Utilization of emergency medical kits on commercial aircraft – A Jet Airways’ perspective

Jet Airways, India’s premier commercial domestic airline, has also commenced International operations. With the recent tremendous upsurge in the aviation industry, a large number of passengers of different age groups and health status, are opting for air travel, as it is the most convenient and fastest mode of transport. An aging population combined with the increasing mobility of people with acute / chronic illnesses, have resulted in an increase in the frequency of in-flight medical events. In addition, the inherent physiological / psychological stresses of a relatively hostile environment, may also precipitate problems in passengers with a serious / potentially serious underlying disorder which may get aggravated due to the stresses of flight.

Jet Airways carries First Aid Kits (FAK) and Physician’s Kits (PK) on board its aircraft in accordance with the existing IATA / DGCA mandated recommendations / regulations. Each kit is prepared and certified by the company doctor, as a placard (sticker), listing all the contents in detail for the user’s reference, is pasted of each kit. In addition, each kit contains a comprehensive ‘Medical Incident Reporting Form’ which has to be filled by the cabin crew / doctor on-board, in the event the kit is opened for a medical emergency. All our cabin crew undergo rigorous initial and recurrent First Aid training. As per existing DGCA guidelines, cabin crew are permitted to open FAKs, whereas PKs can be opened only by Registered Medical Practitioners (RMPs).

A prospective study of the total number of kits utilized for in-flight medical emergencies, across the entire Jet Airways network, was carried out between 1st August 2006 to 30th June 2007. This study did not include in-flight medical emergencies occurring in ill / disabled passengers whose MEDIF Forms had been approved in advance, by the Jet Airways Medical Dept. Relevant Medical Incident Reporting Forms were evaluated and analyzed with the aim of: auditing appropriateness of First Aid treatment administered by the crew; assessing the adequacy of the emergency kit contents; and to Determine the etiology / frequency of various in-flight emergencies, together with the therapeutic modalities used.

Results

A total number of 10 million passengers traveled on our flights during the period under review, and the kits were opened on 3,771 occasions, for in-flight medical problems ranging from trivial to life-threatening emergencies. A doctor was available to render assistance on board on 171 (4%) occasions and the PK was used on 163 occasions. In the remaining 3,600 (96%) cases, where a doctor was not available, the cabin crew rendered First Aid and the FAKs were utilized on all the occasions. Both FAKs and PKs were used on 153 occasions. Of the total number, 3,543 (94%) emergencies occurred in adults (commonest age group being 40-60 years), while 228 (6%) cases belonged to the pediatric population (0-12 years).

The most frequent medical complaints encountered in-flight in the adult group, included severe upper respiratory tract infection (URTI) with headache, fever, malaise; gastrointestinal complaints e.g. vomiting, diarrhoea, abdominal pain; breathlessness, mainly due to asthma; chest pain, high blood pressure and vasovagal syncope. The
most frequently used medications included Tablet Dispirin, Tablet Avil, Otrivin Nasal Drops, Tablet Paracetamol, Tablet Domstal, Tablet Norflox, Tablet Cyclopam, ORS, Asthalin Inhaler, Tablet Deriphyllin, Tablet Sorbitrate. Continuous in-flight oxygen was administered in 91 cases mainly hear disease (IHD) asthma.

Similarly, in the paediatric population, gastrointestinal symptoms as above, fever with / without convulsions, URTI, breathlessness / cyanosis (mainly conjected heart disease CHD), were the most frequently reported problems. Medication used most frequently included Paracetamol (Drops / Tablet), Colimex Drops, Tablet Cyclopam, Tablet Domstal, Tablet Avil, ORS. Continuous oxygen was administered during the flight in 15 cases mainly breathlessness / convulsions.

Of the 3,771 cases, 3,670 patients responded well to the treatment given on-board and required no further assistance on deplaning. 92 cases (mainly IHD, severe acute asthma, severe hypertension, convulsions), had to be urgently hospitalized on arrival at destination city, while 9 cases (IHD 3, CHD 1, severe hypertension 2, hematemesis 2, convulsion -1), were critical enough to necessitate a flight diversion / air return of aircraft to originating station. Fortunately, there were no deaths on board during the period under review.

20 (11.5%) of the attending doctors felt that the kit contents were inadequate and needed augmentation. The commonest medications / equipment that were recommended for addition to the existing list included Ranitidine (Injection and Tablet), Inj. Ondansetron, Voveran (Inj. and Tablet), Inj. Buscopan, Injection Phenargan, intravenous fluids with IV Set, NTG Patch, Insulin Syringes, and Glucometer.

Conclusions

Several points of interest emerged from this study, 1 of every 2,653 passengers & 1 of every 29 flights experienced an inflight medical emergency, About 96% of the inflight medical emergencies were handled by the cabin crew, while a doctor was available to offer medical assistance in only 4% of the cases; The First Aid given by the cabin crew was appropriate, and the level of training imparted to them was for considered adequate RS, GIT, CVS, CNS were the commonest systems affected 2.5% of the medical emergencies (mainly cardiac, respiratory, CNS), were serious enough to warrant urgent hospitalization on landing. Incidence of flight diversion was 0.23% (mainly due to cardiac / respiratory / neurological problems). In view of availability of newer / more effective therapeutic modalities, contents of the emergency medical kits should be reviewed and augmented periodically, so that the level of in-flight first aid / medical care provided by cabin crew / doctor-on-board, can be enhanced.

References


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Modern aviators are required to combine physical, cognitive, team building, and communication skills, while simultaneously monitoring, managing, and updating a dynamic situation in a relatively hostile environment [1]. Communication in the cockpit is of critical importance in order to achieve safe and efficient operation of task. The authority gradient in the cockpit defines the level of communication that the crew pair can achieve. The senior pilot, must achieve satisfactory working relationship with his junior pilot. It should neither be an over-bearing, dictatorial approach nor one in which command function is obscured [2]. This gradient holds vital importance in areas of service flying where the rigid hierarchical structure of the defense forces comes into play. There may be situations wherein the junior pilot does not intervene in the senior pilots’ decisions even though he knows that they are wrong, just because of the military literary or reality! Such decisions of the junior pilots could result into an error ridden event especially during emergencies in air. A few aircraft accident/incidents involving helicopters in the forces are described to bring forth and substantiate the argument such trans cockpit authority gradient (TAG).

Incident 1: A chetak helicopter was on a detachment for a casualty evacuation mission, 12 min flying time from its main base, in the northern sector. The aircraft was parked in the open at a makeshift helipad. The crew comprised of a senior aviator with 1100 hrs of experience on type and a co-pilot with about 350 hrs on type and also junior in service by 8 yrs, At 1430 hrs under the bright sunlight the crew saw low clouds approaching, which they thought would not head for their present location! Hence they delayed their take off back to base and left the aircraft parked in the open, which was strictly against the steward (SOPs). After sometime they realized that the thunderstorm was headed straight for their location! In the melee that ensued the senior aviator decided to take of in a hurry for their main base, with the co-pilot in tow but the thunderstorm caught up with them and made them force land elsewhere.

Incident 2: A young aircrew diver with 25 hrs of flying experience was deployed to a flying base in the eastern sector. In a scrambled mission the aircrew was informed to search for and recover a lifebuoy. The senior pilot was in a dilemma. There were only two of them on board, they had located the lifebuoy, but how do they recover the lifebuoy? Should he turn back (and risk the wrath of a dozen senior officers?) or should he improvise? He opted for the latter (Stee TAG!). He asked the co-pilot who was a qualified aircrew diver to recover the lifebuoy and he would control the aircraft from the centre seat. The co-pilot complied with the decision of the pilot without questioning aeronautical decision making (Poor ADM/TAG). From here onwards things went down hill. The pilot could not see what was happening below and kept lowering the co-pilot (now the diver) till he almost drowned himself. Some desperate tugging on the cable made him realize this and he winched the co-pilot up. They then returned to base for a stern debrief.

Incident 3: An An -32 was on a regular training sortie from an western air base in the hunters section. The senior pilot decided to show some stunts to the co-pilot and started flying low-level along a railway track. The junior pilot did not object! Soon without realizing they hit a railway signal and crashed further ahead.

Incident 4: A Chetak helicopter was on a regular training sortie from an western air base in the hunters section. The senior pilot decided to show some stunts to the co-pilot and started flying low-level along a railway track. The junior pilot did not object! Soon without realizing they hit a railway signal and crashed further ahead.

Incident 5: An An -32 was on a regular low level training sortie. The sortie was to be executed
at a minimum altitude of 150 m and the altimeter was set accordingly to 150 m. But during the sortie because of the annoying warnings the senior pilot set the altimeter to 100 m and proceeded flying at 120 an alternative of the junior pilot who was not comfortable with the GPWS coming on repeatedly made it clear to the captain that he does not want to hear anymore of those noises and warnings. The senior pilot realized his discomfort and reverted back to flying at 150 m and the rest of the sortie was uneventful.

In the first three cases the junior pilots knew that there was something amiss but did not have the required ADM attributes to influence the senior pilot’s decision. Probably they did not understand the gravity of the situation they did not feel it important enough to transgress authority and make the senior aviator aware of the consequences of his decision. They did not assert themselves because of what we call ‘rank’ in the cockpit. They took it for granted that the senior is always right! Whereas in the last case (though because of irritation from the various noises in the headphones) the junior pilot made his mind clear to the senior pilot and averted a likely catastrophe.

In the aviation domain, the authority relationship between an aircraft captain and the junior pilot has been cited in many accidents and incidents. Research has shown that there is an optimum “trans-cockpit authority gradient” to allow an effective interface between pilots on a flight deck [3]. The gradient may be too flat, such as with two equally qualified individuals (or two officers of the same rank like in the first incident) occupying the two seats, or too steep, as with a dominating Senior pilot and a junior and unassertive co-pilot (as in the case of the second incident). In such cases, a reduced performance may result with a chance of error going undetected and uncorrected. A study in the United Kingdom of 249 airline pilots confirmed the importance of this aspect of flight deck communication [4]. Nearly 40 per cent of the junior pilots surveyed said that they had on several occasions failed to communicate to the captain their proper doubts about the operation of the aircraft. Reasons appeared to be a desire to avoid conflict and deference to the experience and authority of the captain. This scenario is more prevalent in the service environment, where the rank is very rigid and inflexible. Greater emphasis needs to be laid on CRM during the flying training phase helps pilot understand the TAG cockpit discipline and satisfied. In the context of TAG it is worthwhile to put forward one of the findings of NTSB [5]. During investigation into a DC 8 air crash in 1978, the National Transportation Safety Board (NTSB) noted, “the safety board believes that this accident exemplifies a recurring problem - a breakdown of cockpit management and teamwork during a situation involving malfunction of aircraft systems in flight. To combat this, responsibilities must be divided amongst members of the flight crew while the malfunction is being resolved....Admittedly, the stature of a captain and his management style may exert subtle pressure on his crew to conform to his way of thinking. It may hinder interaction and adequate monitoring and force other crew member to yield his right to express an opinion”.

In another crash of a Being 737 in 1982, ”NTSB reported the cause of the accident to the co-pilot’s lack of assertiveness and possibly a general hesitancy among subordinates to question superiors forcefully” [6].

References


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