

## PRESIDENTIAL ADDRESS

**Air Marshal SP Verma VSM PHS**

President, Indian Society of Aerospace Medicine

Director General Medical Services (Air)

Air Marshal JS Rai VM & Bar, AOC-in-C Training Command, Mrs Pamela Rai, President AI'WWA (R), Dr SK Sikka, Head of the Department of High Pressure Physics BARC Bombay, Lt Gen R Jayaswal AVSM PHS, DGAFMS, Surg Vice Admiral JC Sharma VSM PHS, DGMS (Navy), Lt Gen SC Verma PHS DGMS (Army), distinguished guests, delegates and my dear friends and colleagues.

It is my proud privilege to welcome, our chief guest Air Marshal JS Rai VM & Bar, AOC-in-C, Training Command and Mrs Pamela Rai, President of AI'WWA (R) on the happy occasion of the inauguration of XXXIX Annual Conference of the Indian Society of Aerospace Medicine. They have been gracious enough to have spared time from their very busy schedule to be admist us here today. The Indian Society of Aerospace Medicine is indeed happy and proud to have you all grace this Inaugural Session of its 39th Annual Scientific Meeting. A number of our distinguished guests this morning are friends and well-wishers of the society who have closely followed and encouraged the scientific activities of the society for the past many years.

This Society has come of age and is nearing completion of four decades of existence. From very humble beginnings, the Society has grown in size and stature and is today, a pioneer in the field of research in aerospace medicine. The Society was given international recognition a few years ago when it was assigned the task of hosting the Annual Conference of the International Congress of Aerospace Medicine at New Delhi in 1994. This is an honour that very few societies can boast of, specially in the newer fields of medical disciplines.

Our Patron Air Chief Marshal SK Sareen PVSM AVSM VM ADC, Chief of the Air Staff was to come for the inauguration of this conference but due to pressing commitments at New Delhi, he has not been able to make it. However, he has asked me to convey his good wishes and blessings for this conference. He and Dr (Mrs) Aruna Sareen have been a constant source of inspiration and support to all our endeavours in providing state-of-the-art medical care to the Air Force personnel and their family members where ever they may be. A number of modernisation schemes have been initiated in the past few years. Aircrew care and air safety measures have been given the much needed thrust with impressive results in terms of operational achievements and flight safety.

The society is honoured by the august presence of Dr SK Sikka amongst us today. He is director of BARC's Solid State and Spectroscopy group. He heads a team that is credited with the physics design of all the nuclear devices tested in May 1998. He also played a key role in 1974 Pokhran explosion. He has been selected for the prestigious Subroto Mukherjee memorial Oration award this year. Most appropriately, he has chosen to deliver this memorial oration on a subject that is not only important to the aerospace industry but also to various scientific societies in the country, specially in the wake of the ever increasing nuclear activities that our country has witnessed during the past few months.

The fusion devices which India and Pakistan claim to have tested represent a thousand fold increase in destructive capacity over the fusion bombs dropped in Hiroshima and Nagasaki. The possible medical

consequences of explosion of nuclear devices in the subcontinent should be a cause of dismay to all those committed to the health and welfare of the people of the world. There is a paucity of information in our country about the health consequences of the use of Nuclear Technology. Notwithstanding the Secrecy and Justification of nuclear programme in the interest of National Security, the people of this country have a right to be informed about and to debate the hazards of nuclear technology both for peace and war. Is the Govt and medical community prepared to face the aftermath of nuclear disaster? What are the safeguards and medical contingency plans for such an eventuality? These are some of the issues which will be deliberated in a scientific symposium on N.B.C. Warfare to be held today soon after the Subroto Mukherjee Memorial Oration.

Following this inaugural session, you will witness an Aeromedical Exhibition, which will be inaugurated by Mrs Pamela Rai. Due to space constraints, we are usually cautious in limiting our invitations to only a few organisations to take part in the exhibition. But I feel that a time has come for the representatives of aeronautical and aeromedical organisations and Industry to showcase their potentials and products during these annual conferences to our guests and delegates who have a stake in guiding the destiny of aerospace science and technology in our country. I hope these organisations will join the society as corporate members to sustain its scientific activities which are ultimately aimed at providing valuable inputs to the industry and operators, both military and civil.

The basic aim of this society is to work towards providing a safe environment for the aviator towards mission accomplishment. A number of disciplines of medicine come into play to improve aircrew efficiency, while enhancing flight safety. The scientific sessions will cover all aspects of the subject.

During the next two days of the Conference, we will be exposed to a cross section of the research efforts and experiences of our aeromedical doctors, scientists and clinical specialists in the vastly differing areas of the multidisciplinary speciality of Aerospace Medicine. Symposia on topical subjects include:

- a. Medical aspects of nuclear and biological warfare
- b. Noise in aviation
- c. Ejection injuries
- d. Aeromedical aspects of air superiority fighter aircraft
- e. Life support system
- f. Hyperbaric oxygen therapy

As usual quality work from our institutions such as the Institute of Aerospace Medicine, Air Force Central Medical Establishment, Aero Medical Training Centres and Air Force Hospitals will be presented by their doctors and scientists. At the same time it is heartening that a number of papers are from the operational units which will provide significant inputs for our research efforts to improve human performance in air operations. Members from the fields of Civil Aviation and Aeronautical Research and Development agencies are also taking part in our deliberations. Over the past few years, the country has witnessed a spurt in civil aviation operations. With the government policies accepting private air taxi operators, there has been a tremendous growth in the civil aviation industry in the country. Busy commercial flying, with unscheduled hours have led to a whole new plethora of problems and experiences for our doctors catering to such requirements. Many civilian doctors are increasingly showing greater interest in aviation medicine and are pursuing advanced post graduate studies in the subject. It is therefore understandable that the Institute of Aerospace Medicine at Bangalore has become a national hub centre for

excellence in training and research in aerospace medicine. The institute has been doing excellent work and has an enviable track record.

I am also very happy to note that the orbit of aviation medicine has not been limited to the Air Force alone. You will witness active participation in the deliberations by aviation specialists from the Army as well as the Navy. The aviation branches of these services are no longer in infancy and require the guidance and support of well trained aviation medicine doctors towards improving human tolerance and effectiveness during stressful flying conditions.

The Association of Physiologists and Pharmacologists of India merit a special mention for their invaluable support to our conference proceedings. A full session is devoted to APPI presentations. We are hopeful of maintaining the high standards of our scientific curiosity during these presentations.

I notice that the organisers of the scientific meeting have been most meticulous and have taken great pains to include all relevant subjects in the deliberations. It is heartening to observe that Continuing Medical Education sessions have also been included in respect of Medical and Surgical update sessions. Senior and experienced specialists and superspecialists from Command Hospital Air Force Bangalore will deliver practical, easy to understand and useful lectures on these subjects, specially for the benefit of our younger doctors posted in distant field stations who do not have access to such exposure routinely.

DRDO is the nodal agency in design specification of various life support systems. I hope that these efforts are directed towards the betterment of aircrew safety. There is an urgent need to reduce the lead time to bring such equipment into commercial production and use by the Air Force. Strict quality control on the development of life support system such as flying clothing and survival rations need to be adhered to. I am happy to know that the Institute of Aerospace Medicine Bangalore as well as a large number of aviation medicine experts are constantly in dialogue with the various agencies of the DRDO in developing such systems.

#### **Aerospace Medicine in India for the 21st century**

The most exciting developments in aeromedical research in the near future will continue to be in the following areas:

a. Aerospace environment is research oriented, and equipment intensive. Some equipments cannot be developed at short notice. I am referring to our age old centrifuge at IAM which is one of its kind in the country. I am happy to inform that the Chief of the Air Staff sanctioned a Budget of Rs. 96 Crores for procurement of updated Human Centrifuge with combat simulation capability. I am quite sure that new simulator should be available for use at IAM by year 2001; for specialised training of our fighter pilots especially flying ASF class of aircrafts.

b. Another area which needs special attention is spatial disorientation as this is a known major contributing factor in many aircraft accidents in all the Air Forces. No pilot, irrespective of experience is immune to this condition. The only remedy is to educate our aircrew by simulating various illusions with use of high tech simulators since such simulations in real flying is neither safe nor economical. CAS has very kindly sanctioned import of five such high tech computer aided Disorientation Simulators for training our aircrew. (One each for WAC, EAC, SWAC, IAM & AFA). It is hoped that these simulators will be

procured before the end of this century. This is a step in the right direction for enhancing flight safety and also for reducing the incidence of aircraft accidents.

c. I wish to once again remind all of you the vision of our Chief is to prepare IAF to be called as Indian Air and Space Force. The vast potential of space must be utilised for the defence. I implore you to apply yourselves with vigour and dedication. We all must think of future needs of next 10 years and carryout research accordingly. I am glad that the IAM has already participated in space programme and the Society has also changed its name. We should further improve our infrastructure and should have our Indian data for any future manned space programmes of the country. We should direct our efforts commensurate with the progress of future space programmes of India.

d. I wish to inform that the Society is forging ahead and has embarked upon publishing a text book on Aerospace Medicine by Indian authors. We have vast experience over the years based on research and field work conducted in the aviation environment of IAF as well as aerospace venture with Russia. Indian Society of Aerospace Medicine has undertaken the task of sponsoring the publication of the proposed text book. The ground work for the text book is already completed and I am sure with active participation of all members both serving and retired, publishing of such a needed text book on aerospace medicine will become a reality in near future.

e. **Human factors in aerospace operations** with special reference to mission accomplishment and safety. Recent initiatives in understanding the concept of human error have already made improvements in the safety record of military and civil aviation organisations worldwide. In India, we have to increase the pace of research efforts in this crucial area. The defence and civil aviation authorities are already aware of the need for such initiatives. With the tremendously high cost of aviation, every accident prevented will help in recovering many times over, the funds spent on Human Factors Research. The Institute of Aerospace Medicine and other DRDO Laboratories need to pool their resources in unraveling the mystery of the 'abominable human error' which continues to take a heavy toll of precious lives and resources.

f. **Clinical Aerospace Medicine** The recent advances in diagnosis and treatment of many of the common cardiovascular and metabolic diseases coupled with the awareness of the need for preventive measures have made inroads into the possibility of allowing aircrew to continue to occupy the cockpit while under medication. The list of such drugs is already getting longer and longer. Already, some pilots have been cleared for restricted flying duties in the US and a few other countries while on antihypertensives, maintenance doses of steroids, even insulin and a large number of other drugs. Cases of renal, liver and even heart transplants have been allowed for Class III Flying licences in a limited way by the Federal Aviation Authority. With improvements in medical care and longevity, the question of extension of flying privileges beyond the magical figure of 60 years, for civil aircrew will require careful consideration, especially after the safe return of 77 years young Senator Glenn from the recent Space Shuttle mission. Medical Categorisation is an important aspect of services. The policies in this regard are being reviewed periodically and updated based on current medical knowledge. Last year we have reviewed and issued new policies on medical disabilities like IHD, Obesity, Hypertension, Endocrine diseases. Now most of the surgical conditions including special workup for women officers/pilots have also been reviewed and we intend publishing the revised edition of IAP 4303 very soon. I would like all MOs to carefully study and implement these policies. I have also issued Medical Information Circular for Civil Aircrew which must be followed meticulously. A special issue of Flight Safety Magazine has come up in Aug 98. It is dedicated to current topics on Aviation Medicine and relaxation of aeromedical standards in flying without compromising flight safety and mission accomplishment.

g. **Operational Aviation Medicine.** The induction of sophisticated combat aircraft capable of extended mission profiles and dual cockpit configuration has introduced new experiences in the operation envelope of our fighter pilots. Matching aeromedical support is required to identify potential areas affecting sustained optimal performance under normal and emergency flying conditions.

h. I am glad to inform that keeping up with current trends in information technology, the society has made inroads into the electronic medium for wider dissemination of aeromedical information with the technical support of the National Informatics Centre of the Planning Commission. The back issues of our Journal for the past ten years are now available on the National Database of Indian Biomedical Research, indeed, on the internet. As decided by the General body of the Society, website of the Society is being launched. The continued support of the Armed Forces, Defence Research and Development Organisation and Civil Aviation Authorities will go a long way in taking the Society to greater heights of professional achievement in the exciting days ahead. We have to take stock of the huge potentials of IT in improving the medical infrastructure with a view to make full use of our limited resources. I hope we will be able to computerise our medical care system incorporating such facilities as data warehousing, online assistance for ensuring the practice of Evidence Based Medicine and even Telemedicine for our troops located in the forward most inhabitable picquets.

It is heartening to note that many of these emerging areas of aeromedical interest are being covered in this Conference in the next three days. I am hopeful that the deliberations will reinforce your confidence in our young doctors and scientists who are providing aeromedical support for our operational requirements.

With this, I would now invite our Chief guest, Air Marshal JS Rai VM & Bar, AOC in C Training Command to come on stage for Lighting of the Lamp and the Inaugural address.