and to prevent the transfer of insect vectors of diseases from one country to another on international flights. Of principle concern is the

mosquito which is capable of transmitting Malaria or Yellow Fever. The aviation medicine specialist must ensure that the airline staff use only the WHO/IATA approved aerosol insecticides. The cabin-staff should be trained and indoctrinated for proper use of these aerosol insecticides. A close liaison should be maintained with airport health authorities in this regard.

(b) Airline Hygiene :

International air travel exposes the aircrew and passengers to special hygiene and sanitation problems. They are exposed to new and varied situations before they have time to acquire immunity or resistance to local diseases. They have no choice but to accept what is offered either on the aircraft or airports. It is therefore important that the crew and passengers be safe guarded from any health hazard.

(i) **Aircraft Catering :** It is needless to emphasise here that if food poisoning happens on board of the aircraft during its flight, not only would there be chaos, but in certain situations the safety of the entire aircraft could be in jeopardy. Similarly an airline is often assessed by the quality of the meals served on board. Thus it is important that in this highly competitive field of Civil aviation the food served on board should be of a high gastronomical quality pleasing to the eye and acceptable to the taste. At the same time it is vital that all the food should be free from any bacteria or toxins which could cause illness or discomfort to the consumer.

The aviation medical specialist should ensure that all the food handlers, including cabin crews ought to be free from any infection. They all should satisfy a pre-employment medical examination. They should be medically cleared before return to employment after sickness absence. They should be frequently checked for any occult infection on carrier state by the examination of swabs taken from fingers and throat. Proper training classes and lectures on food hygiene should be arranged at regular intervals.

The aviation medicine specialist must inspect the various kitchens (in the country as well as abroad) regularly to satisfy himself about its sanitary and proper storage conditions as per food hygiene regulations and WHO standards. He must arrange to get random food samples collected and tested for bacteriological and other examinations. The raw materials like meat etc should be purchased only from fully inspected sources/premises. He must advise the airline catering Department to avoid certain foods which present special risks, since they provide good media for the growth of bacteria. He must also advise about the potential risks in 'double bank meals' for the return flights from the parent station. He must also ensure that for flight safety reasons the pilot and co-pilot should always eat a completely different meal.

(ii) Aircraft drinking water :

International airlines operate through many countries in which water borne diseases are still endemic and where sanitation may be of a low standard. Due to space and weight limitations airlines are forced to uplift water from overseas sources. It is needless to emphasise that water carried on board the aircraft for human consumption must be free from organisms or impurities which can cause illness.

The aviation medicine specialist should know all the water uplift in addition to being safe, must also be potable, free from turbidity, colour and odour. Frequent and regular inspections and random water sample checks should be carried from various sources i.e. water supply points, water storage tanks (Bowsers) and delivery hoses and aircraft tanks. He must advise the airline ground service Department about various methods and procedures to be adopted for uncontaminated aircraft water uplift. He should also give suitable advice on the importance of their responsibilities in maintaining tanks, water-bowsers, portable flasks and aircraft tanks, etc uncontaminated.

Immunisation of Passengers & staff

The aviation medicine specialist must keep

himself upto date with immunisation procedures aware of the day-to-day state of disease of the world and the current health regulation laid down by various countries. He must ensure that the staff and passengers exposed to endemic disease must be properly protected and have valid documents to prove it.

Carriage of invalid passengers :

There has been a great increase in the number of invalid passengers travelling by air. They may vary from the very ill and infirm carried as stretcher cases or on special orthopaedic frames, to the elderly or infirm who only require a wheel chair or a helping hand. Airlines arrange ambulances, oxygen, aerostretchers, special seating and screened areas or locations near toilets if the airline is given prior notice. As per IATA rules all invalid passengers must be cleared by airline doctor before they are accepted for air travel. The civil aviation medicine specialist can play an important role in this area. With his expertise in the subject of aviation medicine he can properly scrutinise the various medical details of the invalid passengers and decide for or against their travel by air. Similarly he is better suited for advice regarding the invalid passengers inflight needs.

IV. Air Safety and Accident investigation :

The airline is usually the most involved and interested party in any commercial aircraft accident. By rule they are required to report all accidents to the appropriate Government Department which takes over the official investigations. However, from air safety point of view and prevention of aircraft accidents most major airlines have an air-safety committee to report incidents. These reports are fully investigated and where necessary accident prevention measures are implemented. The civil aviation medicine specialist must be a member of this air-safety committee. He must try to localise human error incidents and/or accidents and report this to management with suggested remedial measures. He should also be an active member of the airport crash-rescue organisation. He must know

the detailed procedures laid-down for any crash-rescue activity on the airport and give active support and healthy suggestions to improve the effectiveness of such an organisation.

V. **Indoctrination in Aviation Medicine :**

Aviation medicine specialist must ensure that all the new entry pilots, flight-engineers, Navigators and Cabin-Crew are given basic medical training during their ground training. Similarly various refresher training courses must also include refresher medical training. Such training should include basic aviation physiology, tropical medicine and maintenance of good health during world wide operations. The Cabin Crew training should also include the First-aid and passenger needs. Special emphasis should be given to food, water and personal hygiene.

The crew training should also include advice on coping with the effects of time zone and climatic changes. He must also help the management in the production of medical manuals for the staff which are easily understood by the variety of nationalities employed by an individual airline.

VI. **Research and Development :**

Rapid advancement of the aviation industry has involved aviation medicine specialist in many areas of applied research, from problems concerning supersonic operations to work load studies on cockpit and Cabin Crew and others. A joint civil/military aeromedical for Concorde was formed in 1963 and has been exploring such areas as protection of crew and passengers against high altitude, cosmic radiation problems, hazards of noise zone etc. Similarly in the development of Boeing 747 and the Lockheed 1011, aeromedical specialists were involved in the problems ranging from cockpit layout to passenger-seating and the position and design of toilets and disinfection system.

In conclusion, it can be seen that an aviation medicine specialist's role in commercial airline has to be some what like, 'a jack of all trades'. He has to

work as an impartial advisor to the management as well as the aircrew and other ground staff and their unions. He is expected to deliver the goods tactfully in the interest of Flight-safety.

