



# SACTEM TIMES

## ABOUT SACTEM

### CORE VALUES

**Patient-centered care:** Placing the patient's needs and well-being at the heart of all decisions and actions.

**Professionalism:** Maintaining the highest ethical standards and continuously striving for excellence in clinical practice, education, and research.

**Advocacy:** Championing the needs of patients, doctors, and other healthcare providers involved in acute care, trauma, and emergency medicine.

**Collaboration:** Working in partnership with government agencies, medical institutions, professional organizations, and other stakeholders to improve the overall healthcare system.

**Equity and access:** Ensuring that all people in Uttar Pradesh, regardless of their socioeconomic background, have access to quality acute care, trauma, and emergency medical services.

### ACTIVITIES

- Comprehensive Training Programs
- Standardized Protocols
- Simulation Training
- Continuous Education & Team Collaboration
- Research and Innovation
- QIP and Community Outreach
- Leadership Development
- Collaboration with Institutions

### PRIORITIES

- Academic Engagement
- Ambulance Handling
- Ideal Emergency Setup
- Current Guidelines and Protocols Update

### COLLABORATIONS

- Disaster Medicine Institute (DMI) USA
- Mahakumbh 2025 Emergency Preparedness
- CTM-E Semper Scientes

### KNOW THE FOUNDER & PRESIDENT

Since childhood, I've understood the importance of the pace of time and the significance of immediate response. The inception of the Society for Acute Care, Trauma, and Emergency Medicine was inspired by that ethos, where timely, thorough, and compassionate responses are paramount in every situation. I embarked on founding this organization with the purpose of enabling people worldwide to be vigilant in their responses, ensuring better care in critical situations. It is aligned with the vision of the institution, committed to achieving new heights in responsiveness, education, and research in modern healthcare. We embark on this journey with the belief that with each individual, we are ushering in a new era, where diversity in narratives and prosperity are being woven into the fabric of healthcare.

### DR LOKENDRA GUPTA

MBBS, MD (Anaesthesiology)  
 DNB (CCM), MRCEM, OGDHQM, TISS  
 Associate Director Aand Head  
 Emergency Medicine And Trauma Care  
 Medanta, Lucknow



### WHO WE ARE

At the Society for Acute Care, Trauma, and Emergency Medicine, our mission is clear: to advance the field of emergency medicine and improve patient outcomes. With a dedicated team of healthcare professionals, researchers, and educators, we strive to lead the way in providing the highest standard of care for patients facing acute medical needs, trauma, and emergencies. Through cutting-edge research, evidence-based guidelines, and continuous education, we empower healthcare providers worldwide to deliver timely, effective, and compassionate care in critical situations.



### EMPOWERING COMMUNITIES THROUGH EDUCATION

Raise awareness among healthcare workers and the general public by providing prehospital emergency knowledge to reduce morbidities before professional help arrives.



### OUR MISSION

To improve the quality of acute care, trauma, and emergency medical services in India through education, advocacy, and collaboration, ultimately saving lives and reducing suffering.



### OUR VISION

A Country where every person in India has access to high-quality, timely, and affordable acute care, trauma, and emergency medical services delivered by well-trained and dedicated professionals.



### PREAMBLE

This Charter establishes the Society of Acute Care, Trauma, and Emergency Medicine (SACTEM) in Uttar Pradesh, dedicated to advancing the field of emergency medical care, trauma response, and acute care services. Our commitment is towards enhancing patient care, promoting research, and providing continual education and support to healthcare professionals in these critical fields.



From the Editor of  
**SACTEM TIMES**



## Developing Low-Cost Emergency Care for India and her Friends

### DR NAYAN SRIRAMULA

MD, DNB, MRCEM (UK), PG Diploma  
Medical Law (NLSIU), PGCMDM (Disaster Medicine) Consultant, in Emergency  
Medicine and Trauma, AIG Hospitals, Hyderabad

Having spent most of his career in **rural emergency departments**, Dr Sriramula has firsthand experience with the challenges and nuances of providing emergency care to rural populations. His work focuses on **developing low-cost, scalable emergency care solutions**, including **rural tele-triage, prehospital care innovations, and cost-effective emergency response strategies** to improve healthcare access in developing nations. Access to emergency care is a fundamental healthcare need, yet millions in developing nations face barriers due to cost, infrastructure limitations, and workforce shortages. While advanced emergency medicine (EM) thrives in well-resourced settings, replicating the same model in resource-limited environments is often impractical. Instead, a cost-effective and scalable approach must be developed to address the unique challenges of these regions.

#### Understanding the Challenges

Developing nations struggle with emergency medical care due to:

- **Limited Infrastructure:** Few hospitals have dedicated Emergency Departments; ambulance drivers often double as paramedics.
- **Workforce Shortages:** Lack of certified Emergency Physicians, paramedics, and support staff.
- **Financial Barriers:** High costs delay critical emergency care.
- **Inadequate Supplies:** Many hospitals lack essential equipment and medications.
- **Geographical Barriers:** Rural populations travel vast distances for emergency care

#### Strategies for Low-Cost Emergency Care

Addressing these issues requires a multi-pronged approach tailored to the specific constraints of developing regions.

1. **Task-Shifting and Training Non-Specialists:** In the absence of trained emergency physicians, a tiered approach can be effective:
  - **Upskilling AYUSH Doctors and Nursing Practitioners** – Training these healthcare workers in basic emergency procedures can bridge the gap.
  - **Empowering Nurses and Community Health Workers** – Focused training in triage, wound care, and resuscitation can expand care delivery.
  - **Utilizing Telemedicine** – Remote consultation with specialists can aid in decision-making and improve outcomes.
2. **Developing Low-Cost Prehospital Care Models:** A sophisticated ambulance system may be financially unfeasible, but alternatives exist:
  - **Community-Based First Responders**– Training volunteers in CPR and first aid can reduce mortality in emergencies.
  - **Motorcycle and Bicycle Ambulances**– In rural areas, these can transport patients more efficiently than traditional ambulances.
  - **Basic Mobile Emergency Kits**– Equipping health centres with simple resuscitation tools, airway management devices, and essential drugs can make a significant difference.
3. **Affordable and Locally Sourced Medical Solutions:** Innovative, cost-effective solutions can replace expensive imported equipment:
  - **3D-Printed Medical Devices** – Items such as

splints and airway adjuncts can be produced at a fraction of the cost.

- **Locally Manufactured Drugs** – Encouraging domestic pharmaceutical production can lower medication costs.
- **Reusable and Durable Supplies** – Investing in durable, reusable medical gear can save costs in the long run.
- **Recycling and Reusing Medical Equipment** – Certain emergency medical devices can be sterilized and reused, reducing costs. Most of this equipment is already reused in Rural EDs, but their production was done with the idea of being Single use only, if the reusability can be made into a mainstream concept and adopted by organizations, then the quality of pieces of equipment will improve, allowing us to reuse them multiple times without compromising on care.
- **Examples include:**
  - ◊ **Reusable Intubation equipment:** Most intubation equipment can be reused or can be created to be reused, such as laryngoscopes, Bains or Ambu circuits, and Oxygen mask connectors.
  - ◊ **Autoclavable Surgical Instruments** – Scissors, forceps, and clamps can be repeatedly sterilized instead of relying on single-use versions.
  - ◊ **Recycled Oxygen Concentrators** – Older or donated concentrators can be refurbished for continued use.
  - ◊ **Reusable Suction Devices and Masks** – Manual suction devices and certain oxygen masks can be sanitized and reused, reducing waste.
- **Recycling Synthetic Fishing Nets for Medical Use** – Researchers at the Central Institute of Fisheries Technology in Kochi have developed absorbable surgical sutures from the fish gut, offering a low-cost alternative to imported materials. Additionally, **synthetic fishing nets** made from nylon can be recycled into medical-grade nylon for sutures, reducing environmental waste.. This can help reduce a major water pollutant that leads to accidental deaths of millions of oceanic life each year.
- 4. **Rural Tele-Triage Using Pharmacy Stores:** **Dr. Nayan Sriramula** has proposed an innovative rural tele-triage model that converts existing pharmacy stores into **point-of-care testing centres**. These centres will be equipped to rapidly diagnose life-threatening emergencies by recording vital signs **Rapid Diagnosis in Rural Settings** – By enabling early detection of critical conditions, pharmacy store-based triage can ensure timely referrals.
  - **Efficient Patient Routing** – Based on initial triage findings, patients can be referred to the most appropriate medical center, reducing unnecessary **transfers delaying treatment**.
  - **Cost-Effective and Scalable** – Utilizing existing pharmacy networks reduces infrastructure costs while improving healthcare accessibility in underserved regions.
  - **Empowering Rural Pharmacies** – This model allows rural pharmacy stores to expand their role beyond medication sales, making them an essential

part of the local healthcare ecosystem. By providing tele-triage services, these pharmacies can remain financially viable despite growing competition from online pharmacy platforms.

#### 5. BHISHM - Bharat Health Initiative for Sahyog, Hita, and Maitri

- **Compact and organised:** Medical supplies and equipment are packed into **15-inch cubical boxes**. These boxes are organized based on injury types and medical needs, making them **efficient for quick deployment in emergencies**.
- **Transport flexibility:** The cubes are mounted on an adjustable framework, allowing them to be transported via multiple modes, including **air, sea, land, and drone**. Each cube weighs up to **20 kg** and is designed to be carried by an individual.
- **Mother and BHISHM cubes:**
  - ◊ **36 mini cubes** combine to form one mother cube.
  - ◊ Two mother cubes combine to form one BHISHM Cube.
  - ◊ One Mother Cube offers first-line care, shelter, and food for up to **five people for 48 hours**.
  - ◊ The second mother cube is equipped for surgical care, handling **10-15** basic surgeries per day.
- **Ease of use and management:** Medicines and equipment are classified, with **RFID** inventory management and real-time stock updates. Additionally, a dedicated app and a tablet with support for **180 languages** are provided for operational instructions.
- **Capacity and Features:**
  - ◊ Each BHISHM Cube can handle around **200 emergency cases**, including trauma, burns, fractures, and shock.
  - ◊ The cubes are capable of supporting basic surgeries and can generate their **power and oxygen for limited durations**.
  - ◊ **Technological Integration:** BHISHM cubes incorporate **Artificial Intelligence (AI)** and **data analytics for effective coordination, real-time monitoring**, and efficient management of medical services.
  - ◊ **India gifted 4 BHISHM cubes** to Ukraine recently to help them in their front line Emergency efforts

Emergency care in developing nations does not require high-cost, high-tech solutions; it demands practical, scalable, and sustainable interventions. By focusing on workforce training, prehospital innovations, affordable equipment, and public-private partnerships, we can create effective emergency care systems that save lives without overwhelming limited resources. **The key is to embrace innovative, locally adapted solutions that ensure timely and accessible emergency care for all.**



#### Conclusion

Emergency care in developing nations does not require high-cost, high-tech solutions; it demands practical, scalable, and sustainable interventions. By focusing on workforce training, prehospital innovations, affordable equipment, and public private partnerships, we can create effective emergency care systems that save lives without overwhelming limited resources. **The key is to embrace innovative, locally adapted solutions that ensure timely and accessible emergency care for all.**

### SACTEM'S EXPERTS



Dr Samir Misra  
Chief Patron



Dr Lokendra Gupta  
President & Founder



Dr Mohd M Malik  
Vice President



Dr S. S. Tripathi  
Treasurer



Dr Om Prakash Sanjeev  
Secretary



Dr Rajeev K Gupta  
Joint Secretary



Dr Subhankar Paul  
Academic Head



## Managing Catatonia in the Emergency Department: A Step-by-step Guide

**DR MADHU VAMSHI**  
Psychiatrist and Entrepreneur

Catatonia, a complex neuropsychiatric condition, demands prompt recognition and intervention in the Emergency Department (ED). Failure to act swiftly can lead to severe complications such as rhabdomyolysis, aspiration pneumonia, and autonomic instability, making it a life-threatening medical emergency.

### Identifying the Cause

To guide treatment, the physician must obtain a focused history. This includes any previous psychiatric diagnoses such as schizophrenia or mood disorders, as well as a review of medications. Particular attention is paid to the use of antipsychotics, which may increase the risk of neuroleptic malignant syndrome, or withdrawal from benzodiazepines.

A careful physical examination is essential. **Hallmark signs include stupor, mutism, waxy flexibility, posturing, echolalia, or echopraxia.** Hyperkinetic features such as agitation or repetitive movements, along with signs of autonomic instability like tachycardia or labile blood pressure, may also be evident.

Diagnostic evaluation is critical. Blood tests including complete blood count, metabolic levels of electrolytes, calcium, glucose, and creatine kinase (CK) should be performed.

Imaging such as brain computed tomography (CT) scan or magnetic resonance imaging (MRI) may rule out structural abnormalities, while electroencephalogram (EEG) helps exclude non-convulsive seizures. In cases where meningitis or encephalitis is suspected, investigations should be tailored accordingly.

### Initial Stabilization

When a patient presents with suspected catatonia, the primary focus should be on stabilizing patient's airway, breathing, and circulation (ABCs). Patients with severe stupor or mutism may require airway support, including intubation to prevent aspiration. Supplemental oxygen is provided, if necessary and intravenous access must be secured for hydration and correction of imbalances.

### Treatment Approach

First-line therapy involves administering lorazepam, typically starting at 1–2 mg intravenously or intramuscularly. Improvement within 10–15 minutes following a lorazepam challenge test not only confirms the diagnosis but also begins treatment. If there is no response within 24–48 hours, electroconvulsive therapy (ECT) becomes the next step, especially in malignant or treatment-resistant cases.

## TRENDING TOPIC

## Artificial Intelligence in Emergency Triage



**PROF ANGELINE NEETHA RADJOU**  
M.S, FRCS (Edinburgh)

There has been a surge in Emergency Department (ED) visits disproportionate to the population increase, leading to adverse clinical outcomes. This brief statement is to understand how AI can help ED in emergencies of many specialties, handling efficient, safe and acceptable work flow.

Triage optimization using symptom checkers with probabilistic algorithms determined the urgency of care and slightly outperformed the triage nurse underscoring its need during peak times. AI at Johns Hopkins Hospital, outperformed traditional Emergency Severity Index (ESI) methods in predicting hospitalization and need for intensive care unit. Coordinating pre-hospital care using Corti system, assists emergency dispatchers by analyzing the description of caller's speech.

In India, AI pilot project is used in EMRI and Zeno ambulance for triaging and predictive analytics, integration with telemedicine and operational efficiency. A model identifies patients needing imaging after triage.

It is found very useful in cardiac and neurological problems.

Discharge / hospitalization data from over 864,000 ERs within the Mount Sinai Health System, focusing on both structured data and unstructured data, 18.5% resulted in hospital admissions. Assist AI and Google Health are creating AI-based tools that can aid decision-making from triage to discharge /hospitalization

AI technology should be used with the patient's consent, but may not be possible in emergency. European Union has addressed the issue of liability and AI-assisted decision is shifted to health care professionals.

Despite the development of numerous artificial intelligence-based models, few are genuinely applied in emergency. AI has vast potential, but still a nascent technology that is often perceived as complicated and challenging to be implemented. A very healthy collaboration between health care, the engineers, the regulatory bodies would help in rolling out efficient but safe options.

## SACTEM: EVENTS

### HT Medical Excellence Award 29th of June 2024



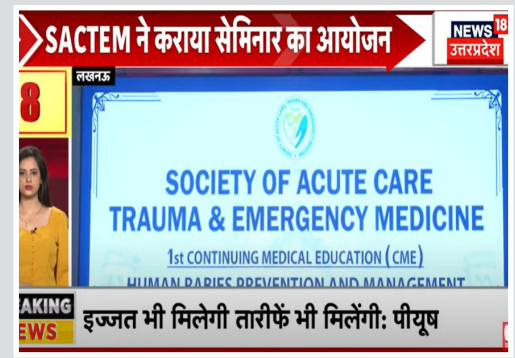
### World Emergency Day 27th Of May 2024



### Unwind your Brain 3rd of August 2024



### Rabies Workshop 11th of May 2024



## SACTEM'S EXPERTS



**Dr Utsav Anand Man**  
Academic Head



**Dr Somnath Longani**  
Executive Member



**Dr Rajiv Ratan Singh**  
Executive Member



**Dr Ajit Singh**  
Executive Member



**Dr Alka Verma**  
Executive Member



**Dr Shivam Srivastava**  
Chief Convener



**Dr Athar Khan**  
Convener

# The Emergency Mindset: A Necessity, Not an Option

## "A doctor cures sometimes, treats often but can comfort always"



**DR AMAR PYARI MAKHAN LAL CHAUHAN**  
CEO, Verve Medisimuhub

Emergency Medicine is a high-stakes field where rapid decisions, teamwork, and resilience are crucial. The Emergency Department (ED) is unpredictable—every second counts, and decisions can be lifesaving. In India, high patient loads and resource limitations add to the challenge.

Success in Emergency Medicine isn't just about knowledge; it's about adaptability, situational awareness, and proactive decision-making—just like a soldier is defined by readiness, not just weapons.

### Why the Emergency Mindset Matters

Emergencies are chaotic and uncertain. Recognizing patterns, controlling the fight-or-flight response, and coordinating effectively within constraints define an exceptional emergency physician.

### The 10 Commandments of Emergency Medicine

- **Master Training & Readiness** – Certifications (ACLS, ATLS, PALS) are a start, but hands-on simulation and SOP mastery are key.
- **Develop Situational Awareness** – Always ask: What happened? What's happening? What's next? Stay proactive.
- **View Emergencies as Challenges** – Cognitive paralysis is dangerous. Train with Emergency Action Drills for quick response.
- **Always Have a Plan B** – Adaptability is strength. A failed intubation? Move to a backup airway strategy immediately.
- **Use Cognitive Aids & Avoid Bias** – Checklists and references help. Stay alert to biases like confirmation and authority bias.
- **Think Flexibly & Adapt** – Rigid thinking fails in emergencies. Modify algorithms based on

real-world constraints.

- **Eliminate Avoidable Failures** – "Slow is smooth, smooth is fast." Preparation prevents preventable errors.
- **Practice Pre-Mortem Visualization** – Anticipate complications before they happen. Mental preparedness saves lives.
- **Accept Uncertainty, Learn Continuously** – Not every patient can be saved, but every case is a lesson.
- **Never Waste a Patient's Suffering** – Reflect, refine, and evolve with every case. Growth is key.

### Thriving in an Indian Emergency Setting

- Stay compassionate, resilient, and resourceful.
- Work with limitations but push for system improvements.
- Take personal initiative—change starts with you.

### Step Up in Emergency Medicine

- S – Self-awareness** (Emotional control)
- T – Teamwork** (Communication, shared vision)
- E – Environment** (Anticipate limitations)
- P – Patient-centered care**
- U – Updates** (Prioritize & reassess)
- P – Prioritize goals & execution**

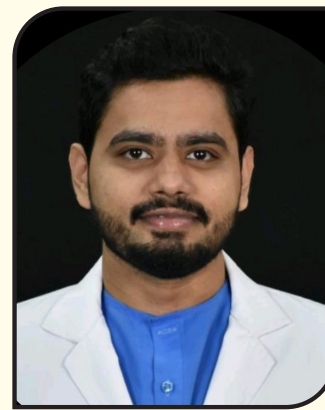
Master the **Emergency Mindset** - because in crisis, mindset makes all the difference.



### Conclusion

In Indian emergency care, the goal should be foundation stabilization - controlling life threats first. A culture of "Resus Readiness" must be ingrained, not just discussed at conferences. Progress happens through action, not intention. Let's make it happen.

# Normal Anion Gap Metabolic Acidosis: Etiology, Diagnosis, and Management



**DR SHAHBAZ HASSAN**  
Assistant Professor  
Emergency Medicine  
Apollo Inst. of Medical Sci. & Research,  
Hyderabad.

Normal anion gap metabolic acidosis (NAGMA) is a common but often under-recognized condition characterized by a low serum bicarbonate ( $\text{HCO}_3^-$ ) level and a normal anion gap (AG). It is crucial for emergency physicians to recognize and manage NAGMA promptly, as it can be a sign of underlying systemic or renal pathology.

### Etiology

- NAGMA arises from either extrarenal or renal causes. Extrarenal causes include gastrointestinal (GI) bicarbonate loss, such as from diarrhea, pancreatic fistulas, or ureteral diversions. Renal causes involve impaired bicarbonate reabsorption (proximal renal tubular acidosis, RTA type 2) or defective hydrogen ion excretion (distal RTA type 1). Other causes include aldosterone deficiency or resistance (RTA type 4) and chloride loading from excessive normal saline infusion.

### Diagnosis

- The first step is to confirm metabolic acidosis with a normal AG (8-16 mmol/L). A detailed history and physical exam can often point to the cause, such as diarrhea or recent saline infusion. Urinary tests, including urine pH, urinary anion gap (UAG), and urinary osmolal gap (UOG), help differentiate renal from extrarenal causes. A urine pH >5.5 suggests distal RTA, while a pH <5.5 points to proximal RTA or extrarenal loss. Elevated UOG (>200 mOsm/kg) indicates extrarenal bicarbonate loss, while a low UOG (<150 mOsm/kg) suggests renal tubular dysfunction.

### Management

Treatment focuses on addressing the underlying cause. For GI losses, oral or IV bicarbonate replacement is often needed. In proximal RTA, large doses of bicarbonate may be required, while distal RTA typically responds to smaller doses. Type 4 RTA may require fludrocortisone and potassium management. Avoid excessive chloride-rich fluids like normal saline in resuscitation.

### Take-Home Message

NAGMA is a heterogeneous condition with diverse etiologies. A systematic approach to diagnosis, including careful history, AG calculation, and urinary tests, is essential. Prompt identification and treatment of the underlying cause can prevent complications and improve outcomes.

# SACTEM: EVENTS

## शुक्रवार की शाम डॉक्टरों के नाम

स्वास्थ्य विभाग की पहल  
एपिसोड 19  
शुक्रवार की शाम, डॉक्टरों के नाम  
प्रदेश के जाने-माने चिकित्सकों से सीधे जुड़े और उनके अनुभवों का लाभ उठाएँ  
दिनांक : 19 जुलाई, 2024 | समय : सांय 6:00 बजे से 7:30 बजे तक

वक्ता  
**डॉ. लोकेन्द्र गुप्ता**  
HMD, DNB (CCM), MRCM, DNB, FRCR (IM) (UK)  
रेस, एमरजेंसी में विशेषज्ञ, एमरजेंसी, एमरजेंसी & एमरजेंसी, SACTEM  
President, SACTEM

आयोजक  
राज्य स्वास्थ्य एवं परिवार कल्याण संस्थान (SIHFV)  
इंदिरा नगर, लखनऊ, उत्तर प्रदेश

वेबकास्ट का विषय —  
गोल्डन ऑवर ऑफ लाइफ  
(Golden Hour of Life)

YouTube LIVE STREAMING

स्वास्थ्य विभाग की पहल  
शुक्रवार की शाम, डॉक्टरों के नाम  
प्रदेश के जाने-माने चिकित्सकों से सीधे जुड़े और उनके अनुभवों का लाभ उठाएँ  
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President, SACTEM

आयोजक  
राज्य स्वास्थ्य एवं परिवार कल्याण संस्थान (SIHFV)  
इंदिरा नगर, लखनऊ, उत्तर प्रदेश

वेबकास्ट का विषय —  
गोल्डन ऑवर ऑफ लाइफ  
(Golden Hour of Life)

YouTube LIVE STREAMING

## Ambulance Meet Meet At Medanta Hospital, Lucknow

Medanta Hospital, Lucknow  
We are thrilled to  
Announce our First Ambulance meet  
Chief Guest  
Dr. Lokendra Gupta  
President, SACTEM  
Guest Speaker  
Dr. Shahbaz Hassan  
Assistant Professor of Emergency Medicine  
Apollo Institute of Medical Sciences  
Hyderabad  
Health talk  
and  
Basic Life Support Training  
Session on  
Monday 15<sup>th</sup> May, 2024 | 11:00 to 2:00  
5<sup>th</sup> Floor, Medanta Hospital, Lucknow  
FOLLOWED BY LUNCH  
Team Medanta



## Shock Unveiled By Sactem 29th Of June 2024

SACTEM  
Society of Acute Care Trauma & Emergency Medicine  
Organizing CME on  
**Shock unveiled**  
29<sup>th</sup> June 2024 (Saturday), 06:00 pm onwards  
Hotel Savvy Grand, Lucknow



CME  
**"A Song of Bugs & Drugs"**  
Theme: Infectious Diseases in Emergency  
Date: 1<sup>st</sup> October, 2024 (Monday)  
Venue: Hotel Savvy Grand, Ganga Nagar, Lucknow

Organized by  
Society of Acute Care Trauma & Emergency Medicine  
Hosted by: Dr. Lokendra Gupta, Dr. Shahbaz Hassan

## CME/Workshop/Conferences



# SACTEM

*What we have done so far...*

**11th May**

## Rabies Prevention and Management

SACTEM launched with a successful Rabies Awareness Program at Hotel Sky Hilton, attended by many doctors!



**13th May**

## Ambulance Meet

The first Ambulance Meet at Medanta Hospital, Lucknow featured a Health Talk & BLS training, with Dr Samir Mishra as Chief Guest and Dr S. S. Tripathi as Guest Speaker.



**27th May**

## World Emergency Day

Conducted multiple awareness programs across Lucknow with doctors from top institutes like Hind, Era, and SGPGI. Dr Lokendra led a medical emergency session for 100 bureaucrats.



**14th June**

## IACC Varanasi

SACTEM, represented by Dr Lokendra, actively participated in the Advancing Health & Wellness Conference at Taj Ganges, Varanasi, where he was a Guest Speaker.



**18th July**

## Excise Office Prayagraj

Medanta Hospital & SACTEM held a Health Talk at Excise Office, Prayagraj, with 100+ staff attending.



**24th July**

## Lucknow Bar Association

Medanta Hospital & SACTEM conducted a Health Talk on Medical Emergencies at Lucknow Bar Association, drawing a large audience.



**29th July**

## Shock Unveiled

A CME on Septic Shock Management marked a milestone, driving society expansion and a booming membership drive.



**31st July**

## Ambulance Meet

The 2nd Ambulance Meet at Medanta Hospital, Lucknow trained 70-80 drivers & technicians on the Golden Hour & CPR. Dr Rajeev Kumar Gupta was the Chief Guest.



**3rd August**

## Neurological Emergencies

Highlights: Talk by Dr Dinkar Kulshreshta, first Community Expansion Award, and 120+ members attending the CME.



**6th August,**

## Ayushman Head Office UP

Medanta Hospital & SACTEM held a Health Talk at Ayushman Head Office, UP, engaging 60-70 staff, led by Dr Lokendra Gupta.



**23rd August**

## Tourism & Forest Department, Varanasi

Medanta Hospital & SACTEM held a Health Talk & CPR Training on 23rd Aug at Tourism & Forest Dept., Varanasi, for 150+ staff, with Dr Lokendra Gupta as Chief Guest.



**31st August**

## Labour Commissioner HO

Medanta Hospital & SACTEM conducted a Health Talk & BLS Training at Labour Commissioner Head Office, Kanpur, led by Dr Lokendra Gupta, with a large staff turnout.



# SACTEM: COMMUNITY EXPANSION AWARD

SACTEM is proud to announce the Community Expansion Award for its members. This prestigious award recognizes individuals who have made exceptional contributions to expanding the SACTEM community.

## Previous Award Recipients

1. Dr. Pankaj Parmar, honored in July 2024, for his outstanding eCorts in advancing the society's mission of reaching out to new members.
2. Dr. Athar Khan, honored in October 2024, for his exceptional work in community expansion and leadership in the field. Join us as we celebrate their achievements and commitment to ensuring high-quality, timely, and accordable acute care for all.

For more information on  
award eligibility and criteria  
Contact: +91 9920611314



## SACTEM AWARD ANNOUNCEMENT

The Society for Acute Care Trauma and Emergency Medicine (SACTEM) is proud to announce the **Community Expansion Award** for its members. This prestigious award recognizes individuals who have made exceptional contributions to expanding the **SACTEM** community.

### Previous Award Recipients:

- Dr. Pankaj Parmar, honored in July 2024, for his outstanding efforts in advancing the society's mission of reaching out to new members.
- Dr. Athar Khan, honored in October 2024, for his exceptional work in community expansion and leadership in the field.

Join us as we celebrate their achievements and commitment to ensuring high-quality, timely, and affordable acute care for all.

For more information on award eligibility and criteria contact: 9920611314



**Award Citation**

"In recognition of your remarkable dedication and significant efforts in expanding the membership of SACTEM, your unwavering commitment and innovative approach have played a pivotal role in enhancing the growth and engagement of our community of professionals. Your tireless work has not only expanded our membership but also created a more vibrant and dynamic community. Your ability to inspire and motivate others has been a key factor in our collective success. Your efforts have significantly enhanced our capacity to provide high-quality, timely, and affordable acute care trauma and emergency medical services across India.

In addition to your contributions to membership growth, your commitment to the values and goals of SACTEM is truly commendable. You have exemplified the spirit of service and dedication that lies at the heart of our society. Your work has had a lasting impact on our community, and your legacy of excellence will continue to inspire others for years to come."



## ED Overcrowding: The Non-Urgent Care Crisis

### DR S PRAKASH BABU

Associate Professor  
Department of Emergency medicine  
Sri Venkateswara Institute of Medical Sciences, Tirupati

### The Growing Challenge

Emergency Departments (EDs) are overwhelmed, not just by critical emergencies but also by non-urgent cases that consume time and resources. Studies suggest that up to 78.5% of ED visits in some settings are non-life-threatening (BMJ Open). In the US, the CDC reports nearly 140 million ED visits annually, but only 13.1% result in hospital admissions - highlighting the burden of unnecessary visits (CDC).

### Why Does This Happen?

#### The reasons are:

- **Limited Primary Care Access:** Long wait times and after-hours unavailability push patients to the ED.
- **Misconceptions About ED Care:** Many believe EDs provide faster or better treatment, even for minor issues.
- **Lack of Awareness:** Patients often do not know about urgent care centres or telemedicine alternatives.
- **Financial Factors:** Insurance policies sometimes favour ED visits over outpatient care.
- **Behavioral Reasons:** Anxiety, convenience, and lack of a regular doctor drive unnecessary ED use.

### What Can Be Done?

- **Better Primary Care Access:** Strengthening community clinics and secondary level healthcare systems reduces ED dependency.
- **Public Education:** Campaigns can guide patients on when to visit the ED.
- **Triage & Diversion:** Directing non-urgent cases to urgent care or telemedicine can ease the load.
- **Fast-track Systems:** Establishing separate area to care for minor ailments and non-urgent cases eases ED workload.

### The Bottom Line

- Emergency Departments are meant for life-threatening situations, yet they are increasingly burdened by non-urgent cases. This not only delays care for critically ill patients but also strains resources and overwhelms healthcare providers.
- The solution is not just turning patients away—it is creating smarter alternatives. Strengthening primary care, expanding urgent care access, and educating the public on when to seek emergency help can reshape the way we use EDs.
- An ED should be a lifeline, not a convenience. It is time to rethink, redirect, and relieve the pressure—because in an emergency, every second counts.

## TRENDING TOPIC



## Artificial Intelligence in Emergency Medicine: Looking Beyond the Challenges and Chasing Opportunities

### DR RAKESH KALAPALA

MD, DNB, FASGE, FJGES, FSGEI  
Director - Center for Obesity and Metabolic Therapy & Center for Artificial Intelligence and Innovation  
AIG Hospitals, Hyderabad

AI technologies are increasingly being integrated into Emergency Medicine, improving patient outcomes, optimizing resource allocation, and enhancing decision-making processes. Here is an overview of the key applications, benefits, challenges, and future directions of AI in this critical field.

### Key Applications of AI in Emergency Medicine

1. **Triage Patients**
  - Automated Triage Systems, Chat bots and Virtual Assistants: AI algorithms can prioritize patients based on the severity of their conditions, using historical data and real-time symptoms.
2. **Clinical Decision Support**
  - Diagnostic Assistance: AI can analyze patient data, imaging, and lab results to provide diagnostic suggestions, particularly in cases of stroke, trauma, pneumonia, or cardiac events
3. **Image Analysis**
  - Radiology: AI algorithms can assist radiologists in interpreting CT scans, X-rays, and MRIs: more accurately than human analysis alone.
4. **Resource Management**
  - Staffing and Inventory Optimization: AI can forecast patient volumes and help manage staffing levels and medical supplies, ensuring that ERs are adequately prepared for surges in patient numbers.
5. **Outcomes Prediction (Predictive Analytics)**
  - Risk Assessment Models: AI can evaluate patient data to predict outcomes, such as likelihood of admission or complications, aiding in treatment planning and resource allocation.
6. **Telemedicine and Remote Monitoring**
  - AI-Enhanced Telehealth: Remote monitoring tools can use AI to assess and triage emergency cases, facilitating quicker decision-making.
  - Smart Wearables & IOTs: Devices equipped with AI can monitor vital signs in real time, alerting medical personnel to any abnormalities.

### Challenges with AI

- **Data Privacy and Security:** The integration of AI involves handling sensitive patient data, raising concerns about privacy and data breaches.
- **Interoperability:** Ensuring that AI systems can effectively integrate with existing healthcare infrastructures and electronic health records (EHR) is crucial for seamless operation.
- **Clinical Acceptance:** Achieving buy-in from healthcare professionals is essential, as there may be resistance to relying on AI for critical decision-making.
- **Regulatory and Ethical Considerations:** The development and deployment of AI in healthcare must adhere to stringent regulatory standards and ethical guidelines, particularly concerning accountability and transparency.

AI holds tremendous potential to revolutionize emergency medicine by enhancing diagnostic accuracy, improving patient outcomes, and optimizing resource allocation. Despite the challenges that lie ahead, continued research, development, and collaboration among healthcare professionals, technology developers, and policymakers will be crucial for realizing the full capabilities of AI in this critical field. Embracing these advancements can lead to more efficient and effective emergency care, ultimately benefiting patients and healthcare systems alike



### Conclusion

AI holds tremendous potential to revolutionize emergency medicine by enhancing diagnostic accuracy, improving patient outcomes, and optimizing resource allocation. Despite the challenges that lie ahead, continued research, development, and collaboration among healthcare professionals, technology developers, and policymakers will be crucial for realizing the full capabilities of AI in this critical field. Embracing these advancements can lead to more efficient and effective emergency care, ultimately benefiting patients and healthcare systems alike



## ECPR: The Need of the Hour in Modern Resuscitation

**DR MOHD ABDUL SATTAR**

Assistant Director  
AIG Hospitals Hyderabad

Extracorporeal Cardiopulmonary Resuscitation (ECPR) is an advanced resuscitative technique that utilizes extracorporeal membrane oxygenation (ECMO) to provide circulatory support in patients with refractory cardiac arrest. Despite improvements in conventional cardiopulmonary resuscitation (CCPR), overall survival rates for both out-of-hospital cardiac arrest (OHCA) and in-hospital cardiac arrest (IHCA) remain low. ECPR offers a potential paradigm shift, improving survival and neurological outcomes in select patients.

### AHA 2024 Update on ECPR

The American Heart Association (AHA) 2024 Guidelines on cardiac arrest management emphasize the importance of ECPR in select patient populations. The key updates include:

- Class IIa Recommendation for ECPR in Refractory Cardiac Arrest:** ECPR is now recommended as a viable rescue strategy for patients with refractory arrest when performed in experienced centers.
- Integration of ECPR into Advanced Life Support (ALS) Protocols:** The AHA highlights the importance of early recognition of ECPR candidates and streamlining ECMO activation during ongoing resuscitation.
- Importance of Time to ECMO Initiation:** Outcomes are significantly improved when ECMO is initiated within 30–60 minutes of arrest.
- Neurological Monitoring and Post-Resuscitation Care:** AHA emphasizes post-arrest neuroprotection strategies to optimize functional recovery in ECPR survivors.

### ECPR vs. Conventional CPR: A Paradigm Shift

While CCPR remains the first-line intervention for cardiac arrest, its limitations in maintaining adequate perfusion and preventing ischemic injury are well recognized. High-quality CPR achieves only 20–30% of normal cardiac output, whereas ECPR can provide near-normal circulatory and oxygenation support, improving survival and neurological outcomes.

### Key Advantages of ECPR Over CCPR

- Sustained Perfusion:** Maintains organ perfusion while addressing the underlying cause.
- Improved Neurological Outcomes:** Reduces anoxic brain injury by ensuring adequate cerebral oxygenation.
- Bridge to Recovery or Intervention:** Enables time for definitive interventions such as coronary angiography, thrombolysis, or cardiac surgery.

### Indications for ECPR

The AHA 2024 Guidelines stress that ECPR should be considered in carefully selected patients:

- Refractory Cardiac Arrest:** Patients with persistent cardiac arrest despite high-quality CPR for >10–15 minutes.
- Potentially Reversible Causes:** Acute coronary syndromes, massive pulmonary embolism, drug overdose, or primary arrhythmias.
- Witnessed Arrest with Immediate CPR:** Better prognosis if CPR was initiated immediately after arrest.
- Young Patients with Good Pre-Arrest Functional Status:** Favorable outcomes in patients without significant comorbidities.
- Availability of ECPR Resources and Expertise:** Centers with trained ECPR teams and ECMO capabilities achieve the best results.

### Challenges and Future Directions

Despite its benefits, widespread ECPR implementation faces several challenges. The AHA 2024 update acknowledges these barriers and suggests future directions:

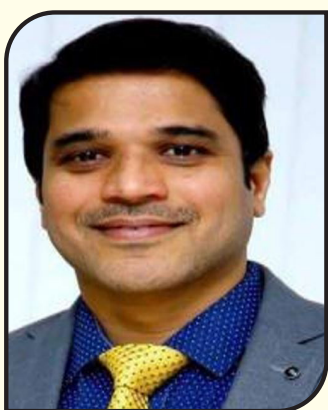
- Standardized ECPR Protocols:** Defining clear inclusion/exclusion criteria and ensuring timely ECMO initiation.
- Prehospital ECPR Programs:** The success of European mobile ECMO teams highlights the need for early field deployment of ECPR.
- Technological Advancements:** Portable ECMO devices, automated cannulation techniques, and AI-driven decision-making tools can improve accessibility.
- Training and Education:** Emergency physicians, intensivists, and paramedics must be trained in ECPR protocols.
- Cost-Effectiveness Studies:** Demonstrating long-term survival benefits compared to traditional CPR will help justify resource allocation.



### Conclusion

ECPR represents a critical advancement in resuscitation science and is gaining increasing support in Global Resuscitation Guidelines, including the AHA 2024 recommendations. While CCPR remains the initial response to cardiac arrest, integrating ECPR in well-equipped centers can significantly improve survival and neurological outcomes. Future efforts should focus on expanding ECPR accessibility, refining protocols, and leveraging technology to make this life-saving intervention more widely available in emergency medicine.

## Notable Developments in Neuro Critical Care



**DR NS SAMPATH KUMAR**

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Neuro critical care patients are those suffering from primary or secondary neurological diseases, with existing or potential organ dysfunction requiring intensive medical monitoring and treatment. Recent advances in neurocritical care have transformed the management of critically ill neurological patients. Some notable developments include the following:

### Advanced Monitoring Techniques

- Multimodal Monitoring:** Integration of various monitoring modalities, such as intracranial pressure, cerebral oxygenation, and electroencephalography, to provide a comprehensive understanding of brain function.

- Optical Coherence Tomography (OCT):** Non-invasive imaging technique to assess cerebral edema, hemorrhage, and infarction.

### Therapeutic Interventions

- Targeted Temperature Management (TTM):** Precise control of body temperature to mitigate brain injury and improve outcomes.
- Electroencephalography (EEG)-Guided Sedation:** Personalized sedation strategies based on EEG monitoring to minimize sedative-related complications.
- Neuroprotective Agents:** Investigational therapies, such as erythropoietin and progesterone, aimed at reducing brain injury and enhancing recovery.

## Shock Unveiled By SACTEM

**Date:** 29th June, 2024

**Venue:** Hotel Savvy Grand,  
Lucknow



## दूसरे मरीज के इन्फेक्शन से भी हो सकता है सेप्टिक शॉक

सोसायटी ऑफ एक्यूट केयर ट्रॉमा एंड इमरजेंसी मेडिसिन की सीएमई

एनबीटी संवाददाता, लखनऊ

आईसीयू में सबसे ज्यादा मौतें सेप्टिक शॉक में जाने के कारण होती हैं। यह शॉक इन्फेक्शन के कारण होता है लेकिन कई बार मरीज दूसरे मरीजों के इन्फेक्शन का भी शिकार हो जाते हैं। ऐसे में आईसीयू के अंदर परिजन से लेकर डॉक्टरों तक को सावधानी बरतने की जरूरत है। एक मरीज को देखने के बाद हाथ सैनिटाइज जरूर करें। वही गंभीर इन्फेक्शन के मरीज को डिस्चार्ज करने के बाद वेड और आस पास की चीजों को सैनिटाइज जरूर करवाएं। परिजन भी इस बात का ख्याल रखें। यह बातें सोसायटी ऑफ एक्यूट केयर ट्रॉमा एंड इमरजेंसी मेडिसिन (सैक्टम) के सचिव डॉ. मुस्तहसिन मलिक ने कहीं। यह सोसायटी ऑफ एक्यूट केयर ट्रॉमा एंड इमरजेंसी मेडिसिन की ओर से गोमतीनगर के एक होटल में शॉक पर आयोजित सीएमई में शामिल हुए। इसमें प्रदेश भर के अस्पतालों की इमरजेंसी के डॉक्टरों की ट्रेनिंग आयोजित की गई।



### बीपी की मॉनिटरिंग जरूरी

सैक्टम के अध्यक्ष डॉ. लोकेंद्र गुप्ता ने बताया कि अचानक बीपी लो हो जाने से मरीज अक्सर शॉक में आ जाते हैं। बीपी की सही मॉनिटरिंग न होने के चलते यह दिक्कत आती है। मरीज खाना खाए बिना बीपी को दवा खा रहे हैं तो बीपी लो हो जाता है। मरीज हाई बीपी को दवा खाते रहते हैं, जिससे वो शॉक में चले जाते हैं। इसलिए जरूरी है कि बीपी, हार्ट, किडनी समेत गंभीर बीमारी के मरीज जिस घर में हों वहां बीपी की मशीन बेहद जरूरी है। ताकि समय रहते अगर बीपी जंच ली जाए तो मरीज शॉक में जाने से बच सकता है। एक बार हॉस्पिटल में एडमिट होने भर से न्यूनतम दस हजार रुपये का खर्च आ जाता है। जबकि बीपी की मशीन एक से दो हजार में आ जाती है।

## डाक्टर मलिक ने बताया कैसे करें शॉक के मरीज का इलाज

लखनऊ (सं)। सोसायटी ऑफ एक्यूट केयर ट्रॉमा एंड इमरजेंसी मेडिसिन की ओर से एक सीएमई का आयोजन किया गया। कार्यक्रम में आयोजक सचिव डॉ. मुस्तहसिन मलिक ने बताया कि शॉक के मरीजों की देखभाल कैसे की जानी चाहिए। अगर किसी मरीज को शॉक लग जाए तो डाक्टर के पास पहुंचने से पहले क्या करें।



निजी होटल में डाक्टरों के लिए आयोजित इस कार्यक्रम में एए नुनिसिस्टों के फ्रिटिकल केयर मॉडलिंग विभाग के डॉ. मुस्तहसिन मलिक ने अपने सम्बोधन में कहा कि शॉक के मरीज को कैसे मैनज किया जाए। अन्दरून्सटाइड का शॉक के मरीज के इलाज में क्या होता है। शॉक का पता कैसे लगाए और उसका इलाज कैसे करें इसकी जानकारी होनी बहुत जरूरी है। उन्होंने बताया कि फ्लूट को कम और किन मरीज में चढ़ाया जाना चाहिए। बताया कि अगर मरीज को हार्ट की कोई बीमारी हो तो शॉक आने पर फ्लूट नहीं चढ़ाना चाहिए।

जबकी हो तो कम मात्रा में चढ़ाए। अगर संक्रमण हो तो पानी अधिक मात्रा में दें। उन्होंने बताया कि लेंथो को शॉक के बारे में जानकारी करना जरूरी है। अपने सम्बोधन में बताया कि सेप्टिक शॉक को कैसे प्रिन्ट करें। सेप्टिक शॉक न हो इसके लिए क्या करना जरूरी है। बताया कि मरीज का बीपी जांचते रहें। बीपी कम हो तो डाक्टर के पास जाए। संक्रमण होने पर सेनेटाइज का प्रयोग करें। उन्होंने बताया कि अस्पताल में भर्ती किसी मरीज को संक्रमण हो उसकी जानकारी डाक्टर को जरूरी है कि संक्रमण एक मरीज से दूसरे में न फैले। उन्होंने कहा कि शॉक के समय पहले एक घंटा महत्वपूर्ण होता है। डाक्टरों को इसकी जानकारी होनी चाहिए कि कब एंटीबायोटिक देना है कब फ्लूट चढ़ाना है। इस अंतर पर संस्थापक अध्यक्ष डॉ. लोकेंद्र गुप्ता ने बताया कि शॉक जैसी बीमारी से बचाव के लिए जानकारी बहुत जरूरी है। कार्यक्रम के अंत में भारत और दुनिया अरिफा का फ्रिकेट मैच सभी सदस्यों को दिखाया गया।

## Nebulized Tranexamic Acid in Hemoptysis: A Paradigm Shift



**DR PRAKASH R MISHRA**  
Associate Professor, AIIMS, New Delhi

The management of hemoptysis remains a critical area in emergency medicine, necessitating effective yet safe interventions. Nebulized tranexamic acid (TA) has emerged as a promising therapeutic option, offering localized hemostasis while minimizing systemic risks. Unlike intravenous (IV) TA, which carries the potential for thromboembolic complications, nebulized TA delivers antifibrinolytic effects directly to the bronchial vasculature, reducing pulmonary bleeding without significantly increasing systemic absorption. This targeted mechanism is particularly beneficial for patients with contraindications to systemic anticoagulation or underlying cardiovascular conditions.

Studies have demonstrated that nebulized TA effectively reduces hemoptysis volume and duration, supporting its role as a first-line therapy, especially in mild to moderate cases. Clinical evidence highlights its ability to stabilize symptoms in patients with recurrent hemoptysis due to bronchiectasis and tuberculosis, potentially reducing the need for invasive procedures like bronchial artery embolization.

India, as a developing country, continues to bear a high burden of tuberculosis (TB), despite dedicated efforts by government. Many TB patients present to emergency departments (EDs) with hemoptysis and require intravenous TA as part of their treatment. Administering TA in nebulized form could enable many patients to manage their symptoms at home. This has become more relevant following the COVID-19 pandemic, since nebulizer machines have become more common in households, making this approach more feasible. Implementing nebulized TA could help reduce the strain on emergency departments, particularly in tertiary care centers. Additionally, it could benefit primary and secondary healthcare facilities by allowing early symptom management, ensuring that patients are referred to tertiary centers in a timely and non-emergent manner for further evaluation and treatment.

As evidence continues to accumulate, nebulized TA is positioned to become a cornerstone in hemoptysis management, bridging the gap between conservative and invasive interventions. Its localized action, ease of administration, and favorable safety profile underscore its importance in management of hemoptysis.

## Trauma Damage Control Resuscitation: Implement. Save. Repeat



**DR SIRI PRIYA**  
Assistant Professor, Govt Medical College, Kadapa

Damage control resuscitation (DCR) may be precisely described as a 'Tailor made resuscitation' for Trauma victims. It has a significantly positive impact on morbidity as it matches the physiological needs of severe hemorrhage in trauma victim. Traditional approaches might involve rapid fluid resuscitation to normalize blood volume and pressure, which can inadvertently worsen bleeding and damage tissues further. DCR, instead, focuses on a more controlled approach to resuscitation.

### Behind the Scene

DCR is actually devised to prevent and reverse the lethal triad of trauma, i.e., coagulopathy, metabolic acidosis and hypothermia, precisely a vicious cycle and coagulopathy being the most "treatable" arm. DCR has three important components in it that act against the vicious lethal cycle, these are -

- Permissive Hypotension
- Hemostatic resuscitation
- Damage control surgery integrating them in one dynamic process.

### The Process

Backed up by many trails, Permissive Hypotension involves targeting a lower SBP except in TBI, to keep the arterial blood pressure low enough to avoid clot dislodgement and exacerbation of arterial hemorrhage while maintaining an adequate perfusion pressure. A target SBP of 80-90 mm Hg until the victim reaches OR has shown to tremendously reduce mortality and length of stay. Further avoiding dumping of crystalloids and rationale use of blood products makes a major contribution to the victim survival as dilution of clotting factors, hypothermia, impaired oxygen transport to tissues and metabolic acidosis worsen the scenario further.

For hemostatic resuscitation working towards temporary mechanical hemostasis, replacing the loss with blood products and antifibrinolytic administration should be aimed at. Two major studies, the Prospective Observational Multicenter Major Trauma Transfusion (PROMMTT) study and the Pragmatic Randomized Optimal Platelet and Plasma Ratios (PROPPR) trial, compared transfusion ratios of fresh frozen plasma (FFP): platelets: packed red blood cells (PRBCs) in patients with major hemorrhage. One group received a 1:1:1 ratio, while the other received a 1:1:2 ratio. Both studies concluded that the 1:1:1 group achieved hemostasis in a higher percentage of patients and required fewer transfusions overall. Tranexamic acid is the best antifibrinolytic in trauma so far. If given as early as 3 hrs has shown to achieve early hemostasis.

Damage control surgery emerged from the understanding that patients with severe trauma often lack the physiological capacity to endure the demands of complex or lengthy definitive surgeries. The primary goal of damage control surgery is to halt bleeding and reduce contamination. Techniques such as temporary clamping, packing, shunting, or ligation are used to achieve these objectives.



### Conclusion

In conclusion, DCR is a critical, life saving approach in trauma care, optimizing survival by controlling bleeding, correcting metabolic imbalances, and facilitating timely surgical interventions.



## "Golden Hour" Course Proposal by SACTEM

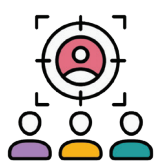
for Doctors at Primary Health Centres and District Hospitals in Uttar Pradesh

Dr Subhankar Paul proposing this course



### Objective

Train doctors & paramedics in emergency management using a standardized protocol.



### Target Audience

Doctors & paramedical staff at PHCs & District hospitals (New & experienced).



### Course Structure

- ◊ One-day training - lectures, workshops, simulations.
- ◊ Hands-on learning with pre- & post-course assessments.
- ◊ Certification upon completion.



### Training Team (6 Experts)

3 MD-level doctors; 1 Nurse; 1 Ambulance driver, 1 Paramedic



### Call to Action

Request to Uttar Pradesh Health Services to support statewide implementation.



### Key Benefits

Standardized emergency care across PHCs & District Hospitals. Uniform protocol for managing critical cases in the first hour. Practical workshops to enhance learning. Assistance in optimizing emergency departments.

# The Toxicologist's Edge: Three Game-Changing Habits for Emergency Physicians



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In the fast-paced environment of an emergency department (ED), clinical toxicologists play a vital role in managing poisoned patients. Given the vast number of potential toxins and poisons, emergency physicians must develop a systematic approach to toxicology cases. Highly effective clinical toxicologists exhibit key habits that enhance their diagnostic accuracy and therapeutic decision-making. This article explores three essential habits that every emergency physician should adopt to excel in toxicology management.

## 1. Pattern Recognition & Early Toxidrome Identification

One of the most critical skills in clinical toxicology is the ability to recognize toxidromes—distinctive symptom clusters that indicate specific classes of poisoning. Effective toxicologists develop a keen eye for these patterns, allowing them to rapidly narrow down the potential toxins involved and initiate timely treatment.

### Developing Pattern Recognition Skills:

- **Regular review of classic toxidromes:** Emergency physicians should familiarize themselves with common toxidromes, including cholinergic, anticholinergic, opioid, sympathomimetic, and serotonin syndromes.
- **Utilizing a structured approach:** Using mnemonics like “SLUDGE” (Salivation, Lacrimation, Urination, Defecation, GI distress, Emesis) for cholinergic toxicity or “Mad as a hatter, Blind as a bat, Hot as a hare, Red as a beet, Dry as a bone” for anticholinergic toxicity helps in quick bedside recognition.
- **Continuous exposure and case-based learning:** Reviewing real-life toxicology cases and participating in case discussions enhance diagnostic intuition over time.

## 2. Mastering Decontamination & Antidote Strategies

Clinical toxicologists must be proficient in selecting the appropriate decontamination techniques and antidotes based on the poison involved. An effective toxicologist

understands when to intervene aggressively and when to avoid unnecessary procedures.

### Key Aspects of Decontamination

- **Gastrointestinal (GI) decontamination:** Activated charcoal remains the most commonly used method, but its use is only beneficial if administered within an hour of ingestion of an adsorbable toxin.
- **Whole bowel irrigation:** Reserved for substances that do not bind to charcoal, such as sustained-release medications, iron, or body packers (drug smugglers ingesting packets of illicit drugs).
- **Avoiding harmful interventions:** Inducing emesis with ipecac syrup is now obsolete due to the risk of aspiration, and gastric lavage is rarely beneficial except in specific cases.
- **Knowing key antidotes:** Emergency physicians should be well-versed in common antidotes such as:
  - N-acetylcysteine (NAC) for acetaminophen toxicity
  - Atropine for organophosphate poisoning
  - Hydroxocobalamin for cyanide poisoning
  - Fomepizole for methanol and ethylene glycol poisoning
- **Understanding risk-benefit analysis:** Some antidotes, like flumazenil for benzodiazepine overdose, can precipitate seizures in chronic benzodiazepine users and should be used with caution.

## 3. Anticipating & Managing Delayed Toxic Effects

Not all toxic effects are immediate—some poisons have delayed but severe consequences. Effective toxicologists anticipate these complications and plan for proactive management.

### Recognizing Delayed Toxicity

- **Hepatic failure in acetaminophen overdose:** Even if asymptomatic initially, patients may develop liver

failure within 72-96 hours. Early administration of NAC is life-saving.

- **Pulmonary fibrosis in paraquat poisoning:** Paraquat, a toxic herbicide, causes progressive lung damage. Despite initial stability, patients can deteriorate rapidly over days. Immediate extracorporeal removal techniques can improve survival.
- **Osteonecrosis in yellow phosphorus poisoning:** Phosphorus toxicity can lead to bone necrosis weeks later, requiring long-term follow-up and intervention.

### Implementing Proactive Measures

- **Early admission and close monitoring:** Patients with potential delayed toxicity should not be discharged prematurely. Serial laboratory monitoring and observation for late complications are essential.
- **Educating the healthcare team:** Nurses, paramedics, and junior doctors should be trained to recognize signs of deterioration, ensuring timely escalation of care.



### Conclusion

Clinical toxicology in emergency medicine requires sharp diagnostic acumen, precise therapeutic interventions, and anticipation of delayed complications. By mastering pattern recognition, understanding decontamination and antidote strategies, and proactively managing late toxic effects, emergency physicians can significantly improve patient outcomes.

Adopting these three habits—early toxidrome identification, precise antidote administration, and anticipation of delayed toxicity—will help emergency physicians navigate complex poisoning cases with confidence and efficiency. Ultimately, these habits not only save lives but also contribute to the growing expertise in the field of clinical toxicology.



## "SACTEM" Where Healthcare Runs Itself-For All

*Because Every Second Counts ...*

Sessions on “**Golden Hour**” at **Kumbh 2025** highlighting the vital role of the Golden Hour in saving lives during medical emergencies



BLS and Hands on CPR training



**Health Camp at Kumbh 2025**

The pioneer of Cardiac surgery in India, **Dr. Naresh Trehan** visited our camp at Kumbh.



# Aluminum Phosphide Poisoning: ECMO as a Rescue Therapy



## DR PRITEEMA CHANANA

Senior Consultant, Critical Care Department  
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Aluminum phosphide (AIP) poisoning is a severe and potentially fatal condition. Aluminum phosphide (Celphos) is the most prevalent suicide agent in developing countries. There is no specific antidote, so the mortality rate is approximately 95% within 24 hours. Patients can die between 1 hour and 48 hours of ingestion. Extracorporeal membrane oxygenation provides life-saving support to the cardiovascular and respiratory systems until the body gets rid of deadly poison.

### Fatal dose

The lethal dosage is 0.15–0.5 g. Aluminum phosphide and aluminum carbonate, in a 54:46 ratio, are the two chemicals found in each tablet, which weighs roughly 3 g. 1 g of phosphine gas is released with every 3 g pill. Most patients, however, arrive having consumed three or more tablets, which always leads to death.

Severity of poisoning also depends on type of compound (fresh vs broken or granular forms) and time delay in medical attention.

### Pathophysiology

Aluminum phosphide releases deadly toxic phosphine gas when it comes into contact with moisture, hydrochloric acid and water in the stomach. Phosphine gas, rapidly absorbed in gastro-intestinal tract. Phosphine gas is highly toxic and can cause severe damage to the cardiovascular, respiratory, and nervous systems. Mechanism of actions are:

- Inhibition of cytochrome c oxidase, leading to cellular respiratory failure.
- Damage to the cardiovascular system due to direct injury to myocytes, can cause cardiac arrhythmias, hypotension and profound circulatory collapse. Most likely this is due to focal myocardial necrosis and changes in membrane action potentials.
- Respiratory failure, including pulmonary edema and acute respiratory distress syndrome (ARDS).

### Clinical Presentation

- The presentation of AIP poisoning depends on the amount of toxin ingested, its route of entry, and the

duration between exposure to the poison and hospital admission.

- Gastrointestinal symptoms, such as nausea, vomiting, and abdominal pain
- Cardiovascular symptoms, such as hypotension, cardiac arrhythmias, and cardiac arrest. (60-100%cases)
- Respiratory symptoms, such as dyspnea, cough, and respiratory failure
- Neurological symptoms, such as headache, dizziness, and seizures.

### Treatment Modalities

- There is no specific antidote available for aluminum phosphide poisoning.
- AIP will only benefit from supportive therapy, such as those that address shock, acidosis, and organ failure. AIP poisoning has been treated with a variety of methods, such as magnesium sulfate, N-acetyl cysteine, and vegetable oil decontamination. These medications may be administered in conjunction with cardiovascular support, but none of them have been demonstrated to reduce mortality or significantly affect patient outcomes.
- Since AIP has a certain elimination time, like other toxins. Notably, phosphine gas has a half-life of 5–24 hours, based on a various factors. Timely arrival, resuscitation, and intense supportive therapy can all lead to favourable outcomes.

### ECMO in AIP Poisoning

VA-ECMO has been employed as a rescue therapy or bridge to recovery in this subgroup of patients since AIP poisoning induces reversible cardiac depression and lung injury/ARDS and does not typically have significant effects on smooth muscle vasculature.

### The use of ECMO in AIP poisoning is typically considered in patients who have:

- Severe cardiac dysfunction, including cardiac arrest
- Respiratory failure
- Refractory shock
- Severe metabolic acidosis

### Benefits of ECMO in AIP Poisoning

Circulatory assistance via ECMO may help to sustain blood pressure, cardiac output, and perfusion. Additionally, by lowering the afterload and supplying the cardiac muscle with adequate oxygen, ECMO can help to enhance myocardial function and to decrease the strain on the heart. The use of ECMO in AIP poisoning has been associated with several benefits, including:

- Improved survival rates
- Support of cardiac and respiratory function
- Reduction in mortality rates
- Ability to provide time for the body to eliminate the toxin

### Challenges and Limitations

The use of ECMO in AIP poisoning is not without challenges and limitations. These include:

- Limited availability of ECMO services
- High cost of ECMO therapy
- Risk of complications, such as bleeding, limb ischemia and infection
- Need for specialized personnel and equipment

### Ethical consideration

The decision to discontinue or refuse ECMO support may give rise to ethical concerns. A multidisciplinary team ought to get involved in the decision-making process and consider the patient's values, and care goal. If the patient is not responding to treatment or if the risk of injury outweighs the potential benefit, it may be justified in certain circumstances to withdraw or withhold ECMO.



### Conclusion

Conventional treatments for aluminum phosphide poisoning are ineffective for this serious potentially fatal illness. Extracorporeal membrane oxygenation, or ECMO, has been used as a rescue treatment in certain scenarios, though its benefits and effectiveness are still up for debate. In extreme situations of AIP poisoning, ECMO may be a life-saving treatment. However, it should be used cautiously and only in individuals with severe respiratory and cardiac failure.

## SACTEM: COLLABORATIONS

### SACTEM Partners with UP Govt for Mahakumbh 2025 Emergency Preparedness

The Mahakumbh in Prayagraj, the world's largest human gathering, brings unique challenges for healthcare systems, with millions of pilgrims and devotees converging for this sacred event. In a proactive initiative, the SACTEM Foundation (Society for Acute Care, Trauma, and Emergency Medicine), India's leading emergency and trauma organization, has collaborated with the Uttar Pradesh Government, AIIMS Delhi, and Raebareli teams to enhance emergency preparedness for Mahakumbh 2025.

### Key Highlights of the Collaboration

- Training medical officers, nurses, and paramedics in disaster management, trauma care, and triage protocols.
- Deployment of a fully equipped Advanced Cardiac Life Support (ACLS) ambulance for on-ground emergency care.

### Leadership & Vision

- Dr. Lokendra Gupta, Founder & President of SACTEM, emphasized the importance of swift, specialized medical responses for emergencies such as heart attacks, stampedes, respiratory crises, and trauma.
- Dr. Mustahsin Malik, Vice President of SACTEM, highlighted the collaboration with government healthcare teams to provide critical care and advanced trauma support during the event.

### Empowering Emergency Teams

Training sessions, led by experts like Dr. Sharad Srivastava, Dr. Ajit Singh, and Mr. Umashankar, focused on CPR and emergency response skills, equipping paramedics and ambulance drivers with life-saving techniques.

**SACTEM is honored to contribute to public safety during this once-in-a-lifetime event. "We are committed to serving society with compassion and expertise," said Dr. Gupta.**



# Aluminum Phosphide Poisoning: ECMO as a Rescue Therapy



**DR MABEL VASNAIK**

Angioedema is a common emergency that presents to an emergency department and has to be diagnosed and treated appropriately. Some of the features of angioedema are similar to anaphylaxis and airway compromise if present is a concern which has to be managed on an urgent basis. Angioedema is a non-pitting edema that affects the subcutaneous tissue and mucosa of the face, neck, oral cavity, larynx and gut.

It becomes life threatening when it involves the larynx. Intestinal angioedema is painful and mimics an acute abdomen.

## Classification of Angioedema

Angioedema can be classified as acquired and hereditary.

**Acquired angioedema** can be allergic or histaminergic which is associated with anaphylaxis.

- Non allergic, drug induced, e.g., angiotensin converting enzyme inhibitors and non steroidal anti inflammatory drugs, complement mediated secondary to acquired deficiency of C1 inhibitor and idiopathic are the other kinds of acquired angioedema.
- **The hereditary form of angioedema** is an autosomal dominant condition due to a C1 inhibitor deficiency which could be type 1 where there is a lack of C1 inhibitor molecule, or type 2 which is a dysfunctional C1 inhibitor molecule caused due to mutations in the gene encoding for C1 inhibitor.

## Pathophysiology Of Angioedema

The pathophysiology of angioedema is either histamine mediated or bradykinin mediated.

- **Histamine mediated** angioedema is the most common and is secondary to mast cell and basophil activation.
- **Bradykinin mediated** angioedema includes hereditary angioedema, acquired C1 inhibitor deficiency and the ACE inhibitor associated angioedemas. Allergic reactions do not trigger this condition. Presentation can be acute or chronic

## Signs and Symptoms Of Angioedema

**Histaminergic angioedema** can be triggered due to drugs, foods, latex, and insect stings and symptoms involve different systems like skin causing urticaria, flushing and pruritus, respiratory causing bronchospasm and gastrointestinal system causing abdominal pain and vomiting. The onset is within 60 minutes of exposure to the allergen and can last for one to two days.

- **Bradykinin mediated angioedema** is not associated with urticaria, it is more severe and lasts for a longer duration and has associated abdominal symptoms.
- **Hereditary angioedema** begins in childhood or young adulthood, gets worse at puberty, and presents as recurrent episodes of swelling or abdominal pain. Patients can develop prominent prodromal symptoms


like erythema marginatum. An acute attack peaks within a day and usually takes two to three days to resolve.

## Treatment of Angioedema

- Treatment of angioedema should be started as early as possible and airway patency should be assessed and managed on priority.
- Histaminergic angioedema is treated with antihistamines, corticosteroids and epinephrine.
- In case of Bradykinin mediated angioedema, it is important to discontinue the trigger factors such as estrogen containing oral contraceptives, hormonal replacement therapy and ACE inhibitors.
- Hereditary angioedema can be treated with plasma-derived C1 Inhibitor concentrate for acute attacks and Ecallantide (Kallikrein inhibitor). In case Ecallantide is not available then fresh frozen plasma (20 ml/kg) can be given. Icatibant a bradykinin-receptor antagonist is an effective home-based, on-demand treatment.

## Prevention of Angioedema


These attacks can be prevented with progestins, tranexamic acid, and danazol.



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**What If Hospital Departments Were Characters in a Netflix Series?**

Imagine the **ER as the drama queen**, the **lab as the introverted genius**, **admin as the control freak...** you get the picture.



# SACTEM: COLLABORATIONS

## Disaster Medicine Institute (DMI) USA



SACTEM is excited to announce a partnership (MOU) between the Disaster Medicine Institute (DMI) USA and the Society for Acute Care, Trauma, and Emergency Medicine (SACTEM) in India!

This collaboration unites two stakeholders in emergency response, trauma care, and disaster preparedness to enhance resilience against emergencies and crises.

### Together, we will:

- Advance research and innovation in disaster medicine
- Provide specialized training and education for healthcare professionals

By combining DMI's expertise in disaster preparedness and SACTEM's leadership in acute and trauma care, we aim to create a more connected, prepared, and informed healthcare community.

Together, we're building a future where every life counts, and every response is impactful. [www.disastermedicineinstitute.com](http://www.disastermedicineinstitute.com) &

[www.sactem.com](http://www.sactem.com)

## CTM-E Semper Scientes



SACTEM is delighted to announce our partnership with Counter Terrorism Medicine Europe, a significant step towards enhancing emergency preparedness and response. I extend my heartfelt gratitude to **George Lucian Tataru** for spearheading this visionary initiative, which addresses a critical need of our times. This collaboration marks a new chapter in strengthening emergency care across India and Europe, fostering the exchange of knowledge, skills, and best practices. Together, we aim to build a robust framework that ensures timely and effective response to emergencies, ultimately saving countless lives.

## Other Collaborations - Webinar



SACTEM conducted a webinar on MRCM, which was attended by around **100 participants**



Around **250 doctors** from Pan India attended our **webinar on Disaster Medicine** which was directed by National fame Emergency Medicine Experts.

# Join SACTEM Today

## Why Join SACTEM?

  
**Public Safety Awareness**  
Promote emergency preparedness

  
**Advance Knowledge**  
Contribute to research & training

  
**Empower Bystanders**  
Gain life-saving skills & confidence

  
**Collaborate & Network**  
Connect with healthcare professionals

  
**Reduce Response Time**  
Master critical interventions to save lives



## Membership Benefits

- Discounted registration for academic activities.
- Opportunities to work with Govt. bodies & NGOs.
- Regular CMEs, workshops & conferences.
- Refresher courses for MD/DNB/MRCEM aspirants.
- Career counseling & job portal for Emergency Medicine.
- Exclusive access to our scientific journal.

## SACTEM Membership Fees

**Associate Life member**

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**Permanent Life member**

₹ 5,000/-



Write Us: : [support@sactem.com](mailto:support@sactem.com)



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