



# 11<sup>TH</sup> GUJARAT CRITICON 2025

Organized by

**ISCCM SURAT & VALSAD BRANCH**

In Association with

**AHMEDABAD, VADODARA, KARAMSAD, RAJKOT, BHAVNAGAR, JUNAGADH BRANCHES**

**SOUVENIR**



**Workshops**  
**14 NOVEMBER**



**Conference**  
**15-16 NOVEMBER**

At Surat's Leading Hospitals



Le Meridian, Surat



NEUROSURGEON  
**DR. DHAVAL PATEL**  
 BRAIN & SPINE

He is  
**Director &**  
**Pioneer of**

**UNIVERSAL**  
 Hospital *All about health*

**500+**  
 Successfully completed  
 brain and spine surgeries  
 at **UNIVERSAL HOSPITAL**  
 (In last 1 Year)

**NEURO & SPINE ADVANCEMENT**

**24 X 7  
 NEURO TEAM**  
 ન્યુરોસર્જન & ન્યુરોફિઝિયોલોજીસ્ટ

**51+  
 ICU Bed**  
 ૫૧ બેડ આઈ.સી.યુ

**MRI 1.5 TESLA**  
 એમ. આર. આઈ. ૧.૫ ટેસ્લા

**NEURO  
 INTERVENTION**  
 મગજની નસ ની બીમારીની  
 કાપ-કુપ વગર સારવાર

**200  
 Bedded hospital**  
 ૨૦૦ બેડની હોસ્પિટલ

**5+ OPERATION  
 THEATERS**  
 ૫ ઓપરેશન થીએટર

**NEUROSURGERY**  
 મગજની સર્જરી  
**SPINE SURGERY**  
 મણકા તેમજ કરોડરજજુની સર્જરી

**MEDTRONIC  
 OPERATING DRILL (UK)**  
 ઓપરેશન માટેનું અદ્યતન મશીન (યુ.કે)

**NEURO  
 CRITICAL CARE**  
 મગજના દર્દીઓ માટે  
 સ્પેશિયલ આઈ.સી.યુ.

**STRIKER OPERATING  
 CUSA (USA)**  
 મગજની ગાઠ કાઢવાનું  
 અદ્યતન મશીન (યુ.એસ.એ)

**ZEISS OPERATING  
 MICROSCOPE  
 TIVATO 700 (GERMAN)**  
 જર્મનીનું અદ્યતન માઈક્રોસ્કોપ

**BRAIN MONITORING  
 SYSTEM**  
 મગજના ઓપરેશન વખતે  
 વપરાતી મોનિટરીંગ સીસ્ટમ

**CT 128 SLICES**  
 ૧૨૮ સ્લાઈસનું અદ્યતન સીટી સ્કેન મશીન

**NEURO  
 NAVIGATION**  
 મગજ અને કરોડરજજુના ઓપરેશન  
 માટે અદ્યતન ટેકનોલોજીથી સારવાર

**NEURO  
 NAVIGATION**  
 મગજ અને કરોડરજજુના ઓપરેશન  
 માટે અદ્યતન ટેકનોલોજીથી સારવાર

**NEURO PHYSIOLOGY LAB**  
 મગજ અને કરોડરજજુની  
 નસ ની તપાસ માટે અદ્યતન મશીન

**24 x 7 EMERGENCY**

**OPD-7, OPD TIME : 4 PM TO 6 PM**



Scan for location

Universal Superspeciality Hospital,  
 Behind New Sids Hospital, New SMC Building,  
 Civil Cross Road, Surat-395001.

**HARSH SANGHAVI**  
Deputy Chief Minister  
Gujarat



No.: Dy.CM/Guj.State/2025/ 2  
Home, Police Housing, Jail, Border Security,  
Gruh Rakshak Dal, Gram Rakshak Dal, Civil  
Defence, Prohibition and Excise, Transport,  
Law and Justice, Sports and Youth Services,  
Cultural Activities, Co-ordination of  
Voluntary Organization, Industries, Salt  
Industries, Micro, Small and Medium  
Industries, Printing and Stationery, Tourism  
and Pilgrimage Development, Civil Aviation,  
Government of Gujarat

Date : 6 NOV 2025

It gives me great pleasure to extend my heartfelt greetings and best wishes to all participants and organisers of the 11th GUJCRITICON 2025. Your concerted efforts and dedication in arranging this State Conference are deeply appreciated.

Conferences such as this provide an invaluable platform for professionals, experts, and young researchers to come together, exchange knowledge and advance our collective mission of strengthening clinical research, practice and collaboration. The enthusiasm, hard work and vision behind this event reflect the highest standards of commitment and scholarship.

I congratulate the organising team for their exemplary planning and execution of this conference. I hope that each delegate gains meaningful insights, forges new links, and returns inspired to contribute further in their respective fields.

I wish the 11<sup>th</sup> GUJCRITICON 2025 every success and trust that it will be a memorable, fruitful and enriching experience for all involved.

With warm regards and blessings,

(Harsh Sanghavi)

To,  
Dr. Arool Shukla  
Chairperson, Indian Society of Critical Care Medicine,  
Surat Branch

## Welcome Message from Gujarat Criticon 2025 Chair

Medical Science is ever evolving imperfect blend of science and art that need to be refined with new knowledge and skills everyday. We as practitioners of this Noble profession, need to keep ourselves updated in the era of AI, as access to uncensored medical information and unmonitored conclusions are easily accessed by any one. This makes it imperative to attend to Medical conferences like Gujcon25 where our own senior peers takes the hardship of digging out the literature, compile it and after critical review of the literature, present the perfect blend of Evidence and Experience in a manner to have lasting take home messages. Keeping this in mind we have selected “Practice Changing Updates” as the Theme Line for the 11th Gujarat Criticon 2025 to be held at Hotel Le Meridian, Magdalla, on 15th and 16th of November 2025.

In addition to Skill-fully crafted scientific sessions in conference we have five preconference workshops on core aspects of Critical Care Medicine on 14th November 2025. Workshops on “Critical Care Nursing” at Shalby Hospital [by team ISCCM Rajkot and Junagadh], “Mechanical Ventilation” at SMIMMER Medical College[by Team ISCCM Vadodara with Dept. of Medicine and Chest Medicine of SMMIMER], “Hemodynamics and ECMO essentials” workshop at Universal Hospital [by Team ISCCM Surat and Valsad], “Point of Care Ultrasound” at Kiran Hospital [By Team ISCCM Karamsad and Bhavnagar]and “Airway management” at Government Medical College, Surat [by Team ISCCMAhmedabad and Dept of Anesthesia of GMCS].

We as Team ISCCM Surat and Valsad is eagerly waiting for you not only to attend this scientific extravaganza but to enjoy a Story of Glory of GUJCON, Skit on “Essentials of Communication skills” , Gala Dinner, Talks on Essentials of Mediclaim applications and Grand “The CCM Quiz”. Its time to meet the peers and enjoy science with Surati delicacies. We will be felicitating all the seniors who dreamt and nurtured the very concept of Gujrat State Critical Care Congress in 2012 in Inaugural Ceremony on 15th November.

We the Team ISCCM Surat and Gujarat hereby forward this informative souvenir and extend the greetings of new year. We WELCOME all the participants to GUJCON 2025.

Lets not forget to thank all the organizing team of ISCCM Surat and Valsad, Intensivist colleagues of all the branches of ISCCM in Gujarat, faculties, ISCCM Surat Office Staff to make this grand Conference possible.



**Dr. Anuj Clerk**



**Dr. Arool Shukla**



**Dr. Kalpesh Joshi**

### Chairpersons

*On behalf of Gujarat Criticon 2025 Organizing team.*

## Message from Chancellor, ICCCM

Greetings from ISCCM

I am extremely happy to know that the 11th Gujarat Criticon is being held in Surat on November 14-16 2025. Gujarat Criticon has always been an excellent meeting and brings in innovative methods of learning and teaching which are replicated in other meetings. I am sure the 11th edition will also be a successful and well attended meeting. The outstanding feature of all Gujarat Criticon meetings has been the exemplary synergy between different city units working towards the common goal of an efficient organization. As always, the scientific content is of very high quality and the faculty list is one of the best. I am sure the delegates and faculty will benefit a lot from this meeting.

The ISCCM has always encouraged academic activities and has taken several initiatives in this direction. This year several courses have been started which have been well received. Apart from this, the society has embarked on an ambitious programme of training school children the basics of CPR. Most branches have come forward and lent a helping hand for this initiative. The society has facilitated the supply of CPR Mannequins to all desirous branches for a hassle-free execution of the program. Similar initiatives have been started in airports and will be extended to gated communities also.

The apex critical care meeting of the Society is Criticare and we will be organising the 32 Annual Congress of ISCCM at Chennai between Feb 25 and March 1 2026. A galaxy of faculty has been invited and an excellent agenda awaits all of you at Chennai. I would like to invite all of you to register for the meeting and join us at Criticare 2026

Wish you all the best



**Srinivas Samavedam**

Chancellor - ISCCM

## Message from Vice Chancellor, ICCCM

It is great pleasure and pride to notice that the 11th Gujarat Criticon 2025 is scheduled between 14th to 16th November in Surat, this year. On 14th, there are 5 workshops happening simultaneously on Airway, Hemodynamics & ECMO, Mechanical ventilation, Nursing Critical Care and Point of Care Ultrasonography which are must-know topics for the critical care student community. The 2-day scientific program is enriched with a variety of fresh, hot & contemporary practice-oriented topics in the form of lectures, thematic sessions and practice-updates delivered by eminent local & national faculty.

On behalf of Indian College of Critical Care Medicine & ISCCM, I would like to congratulate and thank the entire Gujarat Criticon 2025 organizing team for hosting a great critical care academic feast.

Regards

**Dr Ajith Kumar A.K**



**Vice Chancellor, ICCCM**

(01-10-2025)

## ORGANIZING COMMITTEE

### Chairpersons:



Dr. Anuj Clerk



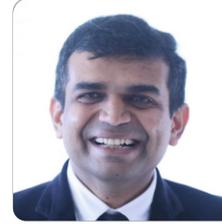
Dr. Arool Shukla



Dr. Kalpesh Joshi



Dr. Vitrag Shah



Dr. Dipak Viradia

### Organising Secretary:

### Treasurer:



Dr. Krunal Patel



Dr. Nirav Gondaliya

### Registration Committee:



Dr. Himani Garasia



Dr. Nishith Patel  
(Valsad)



Dr. Darshan Trivedi



Dr. Kaushal Patel



Dr. Priyank Savaj



Dr. Sunil Amin



Dr. Mahesh Sutariya



Dr. Keyur Paneliya



Dr. Haresh Vastrapara



Dr. Denis Patel



Dr. Parishree Kapadia



Dr. Ankit Gajjar

### Advisor

Dr. K N Bhatt  
Dr. Vipul Srivastava  
Dr. Parul Vadgama  
Dr. Yogesh Desai  
Dr. Devang Desai (Valsad)  
Dr. Praful Chhasatiya

### Accommodation Committee

Dr. Hardik Maniyar  
Dr. Apeksha Parekh  
Dr. Ronak Yagnik

### Academic & Research Committee

Dr. Samir Gami  
Dr. Karsan Nandania  
Dr. Gaurish Gadbail  
Dr. Rajesh Prajapati  
Dr. Ashvin Vasava

### Transport Committee

Dr. Shivam Parekh  
Dr. Sandip Desai  
Dr. Mayur Kachchi

### Team Ahmedabad

Dr. Mehul Solanki  
Dr. Amrish Patel  
Dr. Amit Prajapati

### Team Rajkot

Dr. Chirag Matravadia  
Dr. Tushar Patel  
Dr. Digvijaysinh Jadeja

### Team Karamsad

Dr. Sunil Chhajwani  
Dr. Bharat Prajapati  
Dr. Darshan Shah

### Team Vadodara

Dr. Amit Chauhan  
Dr. Chinmay Pathak  
Dr. Pranav Patel

### Team Bhavnagar

Dr. Dhaval Vaidya  
Dr. Vipul Parekh  
Dr. Harpalsinh Dabhi

### Team Junagadh

Dr. Shailesh Jadav  
Dr. Dharmesh Chauhan  
Dr. Akash Patoliya

# Behind the Scenes: Preparation for Gujarat Criticon 2025



# Behind the Scenes: Preparation for Gujarat Criticon 2025



# ARJO

*with people in mind*

Arjo is a global supplier of medical devices, services and solutions that improve quality of life for people with reduced mobility and age-related health challenges. We create value by improving clinical outcomes for patients and enabling a better work environment for healthcare professionals. We thereby contribute to a sustainable healthcare system – always with people in mind.

We operate in more than 60 countries, which has been divided into three geographic areas: North America, Western Europe and Rest of the World. We have more than 5,900 employees worldwide. Our head office is in Malmö, Sweden.



## ARJO PORTFOLIO

### MEDICAL BEDS

Arjo offers comprehensive range of fully electric general ward and special care bed solutions for a range of healthcare settings and budgets.



### TROLLEYS

Arjo offers range of trolleys is suitable for patient transfer, examination, treatment and recovery. A selection of models, options and accessories allows the flexibility to tailor to different needs and budgets.



### THERAPEUTIC SURFACES

Arjo provides solutions to enhance patient comfort, prevent pressure ulcers and promote the healing process, the advanced range of therapeutic surfaces allows effective pressure management.



### PATIENT HANDLING

Arjo produces a wide range of easy to use patient handling equipment designed to minimize the risk in the working environment and improve quality of care.



### HYGIENE

Arjo believes patients should have access to shower facilities for daily hygiene as well as regular bathing sessions for relaxation and enhanced well being.



### DIAGNOSTIC PRODUCT RANGE

Arjo is a leading global provider of innovative and high quality medical equipment for healthcare professionals. The Diagnostic Products Division can proudly boast world leading brands such as Sonicaid, Dopplex and Smartsigns, covering healthcare requirements in obstetrics, vascular assessment & patient monitoring.



### DEEP VEIN THROMBOSIS (DVT) PREVENTION

Arjo offers wide range of Intermittent Pneumatic Compression (IPC) system which are clinically effective, non-invasive mechanical prophylaxis system designed to reduce the incidence of Deep Vein Thrombosis (DVT).



### Disinfection

Arjo offers wide range of high quality equipment including flusher disinfectors, flusher liquids, multiple sluice room design options, and a choice of materials to meet your sluice room needs, we can help you develop an optimal and efficient sluice room environment as a key component of your infection control strategy.



HELPLINE  
NUMBERS

**Ahmedabad** : 9825319861 / **Bengaluru** : 9845996014 / **Bhubaneswar** : 9178742904 / **Chennai** : 9840087780 / **Gurgaon** : 9871891115 / **Indore** : 9229142678 / **Kolkata** : 9830703008 / **Ludhiana** : 9501802691 / **Mumbai** : 9820402542 / **Mangalore** : 9900023706 / **Navi Mumbai** : 9920439139 / **Pune** : 9881300744 / **Secunderabad** : 9866183543 / **Siliguri** : 9007063722 / **Surat** : 9978995045 / **Thane** : 9920439139 / **Trivandrum** : 8129127373 / **Vijayawada** : 9100934465 / **Lucknow** : 7619995111 / **Noida** : 9910316204 / **Kozhikode** : 8129701270 / **Ranchi** : 9835081444

ArjoHuntleigh Healthcare India Pvt Ltd, 1401, Remi Commercio, 14 Shah Industrial Estate, Off Veera Desai Road, Andheri West, Mumbai-400053, India.  
Tel. : +91 22 26378300 Email : salesindia@arjo.com Website : www.arjo.com

# Sara Combilizer

## Multifunctional aid for early mobilisation



### Improved respiratory function

The upright position improves respiratory function and blood circulation.



### Safe and secure

A secure strap system ensures the patient feels stable and comfortable in all positions. Availability of Sara Combilizer maneuvering control is threefold: hand control, control panel on the handle and an emergency control box in the chassis. The high degree of adjustability allows for an ergonomically correct working position.



### Improving rehabilitation

This versatile aid provides the positioning options to fulfil individual rehabilitation programs.



### Earlier mobilisation

All the benefits of mobilisation - available earlier. Even heavily sedated patients benefit from mobilisation soon after admission to the ICU.



### Patient Safety

There's a manual quick-down function that allows the caregivers to take the patient down to a lying position if complications occur.



### Easy and efficient to use

Sara Combilizer studies has shown a high acceptance amongst nursing staff, physicians and relatives. It is easy to integrate in the daily workflow due to its unique properties: size, mobility, reliability and multiple features

ArjoHuntleigh Healthcare India Pvt Ltd • 1401, Remi Commercio, 14 Shah Industrial Estate, Andheri West • Mumbai 400053 • India • Contact number: 9833368480 (Mumbai) • 9810052041 (Delhi) • 9845996014 (Chennai) • 8118050345 (Kolkata) • +91-22-26378300 (India Head Office) • Email: salesindia@arjo.com

www.arjo.com

**arjo**  
with people in mind



# KIRAN HOSPITAL

MULTI SUPER SPECIALITY HOSPITAL & RESEARCH CENTER



- ❖ Gujarat's largest 900 bedded hospital in private sector
- ❖ 105 Super specialist with 300 doctors full time team
- ❖ 45 Medical departments with full time doctors
- ❖ 2700 Paramedical staff for quality services
- ❖ 400 Cr. Investment in medical equipments
- ❖ More than 40 lakh patients taken benefits in last 8 years



**Padmashri Mathurbhai Savani**  
- Chairman Kiran Hospital



## STATE-OF-ART CRITICAL CARE FACILITY IN GUJARAT

- ❖ 33 Bedded fully equipped Emergency Department
- ❖ 28 Operation Theatres Complex
- ❖ 152 Bedded ICU With latest Life support machines
- ❖ Dedicated ICU beds for Surgical, Transplant, Burns, Cardiac, NICU & PICU
- ❖ World Class Radiology & Pathology In-house Services
- ❖ IDCCM seats available affiliated by ISCCM

📞 0261 7161111



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



Surat





## Leading Hospital for Trusted Care



**100+ Specialist and Super-Specialist Consultants**



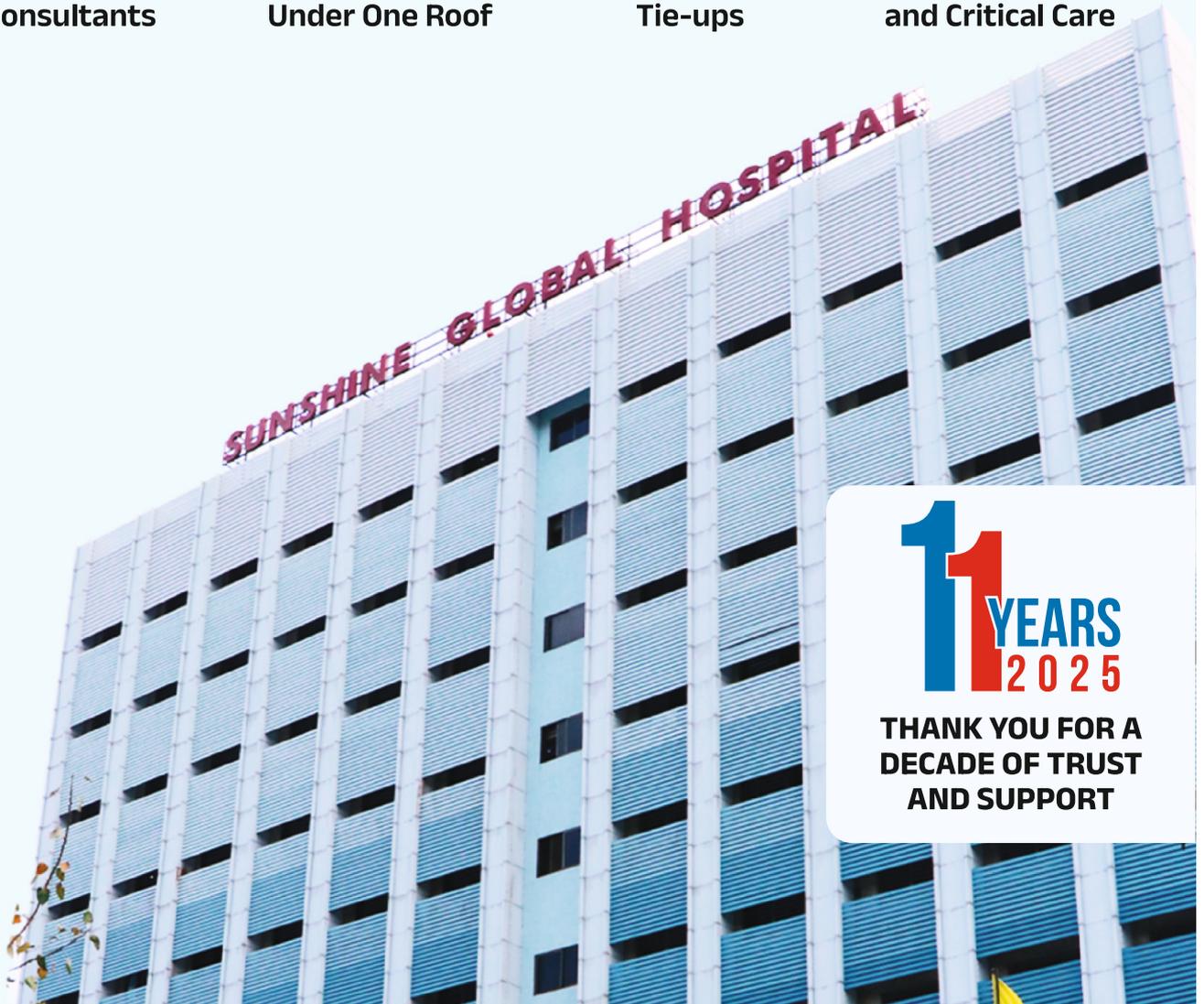
**All Advanced Healthcare Services Under One Roof**



**All Major TPA and Corporate Tie-ups**



**Leaders in Emergency, Trauma and Critical Care**



**11 YEARS 2025**

**THANK YOU FOR A DECADE OF TRUST AND SUPPORT**

Sunshine Global Hospital - Dumas Road, Piplod | Contact : 0261 4111 000 | +91 75748 49466



# SHALBY

## MULTI-SPECIALTY HOSPITAL



શૅલ્બી મલ્ટી-સ્પેશ્યલ્ટી હોસ્પિટલ  
તમારી સેવામાં હવે સુરતમાં



તમારો વિશ્વાસ જ અમારી સફળતાનો સ્ત્રોત છે.  
આ અમને દેશભરમાં સ્વાસ્થ્ય સેવાને વધારે  
સારી અને સક્ષમ બનાવવા પ્રેરણા પ્રદાન કરે છે.

**Dr. Vikram Shah**

(World Renowned  
Joint Replacement Surgeon & CMD,  
Shalby Hospitals)

### સ્થાનીય સરનામું :

શૅલ્બી હોસ્પિટલ, નવયુગ કોલેજની નજીક, રાંદેર રોડ, સુરત, ગુજરાત, ઇન્ડિયા.  
સંપર્ક કરો : 0261-7190000 / 95120 48594 | ઇમરજન્સી : 95126 60096

શૅલ્બી હોસ્પિટલ્સ-વિશ્વની શ્રેષ્ઠ  
જોઇન્ટ રિપ્લેસમેન્ટ સેન્ટરમાંની એક

વેસ્ટર્ન અને સેન્ટ્રલ ઇન્ડિયામાં  
સૌથી મોટી હોસ્પિટલ ચેઇન

### અમારી હેલ્થકેઅર સેવાઓ



Shalby Naroda (Ahmedabad)

- આર્થોસ્કોપી, સ્પોર્ટ્સ મેડિસિન અને ઓર્થોપેડિક્સ
- કાર્ડિયોલોજી, કાર્ડિયોથોરેસિક સર્જરી, વોસ્ક્યુલર સર્જરી
- કોસ્મેટિક, પ્લાસ્ટિક અને રિકન્સ્ટ્રક્ટીવ સર્જરી
- ડેન્ટલ કોસ્મેટિક્સ, ઇમ્પ્લાન્ટોલોજી, ડેન્ટલ સર્જરી
- ઇમરજન્સી, ક્રોનિયુઅલિ અને ટ્રોમા
- જોઇન્ટ રિપ્લેસમેન્ટ
- મેડિકલ ગેરોએન્ટ્રોલોજી અને એન્ડોસ્કોપી
- મિનિમલ ઇન્વેસિવ અને એન્ડોસ્કોપી, સ્પાઇન સર્જરી
- ન્યુરો સર્જરી અને ન્યુરોલોજી
- અલ્ટ્રાસાઉન્ડ, ગાયનેકોલોજી અને હાઇ રિસ્ક પ્રેગનન્સી
- ઓન્કોલોજી, ઓન્કો સર્જરી અને રેડિએશન થેરાપી
- ઓપ્થેલ્મોલોજી, ઇ.એન.ટી અને માઇનર સ્પેશ્યલ્ટીઝ
- પીડિએટ્રિક્સ અને નિયોનેટોલોજી
- સર્જિકલ ગેરોએન્ટ્રોલોજી, એડવાન્સ્ડ લેપ્રોસ્કોપિક સર્જરી અને બેરીયાટ્રીક સર્જરી
- યુરોલોજી અને નેફ્રોલોજી

### સહાયક સેવાઓ

સી.ટી., એમ.આર.આઇ., મેમોગ્રાફી, 24x7 ઇમરજન્સી અને ટ્રોમા, ફાર્મસી, હોમકેઅર સર્વિસ



Ahmedabad  
SG Road



Ahmedabad  
Ghuma



Ahmedabad  
Vijay



Jaipur



Vapi



Mumbai



Jabalpur



Indore



Mohali



Goa

કોર્પોરેટ ઓફિસ: શૅલ્બી લિમિટેડ, કર્ણાવતી ક્લબની સામે, એસ.જી.રોડ, અમદાવાદ-380 015, ગુજરાત, ઇન્ડિયા | www.shalby.org | info@shalby.org



**SIDS HOSPITAL  
& RESEARCH CENTRE**  
A Multi Super-Speciality Hospital



# Advance Cardiac Care Services

**BEST EMERGENCY  
CARDIAC TEAM  
WITHIN YOUR  
REACH **24X7****

Angiography

Angioplasty

Pacemaker

TAVI

## OUR SPECIALTIES

- MEDICAL GASTROENTEROLOGY
- SURGICAL GASTROENTEROLOGY
- UROLOGY
- NEPHROLOGY
- CRITICAL CARE
- SPINE SURGERY
- JOINT REPLACEMENT & ORTHOPEDICS
- NEUROSCIENCES
- ONCOLOGY
- ONCOSURGERY
- CARDIOLOGY
- INFECTIOUS DISEASE
- GENERAL MEDICINE
- GENERAL SURGERY
- PULMONOLOGY
- HEMATOLOGY & BMT
- BARIATRIC SURGERY
- ANESTHESIOLOGY
- PAIN MANAGEMENT
- VASCULAR SURGERY
- PLASTIC SURGERY
- RADIOLOGY
- LABORATORY MEDICINE
- LIVER TRANSPLANT
- TRANSPLANT MEDICINE

**Appointment No. 0261 - 28 00 000 / 990 990 7475**

 [www.sidshospital.com](http://www.sidshospital.com)  
 [info@sidshospital.com](mailto:info@sidshospital.com)  
 SIDS Hospital

 Off Ring Road, Near Shell Petrol Pump,  
 Ring Road – Sosyo Circle Lane,  
 Surat – 395002



Scan the Code For Location



# The Largest Healthcare Network of South Gujarat – Complete Care, Affordable for All.



**200**  
Beded Hospital



**MEDICAL TOURISM,**  
State of The Art International Patient Desk



**200+**  
Doctors & Superspecialist with Full Time OPD



**ORGAN TRANSPLANT**  
Center



**54**  
Beded Largest ICU with 24x7 Intensivist



**RADIATION**  
Center



## SCOPE OF SERVICES

- > PULMONARY MEDICINE & CRITICAL CARE MEDICINE
- > DEPARTMENT OF DIGESTIVE & HEPATOBIUARY SCIENCES
- > DEPARTMENT OF VASCULAR & ENDOVASCULAR SURGERY
- > TRANSPLANT CENTRE
- > DEPARTMENT OF RADIOLOGY
- > DEPARTMENT OF NEURO SCIENCE
- > DEPARTMENT OF PLASTIC RECONSTRUCTIVE & COSMETIC SURGERY
- > DEPARTMENT OF OBSTETRIC & GYNAECOLOGY
- > DEPARTMENT OF PAIN & PALLIATIVE MEDICINE
- > 24 X 7 SERVICE
- > DEPARTMENT OF CARDIAC SCIENCE
- > DEPARTMENT OF RENAL SCIENCE
- > DEPARTMENT OF ENDOCRINOLOGY
- > DEPARTMENT OF INFECTIOUS DISEASES
- > DEPARTMENT OF PHYSIOTHERAPY & REHABILITATION
- > DEPARTMENT OF ONCOLOGY
- > DEPARTMENT OF ENT (EAR, NOSE, THROAT)
- > DEPARTMENT OF CLINICAL RESEARCH
- > DEPARTMENT OF ORTHOPEDC

**📞 Appointment: +91 90811 12148**



Universal Superspeciality Hospital, Beside Jash Infinity, Behind New SMC Bulding, Civil Cross Road, Off Ring Road, Surat - 395001

**📞 Emergency Call: +91 98700 82257**



Green Atria, Society, Anand Mahal Rd, beside Silver Park, in front of Sneh Sankul Wadi, Giriraj Society, Adajan, Surat, Gujarat 395009

United to Care



# Uni+ Hospital

**Super Multi Speciality**

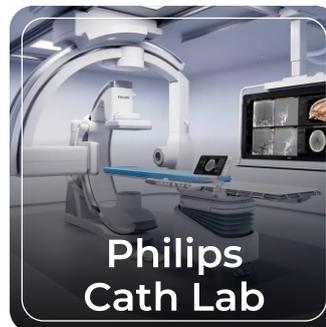
NABH ACCREDITED 100 BEDDED HOSPITAL

Always At Your Service



## Leading 100-Bedded Multi-Superspeciality Hospital with Robotic & Advanced Care

State Of The Art Facilities



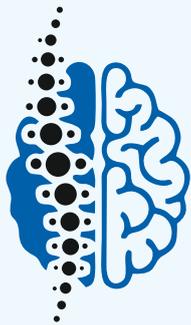
### Seamless Healthcare with 45+ Cashless Tie-ups

For Appointment  **75740 60608**

 Unity Hospital, Beside D. R. World, Aai Mata Road, Parvat Patiya, Surat.

Visit Our Website : [www.unityhospitalsurat.com](http://www.unityhospitalsurat.com)

# Gujarat's best and most Advanced Brain and Spine Surgery



**BSC**  
BRAIN & SPINE CLINIC



## Expertise

- Key hole Brain & Spine Surgeries
- Brain & Spine tumors
- Aneurysms & Vascular Malformation
- Stroke
- Head & Spine Injuries
- Trigeminal Neuralgia
- Spine disc surgeries
- Epilepsy surgeries
- Paediatric Neuro surgery

## Latest Technologies

- Neuronavigation
- Latest Microscope
- Intraoperative Angiography
- C - Arm

## Dr. Bhaumik Thakor

MBBS, MS, M.Ch. (Neuro Surgery)  
Brain and Spine Surgeon

15 YEARS OF EXPERIENCE

MORE THAN 14000 BRAIN AND SPINE SURGERIES



**For Appointment - 7567 077 088**

204, 2nd Floor, Excellent Business Hub,  
Opp. Venus Hospital, B/s. Shell Petrol Pump,  
Lal Darwaja, Surat-03.

OPD Timing: 6:30 pm to 7:30 pm  
(Mon to Fri with Prior Appointment)

Kiran Hospital  
Sumul Dairy Road, Surat.

OPD Timing: 10.00am to 1.00pm  
(Mon to Fri with Prior Appointment)



**Dr. Pranav N Vaidya**

*MD, DM Cardiology (Delhi)*

**Interventional Cardiologist**

## Trusted hands in Interventional Cardiology

### EXPERT IN:

- Coronary Angiography / Angioplasty
- Pacemaker Implant (including Leadless Pacemaker)
- CRT Implant (Heart Failure Device)
- TAVI (Stitchless Aortic Valve Implantation)
- Renal Angioplasty
- Renal Denervation
- Balloon Valvuloplasty
- Stress Testing
- Echocardiography

### FOR EMERGENCY



**MAHAVIR  
CARDIAC  
HOSPITAL**



**SIDS HOSPITAL  
& RESEARCH CENTRE**  
A Multi Super-Speciality Hospital

**Clinic:** 408, SNS Axis Building,  
Beside Mahavir Superspeciality Hospital,  
Opposite Jivanbharti School, Nanpura

**9825959404 / 9998535122**



# INDEX

Sr. No.	Subject	Page No.
1	Top 10 Myths in Nephrology	19
2	From Struggle To Breath, A Challenging Airway Success Story	20
3	Abstracts (1 to 17)	21
4	Cardiologist - Intensivist Collaboration : A Synergy That Saves Lives	34
5	Myths Vs Facts In ICU	35
6	Are We Getting Fresh Air ??	37
7	From Mouth To Lung: Odontogenic Pulmonary Infections	39
8	Personal Branding For Doctors: Why Your Reputation Deserves A Strategy	40
9	Insurance For Doctors. Which, When And How Much?	41
10	Stress And Health Care In Indian Context Title: "stress In Indian Healthcare: From Stethoscope To Stressoscope"	43
11	Acute Pancreatitis	44
12	The Role of Artificial Intelligence In Critical Care: Transforming Patient Management, Research, Education, And Professional Development	47
13	Integration of Artificial Intelligence In The Intensive Care Unit : A Consultant Intensivist's Viewpoint	49
14	Investment Strategies For Doctors In India In 2025	51
15	Education and Learning	54
16	Hawthorne Effect For Error Prevention In Clinical Practice - The Error Prevention Modules	56
17	Green ICU	57
18	Hepatitis a In India: Changing Epidemiology, Clinical Challenges and The Way Forward.	59
19	ID as a Collaborative Specialty	61
20	Role of Plasma Exchange & CRRT in Critically ill Liver Patients	62

# Top 10 Myths in *Nephrology* in ICU Patients

## Introduction

Renal dysfunction in ICU patients represents a complex interplay between hemodynamic instability, sepsis, nephrotoxins, and multi-organ failure. Over the years, several misconceptions have persisted in clinical practice, resulting in suboptimal outcomes. Recognizing and correcting these myths is crucial for timely nephrology involvement, rational fluid management, and appropriate initiation of renal replacement therapy (RRT).

### Myth 1: Mild Rise in Creatinine is Clinically Insignificant

Even small increments in serum creatinine reflect significant reductions in glomerular filtration rate (GFR). Studies show that even a 0.3 mg/dL rise in creatinine correlates with higher mortality and prolonged ICU stay. Early recognition of AKI and nephrology consultation can improve outcomes.

### Myth 2: Oliguria Always Indicates Volume Depletion

Not all oliguric ICU patients are hypovolemic. Causes such as acute tubular necrosis, sepsis-associated AKI, and urinary obstruction must be excluded. Blind administration of fluids can precipitate pulmonary edema and worsen renal perfusion. Volume assessment should be guided by clinical examination, ultrasound, and hemodynamic monitoring.

### Myth 3: Normal Urine Output Means Normal Kidney Function

Urine output is not a reliable standalone indicator of renal function. In critically ill patients with low muscle mass or altered metabolism, creatinine generation may be reduced. Non-oliguric AKI is common in sepsis, rhabdomyolysis, and after nephrotoxic drug exposure. Serial monitoring of creatinine and urine biochemistry remains essential.

### Myth 4: Diuretics Prevent or Treat AKI

Loop diuretics can manage volume overload but do not prevent or treat AKI. High-dose diuretics may delay timely initiation of dialysis and can worsen electrolyte imbalances. Their role should be limited to symptomatic management of fluid overload.



### Myth 5: Dialysis Should Be Started Only When Uremic Symptoms Appear

The traditional “wait for uremic symptoms” approach is outdated. Early initiation of RRT in the presence of refractory metabolic acidosis, hyperkalemia, pulmonary edema, or rising nitrogenous waste improves outcomes. Clinical judgment and biochemical parameters should guide timing rather than uremic manifestations alone.

### Myth 6: Continuous Renal Replacement Therapy (CRRT) is Always Superior to Intermittent Hemodialysis

Although CRRT provides hemodynamic stability in unstable patients, studies have not demonstrated mortality or renal recovery benefits over intermittent hemodialysis. The choice should be individualized, based on hemodynamics, availability, and expertise.

### Myth 7: Nephrotoxic Drugs Must Always Be Stopped in AKI

While drug-induced nephrotoxicity is a concern, many agents such as antibiotics or antifungals are life-saving. Dose modification and therapeutic drug monitoring are often sufficient. The risk of untreated infection frequently outweighs the potential renal risk.

### Myth 8: Contrast-Induced Nephropathy is Inevitable

With modern low-osmolar and iso-osmolar contrast media, the incidence of contrast-induced nephropathy (CIN) has significantly declined. Adequate hydration, minimizing contrast volume, and avoiding concurrent nephrotoxins can effectively prevent CIN in most patients.

### Myth 9: High Urea Always Warrants Immediate Dialysis

Urea levels alone do not dictate dialysis initiation. Asymptomatic patients with high urea may be clinically stable. Indications for dialysis include acidosis, refractory hyperkalemia, fluid overload, and uremic symptoms—not urea levels in isolation.

### Myth 10: Sepsis-Induced AKI Results Solely from Hypoperfusion

Sepsis-related AKI involves complex mechanisms beyond simple hypoperfusion, including inflammation, endothelial injury, and microcirculatory dysfunction. Overzealous fluid resuscitation can aggravate renal congestion and worsen outcomes. Balanced fluid and vasopressor therapy are key.



## Conclusion

Dispelling myths in nephrology practice is crucial to improving ICU outcomes. Early identification of AKI, rational fluid and drug management, and timely RRT initiation are cornerstones of optimal renal care. A collaborative approach between intensivists and nephrologists ensures precise decision-making and better patient survival. Awareness and timely correction of these misconceptions can significantly influence renal recovery and ICU mortality. The kidney, though resilient, requires early recognition and respect in the complex ICU environment.



## DR. MUKESH GOYAL

Consultant Nephrologist & Transplant Physician  
Kidney Transplant Specialist (Gold Medalist)

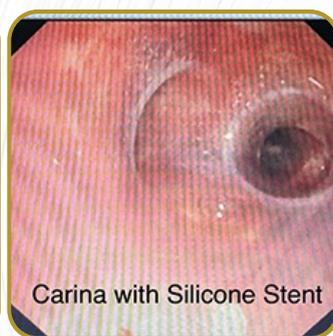
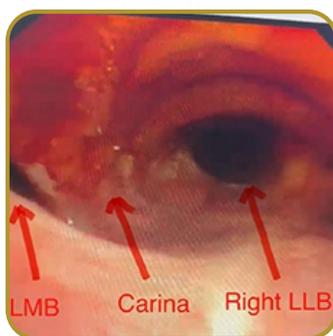
📍 Shalby Hospital, Near Navyug College,  
Rander Road, Adajan, Surat - 395009

☎ + 91 90350 72037



## From Struggle to Breath, A Challenging Airway Success Story

She was just 30, a post TB survivor (2019) who kept struggling with breathlessness and recurrent infections.



### Bronchoscopy:

Pinpoint narrowing of the left main bronchus and multiple level complex tracheal stenoses every breath was a battle.

### Procedure Highlights:

- SEMS trimmed and placed via rigid Bronchoscopy under C-Arm Guidance.
- Excellent Airway opening and immediate symptom relief.

### Final Stage:

After 1 month, SEMS was removed.

Trimmed Silicone Y-stent placement done with bronchial wash, multiple balloon dilatations, and precise customization successfully deployed under fluoroscopic guidance.

### Result:

A complex case... completed successfully, with a beautifully open airway and a big sign of relief! A patient who could finally breathe freely again.

### Takeaway:

A staged and customized approach using temporary SEMS for airway preparation followed by tailored Silicone Y-stent placement—can achieve durable airway patency in complex post-tubercular stenosis.

**While SEMS are not typically used for benign lesions, we utilized it to achieve adequate airway dilation. Even we shortened the right limb of SEMS to provide sufficient space for the upper lobe bronchus.**

**Careful Planning, Patience, and Precision are Key to success.**

**EVERY BREATH MATTERS**

With skill, patience, and teamwork, even the toughest airways can open again reminding us that **medicine is equal parts science and heart.**

**Courtesy: Dr. Pranav Vaidya**

**Special Thanks to Dr. Amit Dave, Dr. Nidhi Patel, Dr. Dharya Pandit, and Universal OT Staff**



**Dr. Dipak Viradia**  
MBBS, DTCD, DNB

Chest Physician & Intensivist,  
Interventional Pulmonologist  
ECMO Specialist



### Demographics and Outcomes from a Multicentric Online CPR Registry in India: A Eight-Year Analysis (2017–2025)

Patel Krunal<sup>1</sup> Gohil Dhruval, Patel Tisha<sup>1</sup>, Panchal Vaibhavi<sup>1</sup>, Hadiya Paresh<sup>2</sup>, Rohit Vaishali<sup>2</sup>, Rajput Vishvajeet<sup>2</sup>, Mangroliya Rakesh<sup>3</sup>, Shrestha Ramchandra<sup>4</sup>, Vyas Bhavin<sup>5</sup>, Shah Bhgyesh<sup>6</sup>, Patel Samir,<sup>7</sup> Shah Ritesh<sup>8</sup>, Jasmin Rachhadia<sup>8</sup>, Bhavsar Ankur<sup>9</sup>, Umrania Purvesh<sup>10</sup>, Indraneel Raut<sup>11</sup>, Patil Vishwanath<sup>12</sup>, Patel Sahil<sup>13</sup>, Desai Nikita<sup>14</sup>, Clerk Anuj<sup>15</sup>

**Corresponding author: Patel Sahil Pareshbhai**

**Affiliations:** 1 Consultant Intensivist, ex Sunshine Global Hospital, Surat and Founder of AOC registry, 2 IDCCM Fellow, Sunshine Global Hospital, Surat. 3 ICU Associate, Sunshine Global Hospital, Surat., 4 Consultant Emergency Medicine, Shree Ramchandra Medical College, Chennai 5 Head Of Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy, 6 Head of Dept of Intensive Care CIMs Global Hospital, Ahmedabad, 7 Head of Dept of Intensive Care, Shree Krishna Hospital, Karamsad, 8 Consultant Intensivist, Vadodara, 9 Head of Dept of Intensive Care Spandan Hospital, Vadodara, 10 Head of Dept of Intensive Care Bhailal Amin Hospital, Vadodara, 11 Head of Dept of Intensive Care Jaslok Hospital, Mumbai, 12 consultant Intensivist, Bhartiya Vidhyapeeth, Pune, 13 Pharm.D interns, Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy, 14 Research Associate, AOC Registry Office, Surat, 15 Head of Dept of Intensive Care Sunshine Global Hospital, Surat and Founder of AOC registry

#### BACKGROUND AND RATIONALE:

To publish data with outcome statistics from our online cardiac arrest (CA) outcome consortium (AOC) online registry.

#### METHODOLOGY:

Data on cardiac arrest (CA) from tertiary care hospitals were collected on the AOC registry online portal from January 2017 to June 2025. Survival endpoints from cardiac arrest events like ROSC, and survival at hospital discharge with neurological status at discharge were analyzed and presented. Studies of demographics, the association of outcome with age and gender was also done along with suitable statistical analysis.

#### RESULT:

Out of 5776 CA, 5512 received CPR (5253 IHCA, 259 Out of hospital Cardiac Arrest (OHCA)) as 264 were DNR. Of these patients, 68% were male and 32% were female. The average age of male and female in this study population were 58.9 and 58.6 years respectively. Asystole (72.4%), Pulseless Electrical Activity (PEA) (21.9%), and VF/pVT (5.7%) as first rhythm significantly influence survival, ROSC was achieved in 1070 (19.4%), with 699 (12.68%) alive and 482 (8.74%) having good (CPC  $\leq$  2) neurological state at discharge.

#### CONCLUSION:

This eight-year multicentric analysis revealed low overall survival following cardiac arrest, with only 19.4% achieving ROSC and 12.68% surviving to discharge. Asystole was the predominant rhythm associated with poor outcomes, while shockable rhythms showed better prognosis. These findings highlight the urgent need for improved early detection, timely resuscitation, and standardized post-arrest care across Indian tertiary centers.

**KEYWORDS:** Cardiac arrest, Cardiopulmonary resuscitation, In-hospital cardiac arrest, Online registry, Out-of-hospital cardiac arrest, Restoration of spontaneous circulation, Survival to discharge.

**Acknowledgement:** We thank Mr. Shailesh Makwana, Manager, AOC Registry Office, Surat for his immense contribution for maintaining AOC Registry Database upto date.

## ABSTRACTS

### ABSTRACT-2

## A Case of Anti-Yo Positive Paraneoplastic Cerebellar Degeneration Revealing Occult Breast Carcinoma

**Authors:** Dr Raghav Jamnani (Medicine resident), Dr Soaham Desai (Consultant Neurologist)  
Dr Devangi Desai (Professor Medicine)

**Institute:** Pramukhswami Medical College, Karamsad

**Introduction:** Paraneoplastic cerebellar degeneration (PCD) is a rare immune-mediated neurological disorder associated with underlying malignancy, most commonly breast or gynecological cancers. It results from an autoimmune response directed against neuronal antigens shared by tumor tissue, often preceding cancer diagnosis.

**Case Presentation:** A 42-year-old previously healthy female presented with giddiness, slurred speech, and imbalance for three weeks. Neurological examination revealed dysarthria, limb and gait ataxia, suggestive of pancerebellar involvement; alongwith frontal subcortical executive dysfunction. MRI brain with contrast was normal. Routine infectious and autoimmune workup was unremarkable. CSF showed mild lymphocytic pleocytosis and elevated protein. Autoimmune encephalitis panel was negative; however, the paraneoplastic neuronal antibody profile was strongly positive for anti-Yo antibodies. She was started on intravenous corticosteroids pulse therapy. On examination she had small lump in right breast and palpable axillary lymph nodes, biopsy of which confirmed invasive ductal carcinoma.

**Discussion:** PCD, particularly anti-Yo mediated, predominantly affects middle-aged women and typically precedes the diagnosis of breast malignancy. MRI may initially appear normal despite profound cerebellar dysfunction. Early identification and immunotherapy, coupled with prompt oncologic management, may halt progression though neurological recovery is often incomplete.

**Lesson Learnt:** Subacute cerebellar syndrome with unremarkable imaging should raise suspicion for a paraneoplastic etiology. Comprehensive neuronal antibody testing and malignancy screening can unmask occult cancers, allowing early diagnosis and management.

---

### ABSTRACT-3

## Toxic chemical exposure

**Author:** Dr Neil Vaidya

**Affiliation:** R. B. Shah Mahavir Hospital, Surat

**Abstract:** Accidental or deliberate exposure to toxic chemicals has been associated with high morbidity and mortality. No specific antidotes are available for many toxic chemicals. This is a case report of a 35Yr/M patient with no known comorbidities who was brought our hospital with an alleged history of rapidly worsening dyspnea, orthopnea, hypotension which was refractory to inotropic and vasopressor support followed by a circulatory collapse. Hence the patient was immediately provided Extracorporeal Life support while investigating the cause of such rapid deterioration. Toxic chemical exposure was later on considered as no other cause was found that could explain such rapid deterioration. Eventually the patient's clinical condition improved with supportive treatment only and was later on discharged.

### **Beyond the Bone Zone — The Clone That Killed Its Own! A Case of Fatal Extramedullary Progression in Multiple Myeloma in a 35-Year-Old Male**

**Presenting Author:** Dr. Kriti Singh (1st Year Resident)

**Co-authors:** Dr. Alpa Patel (Professor, Department of Medicine, PSMC), Dr. Suraj Goyanka (Senior Consultant Hematologist, PSMC), Dr. Bhalendu Vaishnav (Head of Department, Medicine, PSMC)

**Objective:** To document and analyze a challenging case of a 35-year-old male from Gujarat, India, who developed fatal extramedullary progression of MM. Extramedullary disease (EMD) in Multiple myeloma (MM) represents a rare high-risk phenotype characterised by plasma cell proliferation outside the bone marrow microenvironment, often portending poor prognosis. While MM typically presents in older patients, younger individuals may also be affected and may manifest aggressive behaviour.

**Case Study & Measures:** A 35-year-old male resident of Gujarat presented with nonspecific symptoms (e.g., bone pain, fatigue, weight loss) and was found to have monoclonal paraprotein, lytic bone lesions, and bone marrow plasma cell infiltration consistent with MM. Initial therapy (6 cycles of VCD were given) after which patient defaulted. However, after an interval of around 6 months he returned with acute febrile illness and developed new soft-tissue lesion involving the right pharyngoepiglottic fold, lateral aspect of right half of epiglottis, right ary-epiglottic fold, right pyriform sinus, postero-medial aspect of right aryepiglottic fold, right false vocal cord and right laryngeal ventricle. Few subcentimetric-sized heterogenously enhancing lymph nodes were noted in right level IB, II, III and left left IB and II regions with finding of Hepatosplenomegaly. These extramedullary plasmacytomas were noted on imaging (USG, CT NECK) and confirmed by biopsy as clonal plasma-cell infiltration s/o neoplastic lesion of the larynx and hypopharynx. Despite restarting chemotherapy, multiple blood component transfusions and salvage therapy the disease progressed rapidly, & the patient succumbed to sepsis and complications of extramedullary progression at a comparatively young age.

**Discussion:** Extramedullary progression of MM is associated with adverse clinical features, high-risk cytogenetics, and treatment resistance. Studies show significantly shorter overall survival for patients with soft-tissue extramedullary relapse compared with bone-related relapse (e.g., 30 vs ~45 months) and as low as ~5 months in some cohorts. The biology of extramedullary spread involves loss of bone-marrow adhesion (e.g., downregulation of VLA-4, CD56), upregulation of motility/adhesion molecules (e.g., CD44, CXCR4/CXCL12 axis imbalance, MALAT1), and greater genomic instability (RAS/MAPK pathway, 17p/13q deletions). From a regional perspective, younger age at presentation (35 yrs) is unusual for MM and suggests the need for heightened vigilance in Indian sub-populations.

**Conclusion:** This case emphasises that even in younger patients, MM may evolve into aggressive extramedullary disease with fatal outcome. Early recognition of extramedullary manifestations, prompt aggressive therapy (potentially including novel agents and transplant) and surveillance for high-risk features are crucial. Reporting of such cases from regions like Gujarat contributes to global understanding of MM heterogeneity. Clinicians should maintain a high index of suspicion for extramedullary relapse when new soft tissue or visceral lesions emerge in MM patients.

**References:**

1. Ho M, Paruzzo L, Minehart J, Nabar N, Noll JH, Luo T, Garfall A, Zanwar S. Extramedullary Multiple Myeloma: Challenges and Opportunities. *Curr Oncol.* 2025 Mar 20;32(3):182. doi: 10.3390/curroncol32030182. PMID: 40136386; PMCID: PMC11940950.
2. <https://doi.org/10.3324/haematol.2013.094409>
3. Broughton M, Bhatta S, Sonali D, Bumma N, Khan AM, Devarakonda S, Umyarova E, Benson D, Rosko A, Cottini F. Comprehensive evaluation of disease characteristics and outcomes of patients with extramedullary multiple myeloma in the modern era. *Haematologica.* 2025 Jun 12. doi: 10.3324/haematol.2025.287545. Epub ahead of print. PMID: 40501390.

## ABSTRACTS

### ABSTRACT-5

**Author:** Dr. Akshat Thanawala

**INTRODUCTION:** Sarcoidosis is a multisystem inflammatory disease characterized by non-caseating granulomas. Diagnosis typically requires involvement of two or more organs. Cardiac sarcoidosis is a serious complication of systemic disease and may be life-threatening if undiagnosed.

**CASE PRESENTATION:** A 43-year-old diabetic male presented with recurrent dizziness and transient loss of consciousness. Neurological examination and MRI brain (to rule out TIA) were normal. ECG revealed heart block, prompting cardiac evaluation. Cardiac MRI showed patchy mid-myocardial fibrosis. Sputum tests for Acid-Fast Bacilli and CBNAAT were negative. Cervical and mediastinal lymphadenopathy were noted on CT abdomen. Lymph node biopsy suggested sarcoidosis. The patient was started on oral steroids, followed by low-dose methotrexate.

**DISCUSSION:** Sarcoidosis remains a diagnosis of exclusion in chronic granulomatous diseases. Cardiac sarcoidosis (CS) occurs in up to 25% of sarcoidosis cases and may present with conduction defects, arrhythmias, heart failure, or sudden cardiac death. Environmental factors, immune dysregulation, and microbes such as Chlamydia pneumoniae, Propionibacterium, and Mycobacterium are implicated in its pathogenesis. Isolated CS carries a poorer prognosis compared to systemic sarcoidosis with cardiac involvement. Advanced imaging techniques such as cardiac MRI and FDG-PET play a crucial role in early detection and management.

**CONCLUSION:** This case highlights recurrent syncope as a subtle yet important manifestation of cardiac sarcoidosis. Early recognition is vital, as vague symptoms can delay diagnosis. Prompt initiation of steroids with methotrexate may halt disease progression and prevent life-threatening events.

### ABSTRACT-6

## Bilateral pleural effusion due to MSSA infection – A case report

**Author:** Dr Nirav Gondaliya, Dr Chandrakant Ghevariya, Dr Pratik Savaj, Dr Ishan Sheth

**Affiliation:** IDCC hospital, Surat

**Abstract:** Bilateral pleural effusion is a common condition which we do see in our daily practice. But it is uncommon with MSSA infection. We have reported a case of bilateral pleural effusion with MSSA infection due to injury over chest and leg.

**Case presentation:** A 44 year male, doing labour work, admitted in hospital with c/o chest pain, anorexia, vomiting, weakness for last 10 days. Not improved by symptomatic medications. Chest x-ray shows possibility of bilateral pleural effusion. Primary diagnosis was community acquired pneumonia. Patient didn't respond well to treatment and condition worsening. HRCT thorax done which revealed moderate bilateral pleural effusion with atelectasis/collapse of bilateral lower lobes with interstitial septal thickening. Suggestive of infective etiology. ICD was put and pus collected. Pus sent for culture report which revealed MSSA infection. It is treated with Flucloxacillin 2 gm IV TDS for 14 days f/b Cephalexin 500 mg PO QDS for 6 weeks.

**Discussion:** Patient has history of injury over left lateral side of lower part of sternum and minor injury over lateral part of right leg while working. Possibility of entry point of MSSA in body.

**Lesson learnt:** Detailed history taking along with thorough generalized & systemic examination should be done in every patient which helps to get early and accurate diagnosis.

**Bibliography:** CIDS book 2025

## ABSTRACTS

### ABSTRACT-7

## A Patient's Plight of, Dimming Sound and Sight – the IgG4 disease

**Authors:** Dr. Hirday Patel (Medicine resident), Dr. Soaham Desai (Consultant neurologist), Dr. Devangi Desai (Professor medicine) **Institute:** Pramukh Swami Medical College, Bhaikaka University, Karamsad

**Introduction:** IgG4-related disease (IgG4-RD) is a systemic fibro-inflammatory condition. Its presentation as hypertrophic pachymeningitis is rare, creating a diagnostic challenge by mimicking infections, malignancies, and other inflammatory disorders. This report details a case of IgG4-RD presenting with progressive cranial nerve deficits, highlighting these diagnostic difficulties.

**Case Presentation:** A 59-year-old man presented with a two-month history of progressive bilateral hearing loss, blurred vision, headaches, and ataxia. Fundoscopy revealed severe bilateral papilledema. Brain MRI confirmed hypertrophic pachymeningitis with diffuse pachymeningeal enhancement. His neurological exam was otherwise unremarkable, though initial labs showed elevated inflammatory markers (CRP 38.2 mg/L, ESR 47 mm/hr).

**Discussion:** An extensive workup for infectious (tuberculosis, brucellosis), other inflammatory (sarcoidosis, ANCA-vasculitis), and malignant causes was negative. Cerebrospinal fluid analysis was normal. The diagnosis was ultimately established by a markedly elevated serum IgG4 level of 4.04 g/L (ref: 0.03-2.01). The patient demonstrated a dramatic clinical response to high-dose corticosteroid therapy, with significant recovery of both his hearing and vision.

**Lesson Learnt:** This case is a crucial reminder to include IgG4-related disease in the differential diagnosis for hypertrophic pachymeningitis, especially when common etiologies are excluded. Promptly checking serum IgG4 levels can avert diagnostic delays, facilitating timely treatment and preventing permanent neurological harm.

**Bibliography:** Harrison's principles of internal medicine. 21st ed.

### ABSTRACT-8

## A Rare Case of Endomyocardial Fibrosis in Hypereosinophilic Syndrome

**Author:** Dr. Naman Patel, Medicine Resident, Pramukh Swami Medical College, Karamsad

**Introduction:** Hypereosinophilic syndrome (HES) is defined by persistent eosinophilia ( $>1.5 \times 10^9/L$ ) without secondary causes and evidence of eosinophil-mediated organ damage. Cardiac involvement occurs in up to 75% of cases, often leading to endomyocardial fibrosis (EMF)—a restrictive cardiomyopathy characterized by fibrous thickening of the endocardium and myocardium, particularly at the ventricular apex.

**Case Presentation:** A 48-year-old female presented with low-grade fever, intermittent left-sided chest pain, and abdominal fullness. ECG showed NSR with LVH and T-wave inversion (V3–V5). Eosinophil count was  $2.1 \times 10^9/L$ ; parasitic causes were excluded. Echocardiography revealed preserved LVEF with apical hypertrophy. CT imaging showed bilateral pleural effusion, chronic liver parenchymal disease, and splenomegaly. Bone marrow examination was normal. Cardiac MRI demonstrated biventricular EMF with mural thrombi and restrictive physiology. She was treated with corticosteroids and anticoagulation, following which eosinophil counts normalized, and she was discharged stable.

**Discussion:** HES is a multisystem disorder; cardiac injury progresses through necrotic, thrombotic, and fibrotic stages. Once fibrosis develops, the disease becomes irreversible. Early diagnosis and immunosuppressive therapy can halt progression, whereas advanced cases require supportive heart-failure management and prophylactic anticoagulation.

**Conclusion:** Development of EMF in HES portends poor prognosis, with mortality up to 75% within two years of diagnosis. Timely recognition and early corticosteroid therapy are crucial to

## ABSTRACTS

### ABSTRACT-9

## A Rare Case of TTP Mimicking Acute Myocardial Infarction

**Author:** Dr Rahul Talaviya. Medicine Resident – Pramukhswami Medical college

**Introduction:** Thrombotic Thrombocytopenic Purpura (TTP) is a rare, life-threatening thrombotic microangiopathy characterized by microangiopathic hemolytic anemia & thrombocytopenia. Cardiac involvement is uncommon but may present with electrocardiographic changes mimicking acute myocardial infarction, leading to diagnostic dilemma.

**Case Representation:** A 47-year-old female presented with chest heaviness for 4–5 days, worse in the morning. ECG revealed ST elevation in leads II, III, and aVF with elevated troponin I, suggesting inferior myocardial infarction. Coronary angiography was normal. Further workup showed bicytopenia with anemia and severe thrombocytopenia. Hematology consultation suspected TTP. PLASMIC score was 6 (high risk), peripheral smear showed schistocytes, and ADAMTS13 level was 5.9%. The patient received high-dose methylprednisolone followed by oral steroids and underwent four sessions of therapeutic plasma exchange. Platelet count improved, symptoms resolved, and ADAMTS13 level increased to 34%. She was discharged in stable condition.

**Discussion:** TTP can mimic myocardial infarction due to microthrombi in coronary microvasculature, despite normal coronary arteries. Cardiac involvement increases morbidity and mortality. Early recognition is critical, as untreated TTP is often fatal. Plasma exchange remains the cornerstone of therapy, rapidly improving hematological parameters and preventing organ dysfunction. Multidisciplinary management is essential for favorable outcomes.

**Conclusion:** This case emphasizes the need to consider TTP in patients presenting with ST-elevation and thrombocytopenia. Pseudo-myocardial infarction may delay diagnosis. Early identification and prompt initiation of plasma exchange and steroids are lifesaving and result in excellent recovery.

### ABSTRACT-10

## Anesthesia for a Patient with Undiagnosed Heart Disease Undergoing Emergency Laparotomy for Ruptured Ectopic Pregnancy

**Author:** Dr.Gaurang Makwana     **Consultant:** Dr.Hemangini ma'am, Dr. Hina ma'am

**Introduction:** Ruptured ectopic pregnancy is a life-threatening emergency. In such critical situations, the presence of an undiagnosed cardiac condition poses an additional challenge, increasing the risk of perioperative morbidity and mortality. Early recognition and careful intraoperative monitoring are essential to maintain hemodynamic stability while ensuring adequate surgical conditions. This case highlights the importance of vigilant perioperative management and multidisciplinary coordination when an unrecognized heart disease is encountered during emergency obstetric surgery.

**Objective:** To provide safe general anesthesia during laparotomy for rupture ectopic pregnancy in a patient with unrecognized heart disease.

**Method:** A 30 year old female weighing 50 kg at 6week of gestation present to emergency room with abdominal pain, breathlessness and spotting per vagina. Her oxygen saturation 60%with room air and 86%with NRBMmask@15 L /min. Patient had undiagnosed heart disease with clubbing of nails. The patient underwent emergency laparotomy for rupture ectopic pregnancy under general anesthesia induced with injection fentanyl 75 mcg, injection etomidate 15 mg and maintained on oxygen and sevoflurane. Right side salpingectomy done. She remained hemodynamically stable throughout surgery, maintaining 100% oxygen saturation and was extubated. Post-extubation, her oxygen saturation remained as pre-operative levels.

**Conclusion:** General anesthesia with careful maintenance of hemodynamics stability can lead to successful outcomes in patients with undiagnosed heart disease undergoing emergency surgery.

### **Thrombolysis in Massive Pulmonary Embolism with Prolonged Cardiopulmonary Resuscitation & its Consequences: A Case Report**

**Author:** Patel Tisha<sup>1</sup>, Panchal Vaibhavi<sup>1</sup>, Gohil Dhruval<sup>1</sup>, Patel Sahil<sup>1</sup>, Hadiya Paresh<sup>2</sup>, Rajput Vishvajeet<sup>2</sup>, Rohit Vaishali<sup>2</sup>, Mangrolia Rakesh<sup>3</sup>, Patel Krunal<sup>4</sup>, Vyas Bhavin<sup>5</sup>, Clerk Anuj<sup>6</sup>

**Corresponding Author:** Patel Tisha Kamal<sup>1</sup>

**Affiliations:**

*1Pharm.D intern, Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy 2IDCCM Fellow, Sunshine Global Hospital, Surat. 3ICU Associate, Sunshine Global Hospital, Surat. 4Consultant Intensivist, Sunshine Global Hospital, Surat. 5 Head Of Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy 6 Head of Intensive Care Sunshine Global Hospital, Surat*

**Introduction:** We present a case of massive pulmonary embolism resulting in witnessed cardiac arrest that was managed with thrombolysis and prolonged cardiopulmonary resuscitation, which subsequently led to peritoneal bleeding.

**Case Summary:** A 23-year-old female with no prior medical history was brought to the emergency department on July 13th following three syncopal episodes within one hour, subsequently losing consciousness and becoming pulseless. Her arrest time was reported at 20:56 p.m. Code blue was activated and CPR team arrived at 21:08 p.m. Immediate cardiopulmonary resuscitation was initiated, and her first return of spontaneous circulation occurred after 7 minutes, but she continued to arrest repeatedly. Bedside echocardiography suggested pulmonary embolism, which was confirmed on CT pulmonary angiogram with large thrombi in both main pulmonary trunks done during second ROSC interval. She had arrest again in CT scanner, when 36 mg Tenecteplase was injected intravenously within minutes of diagnosis, resulting in another ROSC and after around 30-40 CPR cycles, sustained ROSC was achieved and CPR stopped time was reported at 23:58 p.m., so no flow time and low flow time were 12 minutes and 170 minutes respectively. Intensive care management included high-dose adrenaline, noradrenaline, vasopressin infusions, repeated IV sodium bicarbonate boluses to keep pH above 7.0. Course was complicated by hemoperitoneum (progressive drop in haemoglobin, INR >10, unmeasurable aPTT), requiring transfusions (cryoprecipitate, RBCs, FFP), elevated abdominal compartment pressures, reduced urine output, and on day 3, CT abdomen showed marked ascites without any localised blood clots. On July 16th, exploratory laparotomy drained 4 liters of blood and revealed liver and splenic lacerations requiring packing; subsequent interventions included haemodialysis for anuria on July 17th and removal of abdominal packs on July 17th. On day 7 she started passing urine and discharged walking with normal creatinine on day 14th.

**Conclusion:** Ideally done CPR can also lead to soft tissue injury in mediastinum and abdomen. Therefore, post ROSC bundle must include steps to diagnose and treat the same. Thrombolytic agents injected during CPR takes time to reach to pulmonary artery and provide thrombolytic effect. Tenecteplase is preferred over other agents as it has rapid onset of action. Artificial blood flow during CPR needs to be maintained for longer than routine to achieve thrombolysis. Maintaining Coronary Perfusion Pressure by all possible means in acute cor pulmonale improves outcome. Thrombolysis and soft tissue injury can end up in torrential internal bleeding. Survival is possible even after prolonged CPR as in this case but needs methodical scientific approach and relative's confidence in the treating team.

### From Person to Process: A Case Series on System-Based Quality Control to Mitigate Adverse Clinical Events

**Author:** Dr. Vaishali Rohit; MBBS, MD Respi. Medicine, CIH, IDCCM Fellow - Sunshine Global Hospital, Surat.

**Guide:** Dr. Anuj Clerk; MBBS, MD (Medicine), IDCCM, FNB (Critical Care), EDIC, Head of Department in Critical Care Medicine at Sunshine Global Hospital, Surat.

Rohit Vaishali<sup>1</sup>, Hadiya Paresh<sup>1</sup>, Rajput Vishvajeet<sup>1</sup>, Mangroliya Rakesh<sup>2</sup>, Clerk Anuj<sup>3</sup> <sup>1</sup>IDCCM Fellow, <sup>2</sup>ICU Associate, <sup>3</sup>Head of Intensive Care, Sunshine Global Hospital, Surat

**Background:** The conventional approach to clinical adverse events often focuses on individual blame, leading to staff demoralization and missed opportunities for systemic improvement. A shift towards a systems-based approach is widely advocated in patient safety literature but can be challenging to implement in practice. **Methods:** We present a case series of four distinct adverse events in a cardiac and intensive care setting to illustrate the practical application of a system-based quality control model. The events included significant hematoma post-arterial line removal, accidental tracheostomy tube partial dislodgement, burns from active rewarming, and unplanned intubations. For each event, we contrasted the traditional "conventional blame approach" with "a new, systematic protocol-driven intervention".

**Results:** The traditional blame approach consistently resulted in staff demoralization and human error being a scapegoat for system lacunae. The new system-based approach involved root cause analysis, inter-departmental collaboration, and the creation of standardized protocols. Key interventions included: (1) a timed and coordinated protocol for arterial line removal accounting for anticoagulation, (2) a "star protocol" and equipment modification for tracheostomy securement, (3) mandatory use of thermal blankets and equipment labeling for safe rewarming, and (4) the adoption of a standardized intubation protocol and procurement of video laryngoscopes. Outcomes of the new approach included streamlined workflows, increased staff confidence and sensitization, and a marked reduction in the recurrence of similar events.

**Conclusion:** This case series demonstrates that shifting the focus of incidence analysis from individual practitioners to systemic processes is not only feasible but highly effective. It transforms adverse events into catalysts for sustainable system-wide improvements, enhancing both patient safety and staff morale.

### **A Case of an Euglycemic Diabetic Ketoacidosis in a Patient on SGLT-2 Inhibitors.**

**Author:** Dr. Vaishali Rohit; MBBS, MD Respi. Medicine, CIH, IDCCM Fellow - Sunshine Global Hospital, Surat.

**Guide:** Dr. Anuj Clerk; MBBS, MD (Medicine), IDCCM, FNB (Critical Care), EDIC, Head of Department in Critical Care Medicine at Sunshine Global Hospital, Surat.

Rohit Vaishali<sup>1</sup>, Hadiya Paresh<sup>1</sup>, Rajput Vishvajeet<sup>1</sup>, Mangroliya Rakesh<sup>2</sup>, Clerk Anuj<sup>3</sup> <sup>1</sup>IDCCM Fellow, <sup>2</sup>ICU Associate, <sup>3</sup>Head of Intensive Care, Sunshine Global Hospital, Surat

**Background:** Sodium-glucose cotransporter-2 (SGLT-2) inhibitors are a class of anti-diabetic medications renowned for their cardiorenal benefits. However, their use is associated with a risk of euglycemic diabetic ketoacidosis (euDKA), a potentially life-threatening adverse event characterized by ketoacidosis without significant hyperglycemia, which can complicate the diagnosis.

**Aim and Objective:** To present a case of euglycemic diabetic ketoacidosis (euDKA) associated with SGLT-2 inhibitor use, highlighting its diagnostic challenges and the importance of clinician to recognise it for prompt management.

**Case Presentation:** A 52-year-old female with poorly controlled Type 2 Diabetes Mellitus, on an SGLT-2 inhibitor, presented with vomiting and altered sensorium. She was diagnosed with septic shock secondary to a urinary tract infection, which precipitated severe euDKA and acute kidney injury (AKI). Initial management involved intravenous fluids, insulin, and antibiotics. Her hospital course was complicated by worsening encephalopathy and renal failure, necessitating endotracheal intubation and sustained low-efficiency dialysis (SLED). Following a prolonged admission, also included management of anemia and vaginitis. Eventually, the patient recovered successfully, was weaned from respiratory and renal support, and was discharged on oral medications.

**Discussion and Conclusion:** This case highlights the critical association between SGLT-2 inhibitors and the development of euDKA, particularly during acute physiologic stress factors such as sepsis, dehydration, and relative insulinopenia. Clinicians must maintain a high index of suspicion for this entity, even in the setting of near-normal blood glucose levels. Enhanced patient and provider education, along with consideration of ketone monitoring during intercurrent illnesses, may facilitate earlier diagnosis and prevent serious complications. As the use of this drug class expands, awareness of euDKA is paramount for safe prescribing practices.

**Keywords:** SGLT-2 Inhibitors, Euglycemic Diabetic Ketoacidosis (euDKA), Adverse Drug Reaction, Septic Shock, Acute Kidney Injury (AKI)

### **Attack of Atenolol: A Case of Beta-Blocker Accumulation in Acute Kidney Injury and Its Clinical onsequences: A Case Report**

**Author:** Panchal Vaibhavi<sup>1</sup> , Patel Tisha<sup>1</sup>, Gohil Dhruval<sup>1</sup>, Patel Sahil<sup>1</sup>, Hadiya Paresh<sup>2</sup>, Rajput Vishvajeet<sup>2</sup>, Mehta Vaishali<sup>2</sup>, Mangroliya Rakesh<sup>3</sup>, Patel Krunal<sup>4</sup>, Vyas Bhavin<sup>5</sup>, Clerk Anuj<sup>6</sup>

**Corresponding Author:** Panchal Vaibhavi Jayeshbhai<sup>1</sup>

#### **Affiliations**

1 Pharm.D intern, Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy

2 IDCCM Fellow, Sunshine Global Hospital, Surat.

3 ICU Associate, Sunshine Global Hospital, Surat.

4 Consultant Intensivist, Sunshine Global Hospital, Surat.

5 Head Of Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy

6 Head of Intensive Care Sunshine Global Hospital, Surat

#### **Introduction:**

A long-acting beta-blocker that is eliminated by the kidneys, atenolol is frequently prescribed to treat hypertension. Silent drug accumulation may result from reduced renal clearance in the context of acute kidney injury (AKI). Patients may experience bradycardia and decreased cardiac output as their atenolol levels increase, which exacerbates kidney perfusion and function. Acidosis and hyperkalemia, two metabolic abnormalities frequently observed in AKI, exacerbate this downward spiral by further impairing cardiac conduction. Long term use of renally cleared beta-blockers without monitoring renal function can lead to progressive cumulation of drug due to age related decline in renal function. Any new insert resulting in further decline in GFR in patient taking Atenolol, can result in life-threatening bradyarrhythmia.

#### **Case Details:**

A 78-year-old woman with a height of 150 cm and a weight 50 kg had been treated for hypertension for seven years with atenolol and amlodipine. She complained of severe dizziness and increasing postural weakness. A blood creatinine level of 3.4 mg/dl (CrCL: 10.76 ml/min), which indicates acute renal damage, was found in the laboratory evaluation. Her estimated creatinine clearance was determined to be considerably lower using the Cockcroft-Gault equation, indicating markedly decreased renal drug disposal. She experienced deteriorating renal perfusion, increasing tiredness, and symptomatic bradycardia as atenolol level built up. This phenomenon can be termed as "Attack of Atenolol," to aid in memory and ease of recognition. This is common medication error in which AKI starts a vicious cycle of decreased cardiac output, delayed renal clearance, and increased drug accumulation.

#### **Conclusion:**

This example illustrates how atenolol, a common antihypertensive, can become hazardous in older persons whose renal function declines. A closely related cardio-renal spiral can result from untreated buildup, which can cause severe bradycardia, conduction abnormalities, decreased cardiac output, and more renal decline.

# ABSTRACTS

ABSTRACT-15

## **Sustainability Of outcome in CPR. Benefit from participation in online CPR registry. (2018-2024, single centric study)**

**Author:** Gohil Dhruval<sup>1</sup>, Patel Sahil<sup>1</sup>, Patel Tisha<sup>1</sup>, Panchal Vaibhavi<sup>1</sup>, Hadiya Paresh<sup>2</sup>, Rohit Vaishali<sup>2</sup>, Rajput Vishvajeet<sup>2</sup>, Mangroliya Rakesh<sup>3</sup>, Patel Krunal<sup>4</sup>, Vyas Bhavin<sup>5</sup>, Clerk Anuj<sup>6</sup>

**Corresponding Author:** Gohil Dhruval Vipulbhai<sup>1</sup>

### **Affiliations**

1 Pharm.D intern, Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy

2 IDCCM Fellow, Sunshine Global Hospital, Surat.

3 ICU Associate, Sunshine Global Hospital, Surat.

4 Consultant Intensivist, Sunshine Global Hospital, Surat.

5 Head Of Department Pharmacology and Pharmacy Practice, Maliba College of Pharmacy

6 Head of Intensive Care Sunshine Global Hospital, Surat

### **BACKGROUND AND RATIONALE:**

Whether participation in an online CPR registry can ensure standardized performance and documentation of CPR, thereby contributing to quality control, remains to be proven.

### **METHODOLOGY:**

Data from single urban tertiary care hospital uploaded on [www.AOCregistry.com](http://www.AOCregistry.com) analyzed and interpreted to study annual outcome from (2018-2024). It is a Retrospective observational study from 2018-2024 involving Adult patients with cardiac arrest.

### **RESULT:**

The annual number of cardiac arrests ranged from 102 to 117, except in the year of the covid-19 pandemic, when number increased to 152 cases. In-hospital cardiac arrest accounted for 74.05% (range 67.2%-80.9%). Out-hospital cardiac arrest accounted for 25.92% (range 19.1%-32.74%). Of these patients, 66.39% were male (range 61.1%-71.68%) and 33.6% were female (range 28.31%-38.9%). The average age of male and female in this study population were 58.54 and 59.46 years respectively. The ROSC was achieved in 27.45% of cases (range 19.73%-35.18%). The survival to hospital discharge was 13.6% (range 6.83%-20.37%), while the proportion of patients with a favorable neurological outcome at discharge (CPC <2) was 10.5 (range 2.5% to 18.5%).

### **CONCLUSION:**

This study shows regular CPR training, standardize performance and documentation aimed at data submission in online CPR registry helps in achieving and sustaining good outcome from CPR in tertiary care urban hospital.

# ABSTRACTS

ABSTRACT-16

## Cardiac Tamponade: A Rare Presentation of Primary Hypothyroidism

### Authors:

- Dr. Maithili Yashwant Mahale (Junior Resident)
- Dr. Ashish Kakaria (Associate Professor, MD)
- Dr. Nirmalkumar Rawandale (Head of Department, DNB)

**Affiliation:** Department of General Medicine, SBHGMC, Dhule

### Introduction:

Primary hypothyroidism, second most common endocrine disorder after diabetes mellitus[1], usually has non-specific symptoms and multi-systemic involvement. Pericardial effusion seen in hypothyroidism is common but presenting as life threatening complication such as Cardiac Tamponade is extremely rare.

### Case Presentation:

A 30yrs female came with generalized edema, hypersomnia, dyspnea, in drowsy state with hypotension, muffled heart-sounds, decreased air-entry. CXR-PA showed bilateral pleural effusion with cardiomegaly. 2-Decho showed massive pericardial effusion causing tamponade. Mechanical-ventilation and Pericardiocentesis was done. Blood, urine, pleural and pericardial fluid investigations were normal but TFT was suggestive of Primary Hypothyroidism. Patient was started on levothyroxine therapy 100ug OD. Patient improved clinically and hemodynamically.

### Discussion:

Increased systemic capillary permeability and electrolyte-metabolisms disturbances causes fluid collection in serous cavities of hypothyroid patients[2] leading to pericardial tamponade.

### Lessons learnt:

Hypothyroidism can present as cardiac tamponade rarely. Emergency pericardiocentesis and levothyroxine therapy is mainstay treatment. Failure can cause recurrence.

### Bibliography:

- 1] Shekhawat, et al. Cardiac Tamponade as First Manifestation of Primary Hypothyroidism. Journal of Marine Medical Society 24(Suppl 1):p S125-S128, July 2022
- 2] Chou SI, et al. A rare case of massive pericardial effusion secondary to hypothyroidism. J Emerg Med. 2005;28:293-296.

### .Acknowledgement:

I gratefully acknowledge the guidance and support of staff of Dept. of General Medicine, SBHGMC, DHULE..

### Postpartum Acute Kidney Injury in the Intensive Care Unit: Diagnostic and Therapeutic Challenges

**Authors:** Dr. Meet Bharatbhai Patel (3rd year general medicine resident), Dr. Ronak Shah (Associate Professor of medicine and Critical care consultant)

**Affiliation:** Smt. B.K. Shah medical institute & research center, Sumandeep Vidyapeeth.

**Introduction:** Pregnancy-related acute kidney injury (AKI) remains a significant contributor to maternal morbidity and mortality. Postpartum AKI (PPAKI) can arise due to various obstetric complications such as preeclampsia, HELLP syndrome, sepsis, Atypical Hemolytic uremic syndrome (HUS) and postpartum hemorrhage. This case series presents three distinct cases of severe PPAKI with varied etiologies and clinical courses.

#### Case Presentation:

**Case 1:** A 20-year-old primigravida developed oliguria and facial swelling on the first postoperative day after cesarean section. Investigations revealed hemolysis, thrombocytopenia, elevated LDH, and rising serum creatinine, consistent with atypical HUS. The patient responded to methylprednisolone, hemodialysis, and plasma exchange, showing progressive recovery.

**Case 2:** A 26-year-old primigravida with preeclampsia developed HELLP syndrome complicated by disseminated intravascular coagulation and AKI following LSCS. The patient required broad spectrum antibiotics, hemodialysis for acute renal failure and blood product transfusions. Liver enzymes and coagulation parameters normalized after supportive management.

**Case 3:** A 19-year-old primigravida developed sepsis-induced AKI following emergency LSCS. Elevated inflammatory markers and renal parameters, combined with the use of nephrotoxic medications, suggested septic AKI. With antibiotic therapy and alternate-day dialysis, gradual clinical and renal improvement was achieved.

**Discussion:** PPAKI represents a spectrum of renal dysfunction triggered by multifactorial causes, including hypertensive disorders, sepsis, and thrombotic microangiopathies. The pathophysiology involves endothelial injury, intravascular coagulation, and ischemic renal insult. Differentiating between etiologies such as HUS, HELLP, and sepsis-induced AKI is crucial for targeted therapy.

**Conclusion:** This case series underscores the importance of comprehensive antenatal care, effective infection control, and judicious use of nephrotoxic drugs in the prevention of PPAKI.

#### Bibliography:

1. Ye W, Shu H, Yu Y, Li H, Chen L, Liu J, Li XM. Acute kidney injury in patients with HELLP syndrome. *International urology and nephrology*. 2019 Jul 1;51(7):1199-206.
2. Shu H, Nie F. Clinical characteristics and prognosis of postpartum acute kidney injury. *Journal of International Medical Research*. 2021 Feb;49(2):0300060520988388.
3. Szczepanski J, Griffin A, Novotny S, Wallace K. Acute kidney injury in pregnancies complicated with preeclampsia or HELLP syndrome. *Frontiers in medicine*. 2020 Feb 7;7:22.
4. Eswarappa M, Madhyastha PR, Puri S, Varma V, Bhandari A, Chennabassappa G. Postpartum acute kidney injury: a review of 99 cases. *Renal failure*. 2016 Jul 2;38(6):889-93.
5. Arfeen N, Sinha DK, Kishore K. ACUTE KIDNEY INJURY IN POSTPARTUM PATIENTS: RISK FACTORS AND OUTCOME. *Int J Acad Med Pharm*. 2024;6(2):1266-70.
6. Coles H, Steer P, Hughes P, Cauldwell M. Factors associated with acute kidney injury during delivery or the postpartum period: A case control study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2021 Jun 1;261:200-4.
7. Huang C, Chen S. Acute kidney injury during pregnancy and puerperium: a retrospective study in a single center. *BMC nephrology*. 2017 May 1;18(1):146.
8. Roberto FB. Acute kidney injury requiring dialysis in pregnancy and postpartum: Case series and literature review. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2024 Nov 1;302:33-7.

**Acknowledgment:** I express their sincere gratitude to the Departments of Nephrology, Obstetrics and Gynecology, and Critical Care Medicine for their collaborative efforts in patient management. I also thank the laboratory and nursing staff for their invaluable support throughout patient care and data collection.

# Cardiologist–Intensivist Collaboration: A Synergy that Saves Lives

Dr. Pranav Vaidya (Interventional Cardiologist, Surat)

---

In modern critical care, the boundaries between specialties are increasingly blurred. Among the most impactful collaborations is the partnership between the cardiologist and the intensivist — two professionals who meet at the crossroads of hemodynamics, resuscitation, and advanced organ support. Together, they transform outcomes for patients in whom the heart and circulation determine survival.

## The Overlapping Domains

Critically ill patients frequently present with cardiovascular compromise — shock, arrhythmias, myocardial infarction, or heart failure. The intensivist brings expertise in multisystem management, mechanical ventilation, fluid and vasopressor therapy, and infection control. The cardiologist offers mastery in coronary physiology, rhythm interpretation, echocardiography, and interventional therapies. When these strengths are combined, diagnostic precision and therapeutic speed improve dramatically.

### 1. Managing Cardiogenic Shock

Cardiogenic shock remains one of the most challenging ICU scenarios. The intensivist ensures prompt stabilization — airway, oxygenation, and perfusion support with vasopressors or inotropes. The cardiologist identifies and reverses the underlying cause, whether through urgent revascularization, device therapy (IABP, Impella, ECMO), or rhythm control. Joint decisions on fluid strategy, mechanical support timing, and anticoagulation prevent both under-resuscitation and iatrogenic overload.

### 2. Critical Care Echocardiography and Hemodynamic Monitoring

Point-of-care echocardiography (POCUS) has become an essential skill for intensivists, while cardiologists provide depth in image interpretation and advanced echo parameters. Collaborative echo rounds help correlate clinical findings with cardiac mechanics, refining management in complex shock or ARDS patients. Together they ensure that invasive hemodynamic data (from Swan-Ganz or PiCCO) translates into actionable clinical change rather than raw numbers.

### 3. Arrhythmia and Post-Cardiac Arrest Care

ICUs often witness malignant arrhythmias and post-resuscitation instability. Cardiologists guide antiarrhythmic strategy, ablation candidacy, and device therapy. Intensivists oversee targeted temperature management, ventilatory support, and metabolic optimization. A structured co-management protocol minimizes secondary injury and improves neurological outcomes.

### 4. Advanced Heart Failure and ECMO Programs

The rise of mechanical circulatory support (MCS) and ECMO has made collaboration essential. The cardiologist evaluates myocardial recovery and device weaning potential. The intensivist manages sedation, ventilation, anticoagulation, and multi-organ interactions. This teamwork ensures that MCS is not merely a bridge to survival but a bridge to recovery.

### 5. The Role in Multidisciplinary Rounds

Joint cardio-ICU rounds foster real-time learning: intensivists grasp evolving cardiology interventions, and cardiologists appreciate systemic challenges in critical care. Such synergy nurtures mutual respect, efficient communication, and consistent care pathways — key elements in quality improvement and patient safety.

### 6. Research and Education

Cardiovascular critical care is a fertile field for collaborative research: myocardial injury in sepsis, biomarkers for shock stratification, optimization of vasoactive therapy, and outcomes in post-PCI or post-CABG ICU patients. Joint academic initiatives enrich training programs for both DM/DNB Cardiology and Critical Care residents.

## Conclusion

The critically ill heart cannot be managed in isolation. The cardiologist and the intensivist, working hand in hand, embody the essence of team-based medicine — uniting physiology, technology, and clinical wisdom. Their collaboration not only improves survival but also transforms critical care into a continuum of recovery, from coronary event to rehabilitation.

# Myths vs Facts in ICU

**DR. VITRAG H SHAH** [MD Medicine, FNB Critical Care, EDIC-UK (European Diploma in Critical Care)],  
Physician & Chief Intensivist, VITRAG Hospital, Surat

---

## **Myth: Tachycardia hypotension is due to fluid deficit**

### Fact:

- Without other assessment, fluid should not be given in tachycardia + hypotension.
- It can be due to cardiogenic shock, sepsis, pulmonary embolism, cardiac tamponade and not just hypovolemia or hemorrhage.
- Doing POCUS will help decide fluid bolus.

## **Myth: Managing fluid only as per CVP/IVC**

### Fact:

- Solely IVC and CVP are not reliable indicators for fluid management.
- Trend of CVP is more helpful than a single static value of CVP.
- Clinical correlation with CVP, IVC and POCUS helps decide fluid management better than isolated CVP/IVC.

## **Myth: No fluid in Cardiogenic Shock / LVSD**

### Fact:

- While many patients with cardiogenic shock do have elevated ventricular filling pressures and pulmonary congestion, some may be volume depleted, especially early. This can happen due to pre-hospital dehydration or diuretic use.
- In the absence of overt signs of fluid overload, a small, cautious fluid challenge may be appropriate. This is particularly true for patients with right-sided heart failure or certain types of acute myocardial infarction.
- The goal is to identify if cardiac output will increase with a small fluid administration, but this must be carefully monitored.

## **Myth: Clamp Foley's before removal**

### Fact:

- Current evidence and clinical guidelines state that clamping does not significantly reduce the risk of post-removal urinary retention in short-term catheterized patients. Furthermore, it may increase the risk of Catheter-Associated Urinary Tract Infection (CAUTI) and potentially cause bladder over-distention if left clamped too long.

## **Myth: Liberal fluid in RVMI**

### Fact:

- RVMI often impairs the right ventricle's ability to pump blood forward. This reduces the blood returning to the left ventricle (reduced preload), leading to low cardiac output and hypotension (low blood pressure). Giving a carefully monitored amount of intravenous fluid (a fluid challenge, e.g., 250-500 mL) can increase the preload and improve blood pressure. However, if a patient already has signs of fluid overload (like elevated JVP or clear lungs), additional fluid can worsen the right heart failure. The goal is to correct the reduced preload, not to administer a "liberal" amount without monitoring.
- A blanket "liberal" (meaning excessive or unrestricted) approach to fluid administration is incorrect and can be dangerous.

## **Myth: Shock equals low BP**

### Fact:

- This is the most common misconception. While shock often causes low blood pressure, a patient can be in shock with a normal blood pressure or be hypotensive without being in shock.
- The medical definition of shock is based on the end-result (cellular hypoxia/organ dysfunction), not just one vital sign. The body's compensatory mechanisms (like a fast heart rate and tightening blood vessels) can keep the blood pressure normal for a time, masking the true, life-threatening problem of poor tissue perfusion (this is called Compensated Shock).

## **Myth: No feed if on vasopressor**

### Fact:

- This belief is based on the fear of non-occlusive mesenteric ischemia (lack of blood flow to the gut), as pressors can constrict blood vessels. This practice leads to dangerous underfeeding.
- Enteral nutrition should generally be initiated early, even in patients on low-dose vasopressors, provided they are otherwise hemodynamically stable and show no signs of gut ischemia.

-----continued...

### **Myth: No RL if hyperkalemia or high lactate**

#### Fact:

- RL is generally SAFE and often PREFERRED. RL contains only 4 mEq/L of K<sup>+</sup>, which is significantly lower than the plasma concentration of most hyperkalemic patients. More importantly, using Normal Saline (NS) can cause a hyperchloremic metabolic acidosis, which drives K<sup>+</sup> out of cells and can potentially worsen hyperkalemia. RL is a "balanced" fluid that is less likely to cause this acidosis.
- RL is SAFE and is beneficial for acidosis. RL contains lactate, which is the conjugate base of lactic acid. When metabolized by the liver, this lactate is converted to bicarbonate HCO<sub>3</sub>, which acts as a buffer and helps to correct metabolic acidosis. The small amount of lactate in RL does not worsen the underlying lactic acidosis caused by poor tissue perfusion (shock) unless lactate to bicarbonate conversion is impaired due to liver failure.

### **Myth: Adding Teicoplanin or Vancomycin for Gram Positive cover**

#### Fact:

- Cefoperazone / Sulbactam, Piperacillin / Tazobactam, Meropenem etc inhibit cell wall synthesis and are highly effective against many Gram-Positive organisms (GPCs) including MSSA.
- Adding Vancomycin or Teicoplanin should be reserved for situations where Methicillin-Resistant Staphylococcus aureus (MRSA) or Vancomycin-Susceptible Enterococci (like E. faecium or resistant E. faecalis) is suspected.

### **Myth: Adding Metronidazole for anaerobe cover**

#### Fact:

- For the vast majority of polymicrobial infections where meropenem, piperacillin/tazobactam, or cefoperazone/sulbactam are indicated, the addition of metronidazole is not necessary for anaerobic coverage.

### **Myth: Give Haemaccel for hemorrhagic shock**

#### Fact:

- Haemaccel (Polygeline) was historically used for volume expansion.
- Current guidelines prioritise crystalloids and blood products.

- Albumin is the preferred colloid if a colloid is needed.

### **Myth: Give Dopamine for renal dose**

#### Fact:

- Numerous large, well-conducted, randomized controlled trials and meta-analyses have shown that "renal dose" dopamine does not provide a clinically significant benefit for kidney protection.
- Major clinical practice guidelines, such as those from the Surviving Sepsis Campaign and the KDIGO (Kidney Disease: Improving Global Outcomes), strongly recommend against the routine use of low-dose dopamine for the prevention or treatment of Acute Kidney Injury (AKI).

*The current focus for kidney protection is on:*

- Maintaining adequate systemic perfusion (optimizing overall blood pressure and cardiac output).
- Avoiding nephrotoxins (medications or substances that can damage the kidneys).
- Optimizing volume status (making sure the patient is neither too dry nor too fluid overloaded).

### **Myth: No feed if no bowel sound**

#### Fact:

- Bowel sounds are a poor and unreliable indicator of small bowel function and should not be the primary determinant for withholding enteral nutrition.
- Studies show poor correlation between auscultated BS and actual intestinal motility or nutrient absorption. The small bowel (where most absorption occurs) often continues to function and absorb nutrients even when the stomach/colon are hypomotile or bowel sounds are absent.
- Instead of relying on bowel sounds, clinical practice guidelines recommend focusing on more reliable and objective signs of Gastrointestinal (GI) tolerance:
  - Abdominal distention & Pain: New or worsening abdominal distention, tenderness, or pain.
  - Vomiting or Regurgitation: Intolerance leading to emesis.
  - Rising or Unexplained Lactate: As discussed in the previous response, a rising lactate can be an indirect sign of gut ischemia.

-----continued...

# Are We Getting Fresh Air??

## *Air Pollution — From Evidence to Action*

*Dr. Nirav Gondaliya [MBBS, MD (Respiratory Medicine),*

*IDCCM (Hinduja Hospital & MRC, Mumbai)] Consultant Chest & Critical Care Medicine, Surat, Gujarat, India.*

### **Introduction: -**

**Air pollution is a silent killer. Globally, exposure to fine particulate matter (PM<sub>2.5</sub>) and other pollutants causes about 7 million premature deaths every year. In India, the combined effect of outdoor and household pollution is estimated to cause around 1.84 million deaths annually, contributing to nearly 17% of the nation's mortality.** In Gujarat, recent reports of 2025 have highlighted episodes of hazardous AQI in Ahmedabad and Vadodara, rising hospital admissions for respiratory and cardiac diseases during winter and festival seasons.

**Did you know? A normal adult breathes about 11,000 – 12,000 litres of air every day** roughly 8 litres per minute at rest. That means every individual literally filters the entire environment through their lungs daily. Even slight pollutant increases translate into huge internal exposures over time.

So, Children, pregnant women and the elderly are especially vulnerable. Long-term exposure increases the risk of low birth weight, preterm delivery, impaired child development, and cardiovascular illness.

### **Passive Smoking – The Invisible Indoor Pollution: -**

**Even in non-smoking homes, city residents are often exposed to passive (second-hand) smoke, an overlooked contributor to indoor air pollution. In major cities of Gujarat** including Ahmedabad, Surat, Vadodara, and Rajkot etc. - **passive smoking exposure remains common in public spaces, offices, and residential areas despite legal restrictions.**

Scientific evidence shows that a non-smoker in an urban environment may inhale the equivalent of about **¼ to 1 cigarette per day due to passive smoke exposure.** This seemingly small formaldehyde, and heavy metals etc.

**Preventive Tips,** Enforce smoke-free environments at home, hospitals, and workplaces. Support community awareness and strict implementation of public smoking bans. Avoid sitting or standing near smokers in public areas. Encourage smokers to smoke only in open, well-ventilated zones away from others.

### **Simple Steps to Protect Health: -**

- Check the Air Quality Index (AQI) daily and avoid strenuous outdoor activity when it's poor.**
- Keep windows closed during smog hours; ventilate when air quality improves.

- Use clean cooking fuels (LPG, Electricity, Induction) instead of biomass or kerosene.

- Avoid open burning of waste.

- Plant trees and maintain greenery around homes and workplaces to trap dust and pollutants.

### **Track the Air You Breathe — Mobile AQI Applications** **Real-time monitoring is a simple, preventive habit: -**

- SAFAR-India (IITM/MoES) – official Indian government app with city forecasts and health advice.

- AQI India – gives local readings and pollutant trends.

- Plume Labs Air – global maps with personal exposure tips.

- IQAir AirVisual – combines sensor and satellite data for accurate forecasting.

### **Cloth Masks and Respirators: -**

**Ordinary cloth or surgical masks offer limited protection from PM<sub>2.5</sub>. For high-pollution days, use certified N95 or FFP2 respirators that can filter up to 95% of fine particles when fitted properly.** They lower inhaled pollutant dose, improve comfort, and help prevent flare-ups in asthma, COPD, and in chronic comorbid patients.

### **Air Purifiers – Proven Indoor Benefit: -**

Indoor air often contains PM<sub>2.5</sub>, dust and volatile pollutants. **True HEPA (H13) air purifiers can cut indoor particulate levels by 50 - 80%** and improve sleep and respiratory health. Ideal for children, elderly and chronic comorbid persons.

Recommended models (India 2025) with approx. Price: Xiaomi Smart Air Purifier 4 Lite (Rs 10,200), Philips AC1217/20 (Rs 13,500), Coway AirMega 150 (Rs 15,000, True HEPA filter, Clean Air Delivery Rate (CADR) ≈ 300 m<sup>3</sup>/hr) etc. **Match the purifier's CADR (Clean Air Delivery Rate) to room size, keep doors/windows closed while in use, and replace filters periodically.**

### **Policy and Public Measures: -**

- Enforce strict vehicle and industrial emission standards.
- Promote clean energy adoption and reduce coal dependence.
- Regulate stubble burning and support sustainable farming.
- Restrict fireworks and open burning during festivals.
- Expand air-quality monitoring and public alert systems.
- Increase urban green cover and protect schools and hospitals from high-traffic zones.

-----continued...

**Conclusion: -**

**Are we getting fresh air? For many urban Indians, the answer is often "Not Yet."**

**But air pollution is preventable and reversible. Through public awareness, cleaner technologies, personal protection and strong policy implementation, we can breathe clean air again — for ourselves and for future generations.**

**Key References: -**

1. World Health Organization. Air Pollution – WHO India. 2024.
2. Health Effects Institute. State of Global Air Report 2024.
3. Jaganathan S et al. Estimating the effect of annual PM<sub>2.5</sub> exposure on mortality: national estimates for India. Lancet Planet Health. 2024.
4. World Health Organization. Household Air Pollution and Health Fact Sheet. 2024.
5. Ravindra K et al. Long-term assessment of firework emissions and air quality on Diwali festival. 2022.
6. Gadgets360. Air Purifier Price List in India. 2025.
7. Gujarat Samachar. "Pollution Crisis in Winter: Ahmedabad's AQI Turns Hazardous." Jan 2025.



# From Mouth to Lung: Odontogenic Pulmonary Infections

Dr. Dhara Shiroya (Gondaliya)

BDS; Implantology (IAECD, Mumbai); FMR (Mumbai)

Dental Implant, Smile Design & Oral Hygiene Expert

## Abstract

Odontogenic infections are an important but often underestimated source of pulmonary disease. Aspiration of oral pathogens can lead to pneumonia, lung abscess, or empyema - especially in elderly, bedridden, or ventilated patients. **Early dental intervention and consistent oral hygiene play vital roles in preventing respiratory infections.**

## Introduction

Oral infections such as periodontitis, dental caries, and abscesses harbour predominantly anaerobic and facultative bacteria. When aspirated, these pathogens can colonize the lower respiratory tract, leading to significant pulmonary infections. Therefore, maintaining optimal oral hygiene is essential not only for high-risk or hospitalized patients but also for healthy individuals to prevent oral-origin respiratory diseases.

## Mechanism of Infection Spread

- **Micro-aspiration** of contaminated oral secretions during sleep - common in elderly, sedated, or ventilated patients.
- **Macro-aspiration** in stroke, alcohol intoxication, or impaired airway reflexes.
- **Hematogenous dissemination** from dental abscesses (rare).

## Clinical Presentation

- **Aspiration Pneumonia:** polymicrobial infection of dependent lung segments.
- **Necrotizing Pneumonia:** cavitating lesions with foul sputum suggesting anaerobes.
- **Lung Abscess:** single cavity with air-fluid level.
- **Empyema:** infection extending into pleural space, requiring drainage.

## Preventive Oral Care and Hygiene

### 1. Brushing Technique (Modified Bass Method)

1. Brush **twice daily for 2 minutes** with fluoride toothpaste.
2. Hold the brush at **45° to the gumline** using gentle circular motions.
3. Clean **outer, inner, and chewing surfaces** of all teeth.
4. Brush the **tongue** from back to front.
5. Replace the brush **every 3 months** or when worn.

### 2. Recommended Toothbrush Type

- **Soft-bristled brushes** – gentle on gums and enamel.
- **Compact brush head** – allows better reach to molars.

- **Electric brushes** : ideal for elderly, disabled, or ICU patients.

### 3. Dental Floss

- **Dental floss cleans interdental areas** where brushing cannot reach, removing plaque and food debris.
- **Regular flossing** helps prevent gum inflammation and lowers bacterial load linked with **aspiration pneumonia**.
- **Waxed floss** or **floss picks** are easiest for daily use, especially in adults and caregivers assisting elderly patients.
- **Floss once daily** before brushing for maximum benefit.

### . Mouthwash and ICU Oral Care

- **Chlorhexidine gluconate (0.12–0.2%)** – may reduce ventilator associated pneumonia (VAP).
- **Povidone-iodine (1%)** : alternative for that intolerant to chlorhexidine.
- **Normal saline** : safe for frequent oral cleansing in dysphagic or intubated patients.

ICU / Bed ridden patients, oral hygiene should be performed **2-4 times daily** using **soft brushes, suction, and antiseptic rinses** as per protocol.

### Public and Professional Insights for Prevention

- **Routine dental check-up** every 6 months.
- Avoid sleeping with dentures.
- **Elevate head (30–45°)** during sleep in reflux or dysphagia.
- **Implement oral hygiene protocols** in ICUs and nursing homes.
- **Educate caregivers** in hospitals and long-term care facilities.
- **Avoid tobacco chewing, smoking, and excessive alcohol consumption**
- **Avoid unnecessary antibiotics** to prevent resistance.
- **Vaccinate** (influenza and pneumococcal) for high-risk individuals.
- **Healthy mouth = Healthy lungs** - simple oral care reduces respiratory infections.

### References

1. British Thoracic Society Clinical Statement on Aspiration Pneumonia (2021).
2. Scannapieco FA. *J Periodontol* (1999).
3. Gaekle NT et al. *Respir Care* (2020).
4. Müller F et al. *J Am Geriatr Soc* (2015).

# Personal Branding for Doctors: Why Your Reputation Deserves a Strategy

Dipesh Chodvadia (Healthcare Branding and Communication Expert) Mo. 9328021440

---

If there is one thing the last decade has proven, it is that being a great doctor is not enough on its own. People today no longer choose a hospital first. They choose a doctor they can trust. They search names online, they check Google reviews, they scroll through Instagram, they watch short videos, and they read patient experiences before they even walk into a consultation or an ICU waiting area. This is the new reality of healthcare in the digital era, and this is where personal branding quietly steps in.

## More Than a Reputation

Every doctor already has a brand. It exists in what patients say at discharge, how nurses describe working with you, how juniors look up to you as a teacher, and what peers recall when they hear your name. Critical care often works behind the curtain. Families may never see what happens between a crashing patient and a stable transfer. A strong personal brand gives visibility to that contribution in the right ethical way. Your reputation no longer stays confined to one building. It travels through WhatsApp groups, family referrals, conference panels, and search engines. Reputation was once local. Today, it is digital. So the real question is not whether you have a personal brand. The question is whether you are consciously shaping it.

## What Actually Builds a Strong Personal Brand

Small, simple, consistent content builds trust.

**Start with Self-Awareness:** Think back to what families say during those tense ICU hours. Think of the junior who told you that your style of decision making inspired him. These moments are clues. Do you want to be known as the intensivist who explains complex updates in simple language? Or someone who stands for timely referral advocacy? Or someone who educates the public on ICU care and prevents misinformation? Your brand is not built in a conference hall. It is built in real life moments that reflect your values. Capture those moments thoughtfully. Then communicate them with simplicity and consistency.

**Let your work speak publicly:** Present at conferences, publish a paper, write a simple column in a local publication. When you make complex medical topics easier to understand, you automatically build authority. Build healthy relationships with media and digital creators so you become their go to expert on critical care topics.

**Be visible beyond the ICU:** Most people outside your ICU have no idea what actually happens inside those walls. Use TVs in your waiting areas. Use short, simple content to make them feel less lost. A 45 second video explaining how sepsis progresses or a reel guiding families on how they can support a patient before and after ICU admission can create clarity. Reach mass people where they already are: Instagram, YouTube Shorts, Podcasts and LinkedIn are part of the public's daily information diet. A short reel demystifying ventilators, a carousel clearing ICU myths, or a simple explainer on why families should avoid crowding during rounds can genuinely reduce fear and improve understanding. When you make complex care easy to understand in the formats people already consume, you are reducing fear, guiding behaviour, and building trust in accurate information.

**Stay consistent:** Whether it is Instagram, YouTube, LinkedIn, your hospital profile or a quote in local media, keep your communication simple, professional and compassionate. Avoid heavy jargon. Speak like you would speak to a worried family member. If you see an opportunity to share a clinical learning or a useful insight, take it.

## Your Brand is Your Mirror

Personal branding pushes self reflection. It makes you ask: What am I improving? What am I learning? What value am I adding to my field? A strong brand is not just how the world sees you. It is how you evolve in your own eyes. And that is the real power of personal branding. It is not about being louder. It is about being clearer. If you do not tell your story with clarity and integrity, someone else will define it for you. **So start small. Start simple. But start. Your story deserves to be told by you.**

# Insurance for doctors. Which, When and How Much?

**Dr. Anish Joshi**

*Insurance Advisor, Mutual Fund Advisor (ARN193943), Critical Care Specialist 9898539059*

Every wondered whether you are covered adequately in various types of insurance? Being in the noblest profession with a very busy professional life, we overlook ourselves and family's interest. The most common question that would linger in our minds would be What would happen, if I suddenly stop working due to some medical issue or an accident? What would happen to my family if I die at my productive age?

## 1. Mediciclaim

We always treat patients with full zeal and enthusiasm, but when it comes to our coverage we depend on online platforms or social media without doing any research in this field. Let's look at the statistics first. Total health insurance premiums stand at Rs. 1.18 lacs crore rupees of all the insurance companies as per IRDA data and the average growth rate of the health insurance business is around 15-17 % per year. After removal of the GST, this will have greater impact on the insurance penetration to the population as a whole. Majority of the group policies have a very limited coverage of just around 2-3 lacs which is insufficient in today's world where medical inflation is very high. One should have atleast 10 lacs basic mediclaim with 40-90 lacs supertopup policy to get a total coverage of around 1 crore. Majority of the companies have started offering single private room with unlimited coverage and consumables coverage which must be taken. If we see between private insurers versus public sector insurers then private insurers have an edge in more better service and features and do not have capping in various planned surgeries.

Selecting a mediclaim company requires knowledge of the claim settlement ration and claim incurred ratio. A claim settlement ratio (CSR) is the percentage of claims an insurance company successfully settles out of the total claims received in a year. A higher CSR indicates a company is more reliable and financially stable in paying out claims. The incurred claim ratio (ICR) is a measure of an insurance company's financial performance,

calculated by dividing the total claims paid by the total premiums collected in a financial year. A higher ICR means a larger portion of the premium is paid out in claims, while a lower ICR indicates the insurer retains more for profit and operating costs. An ideal range is often considered to be between 70% and 90%, as a very low ratio might suggest a company isn't effectively serving its policyholders, and a very high one (over 100%) indicates the company is losing money on claims. IRDAI mandates that insurers must maintain a minimum solvency ratio of 1.5, or 150%. A higher ratio indicates the company is financially stable and more capable of paying claims. One should never go for a company whose solvency ratio has gone below or near 1.5. These are some of the indicators for selecting a company.

## What would one do if the insurance claim is rejected?

We face this situation for us as well as for our patients. Most of the times there are situations in which one has not read the terms and conditions of the policy. Not disclosing an illness at the time of purchasing the policy and then mentioning the illness in the history sheet amounts to fraud which results in claim rejections. If the claim was genuine and the company has rejected the claim then one should follow the following steps. Step 1 is to write to the grievance officer of the insurance company & the grievance office is liable to answer you in next 2 weeks. If by 30 days there is no revert then in step 2 one has to approach insurance ombudsman or lodge a complaint on bimabharosa website. If there is no favourable result in ombudsman then as per step 3 one should approach a consumer court. All things should be with a documentary evidence when dealing with such a case.

## 2. Term Insurance

Majority of us would be covered in term insurance but what amount is the basic question? The ideal term insurance should be 20 times of our annual income. The coverage should be till our productive age and till we are free from our liabilities like 60 or maximum 65 years.

Going for a coverage of life time or 99 years actually increases your premium without much benefit. The other marketing gimmick is giving your premium back, commonly called as TROP (Term insurance with Return of Premium) which one should not opt. Also adding various riders like accidental death and critical illness rider increases the premium. When a group of doctors have made a hospital and are paying a loan amount from the common firm like partnership or limited liability partnership, it is always better and safe to take a keyman insurance.

### 3. Cyber insurance

Cyber attacks on hospital software systems, on our mobile banking, net banking are very common and there are various plans to safeguard ourselves to such cyberattacks.

### 4. Professional indemnity

Practising in today's world without professional indemnity is like driving a vehicle without license. Always take a higher sum insured coverage like 1 crore or

above as per the speciality and see that any one accident and any one year ratio is kept as 1:1. This will prevent you from undue financial losses.

### 5. Motor insurance

We do have high end cars and now more than 1 car in the family. Driving a car without proper coverage increases our financial losses. Never ever try to settle an accident claim in cash with opposite party. Third party insurance comes in to play and proper notification to our insurance company will help in dealing with such incidences and will give us peace of mind. There is no such term as Bumper to Bumper told to us at the time of renewals by various executives. File charges are to be paid and the insurance can be purchased from any official channel like advisor, online channels and it is not mandatory to buy from the car dealer. Zero depreciation, consumable cover and engine protect are some of the covers which are highly recommended during the first few years of the vehicle purchase.

For any insurance related queries or more information you can approach the author on [dranishjoshi@gmail.com](mailto:dranishjoshi@gmail.com)



## Stress and Health Care in Indian Context

### Title: "Stress in Indian Healthcare: From Stethoscope to Stressoscope"

Dr. Shreya Maheshwari

MD - (Respiratory Medicine), IDCCM

#### *"Stress in Indian Healthcare: From Stethoscope to Stressoscope"*

Let's admit it - stress in healthcare is as Indian as chai, traffic jams, and WhatsApp forwards from well-meaning relatives warning us about cancer-causing onions.

In the heart of India's bustling healthcare system, stress isn't just a side effect - it's practically part of the job description. You might have a stethoscope around your neck, but chances are you're also wearing an invisible garland of cortisol molecules.

#### **The ICU: Where Drama Meets Dharma**

As an intensivist, I often say that our ICUs are like Bollywood - high drama, emotional plot twists, a lot of running around, and everyone wants a happy ending. Except, in our story, we don't have background music or a second take. We have code blue, confused relatives, and at least one nurse asking, "Ma'am, next ke liye kya likhna hai?" There's a special kind of stress that comes from explaining to a patient's cousin's neighbour's uncle (who once watched an episode of House MD) why antibiotics don't work for a viral infection.

#### **The Great Indian Patient Party**

In India, a hospital admission isn't a medical event - it's a social gathering. If your patient is stable, that's great. If the relatives are stable - that's a miracle. While you're managing multi-organ failure inside, there's multi-generational drama unfolding outside the ICU. Everyone has an opinion, and none of them have read Harrison's.

Stress, you ask? Try explaining palliative care to a family that insists on an MRI for a patient with GCS 3, "just to be sure."

#### **Doctor = Demigod (Until Discharge)**

Doctors in India are simultaneously over-respected and underappreciated. One minute you're "god sent," the next, you're dodging a medico-legal missile because you refused to prescribe a third antibiotic that the local chemist recommended.

Stress isn't just about clinical load; it's also the emotional weight of fighting disease, expectations, WhatsApp University degrees, and Google PhDs.

#### Coping in Style (Or Not)

How do Indian healthcare workers cope? We don't. We adjust. We make dark jokes during case discussions. We sip tea like it's therapy. Some of us meditate, others attain inner peace by cursing softly while filling the same form for the 47th time. We laugh. We cry. Sometimes, both at the same time - in the same shift.

And of course, the holy grail of stress relief - the post-round rant. If you haven't done a rant with at least three colleagues about one consultant, two relatives, and four policy changes, are you even working in Indian healthcare?

#### **But Why Does It Matter?**

Jokes aside, stress in healthcare is real, chronic, and often invisible. Burnout rates are rising. Mental health is neglected. And systemic issues - from understaffing to paperwork overload - are treated like background noise.

We need to normalize seeking help, taking breaks, and saying "no" to unreasonable expectations. We need administrators who listen, not just audit. We need systems that heal healers.

And most of all, we need to remember that behind every N95 mask is a human being who hasn't had a full lunch break in three days.

#### **In Conclusion...**

To be a healthcare worker in India is to serve with heart, science, humour, and a heavy dose of sarcasm. It is a calling, yes - but not one that should come at the cost of our own wellbeing.

So, here's a toast - with cutting chai - to every doctor, nurse, technician, and support staff navigating the chaos with courage. May your stress levels drop, your PPEs fit, your shifts be kind, and your patients not Google their symptoms before seeing you.

# ACUTE PANCREATITIS

Dr. Abhishek Shah

## INTRODUCTION:

Acute pancreatitis (AP) is one of the most common diseases of the gastrointestinal tract and leads to a tremendous emotional, physical, and financial burden for the patient. The incidence of AP has been increasing by 2%–5% per year and varies between 3.4 and 73.4 cases per 100,000 worldwide. Though the case fatality rate has decreased over time, the overall population mortality rate has remained unchanged with 5,000–9,000 deaths reported annually. Advancements in the management of AP over the past decade have been associated with a decrease in mortality.

## DIAGNOSIS:

The diagnosis of AP most often is established by identification of 2 of the 3 following criteria: (i) abdominal pain consistent with the disease, (ii) serum amylase and/or lipase greater than 3 times the upper limit of normal, and/or (iii) characteristic findings from abdominal imaging. Patients with AP typically present with epigastric or left upper quadrant pain. The pain is usually described as constant with radiation to the back, chest, or flanks, but this description is nonspecific. The intensity and location of the pain do not correlate with severity.

Serum amylase alone cannot be used reliably for the diagnosis of AP, and serum lipase is preferred.

In the absence of abdominal pain consistent with the disease, elevations of amylase and lipase do not predict the development of AP. Contrast-enhanced CT provides more than 90% sensitivity and specificity for the diagnosis of AP. Routine use of abdominal CT in patients with AP is unwarranted. However, in a patient failing to improve after 48–72 hours (e.g., persistent pain, fever, nausea, and unable to begin oral feeding), CT or magnetic resonance imaging (MRI) is recommended to assess local complications such as pancreatic necrosis. MRI has advantages in those with contrast allergy and renal insufficiency (can diagnose necrosis on non-gadolinium T2-weighted images) and can more accurately detect stones in common bile duct (CBD) and pancreatic duct disruption.

## ETIOLOGY:

*Gallstones and Alcohol:* The most common causes include gallstones (40%–70%) and alcohol (25%–35%). Abdominal ultrasound to evaluate for cholelithiasis should be performed on all patients with AP. Identification of gallstones as the etiology should prompt referral for cholecystectomy to prevent recurrent attacks and potential biliary sepsis. Gallstone pancreatitis is usually an acute event and cured when the stone is removed or passes.

Alcohol-induced pancreatitis often manifests as a spectrum, ranging from discrete episodes of AP to chronic irreversible changes. The diagnosis should not be entertained unless a person has consumed over 5 years moderate or heavy alcohol consumption. “Heavy” alcohol consumption is generally considered to be greater than 50 g per day, but is likely much higher. Clinically evident AP occurs in only up to 5% of heavy drinkers; thus, there are likely other factors that sensitize individuals to the effects of alcohol, such as genetic factors and tobacco use.

## Other etiologies of AP:

Medications, infectious agents, and metabolic causes such as hypercalcemia and hypertriglyceridemia are rare causes, more often falsely attributed to causing AP. Whereas some drugs, such as 6-mercaptopurine, azathioprine, and didanosine clearly can cause AP.

Primary and secondary hypertriglyceridemia can cause AP (only 5% of all cases of AP and up to 56% of AP in pregnancy). Serum TG should rise above 1,000 mg/dL to be considered the cause of AP. A lactescent serum has been observed in as many as 20% of patients with AP; therefore, a fasting TG level should be re-evaluated 1 month after discharge when hypertriglyceridemia is suspected.

A benign or malignant mass that obstructs the main pancreatic or biliary ducts can result in AP, in around 5%–14% of all cases. Pancreatic cancer should be suspected in any patient older than 40 years with idiopathic pancreatitis, especially with a prolonged or recurrent course.

## IDIOPATHIC AND RECURRENT AP:

IAP is defined as pancreatitis with no etiology established after initial laboratory (including lipid and calcium levels) and imaging tests (transabdominal ultrasound and MRCP in the appropriate patient). Patients with no obvious etiology should be referred for a repeat ultrasound and TG level as an outpatient because initial hospital evaluation often fails to identify gallstones and/or elevated TG level. In patients with recurrent IAP, EUS identifies the etiology in most patients.

Even with a diagnosis established, a recurrent attack of AP is seen in approximately 20%–29% patients after an initial attack of AP. Recurrent pancreatitis occurs more often in male individuals, smokers, and those with alcohol with etiology. In addition, failure to treat a biliary etiology, such as gallstones, is a common cause of recurrent AP. There is growing evidence that gallstones or tiny gallstones (microlithiasis and sludge) are

the cause of IAP in most of whom the etiology has not been identified.

Based on the available evidence, it is concluded that following an episode of AP with no identifiable cause, in patients who are surgical candidates, cholecystectomy should be performed to reduce the risk of recurrent episodes of pancreatitis. Genetic testing may be useful in patients with more than 1 family member with pancreatic disease.

#### **INITIAL ASSESSMENT AND RISK STRATIFICATION:**

*Definition of severe AP:* Severe AP is defined by the presence of persistent organ failure (fails to resolve within 48 hours) and/or death. Organ failure is defined in simple clinical terms as shock (systolic blood pressure less than 90 mm Hg), pulmonary insufficiency (PaO<sub>2</sub> less than 60 mm Hg), renal failure (creatinine .2 mg/dL after rehydration), and/or gastrointestinal bleeding (.500 mL/24 hours) or modified Marshall score of 2 or more in the 3 accepted organ systems.

Moderately severe disease is defined as transient organ failure (resolves within 48 hours) and/or the development of local complications (acute pancreatic and/or peripancreatic fluid collections, acute necrotic collections, pseudocyst or walled-off pancreatic necrosis).

Morphologic classification describes necrotizing AP (usually synonymous with moderately severe and severe disease) vs interstitial/edematous AP (usually mild in severity). Pancreatic necrosis is defined as diffuse or focal areas of nonviable pancreatic parenchyma greater than 3 cm in size or greater than 30% of the pancreas. Necrotizing pancreatitis includes pure peripancreatic necrosis (approximately 45%), pancreatic and peripancreatic necrosis (approximately 45%), and rarely pure pancreatic necrosis (approximately 5%). Pancreatic necrosis can be sterile or infected. In the absence of pancreatic necrosis and/or organ failure, in mild disease, the edematous pancreas is defined as interstitial pancreatitis. Although there is some correlation between pancreatic necrosis, hospital length of stay, and organ failure, patients with sterile necrosis and infected necrosis are as likely to have organ failure.

Most episodes of AP are mild and self-limiting, needing only brief hospitalization. However, 20% of patients develop a moderately severe or severe disease requiring a prolonged hospitalization.

#### **PREDICTING SEVERE DISEASE:**

AP is an unpredictable disease early in its course. Despite intense research, severity scoring systems are cumbersome, typically require 48 hours to become accurate, and when predictive of severity, the patient's condition is obvious regardless of the score. This is especially true for the Ranson, Imrie, and APACHE scoring systems.

Elevated HCT (>44), BUN (>20 mg/dL), C-reactive protein (>150 mg/dL), and creatinine (>2 mg/dL) have been reported in numerous studies to have a significant predictive value for determining moderately severe and severe disease. No single laboratory test is consistently accurate to predict severity in patients with AP. Thus, close examination to assess early fluid losses, hypovolemic shock, and symptoms suggestive of organ dysfunction is crucial. Clinicians need to be aware of the multiple risk factors of severe disease. These include the following: the presence of SIRS, signs of hypovolemia, such as an elevated BUN and an elevated HCT, obesity, presence of pleural effusions and/or infiltrates, and altered mental status. The presence of SIRS at admission has been found to be highly predictive of the development of organ failure/severe disease.

#### **INITIAL MANAGEMENT:**

There is a general consensus that treating a patient with mild disease early in the course of the disease with early aggressive or moderately aggressive hydration is beneficial. Patients with AP have marked systemic endothelial injury and increased vascular permeability leading to fluid shifts into the interstitial space and peritoneum (averaging 2–4 L over the first 48 hours). This leads to decreased intravascular volume. In addition, patients also hypovolemic due to vomiting, reduced oral intake, increased respiratory losses, and diaphoresis. Direct evidence of hypoperfusion of the pancreas leading to cell death and necrosis has been shown.

In addition, intravenous hydration prevents the ongoing inflammation that leads to a cycle of increased vascular permeability leading to increased third-space fluid losses and worsening the pancreatic hypoperfusion that leads to pancreatic necrosis.

Fluid resuscitation in patients with AP is likely more important early in the course of the disease (within the first 24 hours). Monitoring patients with early aggressive intravenous hydration depends on observation of clinical parameters such as heart rate, blood pressure, and urine output. Fluid volumes need to be reassessed at frequent intervals within 6 hours of presentation and for the next 24–48 hours with a goal to decrease the BUN/HCT.

Lactated Ringer solution is preferred to normal saline in the resuscitation and early aggressive hydration of patients with AP. Lactated Ringer solution early benefits in systemic inflammation are by providing calcium that binds ionically with non-esterified fatty acids that are associated with severe disease in AP. Lactate has also been shown to reduce pancreatic injury in AP by decreasing inflammation. Normal saline is more acidic with a pH of 5.5 and is associated with the development of a nonanion gap hyperchloremic metabolic

acidosis and renal injury when large volumes are given.

Patients with no evidence of hypovolemia, an initial resuscitation rate of no more than 1.5 mL/kg of body weight per hour should be administered. However, in patients with hypovolemia, clinicians should administer a bolus of 10 mL/kg.

While the presence of hypovolemia might demand higher amounts and rates of hydration, most patients with AP will likely benefit from 3–4 L the first 24 hours. Older individuals and those with a history of cardiac and/or renal disease, will need caution when applying hydration. Once a patient has severe disease, there seems to be no benefit of early aggressive hydration. When severe disease develops and/or after 24 hours, aggressive hydration may actually be harmful and the risk of necrosis and/or organ failure increases.

#### **ERCP IN AP:**

Urgent ERCP is indicated in this situation only for cholangitis or progressive cholestasis defined by a rising bilirubin in the setting of severe or moderately severe AP (bilirubin 3–5 mg/dL). In the absence of cholangitis and/or jaundice, if a CBD stone is suspected, MRCP or EUS should be used to screen for the presence of CBD stones. Most gallstones readily pass to the duodenum and are lost in the stool.

#### **ANTIBIOTICS IN AP:**

Infectious complications are a major cause of morbidity and mortality in patients with AP, including Cholangitis, urinary tract infections, infected pseudocysts (abscesses), fluid collections, and infected pancreatic necrosis. SIRS that develop early in the course of AP may be indistinguishable from sepsis because of fever, tachycardia, tachypnea, and leukocytosis. Hypotension, early in the course of AP, has been believed to lead to ischemia of the bowel and allow bacterial translocation from the colon leading to infection of necrosis. Guidelines does not recommend the use of prophylactic antibiotics because of lack of benefit in the patient outcome. Guidelines suggest against fine-needle aspiration (FNA) in patients with suspected infected pancreatic necrosis (conditional recommendation, very low quality of evidence). In proven infection by blood or other body fluid cultures or by the presence of gas in the pancreatic necrosis, the need for antibiotic is clear.

While antibiotics should not be used in patients with sterile necrosis, antibiotics are an important part of treatment in infected necrosis along with debridement/necrosectomy. In patients with infected necrosis, antibiotics known to penetrate pancreatic necrosis (like carbapenems, cephalosporins, quinolones and metronidazole) should be used largely to delay

surgical, endoscopic, and radiologic drainage beyond 4 weeks. Some patients may avoid drainage altogether because the infection may completely resolve with antibiotics.

#### **NUTRITION IN AP:**

In patients with mild AP, early oral feeding should be started (within 24–48 hours) as tolerated by the patient. For such early feeding, it is important to have bowel sounds present and no significant nausea, vomiting, or ileus. A desire for food, simple hunger, can help guide clinicians' decision when to start feedings. Inpatients with mild AP, initial oral feeding with low fat solid diet is preferred than a stepwise liquid to solid approach. Enteral nutrition in patients with moderately severe or severe AP seems to prevent infectious complications. Parenteral nutrition should be avoided, unless the enteral route is not possible, not tolerated, or not meeting the caloric needs. Using a nasogastric rather than nasojejunal route for delivery of enteral feeding is preferred because of comparable safety and efficacy. These patients should be placed in a more upright position and be placed on aspiration precautions.

Because enteral feeding maintains and prevents disruption of the gut mucosal barrier, and prevents the translocation of bacteria that seed pancreatic necrosis, enteral nutrition should be begun in patients with severe AP, especially pancreatic necrosis. If enteral nutrition is administered by tube feeds, continuous infusion is preferred over cyclic or bolus administration. In addition, a small peptide-based medium chain TG oil formula may improve tolerance. The timing of initiating enteral feeding in patients with severe disease is controversial. While studies initially suggested a benefit in preventing infectious complications, more recent studies suggest that early (within the first 24 hours) initiation of enteral feeding is not beneficial.

#### **SURGERY IN AP:**

Patients with mild acute biliary pancreatitis should undergo cholecystectomy early, preferably before discharge to decrease recurrent gallstone-related complications. In patients with low to moderate risk, MRCP can be used preoperatively; however, routine use of MRCP is unnecessary. In patients with mild AP who cannot undergo surgery, such as older individuals and/or those with severe comorbid disease, biliary sphincterotomy has been shown to be effective to prevent recurrent biliary AP.

Minimally invasive methods are preferred to open surgery for debridement and necrosectomy in stable patients with symptomatic pancreatic necrosis. Guidelines suggest delaying any intervention (surgical, radiological, and/or endoscopic) in stable patients with pancreatic necrosis, preferably 4 weeks, to allow for the wall of collection to mature.

# The Role of Artificial Intelligence in Critical Care: Transforming Patient Management, Research, Education, and Professional Development

Dr. Darshan Dipakbhai Shah, Dr. Bharat Prajapati, Dr. Sunil Chhajwani, Dr. Abhishek Prajapati,  
Dr. Gunjan Desai Department of Critical Care Medicine Shree Krishna Hospital, Bhaikaka University, Karamsad, Anand

## Abstract

Artificial Intelligence (AI) has emerged as a transformative tool in critical care medicine. With its ability to analyze large, complex datasets and recognize patterns beyond human perception, AI is redefining diagnostic accuracy, clinical decision-making, research methodology, and medical education. This article explores the multifaceted role of AI in patient management, research, education, and professional development — highlighting opportunities, current applications, and ethical challenges associated with its implementation.

## Introduction

Critical care medicine operates in an environment of complexity and urgency, where clinicians are inundated with continuous streams of physiological and biochemical data. The challenge lies not in the lack of information, but in its synthesis and timely interpretation. Artificial Intelligence (AI), encompassing machine learning (ML), deep learning (DL), and natural language processing (NLP), offers an unprecedented opportunity to transform this landscape. AI's role in critical care extends beyond bedside decision-making; it influences research, education, and institutional functioning. This integration marks the dawn of a new era — one where intelligent systems enhance, rather than replace, human expertise.

### 1. AI in Patient Diagnosis and Management :

#### a. Data Integration and Clinical Decision Support

ICU clinicians face data overload from multiple sources — electronic health records, ventilators, monitors, and imaging systems. AI-based Clinical Decision Support Systems (CDSS) consolidate these inputs, identify patterns, and issue early alerts for deterioration. Predictive

models such as *DeepSOFA* and *AISE (Artificial Intelligence Sepsis Expert)* have demonstrated superiority over conventional scoring systems in anticipating sepsis and multi-organ dysfunction. Such tools support early intervention, risk stratification, and efficient resource utilization, enhancing patient safety and outcomes.

#### b. Diagnostic Assistance and Pattern Recognition

AI algorithms aid in diagnostic reasoning by interpreting multimodal data. Deep learning models analyze radiographs or CT scans to detect ARDS, pneumonia, or pneumothorax with precision comparable to radiologists. NLP applications extract meaningful insights from free-text clinical notes, enhancing diagnostic completeness and continuity of care. In the future, AI-integrated bedside platforms may provide probabilistic diagnoses in real time, assisting junior clinicians in complex cases.

#### c. Personalized Management and Predictive Medicine

AI facilitates individualized treatment by modeling patient responses. Reinforcement learning algorithms can optimize fluid resuscitation, vasopressor titration, and ventilator settings, adjusting dynamically to evolving physiology. Predictive analytics can identify patients at risk of reintubation, renal failure, or cardiac arrest, allowing clinicians to intervene preemptively. Such systems represent a shift from reactive to anticipatory critical care.

### 2. AI in Research and Innovation :

#### a. Research Proposal Development

AI-powered tools expedite research proposal development by automating literature searches, summarizing evidence, and identifying research gaps. Generative AI platforms can draft proposals with defined objectives, methodology, and data analysis plans — a process that traditionally demands extensive time and expertise. When used judiciously, these tools support early-career researchers and improve proposal quality.

#### b. Data Analysis and Predictive Modeling

Critical care research involves complex, high-dimensional datasets that challenge traditional statistical techniques. Machine learning algorithms can uncover hidden associations and classify novel phenotypes in sepsis, ARDS, and shock syndromes. For instance, unsupervised clustering methods have revealed biologically distinct sepsis subtypes with differing therapeutic

responses. AI-based data analytics also manage missing data more robustly and can simulate clinical outcomes, fostering hypothesis generation for precision medicine.

### **c. Real-Time and Adaptive Clinical Trials**

AI enables adaptive clinical trials that modify recruitment or interventions based on interim results, increasing efficiency and ethical soundness. Furthermore, AI harmonizes multicentric

ICU databases such as *MIMIC-IV* and *eICU*, allowing large-scale, real-world evidence generation and meta-analysis. This accelerates translation of research findings into clinical practice.

## **3. AI in Medical Education and Simulation**

### **a. Simulation-Based Learning**

AI-driven virtual simulators create dynamic, case-based learning experiences where patient scenarios evolve according to learner actions. A trainee managing a virtual patient in septic shock, for instance, receives immediate physiological feedback, lab updates, and real-time consequences of clinical decisions. Such interactive learning reinforces critical thinking, diagnostic reasoning, and crisis resource management.

### **b. Adaptive and Personalized Learning**

AI-powered learning management systems analyze performance data to identify competency gaps and customize educational pathways. These systems align seamlessly with Competency-Based Medical Education (CBME), ensuring that learning is individualized, measurable, and continuous. Virtual tutors can also provide instant feedback and evidence-based recommendations during self-study or bedside teaching.

### **c. Continuous Professional Development**

AI supports continuous professional growth through automated summarization of new research, guideline updates, and context-sensitive clinical reminders. Clinicians can access personalized knowledge updates through AI-powered platforms integrated into institutional intranets, enhancing lifelong learning and evidence-based practice.

## **4. AI in Professional and Institutional Development**

AI is also reshaping organizational management in healthcare. Predictive workforce analytics optimize ICU staffing by forecasting patient load and acuity. Automated dashboards provide clinicians with performance metrics on patient outcomes, procedural success, and academic productivity, guiding individualized professional development. Additionally, AI-assisted writing tools enhance academic output by improving clarity, grammar, and citation accuracy, enabling clinicians to focus on the intellectual content of manuscripts rather than formatting.

## **5. Ethical and Humanistic Considerations**

Despite its promise, AI adoption in critical care must be guided by ethical prudence. Issues surrounding patient privacy, algorithmic bias, and accountability remain unresolved. Clinicians must ensure transparency and maintain human oversight in decision-making. Explainable AI

(XAI) frameworks that allow users to understand the rationale behind algorithmic outputs are essential to foster trust and safety. Ultimately, AI should augment — not replace — clinical judgment, empathy, and communication.

## **Conclusion**

Artificial Intelligence is redefining the practice of critical care medicine. By enhancing diagnostic accuracy, improving prognostication, streamlining research, personalizing education, and supporting professional growth, AI serves as a catalyst for progress across multiple domains. However, its integration must be balanced with ethical safeguards and human compassion. The ICU of the future will be a *learning ecosystem* — where clinicians and AI systems collaborate synergistically to deliver care that is not only intelligent but also humane. The challenge ahead lies not in developing smarter algorithms, but in cultivating wiser clinicians who can harness them responsibly.

## **References**

1. Topol EJ. High-performance medicine: the convergence of human and artificial intelligence. *Nat Med*. 2019;25(1):44–56.
2. Johnson AEW, Ghassemi MM, Nemati S, Niehaus KE, Clifton DA, Clifford GD. Machine learning and decision support in critical care. *Proc IEEE*. 2016;104(2):444–466.
3. Komorowski M, Celi LA, Badawi O, Gordon AC, Faisal AA. The Artificial Intelligence Clinician learns optimal treatment strategies for sepsis in intensive care. *Nat Med*. 2018;24(11):1716–1720.
4. Bohr A, Memarzadeh K. The rise of artificial intelligence in healthcare applications. In: Bohr A, Memarzadeh K, eds. *Artificial Intelligence in Healthcare*. Academic Press; 2020:25–60.
5. Hashimoto DA, Witkowski E, Gao L, Meireles O, Rosman G. Artificial intelligence in anesthesiology and critical care: navigating the future. *Anesth Analg*. 2023;137(5):906–918.

# Integration of Artificial Intelligence in the Intensive Care Unit : A Consultant Intensivist's Viewpoint

Dr. Bharat Prajapati, (Consultant Intensivist)  
Dr. Abhisek Prajapati, (Consultant Intensivist)  
Dr Darshan Shah(Consultant Intensivist)  
Shree Krishna Hospital, Karamsad, Gujarat, India  
Dr. Gunjan Desai, (Consultant Intensivist)

## Abstract

Artificial Intelligence (AI) has rapidly emerged as a cornerstone technology in critical care medicine. Within the dynamic and data-rich environment of the Intensive Care Unit (ICU), the application of AI has shown potential to revolutionize the way intensivists deliver care. From predictive triage and automated documentation to advanced ventilator management and precision drug dosing, AI tools enable clinicians to make faster, more informed, and personalized decisions. This article elaborates on the practical integration of AI across each phase of ICU workflow—from admission to discharge—through the lens of experienced consultant intensivists.

Integration of Artificial Intelligence in Intensive Care Unit

## 1. Introduction

The ICU is a technologically complex environment characterized by critically ill patients requiring continuous monitoring, frequent interventions, and rapid clinical decision-making. AI, encompassing machine learning (ML), natural language processing (NLP), and deep learning, offers a transformative opportunity to synthesize vast streams of physiological, imaging, and laboratory data in real-time. AI tools can identify subtle clinical trends invisible to the human eye—detecting early signs of deterioration, infection, or organ dysfunction before overt clinical manifestation. This enables intensivists to intervene earlier, improving patient outcomes while optimizing resource utilization. These technologies complement clinical expertise and are reshaping the future of intensive care practice worldwide.

## 2. ICU Admission and Triage

Admission to the ICU often involves complex decision-making under time constraints. AI-based triage systems now utilize predictive analytics to assess patient severity and optimize bed allocation. Machine learning models trained on electronic health records (EHRs) can calculate dynamic risk scores such as modified Early Warning Score (EWS), APACHE IV, or SOFA in real-time, enhancing objectivity in triage decisions. AI systems can also stratify patients based on comorbidity profiles and likelihood of ICU benefit, reducing

bias and improving admission efficiency. For example, neural networks can process vital signs, lab values, and prior admissions to predict mortality risk or deterioration within 24 hours.

## 3. Laboratory Investigations and Drug Charting

ICU patients undergo frequent laboratory testing, generating massive data volumes. AI-driven lab platforms integrate with the hospital's Laboratory Information System (LIS) to detect abnormal trends such as rising lactate, hyperkalemia, or sepsis biomarkers. Predictive algorithms can alert intensivists of evolving sepsis or acute kidney injury hours before they manifest clinically. In pharmacology, AI tools support personalized drug dosing—adjusting vasopressors, sedatives, or antibiotics based on renal and hepatic functions, age, and weight. AI-enabled antimicrobial stewardship programs flag inappropriate prescriptions and provide dose recommendations, enhancing medication safety and precision.

## 4. Radiology and Imaging Integration

Artificial Intelligence has transformed radiological interpretation in critical care through rapid image processing, anomaly detection, and automated reporting. AI-driven image recognition algorithms can identify pulmonary infiltrates, pneumothorax, or pleural effusions on chest X-rays with accuracy comparable to radiologists, allowing intensivists to make timely clinical decisions during off-hours. In neurocritical care, AI-enhanced CT and MRI analysis can quantify cerebral edema, midline shift, or ischemic changes, aiding early intervention. Integrating AI-based radiology systems with PACS allows for real-time prioritization of critical findings, flagging emergent cases such as intracranial hemorrhage or pulmonary embolism.

## 5. Invasive Procedures and Monitoring

AI-assisted technologies are increasingly integrated into invasive ICU procedures, enhancing precision and safety. Ultrasound-guided vascular access now benefits from AI-enabled needle tracking systems, which identify optimal insertion sites and angles. During bronchoscopy or percutaneous tracheostomy, AI algorithms analyze real-time video feeds to assist with anatomical localization and

complication prediction. Continuous hemodynamic monitoring, powered by AI-driven analytics, enables prediction of hypotensive episodes, arrhythmias, or fluid responsiveness using data from arterial lines, ECGs, and central venous pressure monitors.

### **6. Ventilator Management and Respiratory Support**

Mechanical ventilation remains a cornerstone of ICU care, and AI has revolutionized its management. Closed-loop ventilation systems—powered by adaptive algorithms—continuously analyze patient-specific parameters such as tidal volume, compliance, and end-tidal CO<sub>2</sub> to automatically adjust settings. Machine

learning models can predict weaning success, detect asynchrony, and recommend optimal ventilator modes, minimizing the risk of ventilator-induced lung injury.

### **7. Hemodynamic and Organ Support**

Beyond ventilation, AI contributes significantly to the optimization of cardiovascular and renal support therapies. Predictive analytics guide fluid resuscitation strategies by integrating dynamic parameters such as pulse pressure variation and cardiac output. In patients requiring vasopressors or inotropes, reinforcement learning models simulate hemodynamic responses to dose adjustments, offering decision support for maintaining target mean arterial pressures.

### **8. Infection Control and Antimicrobial Stewardship**

AI-based surveillance systems continuously analyze microbiology reports, antibiotic prescriptions, and patient vitals to detect potential nosocomial infections early. Algorithms can flag clusters suggestive of hospital-acquired infections or outbreaks, enabling timely isolation and containment measures. Predictive models identify high-risk patients for ventilator-associated pneumonia (VAP) or catheter-related bloodstream infections (CRBSI).

### **9. Clinical Documentation and Workflow Optimization**

Electronic documentation consumes substantial ICU clinician time. NLP-driven transcription tools convert spoken rounds or procedure notes into structured electronic records, reducing administrative burden. Automated charting systems capture vital trends, drug administration, and ventilator parameters directly into the EHR, minimizing manual errors.

### **10. Prognostication, Rehabilitation, and Ward Transfer**

AI systems assist intensivists in determining prognosis and readiness for ICU discharge. Predictive models analyze trends in vitals, lab results, ventilator parameters, and neurological scores to estimate recovery trajectories. Such tools can

recommend optimal timing for step-down to the ward, reducing premature discharges and ICU readmissions.

### **11. Challenges, Ethics, and Future Directions**

Despite its transformative potential, AI integration in critical care faces challenges such as data privacy, algorithmic bias, and medico-legal accountability. Models trained on biased datasets may underperform in diverse patient populations. Intensivists must retain clinical judgment, using AI as an adjunct rather than a replacement.

### **12. Conclusion**

Artificial Intelligence is redefining the landscape of intensive care by bridging data and decision-making. From triage to discharge, AI tools empower intensivists to deliver personalized, precise, and proactive care.

The technology augments efficiency and enhances safety and outcome prediction.

### **References**

1. Topol EJ. High-performance medicine: the convergence of human and artificial intelligence. *Nat Med.* 2019;25(1):44–56.
2. Komorowski M, Celi LA. The promise of artificial intelligence in intensive care medicine. *Crit Care.* 2019;23(1):1–7.
3. Johnson AE, et al. Machine learning and decision support in critical care. *Proc IEEE.* 2016;104(2):444–466.
4. Vincent JL, Taccone FS. Artificial intelligence in intensive care: Are we ready? *Intensive Care Med.* 2020;46(4):588–590.
5. Fleuren LM, et al. Machine learning for the prediction of sepsis: a systematic review and meta-analysis. *Intensive Care Med.* 2020;46(3):383–400.
6. Saria S, Butte A. Learning from the ICU: Algorithms for dynamic patient management. *Clin Chem.* 2019;65(11):1328–1337.

# Investment Strategies For Doctors In India In 2025

India's medical infrastructure has expanded rapidly: medical colleges have nearly doubled from 387 in 2014 to around 780 by 2025 resulting in over a 112% rise in MBBS seats and PG seats increasing by about 127%. Projections by 2030 estimate production of around 21 lakh doctors cumulatively, though only about 11 lakh may join the active health workforce. Despite growth, India still faces significant shortages both in stock and active workforce of doctors and nurses when measured against global ratio thresholds. Crucially, vacancies remain elevated, specialist doctor roles in government facilities are 65–68% unfilled and PHCs have over 20% officer vacancies.

## Economic Implications for Doctors

### 1. Increased Competition

With an influx of MBBS graduates, particularly in urban and private sectors, negotiating power may decline. Reports indicate new doctors being offered salaries as low as ₹25–30K/month for full-time roles.

Many foresee intensified competition, underemployment, and declining compensation, especially in saturated regions. Complete loss of negotiating power continuous downward pressure on salary.

### 2. Widening Rural–Urban Divide

While rural regions still lack sufficient doctors, urban areas face saturation. Doctors may increasingly be pushed into contractual, lower-paying rural or peri-urban roles to secure employment.

### 3. Govt hiring of contractual staff and incentives

### 4. Opportunity in Specialized & Emerging Sectors

Telemedicine, health-tech, clinical research, and medical administration are emerging domains offering alternative, less saturated career paths.

Doctors in India face unique financial challenges and opportunities, including high education loan debt, a delayed start to high earning years, potentially fluctuating income from private practice, and time constraints for personal financial management and rapid influx of new specialists in recent years. Therefore, their investment strategies need to be tailored to their specific needs, goals and expectations.

### Core Mindset Shift needed:

In the next decade, financially secure doctors will be those who treat medicine as both a calling and a business, strategically

positioning themselves for multiple revenue streams while their investments quietly compound in the background.

### Current reality:

Most doctors invest only about 10% of their monthly income. They prioritize return on investment, risk, and tax benefits when choosing financial instruments. 47% prefer low-risk investments. 39% are moderate-risk takers. Only 14% embrace high-risk, high-return strategies.

Here's a breakdown of recommended investment strategies for doctors in India:

### 1. Goal-based financial planning

Define Clear Goals: Identify your short, medium, and long-term financial goals, such as clearing education loans, buying a home or clinic, saving for children's education or marriage, expanding practice facilities, and building a robust retirement fund.

### 2. Diversified investment portfolio

Balance Risk and Return: Create a portfolio that combines various asset classes based on your risk tolerance and investment horizon.

Equity Mutual Funds: For long-term growth and wealth creation, consider investing in equity mutual funds through Systematic Investment Plans (SIPs). SIPs mitigate market volatility and foster disciplined investing.

Gold & Alternative Investments: Gold and silver can act as hedges against inflation and economic uncertainty. Consider Sovereign Gold Bonds (SGBs) for their interest earnings and tax benefits.

### 3. Retirement planning

Start Early: Begin saving and investing for retirement as early as possible to leverage the power of compounding and build a substantial retirement corpus, even if your earning years start

later. Passive Income Portfolio: Diversify your retirement income by creating passive income streams through dividend-paying stocks and other investment options.

#### 4. Tax optimization:

Utilize Section 80C: Maximise deductions up to ₹1.5 lakh by investing in instruments like Public Provident Fund (PPF), National Pension System (NPS), and Equity-Linked Savings Schemes (ELSS). Leverage Section 80D: Claim deductions on health insurance premiums paid for yourself, your spouse, children, and parents. Claim Professional Expenses: Doctors following the regular taxation method can deduct legitimate business expenses, such as clinic rent, staff salaries, medical equipment, and professional development courses. Consider Presumptive Taxation (Section 44ADA): For doctors with annual gross receipts up to ₹75 lakh, this scheme simplifies tax filing by deeming 50% of gross receipts as taxable income. However, evaluate the pros and cons carefully with a tax advisor. Home Loan Benefits: Claim deductions on principal repayment and interest paid on home loans. Tax-Free Bonds: Consider these for stable, tax-efficient returns, though they may offer lower interest rates.

#### 5. Risk management

Professional Indemnity Insurance: Protect yourself against potential malpractice lawsuits, which can have significant financial implications.

Life Insurance: Ensure financial security for your dependents in case of your untimely demise with adequate life insurance coverage.

Health Insurance: Safeguard your savings from high medical expenses by securing comprehensive health insurance for yourself and your family.

Emergency Fund: Build a readily accessible emergency fund covering at least 6-12 months of living and operational expenses.

#### 6. Debt management

Prioritize Education Loan Repayment: Focus on repaying high-interest education loans before taking on significant new debt for practice expansion or other investments. Debt Consolidation and Refinancing: Explore options for consolidating or refinancing existing loans to secure better interest rates and streamline repayments.

#### 7. Passive income streams

Stock Market Investing (Dividends): Invest in dividend-paying stocks or index funds for regular income. Digital Products & Content Creation: Leverage your medical expertise to create online courses, e-books, or other digital products that can generate passive income.

Automate Clinic Operations: Implement clinic management software and other tools to streamline operations and potentially free up time and resources, indirectly contributing to passive income generation.

Consider Business Investments: Explore investing in healthcare-related businesses or startups as a silent partner or angel investor.

#### 8. Continuous learning and professional advice

Improve Financial Literacy: Educate yourself on personal finance through books, seminars, or consultations with a financial advisor. Seek Professional Guidance: A financial advisor can help create a personalized plan considering your income, expenses, debts, and overall financial health.

### My Recommendations:

#### Years 1-5 – Survival & Foundation

Main Goal: Build your name, accumulate an emergency fund, start SIPs, get insurance, upskill and most importantly set a work free retirement fund so that after retirement work is not burdened with being the source of income. Doctors usually do not retire until they die but the sense of freedom is a must and for calculation sake we will take the retirement age as 70 years. Avoid lifestyle inflation in the first 10 years.

Clear high-interest debt ASAP. Take adequate term insurance (12–15× annual income) & comprehensive health insurance don't rely solely on employer cover. Consider professional indemnity insurance medical litigation risk is rising.

The corpus needed at 70, keeping in mind the inflation and time value money (T.Ve rupee, would be 10 crores.

Age in Years	Recommended Monthly SIP in Rs.
30	10,000
40	20,000
45	50,000
50	1,00,000

## Years 5-10 – Expansion & Income Boost

### Main Goal: Increase income streams, stability allocation.

Diversify investments. Don't depend solely on one employer or a single clinic. Dual Practice where allowed. Combine a government or institutional job (for stability & benefits) with private consultations, part-time hospital shifts, or teleconsulting. Telemedicine & Online Consults. Platforms like Practo, DocsApp, Mfine let you monetise your downtime and reach non-local patients. E reporting can also earn you a steady small passive income. Procedural Upskilling : Add certifications (USG, basic echocardiography, cosmetology, emergency procedures) that bring higher-paying opportunities. Medical Writing / Teaching : Online CME courses, YouTube medical education, or PG coaching can generate recurring

income. Tier-2 & Tier-3 cities often have less competition and higher patient trust, meaning faster patient base growth and potentially better margins. Avoid oversaturated metros unless in high-demand specialties.

Remember: With salaries starting low, the percentage you save matters more than the absolute amount. At least 25% of your income should be invested. Income that is just kept in a bank without investing is actually a depreciating asset.

## Years 10 and more – Asset Creation & Stability

Main Goal: Prepare for practice ownership, scale passive income. Explore hospital admin, pharma-medical affairs, health policy roles, and digital health startups these often pay more steadily.

### Life Goals I recommend from monthly income :

#### Putting it all together divide your monthly income in 4 parts of 25% as shown below.

1. Save 25% of your income with risk taking as defined below:

Age in Years	Risk Taking Investment (Small Cap, Angel Investing Stocks)	Safe Investments (LArge Cap / Blue Chips, FDs, Gold)
<40	20%	5%
40 - 60	10%	15%
>60	5%	20%

2. Invest 25% of your Income on yourself.
3. Spend 25% behind housing and fixed liabilities.
4. Spend 25% of the income behind personal and family enjoyment.

## EDUCATION AND LEARNING

### Balancing Traditional vs Digital Learning Methods

In the rapidly evolving field of healthcare, education plays a pivotal role in ensuring optimal patient outcomes and professional competency. The landscape of medical education has witnessed a transformative shift, especially in the past decade, as digital learning methods have increasingly complemented—or in some cases, challenged—traditional pedagogical approaches. As we reflect on this transformation, it becomes crucial to examine how we can achieve a balance between traditional and digital learning methods in the training and continued development of medical professionals.

Medical field especially critical care demands precision, rapid decision-making, and up-to-date knowledge. The stakes are exceptionally high, and the allowed margin for error is minimal. From ventilator management to hemodynamic monitoring, every clinical decision hinges on both theoretical understanding and hands-on expertise. This dual necessity places an added responsibility on educational systems to deliver both depth and applicability of knowledge.

### Traditional Learning: The Foundation

Traditional learning in medicine—lectures, bedside teaching, grand rounds, textbooks, and peer discussions—has long served as the backbone of clinical education. These methods offer a structured approach to knowledge acquisition and emphasize face-to-face mentorship, real-time feedback, and the cultivation of professional identity.

·Tactile and Observational Learning: In critical care, the physical presence during patient rounds and procedures enhances the learner's understanding of nuances such as patient responses, procedural complications, and interdisciplinary team dynamics.

·Mentorship and Human Interaction: Bedside teaching provides invaluable opportunities for learners to interact with experienced clinicians, asking questions in real-time and observing clinical decision-making firsthand.

·Contextual Learning: The integration of patient context with theoretical knowledge solidifies learning in a way that is difficult to replicate virtually. Clinical intuition often stems from such immersive experiences.

However, traditional methods are not without limitations. They can be time-consuming, dependent on faculty availability. Furthermore, the COVID-19 pandemic exposed the fragility of relying solely on in-person learning formats, necessitating the rapid integration of digital solutions.

### The Rise of Digital Learning

Digital learning tools—ranging from e-learning modules and virtual simulations to mobile apps and online lectures—have revolutionized medical education. Their scalability, accessibility, and adaptability make them an essential complement to traditional methods.

·Flexibility and Accessibility: Digital platforms allow learners to access content anytime, anywhere. This is particularly advantageous for critical care providers who often work irregular hours.

·Simulation and Virtual Reality: High-fidelity simulations and VR platforms offer risk-free environments to practice critical procedures such as intubation, central line insertion, and code blue scenarios. These simulations help learners refine their technical and cognitive skills before facing real-life situations.

·Data-Driven Learning: Digital tools can track learner progress, assess competencies, and personalize educational experiences based on performance analytics. This targeted approach is especially valuable in the high-stakes realm of critical care.

·Continuing Medical Education (CME): Webinars, podcasts, and online courses make it easier for clinicians to keep up with evolving guidelines and emerging therapies in critical care, regardless of geographic location.

Yet, digital learning can feel impersonal, and not all learners are equally adept at self-directed education. Overreliance on digital tools may risk undermining interpersonal communication skills, critical thinking, and the invaluable experiential learning that comes from real patient interactions.

### Striking the Right Balance

The goal is not to choose one method over the other but to integrate both in a complementary fashion, creating a hybrid model tailored to the unique needs of critical care education.

·Blended Learning Models: Many institutions are adopting flipped classroom models, where learners review digital

materials independently and then participate in interactive, in-person sessions to apply their knowledge. This ensures theoretical concepts are internalized before being put into practice.

·Just-in-Time Training: Digital tools can deliver concise, high-yield information at the point of care—for example, reviewing a checklist on ventilator settings just before a patient is intubated. This fusion of digital convenience with clinical immediacy enhances retention and performance.

·Augmented Clinical Rounds: Integrating tablet-based patient data, imaging, and evidence summaries during bedside rounds can enrich traditional teaching moments, facilitating evidence-based discussions in real-time.

·Inter-professional Learning: Digital platforms can connect nurses, doctors, respiratory therapists, and pharmacists in collaborative training modules, fostering a team-based approach that mirrors real-world critical care dynamics.

### **Challenges and Considerations**

Balancing traditional and digital methods requires thoughtful implementation. Institutions must ensure that digital tools are not merely add-ons but are meaningfully integrated into the curriculum. Faculty development is also critical; educators need training in digital pedagogy to maximize the benefits of these platforms.

Equity is another concern. Not all learners may have equal access to devices or reliable internet, especially in resource-limited settings. Ensuring inclusivity is essential to prevent widening educational disparities.

Moreover, in a profession where human connection is paramount, we must be cautious not to let screens replace relationships. The empathy, confidence, and communication skills developed through face-to-face interactions remain irreplaceable.

### **Conclusion: The Synergy of Methods**

The future of critical care education lies in synergy. By harnessing the strengths of both traditional and digital learning methods, we can create a robust, adaptive, and learner-centric educational ecosystem. Traditional methods ground learners in clinical reality and foster mentorship, while digital tools expand access, personalize content, and enhance practical readiness.

As we move forward, the emphasis should not be on choosing between the past and the future but on building a bridge that connects the enduring wisdom of traditional teaching with the transformative potential of digital innovation. In the high-stakes world of critical care, where every second counts and every decision matters, this balanced approach is not just beneficial—it is essential.

# Hawthorne Effect For Error Prevention In Clinical Practice

## The Error Prevention Modules



**Dr. Anuj M Clerk**, MD, IDCCM, FNB, EDIC.

Critical Care Physician.

Head, Intensive Care Services, Sunshine Global Hospital, Surat.



Jointly Designed By **Dr. Anuj Clerk [Surat]** and **Dr. Ritesh Shah [Vadodara]**

“To Err is human” a theme coined by Institute of Medicine in USA in 1999, in its report on Human error in Medical practice<sup>1</sup>. Since this publication various publications kept highlighting the harm caused by Human errors while treating patients. An article in The BMJ in May 2016 quoted “Medical errors are the third common cause of death in USA after Ischemic Heart Disease and Cancer in 2016, based on a study conducted in Johns Hopkins School of Medicine, Baltimore<sup>2</sup>. A lot of ways and means to improve the system and train health care professionals to prevent these errors are being tried since then. In last decade little progress made as the prevalence of errors and the number of patients dying is rising year by year.<sup>3</sup> As the knowledge base is widened and technological advances add more and more machines to the health care, the complexities of medical [and surgical] practice is increasing. But we must not forget the finite ability of human brain to register and recall the stored information. In 1970s Malaria with ARDS patient would receive one antimalarial, Dextrose, ranitidine and oxygen, while in 2016 the same patient will have ventilator, dialysis, blood products, bedside ultrasounds, and even Extra corporeal Membrane oxygenator as well. Size of the clinician's brain remains same!!.

Hawthorne effect in Human psychology is termed for improvement in human behavior when someone is watching or observing. If Clinician's brain is sensitized enough about common errors in our day to day practice than his eyes keep looking for error prone circumstances in practice. What if all the healthcare workers are trained and all starts looking for same!!! This has potential to have snowball effect and by this way we can cultivate an error spotting culture which in turn will tame human behavior and culture of safety will become a “default behavior at work place”

All the medical and paramedical professionals receive training in colleges, by lectures, CMEs and symposia, but none, to the best of my knowledge taught what to do in health care to prevent errors. If none exist, let's design one.

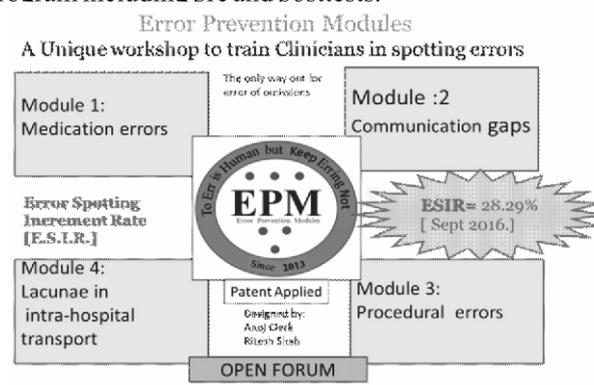
With this thought in mind we started analyzing common and recurrent errors in our practice. We conducted opinion poll on these errors where more than 150 intensive care practitioners replied. Most of them felt that these errors do exist but the frequency in their opinion varied. Then, to facilitate work up on these errors we started giving names. We deliberately choose hilarious names so it can reach talk of the daily rounds and to increase its awareness. These error-solution couplets when presented as lectures in early 2013 in various clinical fora, colleagues liked these innovative idea. Now the list of these couplets expanded and taken shape of full day workshop.

We named the workshop as “ Error Prevention Modules” and conducted as preconference program in various state and national

conferences like Gujarat Criticon, CIMS con, TACON to name a few. Its' one module on procedural errors was accommodated in ISCCM national conference at Bengaluru in 2015 as well. Prevention of Medication error was presented in ISCCM foundation day webinar on 8th October 2016 which was aired as Nationwide webinar called “ safety in ICU”.

Until we have objective assessment of increment in error spotting ability of the attendees, we will never improve upon the effectiveness of the program. So we introduced pre and posttest where clinicians spotted error from case vignettes given to them. This led to a new index, we call it “ESIR=Error spotting increment rate”. Current average ESIR of our attendees is 28.2 %. This means a clinician attending EPM workshop is 28 % more likely to spot 200 odd recurrent errors prevalent in our health care. This will definitely transcribe into safer health care if such module base training become an essential part of curricula for doctors and nurses. This will reduce the medicolegal claims and consequent harassments of health care professionals as EPM trained clinician will shape much safer healthcare system.

The next EPM workshop is planned in Vadodara. This workshop with Theme line “To err is human but to keep erring not.” has four Modules as shown in the diagram below. Its' a full day[ 8 am to 5 pm] program including pre and posttests.



**Contact: anujmclerk@hotmail.com, drriteshshah@yahoo.co.in**

References:

1. To Err is Human, Building a safer health system, A report from Institute of Medicine, 1999
2. Martin A Makary, Michael Daniel, Medical error—the third leading cause of death in the US. BMJ 2016;353:i2139
3. Christopher P. Landrigan, Gareth J. Parry et al, Temporal Trends in Rates of Patient Harm Resulting from Medical Care N Engl J Med 2010;363:2124-34.

# Green ICU

Dr. Ankur Bhavsar

As we are working hard in our critical care units to save life of patients, majority of us are not aware that ICU and its resource have major impact on environment and greenhouse effect. Healthcare's carbon emission and footprints are estimated to be as high as 5% globally. Health sector's negative impact on environment further contributes to health hazards which further leads to increased demand for healthcare facilities which produces more environmental hazards. (1).

So, let us see how ICU impacts the environment and what are the measures we can take to minimize it.

## What is the concept of GREEN ICU

### GREEN ICU-GREater ENvironmental sustainability in ICU. (2).

GREEN ICU concept is multidisciplinary initiative to reduce the environmental impact of intensive care units by focusing on energy consumption, waste generation and resource use. The goal is to minimize the ICU's planet centered footprint without compromising high quality patient care. Ultimate goal is to develop sustainable healthcare system to reduce the greenhouse emission. (3).

Some striking facts about the climate footprint of healthcare. (4). Global Healthcare- 5th largest contributor to global greenhouse emission (If we consider Global HealthCare as a nation)

- ◆ From 2010 to 2018-US HealthCare gas emission rose 6%. It is the highest among the industrialized nations.
- ◆ ICU beds generate almost 3 times the climate footprint of regular inpatient beds.
- ◆ Stay of a patient of septic shock in ICU per day has the same daily climate footprint as one way economy flight for one passenger to travel from New York city to Mexico City.
- ◆ Use of one albuterol inhaler has similar global warming effect to driving a passenger car up to 200 Km!!

### Impact of climate change on health. (3).

- ◆ Increase incidence of heat related illnesses
  - o Heat stroke, collapse, acute deterioration of chronic illnesses (Cardiac, respiratory and kidney diseases)
- ◆ Increase in injuries related to natural disasters
  - o Floods, Hurricanes, fires.
- ◆ Increase in respiratory diseases

- ◆ Increase in vector borne diseases
- ◆ Change in microbiological pattern
  - o Fungi become more thermotolerant-Increases their virulence
  - o Increase in fungal outbreak
  - o Affect the bacterial proliferation, dissemination and survival.
- ◆ Change in mental health

### What are the major contributors to the greenhouse effect in ICU? (5)

As per one systemic review, estimated carbon emissions from critical care ranges between 88 Kg CO<sub>2</sub>e/patient/day to 178 Kg CO<sub>2</sub>e/patient day. Two major contributor in critical care originate from electricity and gas use as well as consumables. Waste production varies from 1.1 13.7 Kg/patient/day.

### Contributors of Greenhouse effect in ICU. (4).

- ◆ Energy and electricity use
  - o HVAC system (Heating, Ventilation ,Air conditioning)
  - o ICU equipment
  - o Patient monitor
  - o Computers
- ◆ Equipment, procurement, plastics and waste
  - o Procedure kits
  - o Pharmaceuticals
  - o Tubings
  - o Linen
  - o Bedpans
  - o PPE
- ◆ Water consumption
  - o Dialysis
  - o Surgical hand wash
  - o Steam sterilization

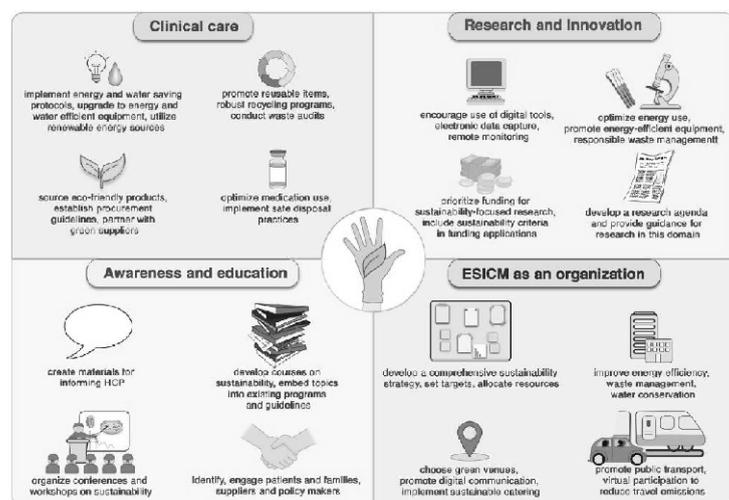
Greenhouse effect is generated by harvesting raw materials, manufacturing, transportation and waste disposal.

More disposable items are being used, now a days to bring down the re-use and infections. Like, BP cuffs, Pulse oximeters, bronchoscopes and laryngoscopes, generating huge medical wastes. Reusable items still may have environmental effect as sterilization will require energy. Waste disposals

require its disposal which may contribute to pollution of local waterways.

- ◆ Pharmaceuticals
  - Inhaler
- ◆ MDI contain Hydrofluorocarbon propellant that traps the heat in the atmosphere more than 1000-fold stronger than CO<sub>2</sub>.
- ◆ Inhalers are often wasted, left unused and garbage, which intensifies the problem.
  - Use of inhaled anesthetic agents like Desfluran and Nitrous Oxide

### How can we minimize the carbon footprint from Intensive care units? (3)



### Less is more approach. (6).

- ◆ Limit low value care
  - Unnecessary screening
  - Unnecessary diagnostics and monitoring tests
  - Overdiagnosis
  - Overtreatment
- ◆ Move away from protocolized care
  - Routine placement of CVC for the management of sepsis
- ◆ Less aggressive approach to
  - Use of ventilatory support
  - Resuscitation fluids
  - RBC transfusions
  - Renal replacement therapy
  - Blood pressure support
  - Nutrition

- ◆ Palliative care and end of life support concept
  - Preventing futile and unnecessary ICU admission

### Switching from IV formulation to oral formulation. (7)

#### Like Paracetamol 1 GM iv to Oral formulation

- ◆ Life cycle greenhouse emission of 1 GM IV PCM 628 GM CO<sub>2</sub>e (Glass bottle)
- ◆ Life cycle greenhouse emission of 1 GM oral PCM 38 GM CO<sub>2</sub>e (Blister packet)

### Conclusion

The concept of Green ICU emphasizes the urgent need for environmental sustainability in ICU, recognizing that healthcare is a significant contributor to global greenhouse emissions. By adopting multidisciplinary strategies such as reducing energy consumption, minimizing waste and optimizing resource use, ICU can lower their environmental footprint without compromising patient care. The goal is to create sustainable healthcare systems that not only protect patient health, but also safeguard planet for future generations. Implementing these changes requires awareness, education and collaboration across all levels of healthcare.

### References:

1. Masud et al Critical Care (2024) 28:154- Past, present, and future of sustainable intensive care: narrative review and a large hospital system experience.
2. Irene Salinas Gabina-Medicina Intensiva 48 (2024) 231-234)-GREEN ICU-Responsible and sustainable ICU.
3. Jan J. De Waele -Intensive Care Medicine(2024) 50:1729-1739-Environmental sustainability in intensive care: the path forward. An ESICM Green Paper
4. Alexander S Rabin-CHEST Critical Care 2024; 2(1):100037-Reducing the climate impact of critical care
5. Melany Gaetani-Intensive Care Med (2024) 50:731–745- The carbon footprint of critical care: a systematic review
6. Katy J.L Bell-Intensive Care Med (2024) 50:746–748- Less is more for greener intensive care
7. Nicole Hunfeld-Intensive Care Med(2023) 49:65-74-The paracetamol challenge in intensive care going green with paracetamol.

# Hepatitis A In India: Changing Epidemiology, Clinical Challenges And The Way Forward.

Dr. Ronak Javia, DrNB Critical Care Medicine Resident, Apollo Hospitals, Ahmedabad

**Introduction:** Hepatitis A, once known as “epidemic jaundice,” has shadowed human history for centuries, has an alarming annual incidence exceeding 1.5 million cases worldwide, HAV is responsible for 0.5% of deaths attributed to viral hepatitis on a global scale and prevalence ranges 2.1% to 52.5% in India, but underestimating the true extent due to unreported cases. India continues to have a high age-standardized incidence rate (ASIR >2,000/100,000), reflecting a significant clinical burden. Historically viewed as a mild or asymptomatic infection in children, the epidemiology of HAV is undergoing a transformative shift both globally and within our country. This shift is evident in the rising burden of Acute Liver Failure (ALF) in children and young adults, previously an uncommon manifestation of HAV infection. Moreover, the diminishing seroprevalence of IgG antibodies in the paediatric population has led to increased susceptibility among adolescents and adults, resulting in severe clinical manifestations. This is characterized by increased symptomatology in young children, higher mortality rates among adolescents, and rising rates of infection among adults.

**Changing epidemiology:** Over the last two decades, improved sanitation, better socio-economic conditions, and increased access to safe drinking water have delayed natural exposure, leaving many adolescents and adults immunologically naïve, leading to multiple outbreaks, sometimes causing severe outcomes like acute liver failure, as seen in Kota, Rajasthan. Age-stratified seroprevalence data from major cities (Pune, Chennai, Kolkata, Ludhiana) show only 44.9% of children under five are seropositive, while 44.5% under 15 remain susceptible. In India, HAV seropositivity has declined significantly, from 85% to 30% in 6–10-year-olds and from 92% to 45% in 11–15-year-olds. Seroprevalence among under-fives ranges from 4.5–10.3% in some areas to 60–80% in others. This has led to a 3–5-fold increased risk of acute hepatitis A. Recent multicentric studies identify HAV as a leading cause of severe acute liver injury and acute liver failure, prompting calls for vaccination in the general population, food handlers, and patients with chronic liver disease. HAV prevalence correlates strongly with children's education and socio-economic status, highlighting the need for renewed vigilance.

**Clinical challenges:** The virus is transmitted through oral inoculation of contaminated feces through person-to-person contact or the ingestion of contaminated water and/or food. It has an incubation period that can last from 15 to 50 days. Only 30% of children under 6 years of age present with nonspecific symptoms with no jaundice and 70% of adults present with nonspecific symptoms, as well as with specific symptoms, such as jaundice. The usual clinical course of infection begins with a pre-jaundice phase lasting 5-7 days and is characterized by typical symptoms, such as general malaise, anorexia, nausea, vomiting, fever, abdominal pain, and headache and sometimes with atypical symptoms, such as chills, myalgias, arthralgias, cough, diarrhea, constipation, pruritus, and urticaria. The jaundice phase then appears and lasts 4-30 days and is characterized by choluria, acholia, and jaundice. The disease course is spontaneous remission in the large majority of cases, but 10-20% of symptomatic patients have an atypical disease course that manifests as relapsing hepatitis, persistent cholestasis, the development of autoimmune hepatitis, or fulminant liver failure.

**Laboratory testing:** Diagnosis of Hepatitis A relies on anti-HAV IgM antibody testing, which is the standard method for confirming acute infection. HAV RNA PCR provides direct evidence of viral replication and is useful in early detection and outbreak investigations, showing research and epidemiological utility.

Serial laboratory tests are used to follow the course of a patient's liver failure and to monitor for complications.

**Management of Hepatitis A induced Acute Liver Failure:** Even though less than 0.5% of the adults develop acute liver failure, the incidence is on rise due to multiple co-morbidities and pre-existing liver dysfunction with frequent outbreaks of the infection. Most patients are now recognized and treated early, and should be managed in centres with liver transplantation capabilities, given the high severity and risk. Only about 40% of patients recover spontaneously; the remainder require transplantation or succumb to the illness. Early transfer to transplant centres is critical, even for those not yet gravely ill, due to rapid deterioration risks such as severe coagulopathy and increasing intracranial pressure.

Acute liver failure (ALF) is defined as the rapid onset of severe liver injury with altered mental status (encephalopathy) and an INR  $\geq 1.5$ , without prior liver disease or cirrhosis, usually developing within 26 weeks of illness onset.

Serial laboratory monitoring tracks disease progression and complications; specifically, ammonia levels above 150 mcg/dL portend increased risk for cerebral herniation. Lowering aminotransferase levels may signal recovery or, paradoxically, massive hepatocyte loss. Improvement correlates with falling bilirubin and INR, while worsening failure shows rising values. Plasma transfusion should be reserved for life-threatening bleeding.

The main goals in critical care are to stabilize mean arterial pressure above 75 mmHg and ensure adequate cerebral perfusion, using norepinephrine or vasopressin as vasopressors. N-acetylcysteine is indicated for all ALF forms, not just acetaminophen toxicity, improving transplant-free survival and ideally started early and stopped after five days. There is a high risk of infection; aggressive empirical antibacterial/fungal therapy is justified in high-risk settings. Early enteral nutrition is preferred, with at least 60 g/day protein.

Measures to prevent intracranial pressure elevation—such as minimal stimulation, careful fluid management, and selective use of hypertonic saline—are essential. In severe cases, barbiturate or propofol coma, and, rarely, hypothermia, are considered, though the latter carries infection and bleeding risks. Advanced therapies like MARS (molecular adsorbent recirculating system) or high-volume plasma exchange may be used in select cases or as a bridge to transplant, but transplantation remains the definitive therapy for most.

Prognosis is worse at extremes of age or higher grades of encephalopathy, with the best spontaneous recovery in Grades

I-II (65-70%), dropping sharply in Grades III-IV.

**Vaccination:** Vaccination should be strengthened for young children, food handlers, the general population, and high-risk groups (chronic liver disease, immunocompromised, IV drug users, MSM, high parenteral risk, travelers to hyper-endemic areas, and close contacts). Currently, the HAV vaccine is not a part of the national immunisation schedule, however, 2 doses of inactivated vaccine at 12 and 18 months or a single dose of live attenuated vaccine at 12 months is recommended by the Indian Academy of Pediatrics (IAP) Advisory Committee on Vaccines and Immunisation Practices. Recommendations for Hepatitis A vaccination in CLD patients exist in the US, UK, and Sri Lanka, but no such recommendations are currently present in India.

**Vaccine Formulations in India:** Two doses of inactivated vaccines like – Havrix, Avaxim, Hapibev and single dose of live attenuated vaccine like Biovac A.

**Public health implications and the way forward:** The changing epidemiology of Hepatitis A in India, with declining childhood immunity and increasing severity in adolescents and adults, has emerged as a significant public health concern. The evolving pattern of HAV infection, now frequently presenting with severe outcomes such as acute liver failure and need for transplant, highlights the inadequacy of relying on natural immunity. Strengthening surveillance, incorporating HAV vaccine into the national immunization schedule, ensuring affordability and access, and raising public awareness on hygiene and safe water are essential. With no definitive antiviral therapy -Targeted vaccination along with policy support for patients with chronic liver disease —are vital to reduce morbidity and mortality associated with Hepatitis A in India.

# ID as a Collaborative Specialty

Dr. Pratik S. Savaj - Infectious Disease Specialist, Surat

## Introduction

In the era of super-specialization, every doctor masters one system — the heart, lungs, brain, or kidneys. But infections cross every border. A single ICU patient may involve a radiologist to locate a source, a microbiologist to identify the organism, a surgeon for source control, and an intensivist to stabilize the patient. At the center stands the Infectious Disease (ID) physician — connecting these dots, interpreting data, balancing opinions, and guiding therapy with scientific calm. The ID specialist is not just a consultant; he or she is the medical diplomat who aligns science with teamwork.

## ID as a Collaborative Specialty :

Infectious diseases thrive on collaboration. The specialty's strength lies in its ability to integrate inputs from lab, imaging, surgery, and clinical medicine. Research has consistently shown that early ID involvement can improve outcomes.

In patients with *Staphylococcus aureus* bacteremia, studies reveal that simple telephonic ID advice led to lower mortality, fewer relapses, and shorter hospital stays compared to cases without ID input. When such impact can occur over a phone call, imagine the value of full bedside collaboration.

## From Consultant to Core Clinician

Modern hospitals increasingly recognize Infectious Diseases (ID) as a core specialty rather than a support service. ID specialists don't just read cultures and prescribe antibiotics. They are trained to differentiate true infection from colonization, helping prevent unnecessary or prolonged treatments that add cost and toxicity. Their expertise lies in integrating the clinical picture, microbiology, and radiology to reach a clear diagnosis.

Research across multiple studies has proven that early ID involvement significantly improves outcomes in infections such as *Staphylococcus aureus* bacteremia,

candidemia, invasive fungal infections, resistant gram-negative infections in ICU, osteomyelitis, bone and joint infections, and infective endocarditis. Similar benefits are seen in cases of prosthetic and device-related infections, post-transplant fevers, and febrile neutropenia.

Beyond clinical management, ID physicians also strengthen antimicrobial stewardship and infection control programs, ensuring rational antibiotic use and preventing resistance.

## Examples from Practice

The COVID-19 crisis reminded us that when critical care specialists, ID physicians, microbiologists, and pulmonologists work together as one team, outcomes can dramatically improve. That spirit of collaboration saved countless lives during the pandemic. As we move into the post-COVID era, the same multidisciplinary approach will continue to be invaluable — not only for emerging infections, but for the complex bacterial, fungal, and resistant infections we face every day in our ICUs.

## The Way Forward

Antimicrobial resistance is now a greater global threat than ever before. The solution is not just stronger antibiotics, but stronger teamwork.

In many situations, a surgeon's knife or a timely pigtail drainage by an interventional radiologist can achieve what antibiotics alone cannot. Early source control, guided by ID and critical care teams, often makes the real difference between recovery and relapse.

Equally important are regular infection control programs and staff training led by ID specialists and microbiologists. These quiet, behind-the-scenes efforts prevent countless infections, protect vulnerable patients, and save more lives than most realize.

**“Alone we can do so little; together we can do so much.” – Helen Keller**

# Role of Plasma Exchange & CRRT in Critically ill Liver Patients

Dr Uday Sanglodkar,

Principal Consultant Hepatologist and Liver Transplant Physician, Nanavati Max super speciality hospital, Mumbai

Liver failure, whether acute, acute-on-chronic, or post-transplant, is frequently associated with a complex interplay of metabolic, hemodynamic, and immunologic disturbances. Critically ill liver patients often present with multi-organ dysfunction, coagulopathy, and profound systemic inflammatory responses, necessitating advanced organ support strategies. Among these, plasma exchange (PLEX) and continuous renal replacement therapy (CRRT) have emerged as vital extracorporeal therapies aimed at stabilizing patients while the native liver regenerates or until transplantation can be undertaken.

## Plasma Exchange

Plasma exchange is a therapeutic procedure involving the removal and replacement of a patient's plasma with donor plasma or albumin-based solutions. The rationale lies in the elimination of circulating toxins, inflammatory mediators, autoantibodies, and ammonia that contribute to hepatic encephalopathy and systemic inflammation. In acute liver failure (ALF), PLEX facilitates temporary hepatic support by reducing bilirubin, cytokines, and endotoxins while replenishing deficient coagulation factors.

High-volume plasma exchange, in particular, demonstrated survival benefit in the landmark study by Larsen et al., showing improved transplant-free survival in non-transplanted ALF patients through attenuation of systemic inflammatory response and improvement in hemodynamic stability. The European Association for the Study of the Liver (EASL) guidelines endorse PLEX as a potential bridging therapy to liver transplantation, especially in fulminant hepatic failure. In acute-on-chronic liver failure (ACLF), it may serve as adjunctive therapy to modulate systemic inflammation and improve organ perfusion, though evidence remains evolving.

## Continuous Renal Replacement Therapy

Renal dysfunction is common in advanced liver disease, resulting from hypoperfusion, hepatorenal syndrome, or multi-organ failure. CRRT plays a pivotal role in managing volume overload, electrolyte abnormalities, and metabolic acidosis while maintaining hemodynamic stability in critically ill patients.

Compared to intermittent hemodialysis, CRRT ensures continuous and gentle solute removal, preventing abrupt shifts in intracranial pressure, a critical consideration in ALF with cerebral edema risk.

CRRT also contributes to the removal of water-soluble toxins such as ammonia and lactate, thereby indirectly supporting hepatic encephalopathy control. Additionally, it aids in precise fluid balance in patients on vasopressors and with ongoing capillary leak syndromes. When used in combination with PLEX, CRRT can help optimize metabolic control and facilitate efficient detoxification by maintaining stable hemodynamics during plasma removal processes.

## Integration of Extracorporeal Therapies

Optimal management often involves integration of PLEX and CRRT within a multidisciplinary critical care framework. Sequential or combined use may provide superior metabolic and immunologic homeostasis, especially in patients with ACLF or post-transplant graft dysfunction. Novel hybrid systems such as the molecular adsorbent recirculating system (MARS) and fractionated plasma separation and adsorption (Prometheus) further build upon these principles, offering enhanced clearance of both water- and protein-bound toxins.

## Conclusion

In critically ill liver patients, plasma exchange and CRRT serve as essential components of supportive therapy. While neither directly replaces hepatic synthetic and metabolic function, both modalities bridge patients through reversible phases or until transplantation. Early initiation, individualized protocols, and close coordination between hepatology, nephrology, and intensive care teams are key to optimizing outcomes. Continued research into timing, modality integration, and prognostic indicators will refine their roles in advanced liver failure management.

## First full time Cardiac Electrophysiologist in South Gujarat



### Dr. Nilesh Parshottam

MD Medicine, DM Cardiology (Sree Chitra), FSCAI  
Post DM Fellow in Cardiac Pacing & Electrophysiology (Sree Chitra)

Sr. Consultant Interventional Cardiologist  
& Electrophysiologist

☎ 080899 47637, 088667 09223

HOD, Cardiology Dpt., BAPS Hospital  
Director, Cardiology Dpt., SIMS Hospital

### Visiting Cardiologist :

BAPS, SIMS, Kiran, Venus, Mahavir,  
Sunshine Global, Tristar, Shalby,  
PP Maniya Hospital



401, Rhythm House, Near Venus Hospital,  
Lal Darwaja, Surat. Time : 11am to 1pm  
Appointment : 0261-2418184, 096383 88302/390



302, 3rd Floor, Solaris Royce, Opp. Old RTO,  
Athwa-Majura Road, Surat. Time : 6 pm to 8pm  
Appointment : 95 12 71 96 96 / 95 12 72 96 96

### Facilities Available

- TMT, Holter - Echocardiography
- Coronary angiography and angioplasty
- Diagnosis & radiofrequency ablations for SVT / VT (2D & 3D)
- Evaluation and management of syncope & sudden cardiac death
- Device therapy for bradycardia (Single & dual chamber pacemakers)
- Device therapy for tachycardia (Implantable cardiac defibrillator-AICD)
- Device therapy for heart failure (Cardiac resynchronisation therapy - CRT)



## THE KIDNEY CLINIC

### DR. ANIL K. PATEL

M.D. DNB(Nephrology)

કિડની રોગના નિષ્ણાંત



૧૧ વર્ષનો બહોળો અનુભવ

### ઉપલબ્ધ સારવાર

- ડાયાલિસિસ
- કિડની ટ્રાન્સપ્લાન્ટ
- કિડનીની બિમારીની તમામ સારવાર

### સચોટ નિદાન સંપૂર્ણ સારવાર

#### અડાજણ કિલનીક

૬૧૭, ૬૧૮, વીર-વિજય બિઝનેસ હબ,  
શૈલ પેટ્રોલપંપની સામે,  
એલ.પી.સવાળી રોડ, અડાજણ, સુરત.  
સમય : સવારે ૧૨ થી ૨ (સોમ થી શનિ)

Mo. : 99 24 997959

#### રીંગરોડ કિલનીક

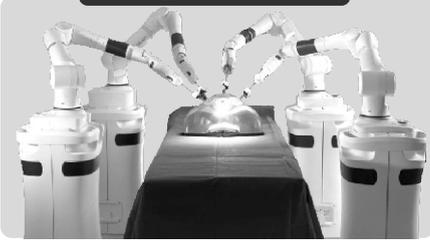
૫૦૨, ૫૦૩, એકોન ટ્રેડ સેન્ટર,  
સિડસ હોસ્પિટલની બાજુમાં,  
શૈલ પેટ્રોલ પંપ પાસે, સિવિલ ચારરસ્તા, સુરત.  
સમય : સાંજે ૪ થી ૭ (સોમ થી શુક્ર)

Mo. : 99 09 997959



# સર્જરીમાં જોઈએ પરફેક્શન!

## પરફેક્શન માટે



ગુજરાત હોસ્પિટલમાં  
ઉપલબ્ધ છે  
કેમ્પ્રિજ મેડિકલ, UK ના  
રોબોટ દ્વારા સર્જરી.

## ઉપલબ્ધ રોબોટિક સર્જરી

પેન્ક્રીયાઝ

કેન્સર

બેરિયાટ્રિક સર્જરી

પિત્તાશયમાં  
પથરી

ઇન્ડોપ્લિકેશન  
(છાતીમાં બળતરા)

હર્નિયા  
(સારણગાંઠ)



## ડો. નરેશ ગાબાણી

MS (Gold Medalist),  
M.Ch.(Pancreas, Liver and  
Gastrointestinal Surgery),  
FICRS(Fellowship in Robotic Surgery)  
Pancreas & Robotic Surgeon

"Pancreas Is My Passion"



## ગુજરાત હોસ્પિટલ

ગેસ્ટ્રો અને વાસ્ક્યુલર સેન્ટર

અડાજણ,  
સુરત.



98322 22233  
63530 90080

## NEXT GENERATION SEQUENCING (NGS):

BRCA1 & BRCA2 somatic mutation  
testing Whole genome sequencing  
Comprehensive Leukemia panel-57  
genes Comprehensive tumour panel-  
270 Genes

## RT-PCR Panels (Oncology)

Lung carcinoma panel : ALK, ROS1  
and EGFR Mutation Lung  
carcinoma panel plus : ALK,ROS1,  
EGFR AND PDL1 Brain Tumor Panel :  
IDH mutation and 1p19 co-deletion

## Molecular Cytogenetics

Chromosomal  
Microarray(CMA)-315K  
Chromosomal  
Microarray(CMA)-750K

**Dr. Suresh Prajapati**  
Consulting Geneticist

## HEMATOLOGICAL AND SOLID TUMOR FISH

**AML Panel**  
(BCR/ABL1/PML/RARA / t(8;21) / INV 16/INV 3 / DEL5 / DEL7/MLL)  
**CLL Panel**  
(Del 13q/Del 17p/Del 11q/ Trisomy 12 and IGH break apart)  
**Multiple Myeloma Panel**  
(t(4;14) / t(14;16) / t(11;14) / Del 13q/Del 17p)  
**MDS Panel**  
(Inv3/Del 5q/Del 7q/Trisomy 8/ MLL/Del 13q/Del 17p/Del 20q)  
**ALL Panel**  
(t(12;21)/BCR/ABL1/ MLL/E2A)  
**D-B cell lymphoma**  
(BCL2/BCL6/c MYC)  
BMT Sex Mismatch (X/Y Chromosome)  
HER2- neu Amplification  
1p19q co-deletion  
ALK and ROS1 Rearrangement  
PML/RARA translocation [t(15;17)]  
BCR/ABL1 Translocation [t(9;22)]



a genomics division of  
SORUS LABORATORIES

## KARYOTYPING TESTS

- Bone marrow Karyotyping
- Peripheral blood Karyotyping (Single and couple)
- Prenatal Karyotyping (Amniotic fluid / CVS / POC/cord blood)
- Stress cytogenetics (Fanconi anemia)

## PRENATAL AND POSTNATAL FISH

- Aneuploidy screening for chromosome 13,
- 18, 21, X and Y (Amniotic fluid/ CVS/ POC/ cord blood)
- Microdeletions by FISH (Prader-Willi syndrome/Di-George syndrome)

## RT-PCR ONCOLOGY

- BCR/ABL1 Quantification(Major)
- PML/RARA Quantification
- JAK2 Mutation
- EGFR Mutation
- BRAF mutation
- KRAS/NRAS mutation

**SORUS**  
LABORATORIES

SORUS LABORATORIES | 0261-360-3400 | www.soruslabs.com

Plot No. 4, Sorus Square, Besides Vanita Vishram Ground Gate-2,  
Opp. Mahavir Hospital, Athwagate, Surat.

www.soruslabs.com

Quality is When The Customer Returns & The Product Does Not

PRASHANT

☎ 9426140641 / 6352516363

chairworld1@gmail.com

**CHAIR WORLD**

*Manufacture off All Type of Office Chairs*

Dealers For  
Nilkamal & Wipro Brand Chairs



**8, Radha Krishna Society, Navjeevan Circle, Dhanush Ceramic wali gali,  
Before Shiv Shakti Laminates, Udhna-Magdalla Road, Surat-02.**



- ◆ Advanced 1.5T MRI
- ◆ 128 Slice CT Scan (Lowest Radiation Dose)
- ◆ High Resolution Ultrasound/3D-4D USG
- ◆ Colour Doppler
- ◆ Digital X-Ray / Scanogram
- ◆ CT/USG guided Intervention



**Dr. Ashwin Patel**

MD (Consultant Radiologist)  
MSK and CardioThoracic fellow,  
Jankharia and Nanavati Hospital  
Neuro and Oncoimaging Fellow, USA.



**Dr. Mitesh Desai**

MD (Consultant Radiologist)



**Dr. Aashik Sikaria**

MD (Consultant Radiologist)  
M.D. Radiodiagnosis, FMF  
Fellowship in Fetal Medicine(Mumbai)



Ground floor, Rexona, Lal Darwaja Station Rd, opp.  
Ayush Doctor House, Lal Darwaja, Surat, Gujarat 395003



900 900 7568,  
900 900 2245



# Car Rental Services

**Choose Your Ride, Create Your Path**

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

## SERVICE WE OFFER :



- ▶ Corporate Car Rental
- ▶ Long Term Car Rental
- ▶ Luxury Coach & Buses
- ▶ Airport Transfers
- ▶ Employee Transportation
- ▶ Outstation Car Rental

**RENT NOW**



Call us  
+91 9726400024

Mr Mehul Shah  
91 9998900024



[bookings.jeevanrath@gmail.com](mailto:bookings.jeevanrath@gmail.com)  
[mehul24000@gmail.com](mailto:mehul24000@gmail.com)



A-106-Triumph Plaza, Near Palanpur Fire Station Canal Road, Gaurav Path Road, Pal Gam, Surat, Gujarat 395009



**SCID-AI**

**SURAT CLINIC OF INFECTIOUS DISEASE  
& ADULT IMMUNIZATION**

# **Surat Clinic of Infectious Diseases & Adult Immunization**

## **Our Expert Team**

### **Dr. Pratik Savaj**

Infectious Diseases Specialist  
FID & FNB (Hinduja Hospital, Mumbai)

### **Dr. Ishan Sheth**

Infectious Diseases Specialist  
Certified in Tropical Medicine  
(CMC Vellore)

### **Dr. Parishree Kapadia**

Infectious Diseases &  
Critical Care Specialist  
MD, DNB (Critical Care), FID

## **Specialization & Expertise**

COVID-19 Pneumonia | TB | HIV | Fungal & Viral Infections Critically |  
Infections | Bone & Joint Infections Post Transplant & ICU Infections |  
Antibiotic Consultation

## **Our New ICU-Equipped Hospital**

At Solaris Pulse, Near Vijayalaxmi Hall, Vesu

**COMING  
SOON**

**OPD Hours: 4:00 PM – 6:00 PM (Monday–Saturday)**

### **Admin:**

+91 76000 84241  
+91 91572 77253

### **Clinic:**

+91 72839 34807  
+91 94287 93759

**Email:** pratik.savaj2@gmail.com

**Attachment with all major hospitals of South Gujarat**



**NABL Accredited LAB**



An I.S.O. 9001-2000 Certified organisation!  
Helping Clinicians Through Perfect Diagnostic Decisions



Pioneer in introducing the latest technology  
**SOUTH GUJARAT LAB TO OFFER MOLECULAR  
INFECTIOUS DISEASE WORK UP**

### Radiology

- Digital X-Rays
- 3D, Real Time 4D Color Sonography
- 1st Trimester Screening report
- X-Ray-Sono Mammography
- Peripheral Arterial & Venous Doppler
- Sono guided interventional procedures
- Specialized radio procedures/  
& Contrast studies

### Pathology

- Clinical Pathology / Biochemistry
- Clinical Endocrinology
- Histopathology & Cytopathology
- Cardiac & Health Check up profiles
- 5th Gen Automated Semen analyser
- Tumor Markers
- Infectious Diseases Panels /  
Molecular (PCR) Markers

### OUR SERVICES

Toll Free : 90992 22226  
For Home Visit  
& Portable X-ray  
Call on : 9909950939

## Automated Culture & Susceptibility Testing (MIC)

Aerobic Culture & Susceptibility - Urine / Pus / Sputum / Tissue / Body Fluids / Vaginal Discharge, etc

### BioFire

- Meningitis Panel
- Gastrointestinal Panel
- Pneumonia Plus Panel
- Respiratory Panel
- Joint Infection Panel
- Blood Culture Identification Panel (BCID)
- Tropical Fever Panel

### Point-of-care tests

- Aspergillus galactomannan
- Streptococcal urinary antigen
- Legionella urinary antigen
- Group A Streptococcal antigen
- Cryptococcal antigen
- Histoplasma urinary antigen

### Environmental Microbiology Surveillance

(OT, Water, ICU, CSSD, Biological Indicator, etc).



### GeneXpert

- MTB-Rif Ultra
- MTB-XDR
- Carba-R
- HPV Combo
- Flu Panel -  
(SARS COV2, Influenza A, Influenza B & RSV)
- HIV/ HBV/HCV Viral Load

### In-House PCR (Less Turn Around Time)

- Tropical fever panel  
(Plasmodium, Dengue, Chikungunya, Salmonella,  
West Nile Fever, Leptospirosis, Rickettsia)
- Dengue
- Chikungunya
- Dengue-Chikungunya combo
- Zika Virus
- CMV
- HLA B-27
- SARS COV2
- Childhood fever with rash panel

### Our Centers

Bhatar | Vesu | Althan | Citylight | Piplod | Adajan-Rander

HO: 2nd Floor, Sheetal Shopping Square, OLD LB Cinema, Bhatar Rd, Surat, Gujarat



## Dr. Nikunj K. Vithalani

M.B.B.S., M.S.(General Surgery),  
DNB (Surgical Oncology), FMAS,  
Consultant Oncosurgeon

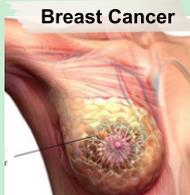
📞 **+91 98792 04250**

Consultant Onco-Surgeon

at Basil ONCO CARE Research Institute Pvt. Ltd.  
(Laldarwaja, Surat)

Consultant Onco-Surgeon & Associate Professor

at Bharat Cancer Institute and Research Institute



Breast Cancer



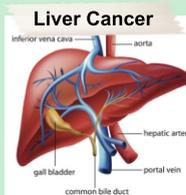
Oral Cancer



Colon Cancer



Lung Cancer



Liver Cancer



Stomach Cancer

### Specialist

- ◆ Oral, Larynx and Head & Neck Cancers
- ◆ Oesophagus, Stomach,
- ◆ Colorectal Cancers
- ◆ Hepatopancreaticobiliary
- ◆ Kidney, Urinary Bladder, Prostate Cancers
- ◆ Breast Cancer and Breast Reconstruction



SCAN THIS QR CODE  
to access all my footprints,  
Hospital and  
Social Media addresses.

For Appointment : **+91 9879244250**  
Time : 3.30 pm to 6.30 pm

 **3rd Floor, Rhythm House,  
Beside Venus Hospital, Laldarwaja, Surat**



A Comprehensive Cancer Centre

**basil**<sup>™</sup>  
ONCO CARE &  
RESEARCH INSTITUTE PVT. LTD.

Believe in the best



**VEDAM**  
**GASTRO HOSPITAL**  
Liver | Pancreas | Stone | Endoscopy | Surgery

**Advanced**

# Gastro & Liver Care

Expertise, technology, and empathy in every consultation

## Medical Gastroenterology



**Dr. Pintu Bhakhar**

DNB (Medicine)  
DNB (Gastroenterology)



**Dr. Pravin Borasadiya**

MD (Medicine)  
DNB (Gastroenterology)



**Dr. Pallav Parikh**

MD (Medicine) Gold Medalist  
DNB (Gastroenterology)

## Surgical Gastroenterology



**Dr. Ronak Malani**

M.S. (General Surgery),  
DNB (Surgical Gastroenterology)



**Dr. Vedant Wankhede**

MBBS, MS, Fellowship in  
surgical gastroenterology, Fellowship  
in Hepatobiliary pancreatic surgery



**Dr. Meet Desai**

MS, DrNB (Surgical  
Gastroenterology,  
Medanta-Gurugram)

**Lal Darwaja Branch**



**For appointment: 92656 22212**

Pulse House, Near Venus Hospital,  
Lal Darwaja-Katargam Road, Surat.

**Zenon Branch**



**For appointment: 63557 08003**

407, Zenon, Opposite Unique Hospital,  
Ring Road to Socio Circle Road, Surat.

**Sarthana Branch**



**For appointment: 95126 22212**

Times Shoppers, 206-209, Beside Amirus Hotel,  
Sarthana Jakat Naka, Nana Varachha, Surat.



**The Cell**  
Blood & Cancer Centre

# A Trusted Centre for Advanced **Hematology & Bone Marrow Transplant**

Care in Surat

- **Bone Marrow Transplant**  
Allogeneic, Autologous,  
Haploidentical & MUD Transplant
- **Managing Blood Cancers**  
Leukemia, Lymphoma,  
Multiple Myeloma, MDS & MPNs
- **Managing Hemoglobinopathies**  
Sickle Cell Anemia & Thalassemia
- **Managing Benign Blood Disorders**  
Complicated Anemia, Aplastic Anemia,  
Inherited Bone Marrow Failure Syndrome,  
Thrombocytopenia, Hemophilia & Other  
Rare Bleeding Disorders

**DR. AMEE PATEL**

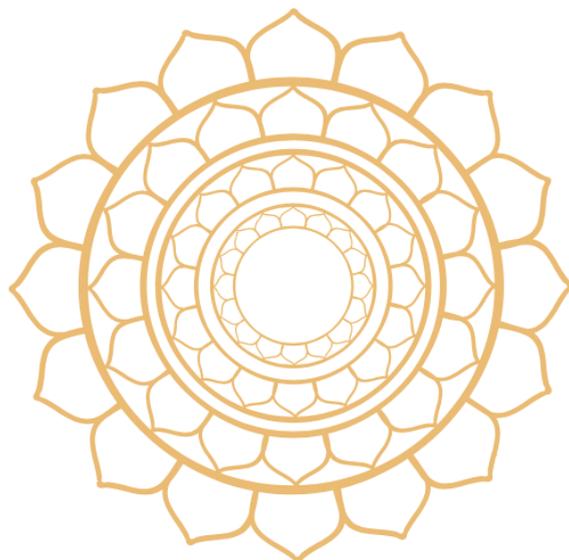
(MD, DrNB CLINICAL HEMATOLOGY)

**Hematologist, Hemato-Oncologist &  
Bone Marrow Transplant Physician**

 For Appointment Call 92653 02343

 501-502, 5th Floor, Sundram Space, Ring Rd,  
Near Sub Jail, Sagrampura, Surat- 395002.



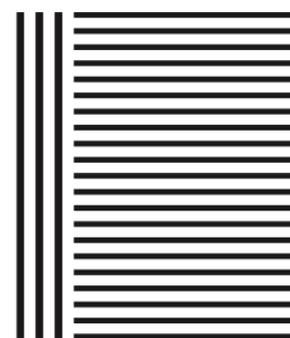


# VASUPUJYA

GROUP



**RIO EMPIRE**



CASA  
RIVERA

---

VASUPUJYA  
**EMPIRE 11**

THE PREMIUM COMMERCIAL SPACES

THE CLINIC

(Solaris Kode)

Intervention Radiology  
By Dr. Jenny Gandhi  
Endovascular Surgery: Neuro & Peripheral

# The Best In Health Care

ઉપલબ્ધ સારવાર



ન્યુરો  
ઇન્ટરવેન્શન



પેરિફેરલ વાસ્ક્યુલર  
ઇન્ટરવેન્શન



**DR. JENNY GANDHI**

ઇન્ટરવેન્શનલ રેડિયોલોજી  
ના નિષ્ણાત

For Consultation:

**+91 90033 03373**

7th floor, Solaris Kode, Khatu Shyam Temple, 702, VIP Rd, Vesu, Surat,  
Gujarat 395007



**Parikh Nursing Home**



**Keval Krupa Hospital**

# Power Bill Cut To At Least **50%** With Tech Sun Bio Solar

## Rooftop Solar -

Best For Hospitals With  
₹5-6 Lakhs Monthly Electricity Bill

## Ground Mount Solar Park -

Best For Hospitals With More  
Than ₹7 Lakhs Monthly Electricity Bill



**1010, International Wealth Centre (IWC),  
VIP Road Vesu, Surat, 395007**

**+91 99253 36536**

**www.techsunbio.com**



# Ishaahwat

## CARDIAC & CANCER CARE

### DR. KEYUR PATEL

MD (Internal Medicine),  
DM (Interventional Cardiologist)  
FSCAI (USA)  
Ex Faculty - U.N. Mehta Institute Of  
Cardiology, Ahmedabad



### DR. PRIYANKA PATEL

MD (Internal Medicine)  
DM (Medical oncologist & Hemato Oncologist)  
European certified Medical Oncologist (ECMO)  
Ex Faculty - HCG cancer cancer Ahmedabd



### OUR SERVICES

- ECG
- 2D Echocardiography (Advanced GE Vivid IQ Premium Machine)
- GLS AFI ECHO Cardiography
- Treadmill Test (TMT),
- Holter Monitoring
- Ambulatory BP Monitoring (ABPM)
- Congenital Heart Disease
- Coronary Angiography
- Coronary Angioplasty
- Carotid And Renal Angioplasty
- Pacemaker
- CRT
- Peripheral Angiography
- Peripheral Angioplasty
- Balloon Mitral Valvuloplasty
- Diagnosis and treatment of solid cancer (Breast, Lung, Gynecological, Gastrointestinal, Genitourinary, Sarcoma etc.)
- All types of chemotherapy administration and side effects management
- Immunotherapy and Targeted Therapy
- Oral Chemotherapy And Hormonal Therapy
- Lumbar puncture and Intrathecal Chemotherapy
- Genetic counselling and family screening advice
- Cancer Preventive Vaccination

### Our Address :

301, Om Arcade, Opp.Green Elina, Anand Mahal Road, Adajan, Surat - 395 009.

# GujCriticon Highlights



# Behind the Scenes: Preparation for Gujarat Criticon 2025



THANK YOU FOR YOUR SUPPORT



THANK YOU FOR YOUR SUPPORT



## THANK YOU FOR YOUR SUPPORT



- **Dr Jeni Gandhi** (Intervention Radiologist)
- **Dr Manu Sharma** (Joint Replacement Surgeon)
- **Dr Dhaval Patel** (Neurosurgeon)
- **Dr Bhaumik Thakor** (Neurosurgeon)
- **Dr Pranav Vaidya** (Cardiologist)
- **Dr Mukesh Goyal** (Nephrologist)
- **Dr Nikunj Vithlani** (Oncosurgeon)
- **Dr Nilesh Purushottam** (Cardiologist)
- **Dr Anil Patel** (Nephrologist)
- **Dr Naresh Gabani** (GI Surgeon)
- **Dr Pratik Savaj** (ID Specialist)
- **Dr. Ashwin Patel** (Future Imaging)
- **Dr Keyur Patel** (Cardiologist)
- **Dr Priyanka Patel** (Oncologist)
- **Dr Ameer Patel** (Hematologist)

# THE CLINIC

(Solaris Kode)



**Dr. Manu Sharma**

MBBS, MS (Ortho) FIJR (Germany), FIA (Australia) Senior Joint Replacement Surgeon (Consultant at Shalby Hospital)

**1 LEADER IN  
KNEE REPLACEMENT  
NO. 1 IN SOUTH GUJARAT  
(EXPERIENCE OF >15000 SURGERIES)**



**NOW INTRODUCING  
ROBOTIC  
KNEE REPLACEMENT SURGERY**





Not just numbers, milestones built over decades of dedication

35+

Years of Experience

4250+

Happy Customers

31+

Successful Projects

29.5+

Lakh Sq.Ft. Constructed

Every figure stands for one thing  
trust built, delivered, and lived

With Infinity Group,  
your dream space is not a promise  
it's a proven legacy

