

Vapour

The official E-Newsletter of the
Indian Society of Anaesthesiologists

HIGHLIGHTS

ISA Activities

ISA conference & CME calendar

An interview with
Dr. Prasad Rajhans
on Emergency Medical Services in India

An interview with
Dr. Shalini Nalwad
on air ambulance services in India

“Brought dead” to the Emergency
Department....Prehospital Care in
our Country: A perspective
Dr. Aruna C Ramesh & Dr. Hariprasad KV

Limitations of Damage Control Resuscitation
in Pre-Hospital Care During Emergencies: A
Snapshot from Rural Areas in India

Lt Col (Dr.) Shibu Sasidharan



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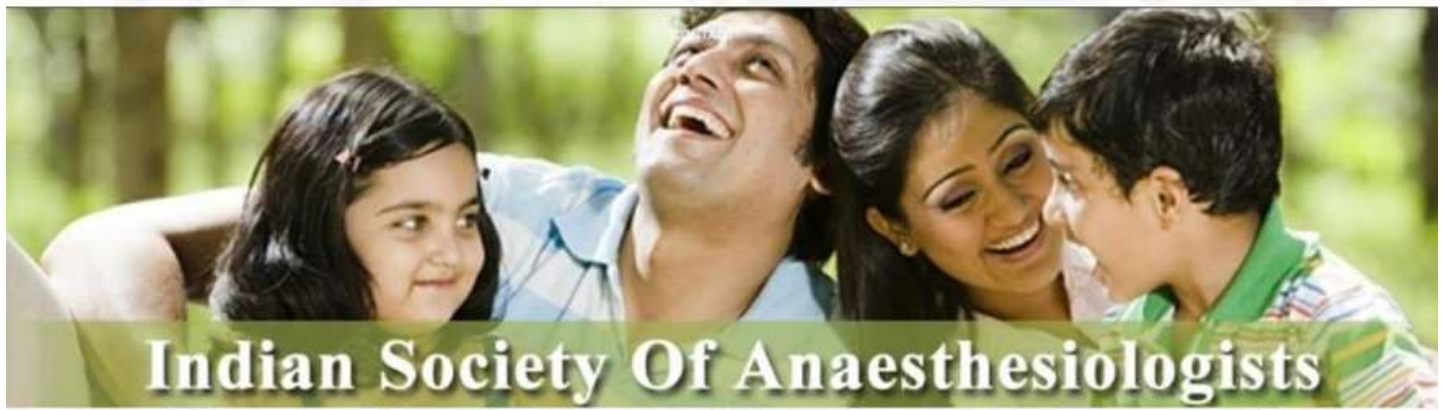
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CONTENTS

- Editor's Note 6-7
- ISA Notice Board 8

SPOTLIGHT: ACADEMICS

- Dr. Aruna C Ramesh & Dr. Hariprasad KV :“Brought dead” to the Emergency Department... Prehospital Care in our Country: A perspective 9-12
- An interview with Dr.Prasad Rajhans on Emergency Medical Services in India 13-16
- Lt Col (Dr.) Shibu Sasidharan – Limitations of Damage Control Resuscitation in Pre-Hospital Care During Emergencies: A Snapshot from Rural Areas in India 17-18
- An interview with Dr. Shalini Nalwad on air ambulance services in India 19-29
- Dr. Mayank Massand – Recent management guidelines for organophosphorous poisoning 30

ISA ACTIVITIES

- Felicitation of Padmashri Awardee Dr. Maya Tandon by ISA National 33-34
- Nagpur City Branch activities 36-37
- Navi Mumbai Branch activities 38
- Andhra Pradesh Branch activities 39

YUVA PARNIKA

- Crossword: Dr. Parul Jindal 41-42
- Spin The Word Wheel: Dr. Parul Jindal 43

EDITOR'S NOTE



Dear esteemed members,
Warm greetings from Indian Society of Anaesthesiologists (ISA)
National Headquarters!

The cold month of December brings to you another issue of 'VAPOUR'. As the mercury dipped low, we were shivering along with all the other living beings. It seemed like everyone had gone to sleep. The multiple layers of clothing, the warmers, the steaming cups of coffee...all kept us alive through the pangs of the cold. What if someone fell dangerously ill at such times? The sight of village men and women waiting patiently by a solitary bus-stop on a remote Indian road, sometimes by the side of a forest or in the desert or on a mountain for the only bus to arrive and take them around 100 kilometres to reach the nearest healthcare centre is not uncommon. [1] Many of the villagers spend their lives trekking many kilometres to reach the nearest market for getting their daily necessities. This sets us thinking as to how successful have we been in facing the challenges of bringing emergency healthcare facilities to our rural brethren?

The primary health care centres, sub-centres, floating boat hospitals, motorbike ambulances, mobile clinics in ambulances that move from village to village are contributing a lot to improvement in rural healthcare. The '108' ambulances that breeze past the busy Indian roads, training courses such as the Advanced cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS), Jeeva Raksha, National Emergency Life Support (NELS), the National Rural Health Mission, telemedicine and the upcoming tele-intensive care units kindle the fire of reassurance in us and depict our efforts at improving emergency healthcare and life support facilities. Yet, at this moment, we have to ask ourselves these questions: 1) Are we currently well resourced and trained in the management of trauma and other emergencies in the periphery and on the Indian roads? 2) How good are our citizens and paramedics in prehospital resuscitation? 3) Are we at par with other countries in prehospital resuscitation?

This issue of VAPOUR is themed 'Emergencies and anaesthesia journey' and it brings to you interesting articles, inspiring interviews and news of meeting with the pioneers of prehospital resuscitation and emergency medical care in India, viz Dr. Maya Tandon, the messiah who spread road safety awareness, Dr. Prasad Rajhans, the pioneer of '108' ambulance and emergency medicine in India and Dr Shalini Nalwad, the pioneer of air ambulance services in India.

All these pioneers are anaesthesiologists who by their dedicated and innovative work have shown the world how anaesthesiologists can contribute to emergency healthcare management. I am thankful to all the authors for their valuable contributions to this issue of 'VAPOUR'.

As we celebrate the beginning of the new year and the end of the past year, we should remember that there is no true ending. There is always a beginning; the beginning of newer goals to reach and tasks to be accomplished. The ISA is no exception to this. It is growing fast with its vibrant activities and has more miles to go, more hurdles to cross and more good work to be done. I am sure that we will achieve our dreams for the ISA by walking every mile together and I am sure that every step will be memorable and rewarding.

Thank you and bye till we meet again with the January 2024 issue of 'VAPOUR'.

Long live ISA!

Dr Sukhminder Jit Singh Bajwa

Honorary Secretary ISA National

Editor-in-Chief

'VAPOUR'

(The official newsletter of the ISA National)

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ISA NOTICE BOARD

CONFERENCE & CME CALENDER OF ISA (2024)

Conference/CME (Coming up)	Location	Organised by	Dates
UP ISA Sponsored PG assembly	Jhansi	ISA Lucknow branch	12th to 16th March 2024
ISA Delhi YUVA CON 2024	Maulana Azad Medical College, New Delhi	ISA Delhi YUVA Wing	6th to 7th April 2024
ISACON TELANGANA	Mahaboobnagar	ISA Mahaboobnagar branch	5th to 7th July 2024
ISACON KARNATAKA 2024	JN Tata Auditorium Complex, Malleshwara, Bengaluru	ISA Bangalore Metro branch & Department of Anaesthesiology, BMCRI, Bangalore	9th to 11th August 2024
RAJISACON 2024	Jodhpur	Dr. SN Medical College, Jodhpur & ISA Jodhpur city branch	13th to 15th September 2024
ISACON North zone 2024	Jammu	Govt. Medical College, Jammu, Jammu & Kashmir (UT)	20th to 22nd September 2024
ISACON GUJARAT 2024	The Deltin, Daman	ISA Gujarat state branch	28th to 29th September 2024
UPCZ ISACON 2024	Jhansi, Uttar Pradesh	MLB Medical College, Jhansi & ISA Jhansi city branch	25th to 27th October 2024
71st ISACON 2024 (National Conference of ISA)	Samrat Ashok Convention Center, Patna	Patna Society of Anaesthesiologists (PSA)	20th to 24th November 2024

Note: The dates mentioned in the above table are tentative & as per information received.
The list of upcoming conferences will be updated in subsequent issues.

Indian Journal of Anaesthesia
The ISA-IJA REAP academic
webinar series (fortnightly),
every Thursday between 5pm
to 6pm is being conducted.

ISA National PG online classes
These are being conducted regularly every
Monday between 6.30 to 8pm. Experienced
PG teachers are taking PG oriented classes
including exam-oriented topics.

ISA academic webinar series
The ISA conducts Clinical
Practice oriented webinar
series (CLIP) and Clinical
Reasoning and Problem Solving
webinar series (CRISP) on
Thursdays between 6.30pm to
8.30pm.

“Brought dead” to the Emergency Department... Prehospital Care in our Country: A perspective



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Introduction

Emergency Medical Services (EMS) worldwide prioritise assessment and treatment within the 'Platinum Ten Minutes' followed by definitive care within 'The Golden Hour' for prehospital medical or trauma emergencies. It is widely acknowledged that patients who receive basic care from trained providers and are transported to the nearest healthcare facility within 15-20 minutes of an emergency have the highest chance of survival. Consequently, Prehospital care/EMS plays a crucial role in the broader healthcare system, with continuous advancements aimed at providing swift prehospital medical assistance.[1]

Despite advancements in the healthcare sector over the past decade, India has yet to establish a unified, comprehensive EMS accessible nationwide. However, EMS in India, though fragmented, is rapidly becoming an integral part of the healthcare system, expanding both in scope and geography. In 2007, the Indian government sanctioned the development of an

integrated network of trauma centres along the country's busy highways to cater to patients involved in motor vehicle crashes.

Prehospital emergency care in India has undergone significant transformations in recent years, reflecting the nation's commitment to improving healthcare delivery. The phrase "**brought dead to the emergency department**" underscores the critical importance of timely and effective prehospital interventions. In this article, we delve into the progress, challenges, and future directions of prehospital emergency care in India.

Historical Perspective

In 1989, the Supreme Court initiated a significant advancement in trauma care within EMS through a landmark judgment in response to a public interest litigation. This marked the beginning of several judicial interventions in EMS. Parmanand Katara, through his individual efforts,

played a pivotal role, leading to a judgment commonly associated with his name. This directive compelled doctors and hospitals to provide immediate treatment to victims of road traffic accidents, bypassing bureaucratic formalities typically required for other emergencies.[2]

The inception of EMS in India saw its earliest efforts in 1985, centered in Mumbai. The Association for Trauma Care of India facilitated the connection of 15 ambulances to a central wireless dispatch centre. The evolution of EMS in the country was largely driven by passionate individuals and organisations aiming to transform the perception of ambulances from mere transport vehicles to crucial lifesaving emergency medical units. They advocated for an evidence-based EMS bolstered by technology and well-trained personnel, emphasising the importance of efficacy over financial considerations.

EMRI (Emergency Management and Research Institute) was established in 2005 with its initial operations concentrated in Hyderabad and Andhra Pradesh. The organisation aspired to respond to 30 million emergencies annually and save one million lives. India primarily adopted the "scoop and run" model of EMS rather than the Franco-German model. The provision of emergency services is constitutionally mandated in India.

Infrastructure development

A fundamental element of advancement in prehospital emergency care lies in the establishment of strong infrastructure. Over time, there has been a deliberate push to bolster EMS infrastructure nationwide. This entails acquiring ambulances outfitted with critical life-saving tools like cardiac monitors, defibrillators, and ventilators. The Government's National Health Mission (NHM) oversees the National Ambulance Services (NAS) operating across most states and union territories. Through the Dial-108 model (Emergency Response System),

they offer free emergency transportation, with one ambulance stationed for every 100,000 individuals in the population.

Access

Enhancing the availability of emergency services, especially in rural and isolated regions, continues to pose a major obstacle. Unlike urban areas that typically enjoy robust EMS networks, rural locales contend with scarce resources and infrastructure. Programmes like the National Ambulance Service (NAS) and the National Rural Health Mission (NRHM) have endeavoured to alleviate this disparity by extending emergency medical services to underserved populations. Mobile medical units and community health personnel are pivotal in providing prompt care to remote areas where access to healthcare facilities is restricted.

Training

The efficiency of emergency medical care before reaching the hospital heavily relies on the preparedness and proficiency of healthcare professionals. Paramedics, emergency medical technicians (EMTs), and initial responders undergo extensive training to acquire the necessary expertise and know-how in managing various medical crises. Instructional modules encompass a broad spectrum of subjects, such as fundamental life support, trauma treatment, and disaster response. Ongoing educational initiatives and certification processes guarantee that responders remain informed about current protocols and optimal approaches in prehospital healthcare.[3]

Integration of Technology

Technology has emerged as a powerful tool in advancing prehospital emergency care in India. The integration of GPS tracking systems in ambulances enables real-time monitoring of vehicle locations, allowing dispatchers to optimise response times and route selection.

Telemedicine platforms facilitate remote consultation between paramedics in the field and physicians in hospitals, enabling timely decision-making and intervention. Electronic health records (EHRs) streamline the documentation process, ensuring that vital patient information is readily accessible to healthcare providers across different settings.

Public Awareness and Education

Public awareness and education play a pivotal role in optimising outcomes during medical emergencies. Initiatives aimed at educating the public about the importance of timely intervention, recognition of warning signs, and appropriate response protocols empower individuals to take proactive measures in emergency situations. Basic first aid training programs equip citizens with essential lifesaving skills, such as cardiopulmonary resuscitation (CPR) and wound management. Mass media campaigns, community workshops, and school-based education programs serve as platforms for disseminating crucial information about emergency preparedness and response.[4]

Effective policy formulation and governance are essential for the sustainable development of pre-hospital emergency care systems. Government initiatives such as the NHM and the EMS Act have laid the groundwork for standardising emergency care practices and protocols nationwide. Regulatory frameworks ensure adherence to quality standards, patient safety guidelines, and ethical principles in the delivery of prehospital services.

Collaboration between government agencies, healthcare institutions, and non-profit organisations fosters a synergistic approach to addressing systemic challenges and driving continuous improvement in EMS.

Challenges and Future Directions

Despite significant strides in prehospital emergency care, several challenges persist. Inadequate infrastructure, particularly in rural

and remote areas, remains a barrier to timely access to emergency services. Shortages of trained personnel, equipment, and essential supplies pose operational challenges for EMS providers. Financial constraints and resource limitations hinder the scalability and sustainability of emergency care programmes. [5]

Based on our experiences in the Accident and Emergency Services department of our hospital, we have observed high morbidity and mortality rates among patients due to various factors such as inadequate pre-hospital care, inappropriate transport, and delays in receiving proper treatment. To address these issues, we propose the following:

- Provision of first aid at the site of the incident.
- Transporting patients in ambulances equipped with necessary resources.
- Directing patients to facilities with appropriate treatment capabilities.
- Ensuring timely transfer to higher centres if initial facilities lack required resources.
- Minimising the time from the incident to definitive care.

We hypothesise that providing comprehensive care through quick response and online monitoring by experts with the assistance of trained healthcare personnel can reduce both, disability and deaths. We suggest integrating existing 108 response systems with quick transportation modes and prehospital interventions, including two-wheeler first-responder responses and ambulances (108, private, or public).

Emergency response vehicles should be staffed by qualified and trained personnel equipped with online monitoring devices under medical direction. Medical facilities, both government and private, from Primary Health Centres (PHCs) to speciality hospitals, should be organised in a 'hub and spoke' model based on geographical functional divisions.

The main aim of this initiative, named **RISE, is to Reach, Identify, Save, and provide Emergency care:**

R: Reach the patient, as survival is time-dependent.

I: Identify life-threatening problems.

S: Save lives.

E: Provide Emergency Care as per standardised protocols.

The benefits of successful implementation of RISE include a reduction in deaths and disabilities caused by medical emergencies and trauma, an increase in productive working years, decreased treatment and rehabilitation costs, and reduced burden on communities and governments supporting disabled victims and their families.

Conclusion

The evolution of prehospital emergency care in India reflects a commitment to saving lives and promoting public health. While significant progress has been made, there is still much ground to cover in ensuring equitable access to timely and effective emergency services for all. By addressing challenges, embracing innovation, and fostering collaboration, India can continue to build resilient and responsive prehospital emergency care systems that meet the evolving needs of its diverse population.

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Access to Emergency Medical Care is still a problem in the rural areas of our nation. Pre-hospital care though still in its infancy is steadily growing. Several programmes, missions, organisations and persons have contributed to the development of Emergency Medical Services in India. This newsletter brings to you a thought-provoking and informative interview with Dr. Prasad Rajhans, an anaesthesiologist who is a pioneer of Emergency Medical Services in India. Dr Rajhans discusses the challenges of access to emergency care in India, the growth of Emergency Medicine in our country, especially the 'Dial 108' ambulance services, tele-ICUs and expresses his opinion on the further improvement of pre-hospital care and Emergency Medicine in India.

AN INTERVIEW WITH

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'Pioneer of Emergency Medical Services in India'

Warm Greetings to you from ISA National Head Quarters and the editorial team of 'VAPOUR'!

You are known as the pioneer of emergency medical services (EMS) in India. You have done yeoman services in the field of Emergency Medicine and Critical care in India. We are honoured to have you with us here.

1) Tell us what inspired you to develop EMS in India?

I was working in the UK from 1995 to 1998. Once I was travelling by a British Rail from Edinburgh to Cardiff and there was an announcement of a patient suffering a cardiac arrest on train and requesting any doctors on the train to come and help. I was travelling with my colleague and we had just completed the basic life support (BLS) and advanced cardiac life support (ACLS) course at Edinburgh. We decided to go and help the patient.

Both of us gave cardiopulmonary resuscitation (CPR) to the patient until the ambulance arrived on the next station. The train guard had already informed 999 emergency service. It was surprising that there was an ambulance that was waiting on the platform right in front of the train bogie in which the patient had a cardiac arrest. The paramedics came in and took charge of the CPR and shifted the patient. Later on, we found out that the patient had survived. After the patient was handed over to the paramedics, we walked back to our seats. The passengers in the British Rail gave us a standing ovation till we reached back to our seats. This was an emotional moment for me and that is when I thought, "When can this kind of emergency service be available to our people in India?" That is when I decided to do something about it.

2) Free standing academic departments of Emergency Medicine which can house post graduate residency training programmes are now being developed in most of the medical colleges in India. Do you think the growth of Emergency Medicine as an academic discipline in India is satisfactory? What hurdles are we facing in India in this regard?

Emergency Medicine (EM) is a well-developed speciality in all the developed countries. Since 2009, it has started finding roots in India too. I am the Past President of the Society of Emergency Medicine of India [SEMI], and we have put in a lot of efforts to get this speciality recognised in India.

The main challenge for development of this speciality is non-availability of teachers. Teachers have to move from their primary speciality like Anaesthesia, Medicine, Surgery and Orthopaedics to teach Emergency Medicine. Many of them are reluctant to leave their primary speciality. The infrastructure is another challenge. To run a post graduate training programme, the department needs to have good infrastructure with adequate equipment.

Both, the government as well as the private sector are taking this initiative. The National Medical Commission (NMC) has advised that all medical colleges should have a good EM department. There are some private hospitals that have a good EM department with a DNB EM program. The need of EM doctors is very high and the number of doctors being trained in EM is still less. Some of the trained EM doctors go abroad for better opportunities and some decide to do a super speciality programme like DrNB Critical Care Medicine. This is also leading to shortage of trained doctors in EM.

3) All Medical Colleges and hospitals have a department of casualty which caters to emergency cases. Is there a need then to have a Department of Emergency Medicine?

The use of the name 'Casualty' should be stopped.

The job of the traditional casualty as we know it is just to do the policing job and refer the patient to the respective speciality. While this is done, precious time at salvaging the patient is lost. In fact, critical patients arriving to the hospital are first attended to by a junior doctor.

In contrast, trained EM doctors are jacks of all specialities and masters of EM. They are trained to assess, diagnose, treat and stabilise critical patients coming to the ER. All lifesaving procedures can be done by the EM doctor. The EM department is the face of the hospital and any good hospital should have a good EM department.

4) Do you think emergency prehospital care in the rural areas of India is still in its infancy?

Access to emergency care is still a problem in rural India. After the launch of '108', it has become a lifeline in rural India. The government is planning to set up a medical college in each civil hospital in every district which will definitely improve the medical care in that district. The primary health care centres [PHCs] are being upgraded.

The initial emergency numbers are 100 for police, 101 for fire and 102 for ambulance. But in case of any emergency event like an accident all these three services are required. Police for law-and-order control and legalities, fire services for extrication and ambulance for saving lives. Hence the concept of having an integrated number for all three services came up as all the three services are needed to coordinate with each other.

If we dial 108, we have access to all the three services. EMS was launched in Pune on 5th August 1999 as Pune Heart Brigade. The first state level Dial 108 project was launched by EMRI in Andhra Pradesh, I was the technical advisor to the project. Many of my students have contributed to the Dial 108 project in Andhra Pradesh. My students have also contributed to the growth of Dial 108 project in many other states in India.

112 is now a universal emergency number all over the world. 112 will be the unified emergency access number in India and 108 will soon be migrated to 112.

5) Have the '102' & '108' ambulance services served their purpose and brought down mortality and morbidity, especially maternal mortality in India?

108 service has brought down the maternal mortality rate and infant mortality rate. It is one of the best interventions that could have occurred to decrease the maternal mortality rate. You will be surprised to know that more than 35,000 pregnant mothers have delivered in the ambulances of 108 services in rural Maharashtra. This also goes on to show that the ambulances do receive a call from them very late. The rural people still don't go for proper antenatal checkup and don't utilise the health care facilities in spite of Government providing all the services in the PHC.

6) We read an article entitled 'From Crisis to Care: The Spectacular Evolution of Emergency Medicine in India'. We also read an article entitled 'Emergency medicine in India: Time for more than applause'. So, what is your opinion on how to improve EMS in India? How can the challenges be overcome?

I personally feel we have done a great job in providing Dial 108 services in many states in India. But it remains a 'load and go' situation where the paramedics still lack proper ACLS training and are not delivering advanced care. Dial 108 service model is run as a PPP [Public Private Partnership] model where expenses are borne by the government and service is provided by a private service provider. There needs to be a central EMS authority which will monitor the tendering process in all states and monitor the quality of these services. There is a shortage of paramedics. There needs to be a universal paramedic curriculum and accreditation of these programmes at the national level. At present staffing of ambulances is different in different states.

Funding for EMS is a challenge and hence although these services have been initiated, quality services remain a distant dream. Helicopter Emergency Services (HEMS) are the need of the hour on the new highways being built in our country. Use of drone to provide EMS has also to be thought about.

7) Do you think there is a need for unified emergency healthcare legislation in our country? Is there a need for a law on 'right to emergency medical care'?

There is definitely a need for unified EMS legislation for the country. It should include the legislation on ambulance standards, tendering process, funding, quality controls, paramedic training and certification, paramedic registration, fines and penalties, medical direction and many other areas related to EMS. Every citizen has a right to emergency care and every hospital, private or public is duty bound to provide lifesaving treatment to any emergency that arrives at the hospital without worrying about the medicolegal implications. This was the verdict given by the Honourable Supreme Court in the famous Parmanand Katara case.

8) Can the Tele-Intensive Care Units (ICUs) and launch of remote ICU and telehealth services in rural areas by the Government of India be successful in bringing down mortality? How can we make tele-ICUs bridge the gap between health services in rural and urban India?

Tele-ICUs are coming up in a big way in India. Although it has its own limitations, it does help to improve patient care in remote areas. The big challenge is its proper implementation and the cost of care. The staff manning in the ICU should be able to perform all lifesaving procedures which are advised by the Tele-ICU team. Proper training of the manpower will be required. There is no clarity on the medicolegal implications of the team giving advice and that needs further introspection.

9) You were basically an anaesthesiologist when you took up a career in emergency medicine. Do you advise our young anaesthesiologists and young medical graduates in India to take up a career in Emergency Medicine?

Jokingly, I always say my first lecture was on 'Role of Anaesthesiologist outside OT' and that is when I took up Critical Care. My next lecture was on 'Role of Intensivist outside ICU' and that is when I started contributing my bit for Emergency Medicine. My next lecture was on 'Role of EM doctor outside ER' and that is when I contributed for development of prehospital Care. But there is so much to be done in all these areas and anaesthesiologists are well trained and the most appropriate specialists to help these specialities grow.

At present, I am the Chief Intensivist at Deenanath Mangeshkar Hospital, Pune overlooking EM and EMS as well.

Yes, young medical graduates should take up emergency medicine. Emergency Medicine is a great and exciting branch. You are saving lives all the time. You are an enterprising doctor diagnosing, treating and stabilising critical patients. Opportunities for EM doctors are in plenty all over the world and in India.

10) You have launched your website <http://dial108.com/> which is dedicated to Emergency Medical Services. We read your inspiring quotes there. Which is your favorite quote and what would be your advice to the younger generation of today?

My favourite quote is 'One has to ignite a torch to start a movement, and one has to create torchbearers to spread the movement.' I think my greatest contribution for developing prehospital care in India is that I was able to create leaders in EMS who have in turn helped spread the EMS movement all over the country. I feel the younger generation is very impatient and they want to achieve everything very quickly. But if one holds fort and has patience, one can achieve bigger things in the longer run. Though 'work-life balance' is needed, many of them refuse to walk the extra mile to achieve

what they wish for.

Thank you, Dr Prasad Rajhans!

A big Thank You from the editorial team of 'VAPOUR'!



Limitations of Damage Control Resuscitation in Pre-Hospital Care During Emergencies: A Snapshot from Rural Areas in India

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Introduction:

Pre-hospital care is pivotal in managing emergencies, particularly in rural areas of India, where access to advanced medical facilities is limited. Damage control resuscitation (DCR) aims to limit blood loss and prevent coagulopathy by combining hypotensive resuscitation, early airway control, and early and balanced use of blood products and other haemostatic agents. While DCR offers several advantages, its implementation in rural India faces significant limitations, which must be addressed to optimise patient outcomes.

Limitations in Pre-hospital care:

1. Limited Access to Specialised Care Facilities

One of the primary challenges of implementing DCR in rural India is the scarcity of specialised care facilities such as trauma centres and well-equipped hospitals. These areas often lack the infrastructure required for immediate access to blood products, advanced imaging, and surgical interventions, making it difficult to execute DCR protocols effectively.[1]

2. Delayed Transport and Remote Locations

Rural areas in India are characterised by remote locations and inadequate road networks, which can lead to prolonged transportation times for trauma patients.[2] Delays in reaching a medical facility can hinder the timely application of DCR, potentially compromising patient outcomes.

3. Insufficient Training of Healthcare Providers

Effective DCR necessitates highly skilled medical personnel capable of rapidly assessing and managing critical injuries. However, many healthcare providers in rural India may lack the necessary training and experience to perform DCR procedures accurately.[3]

4. Resource Constraints

Resource constraints pose a significant limitation to DCR implementation in rural India. [4] Access to essential resources such as blood products (e.g., packed red blood cells and fresh frozen plasma), specialised surgical equipment, and diagnostic tools may be inconsistent or insufficient in these areas, making it challenging to adhere to DCR guidelines.

5. Socioeconomic Factors

Socioeconomic factors also play a crucial role in DCR limitations in rural India. Many residents lack access to affordable healthcare services and health insurance, leading to delayed medical care-seeking behaviour and sub optimal outcomes. The financial burden of DCR interventions can further compound the challenges faced by patients and their families. [5]

6. Infrastructure and Road Conditions

The inadequate state of rural roads and transportation infrastructure hinders the rapid

transfer of trauma patients to healthcare facilities. Ambulances often struggle to navigate rough terrain and congested roads, contributing to delays in accessing medical care and increasing the risk of complications in patients requiring DCR.[6]

Conclusion:

While DCR offers a promising approach to trauma care, its implementation in rural India faces numerous limitations. Addressing these challenges requires a comprehensive strategy encompassing improvements in medical infrastructure, enhanced training for healthcare providers, better resource allocation, increased awareness about pre-hospital care, and efforts to improve rural road conditions.

By recognising and addressing these limitations, we can work toward improving pre-hospital care and optimising outcomes for trauma patients in rural India, ultimately saving lives during emergencies.

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Air ambulance services in India have become popular in recent years. These services provide on-site emergency medical care, provide pre-hospital resuscitation and also transport patients from one location to another, usually to a higher level hospital. The International Critical-Care Air Transfer Team (ICATT) is one such air ambulance service in India. It was founded in 2017 by two courageous and innovative anaesthesiologists, Dr. Rahul Singh Sardar and Dr. Shalini Nalwad, also called as 'Flying doctors'. Dr Shalini Nalwad was recently interviewed in this regard on Zoom by Dr. Sukhminder Jit Singh Bajwa, Hon. Secretary ISA National and the editorial team of VAPOUR. In this interview, Dr. Shalini delves into the development and functioning of air ambulance services in India. She shares some interesting moments from her career, motivates and urges young anaesthesiologists to take up this exciting career in aeromedical services.



AN INTERVIEW WITH

Dr. Shalini Nalwad

MBBS., MRCA., FCAI (UK)

'Pioneer of Air Ambulance Services in India'

Chairperson: ICATT Foundation

Co-founder & Director: ICATT Air Ambulance Services

Co-founder & Director: ICATT Maldives Medical Services

Co-founder & Director: Fellowship in Aero-Medical Science (FAM)

Vice Chairman: Federation of Industries of India



Madam,

A warm welcome to you from the Editorial team of 'VAPOUR'.

Thank you very much for accepting our invite and it's a pleasure to network with you. You have done a lot of pioneering work in air ambulance services in India. We are keen to know about you, your journey, the challenges you faced and your achievements while doing this.

1. Madam, tell us more about yourself?

I did my under-graduation in India and post-graduation in anaesthesia in the United Kingdom(UK). I completed my fellowship from Northern Ireland and my Deanery was from Northern Ireland Medical Training Agency (NIMDTA). I am trained in anaesthesia and critical care training from there as well. I did my aero-medical training based out of Oxford, Kidlington. I returned to India in 2017 and established this organisation called ICATT which stands for International Critical Care Air Transfer Team with two directors here, Dr. Rahul and myself in 2017.

We have grown very organically so far with four organisations at this point of time.

PHEM Education is an acronym for Pre-Hospital Emergency Medicine programme where we train doctors and paramedics jointly with the UK. In collaboration with KSS HEMS, we create an army of aeromedical commanders, a one-year programme where they all train in four different modules. First three modules happen in India and the fourth module happens in the UK from the Red Hill airport base.

I'm also the chairperson for ICATT foundation, where so far we have trained more than 45,000 people in cardio pulmonary resuscitation (CPR) and we have adopted ten intensive care units (ICUs). We train the doctors and nurses in ten taluk level ICUs. We have worked at a lot of community programmes.

I headed the mission Covid Plasma Endeavour (COPE), under COVID INDIA CAMPAIGN, where we worked with Karnataka government for creating plasma banks, making people to come ahead and donate. That's when plasma was widely used for coronavirus disease(COVID). We also ran quite a few other campaigns like Save our Saviors (SOS), where we supplied four crore worth of N95 masks for doctors, paramedics and nurses across the government hospitals. We also have another overseas venture organisation called ICATT Maldives where we have a base including a

medical team, seaplanes and speedboats which are used to retrieve patients and also shift patients out of Maldives to other countries when they need further treatment.

I'm also the Vice Chairman of Federation of Industries of India.

2. It's indeed an impressive work that you have done for a nice initiative from your organisation. Is ICATT a purely private or a public-private partnership? Were there any hassles while getting the permission to start this company that came from the health authorities?

As a private limited company, we are obliged to adhere to the regulations established under the Company Limited Registration Act. Despite being a global operating company, we must undergo the necessary registration processes in each state and country where we conduct business. For example, if we are conducting operations in Maldives, we must obtain registration from the Maldivian authorities. Similarly, our doctors are required to register both in India and in the countries they travel to. Personally, I hold registrations with the General Medical Council (GMC) in the UK as well as the Karnataka Medical Council in India. These registrations present opportunities for me to practise medicine in both India and the UK.

3. Do the doctors who get trained by your organisation get a registration that is valid throughout the world or only in India?

The training programme offered in collaboration with the UK is highly distinctive in nature. It is specifically designed for doctors who possess an MBBS degree along with a postgraduate qualification in emergency medicine, anaesthesia or critical care. Through this programme, we provide additional training in aeromedical skills. Upon successfully completing the programme, doctors gain the ability to apply these acquired skills in the country where they are registered to practice.

4. For these aeromedical skills, do they need minimum flying hours too?

There is no specific requirement regarding a minimum number of flying hours for our training programme. Instead, we exclusively select postgraduates who meet our eligibility criteria. In the initial application process, we received 130 applicants for the first batch and carefully selected the top 15 candidates. During the selection process, we assess their proficiency in fundamental areas such as airway management, ventilation, and ICU management. Additionally, we evaluate their aptitude and preparedness to handle critical patients in both pre-hospital and inter-hospital settings. Only after a thorough assessment do we proceed to enrol them into the training programme.

5. How many trainees do you train per year?

In the initial batch, we provided training to twelve doctors and fifteen paramedics and we conducted their training simultaneously. The primary distinction between the training courses is that while all doctors have the opportunity to receive training in the UK, paramedics do not.

6. Do the trainees have to pay fees for the course?

Indeed, the trainees are required to pay fees for the programme. However, in the case of the first batch, we provided a subsidy by covering approximately 60% of the total cost, while the remaining 40% was borne by the trainees themselves. The reason behind this subsidy was our aim to assemble a highly talented group of individuals for the inaugural batch, whom we consider our poster boys or poster girls. Additionally, it was important for us to establish a team of excellent trainers, all of whom are flown in from the UK to ensure top-quality instruction.

7. What about the general duties and responsibilities of these trained doctors?

Within our organisation, we employ doctors under various types of contracts, including full-time positions and zero-hour contracts. Our team consists of cardiac anaesthetists, cardiothoracic surgeons, intensivists, emergency medicine physicians, and flying physicians. While some doctors work full-time and are stationed at our facilities, others rotate between different bases. Our main offices are located in Bangalore, Hyderabad, Mumbai, Mysore, and Maldives, with Bangalore serving as our head quarters.

On a typical day, our doctors are either already on transfer or on call, ready to respond to transfers as needed. For example, today we have an extra corporeal membrane oxygenation (ECMO) transfer scheduled from Delhi to Chennai, alongside an airlift of an organ from Pune to Chennai. Nearly 95% of organ airlifts are handled by our organisation, and we have established standard operating procedures (SOPs) for conducting these airlifts. Our doctors are involved in every aspect, including patient transfers and taking calls.

Whenever our command centre receives a call for a patient transfer, our doctors are immediately engaged. The initial discussion with the patient's family and understanding the patient's requirements is led by our on-call doctor. This comprehensive involvement from the start has contributed to our consistent success, as we have completed over 265 ECMO air transfers in the past two and a half years, likely surpassing the record of any other organisation in the world within such a short time frame.

8. How do you popularise or publicise your services to the general public or hospitals? Do you have helpline numbers for the purpose of marketing?

Our organisation does not employ a dedicated marketing or sales team. Since our inception in 2017,

our growth has been predominantly organic. The majority of our marketing efforts rely on word-of-mouth referrals. Approximately 80% of our incoming calls are generated through connections with doctors and hospitals, while the remaining 20% come directly from individuals seeking our services. Hospitals often provide our contact information to families in need, and some individuals discover our air ambulance services by conducting online searches or finding our contact details through online platforms such as Google.

9. Since the air ambulance services you provide come at a cost, should we infer that only the people who can afford the cost will be able to utilise your services?

Surprisingly, since our operations began, it has been observed that 80% of the patients we transfer belong to the middle class and upper middle class, rather than being exclusively wealthy individuals. This highlights the fact that when it comes to preserving life, people from these socioeconomic backgrounds exert tremendous efforts. Furthermore, it is important to note that the cost of an ICU stay in a corporate hospital over a ten-day period typically ranges from 30 to 40 lakhs. In comparison, the expense incurred for our transfer services amounts to only 10% to 20% of that total cost.

10. Do you provide these services for charitable purposes also?

ICATT foundation, which I chair, actively engages in charitable initiatives. An example of our work took place during the floods in Kerala in 2018. In response to the crisis, we stationed a helicopter and a team with essential equipment at a command centre located at a football base in Chengannur. One of the National Health Mission hospitals was graciously provided to us for the purpose of setting up this command centre. During this operation, we implemented a system known as "track and trigger."

Through this system, we closely monitored the health status of every individual in the relief camps. With nearly a million patients in these camps, it was common for individuals to fall ill due to stress or lack of medical resources. Each camp was manned by a doctor, and we made it a priority to track any sick individuals, provide necessary medical advice, and stabilise them on-site. If stabilisation proved difficult, we would deploy an aircraft to airlift them to Thiruvananthapuram. It is worth mentioning that this entire operation was conducted free of cost, in collaboration with the Sai Care foundation. We allocated the majority of our savings from the UK to support this endeavour and provide aid where it was most needed.

In another significant instance, we partnered with actor Sonu Sood to airlift a young girl from Nagpur to Hyderabad. This was made possible through the initiation of ECMO and subsequent transfer. We covered all expenses, totalling 17 lakhs, including the costs associated with ECMO initiation and the entire transfer process.

11. Do the helicopters you use for the airlifting include almost all the equipment?

In our operations, fixed-wing planes are predominantly utilised due to their economic efficiency and enhanced stability. These planes offer pressurised cabins, enabling us to travel at higher speeds and cover long distances effectively. Thanks to the UDAN regional connectivity scheme, most cities are well connected, contributing to the accessibility of our services. For instance, Karnataka alone has approximately 17 airports, facilitating seamless transportation. However, there are circumstances that call for the use of helicopters, which are equipped accordingly for specific projects. An example of this occurred during the Chattisgarh elections, where we collaborated with the election commission. In Jagdalpur, considered the second most sensitive airport in India after Jammu and Kashmir due to Naxalite issues, we stationed two aircrafts.

They have recognised the challenges in establishing trauma centres across every location or along the entire highway. Even if these centres were created, it would be difficult to adequately staff them with the required skill sets. For instance, district headquarters still lack trauma teams, especially with neurosurgeons.

While infrastructure can be developed, there is a shortage of skilled professionals. In international contexts like European countries or the United States, tertiary care centres are limited, and patients are often transported there for specialised treatment.

Our training methods focus on the "stay and play" approach. When our team responds to a situation, they stabilise the patient on-site and provide all necessary interventions. Our personnel are trained to perform clam shell thoracotomy if required before airlifting the patient for further medical attention.

We successfully performed the first trauma ECMO procedure in India for a patient who was a wildlife doctor from Shimoga, a location approximately six hours away from Bangalore. The incident occurred when the doctor was attempting to tranquilise an elephant, which unfortunately turned violent and injured him. He was rushed to a local hospital where the medical team provided exceptional care. However, due to the severity of his injuries, it was not feasible to transfer him to a tertiary care centre at that time. He suffered from pneumothorax and haemothorax, and his condition prevented a comprehensive trauma screening due to his unstable flail chest. Due to the risky nature of moving him to the CT scan suite, it remained uncertain whether he had a scapular or spine fracture. With limited information about his injuries, we took a calculated risk and decided to initiate ECMO, considering that anticoagulation carried a high risk of bleeding.

We started the ECMO procedure without administering heparin and gradually introduced anticoagulation. In a span of 230 minutes, we transported him by road to Manipal Hospital in

Bangalore, although we could have used an air ambulance if needed. This transportation involved creating five district green corridors and coordinating with seven Indian Police Service (IPS) officers. After just 52 days, the patient returned to work, and a heartwarming moment occurred when he embraced the elephant that had previously caused his injuries. To this day, his family maintains contact with me, and they have invited me to their housewarming ceremony on February 22 this year. In a gesture of gratitude, he visited my office and presented me with two small elephant figurines. Such rewarding moments occur regularly, motivating us to strive for innovation in our services.

To ensure continuous improvement, we hold debrief meetings after every patient transfer to learn from our own mistakes. Remarkably, our expertise has gained recognition internationally, as the UK has sought our ECMO guidelines and knowledge regarding ECMO transfers. While most air ambulance organisations primarily focus on patient retrieval, we differentiate ourselves by taking the initiative to initiate ECMO before transporting the patient.

15. What is the kind of equipment that is available on the aircraft? Do you have ECMO transfers and non-ECMO transfers as well?

Our team ensures that we are prepared to create an ICU setup anywhere, at any time. We bring along all the necessary equipment, excluding only light sources. Recently, we have expanded our equipment to include ABG i-stat and ACT machines, as well as fibrinogen concentrates. This addition is crucial, as obtaining Fresh Frozen Plasma can pose challenges in remote hospitals.

Despite the challenging environment, including crossfire incidents that lasted for hours, we promptly responded to calls with sanitised helicopters landing on designated helipads. Our tasks involved transferring patients with gunshot injuries, blast injuries, and airlifting Central Reserve Police Force (CRPF) jawans.

Moreover, helicopters prove invaluable in project-based situations. For instance, during the Moto Grand Prix held at Buddh Circuit in Noida, helicopters were employed to cover the entire circuit. This highlights the versatility of helicopters, particularly in trauma and emergency scenarios.

12. Are the runways and the planes provided in association with the Government of India? What is your experience with them?

Runways are typically owned by airports and regulated by the Airport Authority of India, although there are also privately owned airports in existence.

In a recent incident, we successfully airlifted three Indian individuals who had been involved in a road traffic accident in Azerbaijan. Complicating matters further, we needed to fly over Pakistan, which posed challenges due to the prevailing security situation, (loss of Captain Pranjal's life to terrorists in the background) . Consequently, we were denied permission to fly over Pakistan, which would have required a two to three-day detour to reach our destination. To overcome this obstacle, we swiftly arranged for an aircraft from Dubai to be mobilised. With the Dubai aircraft granted permission to fly, we were able to bring the three young boys back home within a remarkable 24-hour time frame from the moment we received the call for assistance. Undoubtedly, this incident stands as one of our greatest achievements. Overcoming language barriers and navigating a complex situation, we encountered significant hurdles during our mission in Azerbaijan. The local authorities had confiscated the passports, documents, and phones of the individuals involved, causing further complications.

Moreover, the local doctors were uncooperative, making our medical teams wait in freezing temperatures outside the hospital, while access to the airport was tightly controlled. The presence of highly armed personnel, even among the lowest-ranking officers, underscored the importance of utmost precision and caution, as the slightest error on

our part could have dire consequences for lives at stake in that challenging environment.

13. So, does this mean that you have the maximum base in India?

Indeed, in addition to our other operations, we take pride in being recognised as the largest team of air ambulance services in Asia. Our extensive network enables us to have access to a fleet of over fifteen air crafts worldwide, with at least eight of them stationed in India.

14. Do you have any formal agreement signed or MoU signed with the government of India like the one with the Election commission?

The Odisha government has recently issued a tender to establish air ambulance services in collaboration with us and Pawan Hans. Although the commencement of operations is pending, we have already prepared the entire blueprint for the project. Notably, the election commission project marks our initial formal engagement with the government. Furthermore, I would like to highlight that in the last budget, the Karnataka government has announced its support for air ambulance services. Many state governments are giving serious consideration to the implementation of air ambulance services, particularly for organ airlifts, emergencies, and trauma cases. We are actively working with national highway authorities on this initiative. We have also participated in several high-level meetings with NITI Aayog, where they have strongly recommended the Ministry of Road and Transport to support our endeavours.

In our experience, we have successfully initiated ECMO in remote locations like Reva. There have been instances, such as in a hospital in Rajkot, where no lifts or elevators were available. In such cases, we have had to shoulder the responsibility of carrying the patients downstairs, even with the added complexity of ECMO ventilators, chest drains, and central lines. The lifts, at times, have been too small to accommodate both the patient and a stretcher. Consequently, we bring every essential piece of equipment with us, including

ventilators, syringe pumps, suction machines, and portable oxygen cylinders.

During an ECMO initiation in Gandhi Dham, the hospital experienced a sudden drop in oxygen pressure. To stabilise the patient temporarily, we relied on portable oxygen cylinders until the pressure was restored. As a result, we have learned not to rely on hospitals for anything beyond blood, as transporting cross-matched blood can be difficult. Therefore, we ensure that all our ICU equipment is airworthy and certified. Even the oxygen cylinders must meet specific criteria, such as being made of aluminum rather than molybdenum steel. Each piece of equipment undergoes crash testing to ensure its functionality even in the event of an aircraft crash.

To promote consistency and familiarity, we have standardised our equipment across all bases. This means that the equipment used in Maldives is the same as what is used in Bangalore and Hyderabad. We also pack and organise the equipment uniformly to facilitate familiarity for doctors and paramedics across different locations.

16. Do you face any problems with the functioning of the ventilators and suction machines on board? Is their functioning same as on the ground?

Pressurised cabins ensure that we do not experience significant pressure changes until we reach altitudes of 8,000 feet or higher. Below this threshold, the cabin maintains a pressure level similar to that of sea level.

17. Do you follow the same guidelines and steps suggested by American Heart Association and other societies for cardiopulmonary resuscitation on board?

Certainly, We strictly adhere to established guidelines. Implementing these guidelines was relatively straightforward for us as we adopted and adapted the Intensive Care Society of the UK and the Association of Anaesthetists of Great Britain and Ireland (AAGBI) guidelines.

However financial considerations pose a significant challenge to achieving complete alignment. One constraint we face is the limited space within the aircraft, given that it is a seven-seater. The seating arrangement places seats against a wall, which restricts access to patients on one side. This arrangement becomes problematic when dealing with procedures such as placing a chest drain on the left side, as it faces the wall. Additionally, the number of personnel we can accommodate is limited. For ECMO transfers, we can only have one doctor, one paramedic, and two perfusionists. In cases where we do not carry relatives, four individuals, including two pilots can be present during an ECMO transfer. However, for all other transfers, we bring along relatives. In neonatal transfers, it is mandatory to have at least one parent present, even for ECMO transfers. This limited capacity has required us to carefully manage the number of medical personnel based on the presence of relatives. For example, during an ECMO transfer for a one-and-a-half-year-old child, we could only accommodate one perfusionist due to the inclusion of a parent. To address these space constraints, we are in the process of designing the Saras Mark two aircraft in collaboration with the National Aeronautic Laboratories (NAL). This larger aircraft will seat approximately 14 individuals and feature a stretcher positioned in the middle, allowing for 360-degree access to the patient. With this new design, we aim to perform ECMO procedures directly within the aircraft, reducing dependence on hospital facilities. The new aircraft will be equipped with sterilisation capabilities, essentially transforming it into an operating theatre or ICU. This project is a part of the government's 'Make in India' initiative, and we have already signed a Memorandum of Understanding.

The Saras Mark two aircraft, manufactured by Hindustan Aeronautics Limited (HAL) and designed by NAL, is expected to be operational within the next three years.

It will mark the first-ever aircraft purpose-built as a flying ICU.

18. Can these air ambulances land in remote areas or do they need a helipad for landing?

There are two types of air ambulances: fixed-wing and rotary-wing. Fixed-wing air ambulances are limited to landing only at airports, while rotary-wing air ambulances, such as helicopters, have the flexibility to land in various locations. In Bangalore, for example, there are around 300 helipads on rooftops, but the majority of them are not authorised for landing. Only two locations, namely ITC Gardenia and Electronic City, have the necessary authorisation for rooftop landings, while the rest are primarily for aesthetic purposes and not structurally designed for landing purposes.

These air ambulances have the capability to land and take off from any open area that measures approximately 50 x 50 metres. However, clearance is required in the vicinity to ensure safety. Loose objects must be cleared since the rotor blades generate significant down wash that can propel objects into the air. On certain occasions, we have successfully landed at locations such as the Rajarajeshwari cricket ground of a medical college and police grounds. Airlifting organs from police grounds, for example, is facilitated by the availability of required permissions from the Superintendent of Police (SP) and the district collector, as security measures can be swiftly arranged.

Managing crowd control is one of the significant challenges encountered during helicopter emergencies in India.

19. What motivated you to go into this and take up air ambulance services as a career option?

As an anaesthesiologist practising in the UK, I am consistently at the forefront of accident and emergency response. When complex cases, such as polytrauma incidents arise, I am on standby and ready to be the first line of medical

assistance. During my time in Northern Ireland, I encountered numerous challenging injuries resulting from gunshots and bomb blasts. One of my main aspirations has always been to return to India. In the Indian context, a traffic accident occurs on an average every four minutes. My ultimate goal in returning to India was to establish free helicopter emergency services, specifically targeting road traffic accident victims. The prevalence of such accidents leads to a massive loss in the gross domestic product (GDP). By investing 2500 crores in constructing safer roads, the government could potentially save 25,000 crores that are otherwise lost due to the high number of fatalities on hazardous roads.

Moreover, a personal experience involving my uncle, who was a prominent coffee planter and major coffee exporter in Chikkamagaluru, deeply impacted me. He suffered from a brain haemorrhage and unfortunately, while being transported in an ambulance to Bangalore, he passed away. I strongly believe that if proper protocols, timely intervention, and swift transport had been in place, his life could have been saved. Tragically, India's helicopter emergency services are significantly lagging behind technological advancements by 35-40 years. India has made remarkable progress in diverse fields, such as space exploration, information technology (as seen in Silicon Valley), and becoming the startup capital exemplified by Bangalore.

The country possesses advanced technologies such as Unified Payments Interface (UPI) services, smart cities, etc.

However, when it comes to saving lives, particularly in the pre-hospital setting, India still has a long way to go. These disparities and the immense potential for improvement are among the driving factors that motivated me to pursue my goals.

20. Did you encounter any problems/hurdles when you set this up? How did you cross these hurdles? Especially as a woman, you have taken up such a rare career...

The aviation industry has historically had a limited representation of women, but I have noticed an increasing number of women making their mark in critical care and emergency medicine. Pursuing a career in this field is not just a profession; it becomes a lifestyle due to its demanding nature.

When we initially embarked on our journey, we held the belief that we would secure investment and quickly begin operating with two planes. However, we soon realised that this vision did not align with the actual ground reality. Many people doubted or disagreed that air ambulance services of this nature could thrive in India. It was a challenging transition, especially since we had left stable jobs to pursue this venture.

Initially, we adopted an organic approach and refrained from investing capital. We conducted an aeromedical workshop at an emergency medical conference in Hyderabad, which garnered attention and led to us winning the innovation award in emergency medicine. This recognition helped to generate awareness about our services. One of our earliest air ambulance missions involved airlifting a surgeon from Raipur, despite not having all the necessary equipment at that time. We managed to gather the required equipment since the patient was a colleague, and we were determined to assist. As we started gaining traction, hospitals began reaching out to us, seeking our assistance.

Initially, we conducted only one or two transfers per month. However, we have now grown to the point where we perform nearly two to three transfers daily.

21. Can you share with us some very interesting moments of your career?

Certainly, I would be glad to share a particular incident. The experience I want to talk about was as rewarding as winning an Oscar award

for an actress. In my case, it felt like receiving a similar level of recognition. It occurred when I had the opportunity to transport Siddaganga Swamiji Shivkumar Swamiji from Tumkur mutt to Rela Hospital in Chennai, and subsequently bring him back. The entire process took only 60 minutes, from leaving the Tumkur mutt to arriving at the Chennai hospital.

The pressure I faced during this task was unimaginable, considering the presence of mutt trustees and the state administration. Outside the mutt, around 10,000 children were standing, sobbing as we carried Swamiji away. It was like flying with a revered figure, whom I have worshipped as a walking God since my childhood. This incident was incredibly fortunate for me, as he held a divine status in my eyes. I grew up seeing him as a deity.

I was entrusted with transferring him, which was a daunting task in itself, as it involved moving him from his familiar surroundings to a different state. The responsibility was immense, so I made sure to create a mutt-like environment within the aircraft to ensure his comfort. His disciple, who was his favourite person, sat right in front of him during the flight. Despite him being 111 years old, many people, including the press, asked for my opinion on his medical condition. While I can provide an opinion based on my training and experience, when it comes to a human, I don't know how to give an opinion on God. However, he walked the entire marble floor of the ward at Rela Hospital when we arrived, even though a wheelchair had been prepared for him for added privacy.

This was quite a scary moment, as he wasn't in good health, and there was a risk of him collapsing or sitting down. I held his 'paduke' (wooden footwear) and followed closely behind him with the wheelchair in case he needed support.

Once we reached the ward, I intended to hand him over to the Rela team, but before that, I asked him, "Swamiji, can we perform some tests to check your vitals?" In response, he said, "No, first bath, puja and then everything else!"

Bringing him back safely had been a constant determination. Witnessing the children's tears and their emotional display further intensified my sense of responsibility to ensure his return. I was fully committed to fulfilling this duty, as there was simply no other alternative. Therefore, this became the most unforgettable transfer I have ever experienced.

22. You're training people for the air ambulance service. Are you taking only these trained doctors?

The majority of the doctors accompanying us on these flights possess expertise in aeromedical sciences, thanks to their training and fellowship programmes. However, it is essential to acknowledge that each team member, including the ECMO team, contributes significantly, even if they might not have undergone specific training in aeromedical sciences. Despite this difference in training, these individuals still perform exceptionally and contribute to the overall success of the team.

23. Is there any fellowship training in India, like this training programme available in India for air ambulance services?

In India, there are currently no comprehensive training programmes dedicated to aeromedical sciences. While there are some diploma courses available, they mainly focus on theoretical aspects and require online participation for submission of written assignments and theses. However, we have developed our own unique training approach, which involves practical, hands-on experience.

Our training programme encompasses flying participants on real aircrafts and helicopters, conducting drills and simulations onboard planes, and providing in-depth instruction. Additionally, to further enhance their they fly on real HEMS sorties in the UK. Upon completion of the training programme, doctors are immediately able to accumulate flight hours and begin flying with us. It is noteworthy that many of the doctors who have undergone our training have chosen to either continue working with us or pursue opportunities abroad.

24. You are on call around 24 hours a day and seven days a week. So don't you get stressed out? And what do you do to decrease all this stress?

The nature of our work, which involves the integration of aviation and critical care medicine, creates a high level of stress. Both professions individually demand immense focus and responsibility.

Throughout the duration of a flight, until the aircraft safely lands, there is no room to relax, as circumstances can shift unpredictably at any moment.

We operate within an environment that is often unfamiliar, facing new challenges day in and day out. As a result, opportunities for socialising are limited, and I find myself with minimal time to engage in social activities. Instead, I prioritise using any free moments I have for relaxation and rejuvenation in the comfort of my home. However, even when I am at home, the possibility of receiving an urgent call remains, making it difficult to completely disconnect from work.

25. Do you think that there is a lot of similarity between aviation and anaesthesia?

We often emphasise the existence of numerous similarities in our work. To mitigate the occurrence of errors, we have implemented a debrief checklist designed to minimise potential mistakes.

However, it is important to acknowledge that there are various factors beyond our control due to the unique challenges we encounter on a daily basis.

Each day presents us with different airports, receiving hospitals, referring hospitals, and diverse aircrafts. This dynamic environment introduces a multitude of variables that we must navigate. Despite our efforts to establish protocols and checklists, we must remain adaptable and prepared to address unexpected circumstances inherent in our line of work and it works the same in the air ambulance world.

26. By the way you have spoken to us, we do sense you really enjoy your job. What are your thoughts on this?

Indeed, there is a profound sense of accomplishment after each successful patient transfer. However, it is important to note that in our line of work, each new day brings a fresh start, leaving no room for complacency. Settling down becomes a luxury we cannot often afford. We are consistently faced with new and unforeseen challenges that prevent us from claiming to possess all the answers. Every day is laden with its own unique obstacles and hurdles, demanding our unwavering attention and adaptability. To illustrate, during a recent transfer from Delhi to Chennai, where we had initiated ECMO for a patient, we encountered an unexpected challenge. We required five oxygen cylinders, but the individual responsible for supplying them arrived at the airport with two of the cylinders empty. With the team already present at the airport and the patient relying on ECMO, we were confronted with the arduous task of resolving such unforeseen scenarios. Challenges like these constantly test our problem-solving abilities and resourcefulness.

27. You have to spend many anxious moments and take quick decisions on such calls. As an anaesthesiologist, I think you are very much tuned to this. Do you think that anaesthesiologists are the right persons to do this job?

I am fully confident and have no doubts regarding the suitability of anaesthesiologists for air ambulance services. This confidence stems from the extensive training we receive in managing critical patients, handling airway and intravenous lines, and effectively caring for ventilated and critically ill individuals. Our training also encompasses a wide range of life-saving interventions and procedures.

In our field, we are ingrained with the importance of being prepared at all times. We are trained to have multiple contingency plans such as plan A, plan B, and plan C, regardless of

whether we are performing a simple rapid sequence induction (RSI) or dealing with a patient classified as an American Society of Anesthesiologists (ASA) grade I. We understand that even in seemingly straightforward situations, anything can go wrong at any second.

Administering anaesthesia requires us to be acutely aware that the life of the patient hangs in the balance, with mere minutes and seconds making all the difference. This understanding drives us to be thoroughly prepared in every aspect. Debriefing sessions and checklists serve as the backbone of our practice, ensuring that we consistently maintain a high standard of care. As a result, I firmly believe that anaesthesiologists are exceptionally well-suited for providing air ambulance services.

28. What is your message to the younger generation of today?

There is a multitude of opportunities beyond our formal training where we can make a meaningful impact. It is essential to think creatively and step outside the confines of traditional roles, exploring ways in which we can contribute to the betterment of society in even the smallest of ways.

Constantly seeking areas of improvement and innovation both for ourselves and for the care we provide is crucial. It is tempting to become complacent, simply performing our designated tasks, earning a pay check, and then unwinding at home. However, such a mindset can be adopted by anyone. As anaesthesiologists, we possess unique and invaluable skill sets that can make a significant difference between life and death. This is not meant to diminish the contributions of other medical specialities, but it is important to acknowledge that physicians and surgeons often play a secondary role in critical situations. We, as anaesthesiologists, are at the forefront - the first line of defence.

Our profession empowers us to take on numerous responsibilities and initiatives that extend beyond the boundaries of traditional

medical practice. For instance, one of our fellow doctors recently innovated a special electronic pillow designed specifically for challenging intubations. As anaesthetists, we often have a brief window of relative stability once a patient has been anaesthetised, providing us with an opportunity to think and explore new ideas. Instead of squandering this time, we can dedicate it to improving our craft and making meaningful contributions to society and the medical field.

It is within our power as anaesthetists to bring about substantial advancements in the field of medicine and enhance patient care. By embracing a proactive and innovative approach, we can truly make a difference that extends far beyond our immediate responsibilities.

We have been amazed and inspired by your endeavours at air ambulance services and we feel this interview will inspire the younger generations and the concept of air ambulance itself should also become popular. We think it has got a good scope in India with so many lives being lost on the roads.

Thank you so much Dr Shalini Nalwad!

Thank you from the editorial team of 'VAPOUR'!



Recent Management Guidelines for Organophosphorous Poisoning

DR. MAYANK MASSAND

Senior Consultant

Anaesthesiology & Critical Care

Care CHL, INDORE

ISA No. M1892



Organophosphorous poisoning is a grim problem of developing countries. The mechanism of action is basically irreversible inhibition of cholinesterase and pseudocholinesterase enzymes. More acetylcholine is available on the receptors of neuromuscular junction, autonomic nervous system and the central nervous system. Insecticides are the main source of this poisoning. The routes of exposure can be inhalational, skin, conjunctiva, oral mucosa and the gastrointestinal tract. The symptoms can be divided into

- 1) Acute (within 24hours)
- 2) Delayed (24hours to 2 weeks)
- 3) Late (beyond 2weeks)

The symptoms can be classified as follows[1]

1. Muscarinic - salivation , lacrimation, faecal incontinence, urinary incontinence, blurred vision, diarrhoea, nausea, vomiting, wheezing and bronchoconstriction.
2. Nicotinic - weakness , fasciculations, muscle cramps, convulsions and flaccid paralysis, hypertension, tachycardia .

DIAGNOSIS & MANAGEMENT [2]

The diagnosis is based on the history and examination.

MANAGEMENT

The 3 main pillars of management are

- 1) Decontamination
- 2) Oximes , atropine , benzodiazepines
- 3) Airway and ventilatory management

There are certain treatment modalities that have been employed and have proven good results in certain cases. These include the following-

1. Gacyclidine - It is an antiglutaminergic compound of benefit in nerve agent poisoning along with atropine, benzodiazepines and pralidoximes. Soman neurotoxicity is the main one cured by it.[3]
2. Sodium bicarbonate - The alkalinisation produced is effective to block the nerve agent toxicity produced by soman by products. Higher dose 5meq/kg in 60 min followed by 5 to 6 meq/kg / day is administered.
3. Magnesium sulphate - Dose of 4gm is known to be extremely effective to prevent seizures. It blocks the calcium channel and thus is effective in the inhibition of acetylcholine release.
4. Clonidine - It reduces acetylcholine synthesis and so the release in the presynaptic terminal.
5. Antioxidants - VITE is useful in dimethonate and malathion poisoning .
6. Haemofiltration and Haemoperfusion - effective therapy but yet to be proven .
7. Plasmapheresis - Best therapy in terms of molecule size and distribution of toxins via peripheral line. No central line is required. We cannot deny the role of the primary therapy and that remains the crux of the proceedings.

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ISA National Activities

Felicitation of PADMA SHRI awardee DR. MAYA TANDON by ISA National

Dr. Maya Tandon, ex. Prof & Head of Department of Anaesthesiology, SMS Medical College, Jaipur was recently awarded the coveted Padma Shri award by the Government of India for her dedicated services to the spread of road safety awareness through her organisation 'Sahayta'.

The ISA National felicitated her on 10th February 2024. The Hon Secretary ISA National, Dr Sukhminder Jit Singh Bajwa, President of Rajasthan Society of Anaesthesiologists and senior members of the Jaipur Society of Anaesthesiologists visited Dr. Maya Tandon madam at her residence in Jaipur and honoured her on behalf of the Indian Society of Anaesthesiologists.





ISA
Indian Society of
Anaesthesiologists

CITATION



PADMA SHRI DR. MAYA TANDON

Ex-Professor & Head,
Department of Anaesthesiology
SMS Medical College, Jaipur

An alumni of Sophiya School, Ajmer and SMS Medical College, Jaipur, Dr Maya Tandon is a well-respected teacher in Anaesthesiology. Her professional career started as a tutor in the Department of Anaesthesiology and she rose up to the rank of Professor & Head of the Department, SMS Medical College, Jaipur and Medical Superintendent of JK Lon Hospital which is the attached children's hospital of SMS Medical College. She did a lot of hard work in paediatric anaesthesia and is the recipient of the Lifetime Achievement award at SMS Medical College, Jaipur.

After her superannuation, she formed a non-profit non-governmental organisation, 'Sahayta' and through this, she taught basic life support to the police personnel and people of multiple organisations. She believed that no person should pass by a road transport accident victim without attempting to save the victim's life. The creation of public awareness of Basic Life Support and the teaching of Compression Only Life Support, especially to save the life of victims of road traffic accidents has always been her long time passion. Her enthusiastic efforts and energy in teaching this to the masses and to trainers are unmatched. More than one lakh people have been trained in Basic Life Support because of her services. It is very apt that Madam has been very recently conferred the coveted Padma Shri award, the fourth-highest civilian award of the Republic of India for the year 2024 in the social work category for the outstanding work that she has carried out in road safety awareness in the last three decades.

The ISA National feels extremely proud to honour Dr Maya Tandon for her distinguished achievements. Her dedication and commitment to her profession and her exceptional contribution to the noble cause of spreading public awareness of cardiopulmonary resuscitation will serve as an inspiration to all her fellow colleagues, teachers and students in the years to come.

Dr Jigeeshu V Divatia
President
ISA National

Dr. Sukhminder Jit Singh Bajwa
Honorary Secretary
ISA National

10th February, 2024
ISA National Headquarters,
Patiala, Punjab

ISA activities by Miraj-Sangli city branch

(December, 2023)

ISA Miraj-Sangli branch conducted two COLS activities and one offline clinical meeting in the month of December, 2023. The first COLS activity was conducted on 6th December at ITI college, Sangli for their staff under the leadership of branch president, Dr. Vasudha Jadhav. The second COLS activity was conducted on 15th December for the 8-10th standard students of Shri A.B. Patil English school, Sangli. It was conducted by Dr. Ashok Deshpande and team. The branch also conducted one offline clinical meeting on Bariatric Anaesthesia on 22nd Dec at Shree Siddhivinayak Ganapati Cancer Hospital which was attended by around 35 branch members. The invited faculties for the CME, Dr. Pallavi Kulkarni and Dr. Mansing Adnaik gave lectures on “Anaesthesia for Bariatric Surgery-How I do it?” and “Practical aspects of Bariatric surgery”, respectively.

Dr. Vasudha Jadhav, Dr. Aparna Purohit and Dr. Ankita Gosavi were also invited at Health Expo for common people arranged by IMA Sangli branch to solve queries of the common people regarding pain management and anaesthesia.



COLS activity at ITI college, Sangli.



COLS activity at Shri A.B. Patil English school, Sangli

ISA activities by Nagpur city branch (December, 2023)

ISA Nagpur city branch (NCB) conducted multiple activities in the month of December, 2023. Compression only life support (COLS) activities started on 2nd December and were conducted at two places- Tilak Vidhyalaya, Dhantoli and, Reliance Smart Bazaar, Ramdaspath. In the former one, Dr. Dilip Wasnik, Hon. Secretary ISA NCB and team conducted the activity. In the later one, NCB president, Dr. Gauri Arora, in addition to COLS activity, also explained the role of anaesthesiologists inside and outside OT, in pain management, ICU, trauma, emergency medicine, labour analgesia etc. Multiple awareness programmes on anaesthesia and COLS activities followed thereafter at various places that included Gauri Fitness centre, Sugat nagar on 3rd December and at Khaasdar Sanskrutik Mahotsav on 5th December (MEGA COLS attended by around 20,000 people including Ministers, IAS officers and VIP dignitaries), at Sure tech Multi speciality Hospital and Research Centre, Dhantoli on 6th December, CPR awareness programme for non-medical personnel organised by National Board of Examination in Medical Sciences (NBEMS) at Super speciality Hospital, Nagpur and National Cancer Institute, Nagpur on 6th December, at Institute of Chartered Accountants of India (ICAI) on 10th December, basic life support (BLS) at LGI hospital, Dhantoli on 21st December and COLS at Indian Institute of Fire Engineering, Makardhokda on 26th December. A pair of virtual webinars were organised, with the first (12th December) focused on financial education and titled "Money Matters." The second (21st December) webinar focused on simplifying the cardiac equation for non-cardiac surgery in collaboration with Society of Anaesthesiologists, Maharashtra State (SAMS).

The 3rd Executive Committee Meeting of ISA NCB was conducted on 7th December, 2023 which was attended by 18 members. Later, the new team of ISA-NCB for the year 2023-24 was installed on 17th December. Dr. Gauri Arora, Director, Arora Hospital and Dr. Dilip Wasnik, Consultant, Alexis Hospital were selected as the President and Hon. Secretary, respectively, for the year 2023-24. Other members were also inducted into various posts. The new team emphasised to create awareness about the ill effects of tobacco and its implications on anaesthesia and also promote COLS with the aim that 'Every citizen should become a life-saver'. On this occasion, 'e-Sense', e-newsletter of ISA NCB was also released, the editor and co-editor of the newsletter being Dr. Nilesh Mathankar and Dr. Sheetal Deshpande, respectively. A hand book "Know Your Anaesthesiologist" was also released for the purpose of creating awareness amongst the general public. ISA NCB branch also managed to achieve media coverage on the various activities they had organised and conducted.



Glimpses of Mega COLS



Installation ceremony of ISA NCB

‘Fear stems from misinformation. Time to debunk anaesthesia myths’

Chaitanya Deshpande
@timesgroup.com

Nagpur: Anaesthesiologist Dr. Gauri Arora, the incoming president of Indian Society of Anaesthesiologists, Nagpur, is on a mission to debunk common myths surrounding anaesthesia. With her experience and expertise, Dr. Arora sheds light on misconceptions that often lead to unnecessary fear and apprehension among patients.

What inspired you to address the many myths surrounding anaesthesia?

I believe that fear often stems from misinformation. Anaesthesia is an essential part of medical procedures, and it's crucial for patients to have accurate knowledge. Dispelling myths helps in building trust and understanding, contributing to a more positive experience for patients undergoing surgery.

There is a myth that anaesthesia is given by a nurse or the operating doctor. What's the reality?

The truth is that anaesthesiologists, specialized doctors with extensive training, administer anaesthesia. Patients should be assured that their care is in the hands of highly qualified professionals.

Many believe past illnesses are irrelevant to the anaesthesiologist. Can you clarify?

Contrary to popular belief, informing the anaesthesiologist about past illnesses is crucial. The body's organs and functions are interconnected, and a history of past health issues provides valuable insights. It guides the entire treatment process and enhances patient safety.

Why is fasting before surgery critical, and what are the risks of non-compliance?

Fasting is essential to prevent complications during surgery. Eating or drinking before surgery can lead to vomiting, posing a severe risk to the patient. Following pre-operative instructions diligently ensures a safer surgical experience.

Many believe that anaesthesia takes time to take effect. The idea that anaesthesia doesn't take effect quickly is a false notion. While individual responses may vary, the dosage is carefully tailored to each patient. It's crucial for patients to trust the expertise of their anaesthesiologist and communicate any concerns for a smoother experience.

What's the reality behind backache following spinal anaesthesia?

Backache following spinal anaesthesia is often misattributed. Thorough patient history reveals pre-existing conditions or recent traumas, rather than the anaesthesia. Understanding the true causes helps patients make informed decisions about their medical care.

Your thoughts on relying on information available in internet versus trusting medical professionals?

While technology provides vast information, it's essential to trust qualified medical professionals. "Google knows everything" is a dangerous misconception. Discussing concerns with your doctor, making informed decisions, and having faith in the medical expertise contribute significantly to overall health.

TheHitavada

Nagpur City Line | 2023-12-07 | Page 3
ehitavada.com

ISA NCB wins Best Branch Award 12th time in a row at national level

■ Staff Reporter

INDIAN Society of Anaesthesiologists Nagpur City branch (ISANCB) led by Dr. Ramesh Shingde, President and Dr. Devyani Thakur, honorary Secretary has won various awards at recently held National and State conferences at Coimbatore and Pune.

ISANCB bagged all 4 major awards at State level for the year 22-23. The awards include prestigious 'Best City Branch Award' - 1st prize, Best Elder Day Celebration Award - 1st prize, Membership Drive Award - 2nd prize, Public Awareness Award - 1st prize.

Dr. Ramesh won third prize for public awareness in individual category. President's appreciation award was conferred upon seven eminent members - Dr. Chandra Gokul, Vice President, MSCSA; Dr. R. M. Bajaj, Special Executive Member; Dr. Suresh Barde and Dr. Sheetal Dabli, GC



members MSCSA; Dr. Gauri Arora, President elect; Dr. Umesh Rautani and Dr. Vinodini Anilkar, Narmadapada organizing Chairman and Secretary respectively.

At national conference ISA Nagpur won 4 awards. The Prestigious President's Appreciation Award - 1st prize, Membership Drive Award - 1st prize, Best City Branch Award - 2nd prize, Public Awareness Award - Consolation. Dr. Bhimnagar Rao,

President, ISA National and Dr. H. K. Sule, President of MSCSA, appreciated the efforts of Nagpur City Branch and congratulated all the members. From this year ISA Nagpur instituted Dr. Ashok Jadhav memorial award

at national level for practicing anaesthesiologist from the generous donation by family members of late Dr. Ashok Jadhav. Dr. Gauri Arora received 1st prize in this category.

Other members of the team of ISA NCB 22-23 included: Dr. Klean Vyawahare and Dr. Smita Jogdakar Immediate Past President and Secretary respectively; Dr. Dilip Wankar, Treasurer; Dr. Anjali Borkar and Dr. Sonali Bhagat Joint Secretaries; Dr. Shital Samal, Dr. Vijay Patil, Dr. Ketki Ramteke, Dr. Tapaswini Dhanwan, Dr. Neha Gokul, Dr. Monica Sengupta, Dr. Omeshbhorn, as executive members. The branch has achieved an unprecedented status of winning the coveted 'Best Branch award' for 12 times in a row.

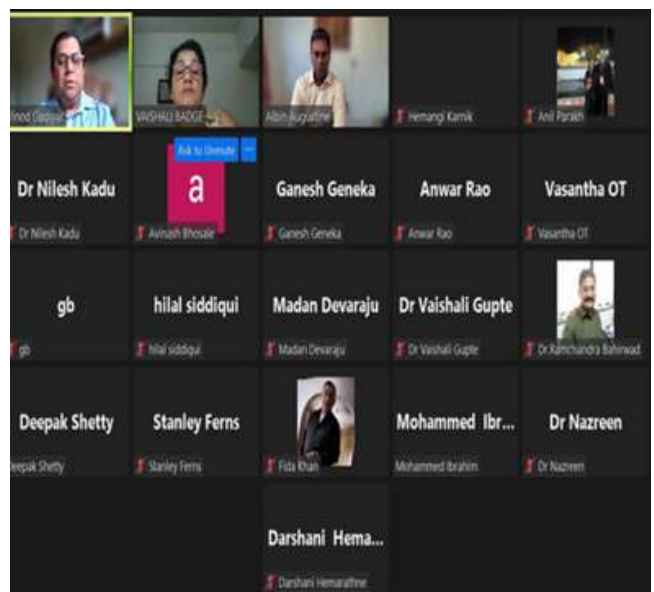
The team was guided by senior ISA NCB members Dr. A. A. Ghosh, Dr. Hemu Mankeshwar, Dr. Shrinu, Dr. Anjali Bhatnagar and Dr. C. S. Chavan.

ISA ACTIVITIES

Organised by ISA NAVI MUMBAI

Awareness session on Thalassemia and Cardiopulmonary resuscitation (4th December 2023 & 7th December 2023)

Faculty included Dr Surekha Patil and Dr Vaishali S Badge and postgraduates Dr. Shetty and Dr. Chinmay Kar. Attended by approximately 100 students and staff.



Theme based Zoom Webinar (16th December 2023)

“Maintain and retain Ur Brain”

Dr. Albin Augustine(UK) spoke on “Anaesthesia for Stroke thrombectomy”

Dr Vinod Gadiyar(UK) gave a lecture on Processed EEG.

Activities by ISA Andhra Pradesh (DECEMBER 2023) ISA Vijaywada City Branch

12th December 2023

Topic - Anaesthesia for robotic surgeries (Dr. Pranati)
- Some Interesting cases (Dr. Kalyan Deepak)



ISA Visakhapatnam City Branch 29th December 2023

How do I do it? Pheochromocytoma: Perioperative management.
Speaker (online)- Dr. Rakesh Garg



ISA Guntur City Branch (11th December 2023)

Peripartum Cardiomyopathy – A case presentation (Dr. Meena)

Communication and the anaesthesiologist (Dr. Sukdev Nayak)



ISA Kadapa City Branch (29th December 2023)



ISA Tirupati City Branch (19th December 2023)



Yuva Parnika (Youth Zone)



CROSSWORD

Dr. Parul Jindal

Professor

Department of Anaesthesiology

HIMS, SRHU, Dehradun

ISA No. PT190

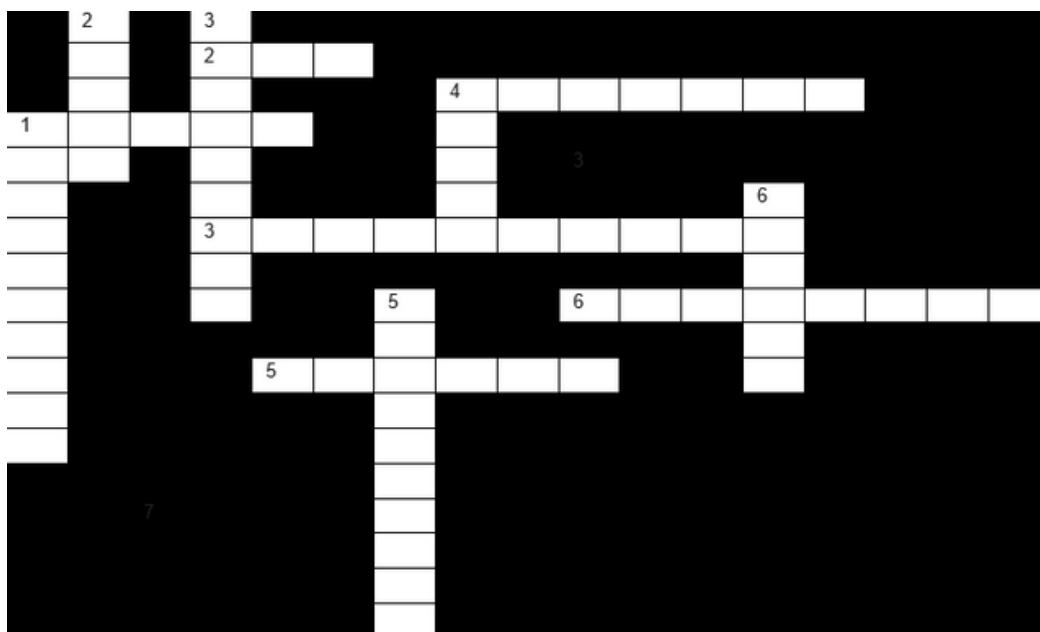


ACROSS:

1. Idea of performing spinal with bare essentials and limiting the number of attempts at insertion (5)
2. Which type of embolism is more common in neurosurgery? (3)
3. First line drug for ventricular fibrillation (10)
4. Chest radiograph appearances suggesting aortic injury (7)
5. Sign suggestive of basal skull fracture (6)
6. The trial established that the short synacthen test lacked prognostic value (8)

DOWN:

1. Drug that increases gastric pH while decreasing gastric volume (10)
2. Who developed the classification of the urgency of caesarean delivery in 2000? (5)
3. A rare autosomal dominant condition, that can present as an acute emergency in susceptible individuals following exposure to a trigger agent such as volatile anaesthetic agents or suxamethonium (9)
4. Scoring system to assess liver failure severity (5)
5. _____(10) thromboelastometry (ROTEM) is a viscoelastic method, which provides a graphical and numerical representation of induced haemostasis in whole blood samples.
6. MENDELSON'S syndrome, or also called _____(6) aspiration pneumonia, was first described in obstetric cases by Mendelson in 1946.



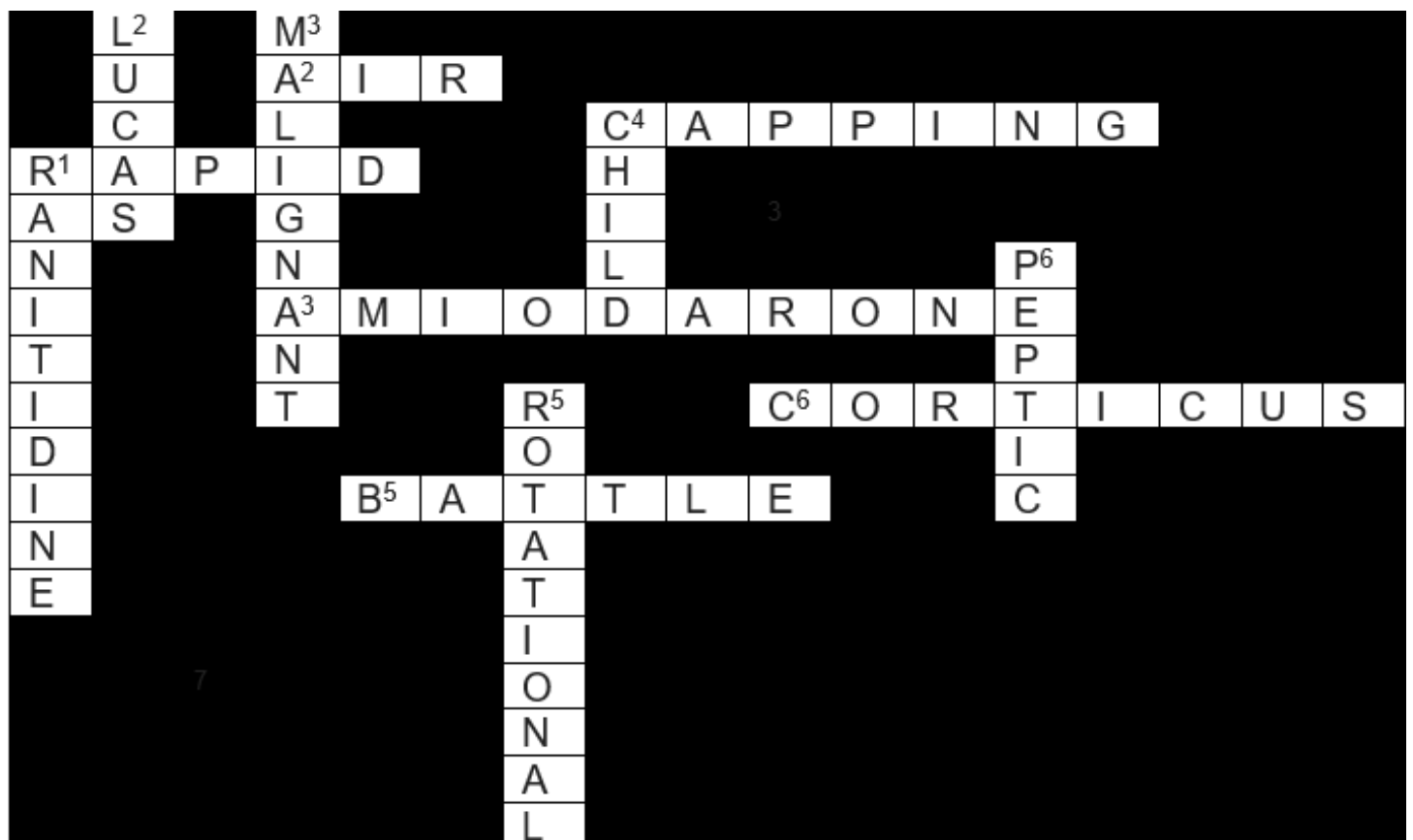
SOLUTION

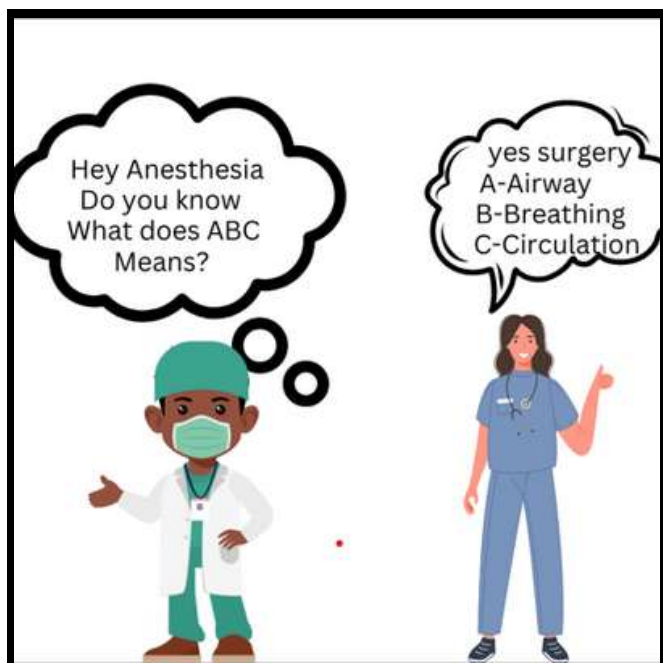
ACROSS:

- Idea of performing spinal with bare essentials and limiting the number of attempts at insertion (RAPID)
- Embolism is more common in neurosurgery (AIR)
- First line drug for pulseless ventricular tachycardia (AMIODARONE)
- Chest radiograph appearances suggesting aortic injury (CAPPING)
- Sign suggestive of basal skull fracture (BATTLE)
- The trial established that the short synacthen test lacked prognostic value (CORTICUS)

DOWN:

- Drug that increases gastric pH while decreasing gastric volume (RANITIDINE)
- Who developed the classification of the urgency of caesarean delivery in 2000? (LUCAS)
- A rare autosomal dominant condition, that can present as an acute emergency in susceptible individuals following exposure to a trigger agent such as volatile anaesthetic agents or suxamethonium (MALIGNANT)
- Scoring system to assess liver failure severity (CHILD)
- Rotational thromboelastometry (ROTEM) is a viscoelastic method, which provides a graphical and numerical representation of induced hemostasis in whole blood samples.
- MENDELSON'S syndrome, or peptic-aspiration pneumonia, was first described in obstetrical cases by Mendelson in 1946.





Dr. Ankita Saini
DNB Anesthesia Resident
Max Super speciality Hospital, Delhi
ISA No. A5124/A

SPIN THE WORD WHEEL

Dr. Parul Jindal

Professor

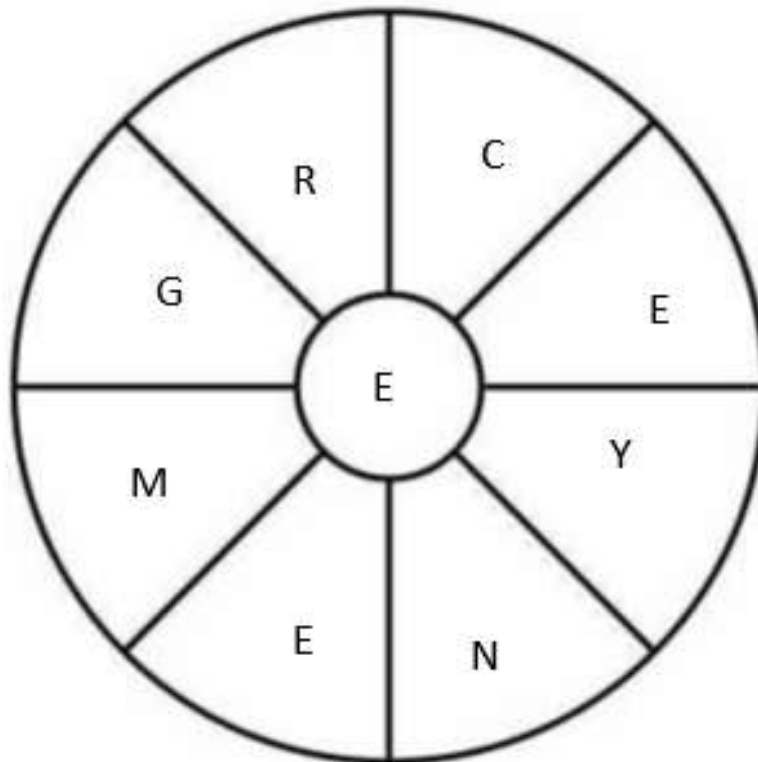
Department of Anaesthesiology

HIMS, SRHU, Dehradun

ISA No. P1190



The centre Letter has to be used in all the words.
Only 6 to 9 letter words are acceptable



SOLUTIONS:

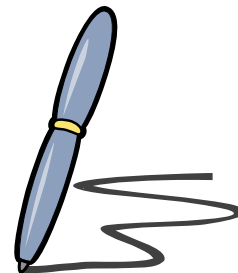
9 LETTER WORD: EMERGENCY

8 LETTER WORD: MERGENCE

7 LETTER WORD: REGENCY, REGENCE

6 LETTER WORD: CYMENE, EMERGE, ENERGY,
GERMEN, GREENY, GYRENE, MERGEE, RENEGE

INVITATION TO CONTRIBUTE



Vapour', the official newsletter of the Indian Society of Anaesthesiologists invites contribution of articles originally written by ISA members (Life and associate). The articles can be in the form of interesting case reports for discussion, articles on topics of current clinical relevance, photo-essays, articles on medicolegal /health/ financial/extracurricular issues of interest to the anaesthesiologists. Original literary works such as poems, funny cartoons or paintings on topics of anaesthesia are also welcome. Information about extraordinary achievements /experiences of ISA members, book publication can be sent.

The articles should be brief and written in font Times New Roman 12-14 size and presented in Microsoft office word document (rtf/doc files). Plagiarism and violation of copyrights should be strictly avoided. The articles should be e-mailed to isanhqvapour@yahoo.com with a covering letter addressed to the Honorary Secretary ISA National.

Dr Sukhminder Jit Singh Bajwa

Honorary Secretary ISA National & Editor-in-Chief

VAPOUR

(The official newsletter of the ISA National)

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