

Child India

August
2023



Monthly e-Newsletter of Indian Academy of Pediatrics



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Editor's Note

Dear friends,

Greetings!

We start the month with the World Breast-feeding Week – August 1-7 - for which we have witnessed multiple promotional programs highlighting the theme – “Step up for Breast Feeding - Educate and Support.” which aims to empower and support breastfeeding mothers. The theme emphasises necessary actions by policymakers, employers and colleagues to support continued exclusive breastfeeding in working women to their infants. Please send reports of WBW celebrations to IAP CO.



August 12th is celebrated as International Youth Day - The theme for 2023 is “Green Skills for Youth: Towards a Sustainable World.” Green skills like “knowledge, abilities, values, and attitudes needed to live in, develop and support a sustainable and resource-efficient society” are important, according to the UN, to impart in the youth as they could contribute to the green transition for a longer period of time. The aim is to shift towards an environmentally sustainable and climate-friendly world, critical not only for responding to the global climate crisis, but also for achieving the Sustainable Development Goals (SDGs).

This issue onwards, our President, Dr Upendra, in this Diamond Jubilee year, has a vision of recognising the HIDDEN GEMS among pediatricians. The HIDDEN GEMS are pediatricians who have excelled in fields other than pediatrics and who are not in the IAP limelight. This issue will feature those from South Zone. The next 4 issues will feature HIDDEN GEMS from the other 4 zones, 1 at a time.

The article in this issue of Child India will focus on liver failure in children and we are indebted to Dr Neelam Mohan for coordinating the scientific submissions for this issue.

Happy reading,

Best wishes to all 42,000 IAP members,

Regards,

Jai Hind, Jai IAP,

Dr Jeelson C Unni

Editor-in-Chief

President's Address

Dear Fellow IAPans,

Greetings from CIAP!

As a part of our DIAMOND Jubilee celebrations, we are recognizing the HIDDEN GEMS in IAP. i.e., Identify talented IAPians whose excellence and achievements really deserve to be recognized.

Social Work - Includes social and charitable services in the areas of affordable healthcare and education, other contributions to community projects like Environment, Sanitation, etc.

Pediatrics - Includes medical research, however not known to the rest of the country, teaching passionately over last many years, popular and respected in the local area but the rest of the country would love to hear that. Grassroot Innovations useful to implement in practice etc.

Literature & poetry, authors, etc.

Very significant contribution through **Government Service**

Sports - Includes Sports, Athletics, Mountaineering, etc.

Art - Includes Music, Painting, Sculpture, Photography, Cinema, Theatre, etc.

Others - Includes fields that are not covered in the above-mentioned fields. This may include Spirituality, Yoga, Wild Life protection/conservation, Agriculture etc.

We begin the zonal series with the south zone.

In this issue of Child India, we are also discussing some key aspects of Liver failure in Children. It is indeed one of the most rapidly progressive and complex clinical syndromes that is the final common pathway for many disparate conditions, some known and others yet to be identified. The estimated frequency of ALF in all age groups is between one and six cases per million people every year, but the frequency in children is unknown.

PALF is a rapidly evolving clinical condition. There are no adequately powered studies to inform diagnostic algorithms, to assess markers of disease severity and trajectory, and to guide decisions about LT. Though it is said that the clinician must construct an individualized diagnostic approach and management strategy this issue will help us in doing that with respect to the Indian setting.

Happy reading!

Dr Upendra Kinjawadekar

National President 2023

Indian Academy of Pediatrics



Secretary's Message

Dear Colleagues,

Greetings,

“The best way to predict the future is to create it together.”

I am pleased to report that in the month of August, we have achieved remarkable milestones in our various projects and initiatives. We have successfully conducted several workshops, campaigns, and events to promote child health and development across the country. We have also strengthened our collaboration with other organizations and stakeholders to advance our common goals and vision.



World Breast Feeding Week was celebrated from 1st August – 7th August with theme - “Step up for Breast Feeding - Educate and Support”. I appreciate and congratulate all Office Bearers of CIAP, Executive Board members, and Office bearers of branches for their active participation in organizing the days/activities in their respective branches.

We have conducted several meetings in the month of August via Video Conferencing. Includes a meeting on Official Area which was conducted on 01st August as well as on 16th August. 100th Microsite Project meeting was conducted with the NHA team under Ayushman Bharat Digital Mission on 7th as well as 17th of August. Website committee met on 08th August, 2023. On the same day IAP office bearer also met and discussed various matters related to Zonal Pedicon, Constitution amendments, JnJ support to NC ECD and NRP, Child Abuse etc. Meeting on IAP's Prevention of Violence against Children (VAC) Initiative took place on 21st August. “Position statement of IAP on age of consent related to POCSO met was held on 23rd of August and IAP Election 2024 meeting took place on 29th of August discussed various aspects of the Election matters with the vendor and the E-voting committee.

On 05th August 2023 Special General Body Meeting to Ratify the proposed amendments to the Constitution of the IAP was held at Kolkata and New Constitution is now effective from 05th August 2023 as discussed in the same.

Along with this, Indian Academy of Paediatrics conducted workshops on the following modules under the Presidential Action Plan 2023. 4 of “Risk Stratification Assessment Clinical Monitoring Early Stimulation in high-risk neonate” (RACE); 8 of Understanding Lab Test Rationale (ID ULTRA); 2 of Comprehensive nutrition Module (CNM); 3 of Hematology - from care to cure; 3 of Hit the bull's eye-Clinical Clues; 2 of Life Beyond Pediatrics (LBP); 2 of Rheumatology training module (RHYTHM); 4 of Saksham.

Regarding the ECD, total of 158 workshops of ECD have been completed till date. Though no workshop of ECD was conducted in August 2023 but that was because of the temporary cessation of grant. The grant has resumed and so will ECD program from now onwards. This month total of 86 Basic NRP and 13 Advanced NRP provider courses have been successfully conducted.

On behalf of IAP, I urge you to organize various activities in the best interest of the health and welfare of the country's children.

Long Live IAP, Jai IAP

Yours sincerely,

Dr Vineet Saxena

Hon. Secretary General 2022 & 23

President's Engagements



State of Jammu and Kashmir is yet another state which will collaborate with IAP for conducting Sankalp Sampurna Swasthya across the state. Director of School Education and the Chairman of the Private Schools Association were personally present for the launch in Srinagar.

Heartfelt thanks to Dr Muzaffar Jaan, President IAP Kashmir, Dr Khurshid Wani our EB member, Dr Mushtaq, all the members of State IAP and ofc our Chief scientific convener Dr Rekha Harish for the efforts in reaching out to the government as well as for the smooth launch of the program.

Visit to IAP Jammu on 31-8-23 President Dr Ghanshyam Saini, Dr Ravinder Gupta, Dr Ashok Gupta, Dr Rekha Harish and some team members

President's Engagements



Launch of SSS at Alibag on 29-8-23. Dr Vikas More, Dr Vinayak Patil,
Dr Raju Dhamankar, Dr Ajay Koli and team Raigad IAP

President's Engagements



SSS at Hyderabad alongwith Dr C Nirmala and Dr A Bhaskar on 25-8-23.

Dr G Laxman, Dr Sridhar and Dr Pavan Kumar took special efforts in the successful launch



15th August a unique online program was organised by NCDPA Chairperson Dr Anil Sud and Secretary Dr C Nirmala

President's Engagements



With the school management and Dr Obula Reddy for the SSS program at Kadapa on 9-8-23



Along with Dr Pavan Kalyan, Dr Murlidhar Reddy, Dr Sai for the SSS program at Next Gen international School, Ongole AP

President's Engagements



5-8-23 Constitution ratification meeting at Kolkata

President's Action Plan 2023

Hidden Gems - South Zone

Dr. V. Venugopalan



Dr. V. Venugopalan

'Divyasree'

Govt. Hospital Road

Perintalmanna 679 322

Malappuram Dist., Kerala

A Doctor for 56 years and a practicing pediatrician >50 years

Started a troupe - 'MEDIARTS' - to promote hidden talents among doctors and their families - created an AIDS awareness drama - 'AKSHAHRIDAYAM', which was staged 60 times and was approved by the state AIDS Cell. Other dramas include: 1) Manase Nee Sakshi, 2) Kali; 3) Nalkavala; 4) Perunthachan

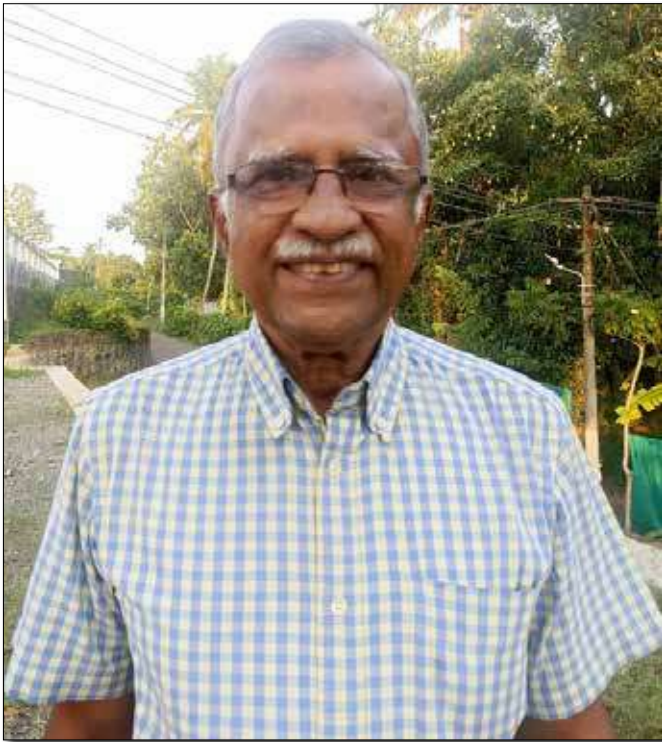
Formed a production company, 'Kappoor films'. Telefilms released - 1) Darshanam 2) Oru Onathalennu 3) Noolu 4) Pazhuthu 5) Kanikonna Pole 6) Sahayathrikan

As actor in Telefilms: 1. Nithakhath. 2) Insha Allah - won 14 awards - 6 awards from Television Chamber and Best film award from Thikkurissi Foundation. 3) Innu Nhan 4) Balance Sheet 5) Innu Innale - bagged Best Actor Award 6) POBE 7) Kannetante Bharya 8) BANSURI - awarded special Jury award for best Actor by Malabar Souhtudavedi, Kozhikode.

Documentaries: 1) Please 2) Sadgamaya 3) Muthassante Vyakulathakal 4) Chinthakal Pookumbole -

Feature Film: Stethoscope

Movies acted : 1) Thilakkam by Jayaraj; 2) For the People -By Jayaraj; 3) Vismayathumbath - by Fazil; 4) Kazhcha - By Blessi; 5) Andavan - By Akbar Jose; 6) Madhuchandralekha - By Rajasenan; 7) Achanurangatha Veedu - By Lal Jose; 8) Bus Conductor - By V.M. Vinu; 9) Aanachantham - By Jayaraj; 10) Of the People - By Jayaraj; 11) Amrutham - By Sibi Malayil; 12) Mulla - By Lal Jose; 13) Kavyam - By Aneesh Varma; 14) Bullet - By Nizar; 15) Gulmohar - By Jayaraj; 16) Cat & Mouse; By Fazil; 17) Passenger - By Ranjith Shankar; 18) Puthiya Mugham - By Dipan; 19) Maykom (Tamil) - By Major Ravi; 20) Drona - By Shaji Kailas; 21) Vydooryam - By Sasindra; 22) Thiruvambady Thamban - By Padmakumar; 23) Moly Aunty Rocking - Ranjith Sankar; 24) Red Wine - By Salam Palappetti; 25) Rasam - By Rajeevnadh; 26) Neena - By Lal Jose; 27) Loham - By Ranjith; 28) Su Su Sudhi Vatmeekam - By Ranjith Sankar; 29) Sathya - By Deepan; 30) Stethoscope - By Suresh Iringaloor; 31) Njan Merikutty - By Ranjith Sankar; 32) Mamankam - By Padmakumar; 33) Pathombadam Nootand - By Vinayan; 34) Kattu Kadal, /athirukal - By Samad Mankada; 35) Valatty - By Devan

President's Action Plan 2023**Hidden Gems - South Zone****Dr Sebastian Luckose****ADDRESS**

**Dr Sebastian Luckose
Poondikulam House
Pala P.O. 86575
Kottayam Dt, Kerala**

RESUME OF MY PHYSICAL FITNESS ACTIVITIES

- A shuttle badminton player in my college days and early part of my life
- A runner 5-8 kilometres from 1985.
- Doing muscle strengthening exercises from 1995.
- Did Diploma in Fitness Management in 2007 from Bharathiar University
- Did Master of Health Sciences in Fitness and Wellness and Diploma in Food and Nutrition from Annamalai University.
- Organised Certificate course in Fitness Management for Gym trainers, under All India Body Building Federation.
- Guest faculty at St Thomas College, Pala, for students of BSc (sports and Fitness)
- Regular speaker on fitness and Wellness, for Doctors, KSEB engineers, public and students.
- Organised 4-5 mini marathons at Pala and Medical College Kottayam.
- Currently run 5-8km daily and do weight training 3-4 days a week.
- I was active in KGMOA, IMA and IAP.
- Hobbies, Trekking and Farming.

I would like to add that I have participated in a number of minimarathons and have won a few prizes in veterans sports competitions.

President's Action Plan 2023**Hidden Gems - South Zone****Dr Jiss Thomas**

Dr Jiss Thomas is currently working as a Senior Consultant Paediatrician in Marsleeva Medicity, Pala.

He has directed six short films, which includes One done for IAP Kerala, realization a film on immunization and others included. Baby, the turtle and other four short films. Then he entered into the Malayalam film industry and directed A feature film, which was released in May 20, 2022 named Trojan. Now, he has done four other scripts and his next project will be releasing soon.

President's Action Plan 2023

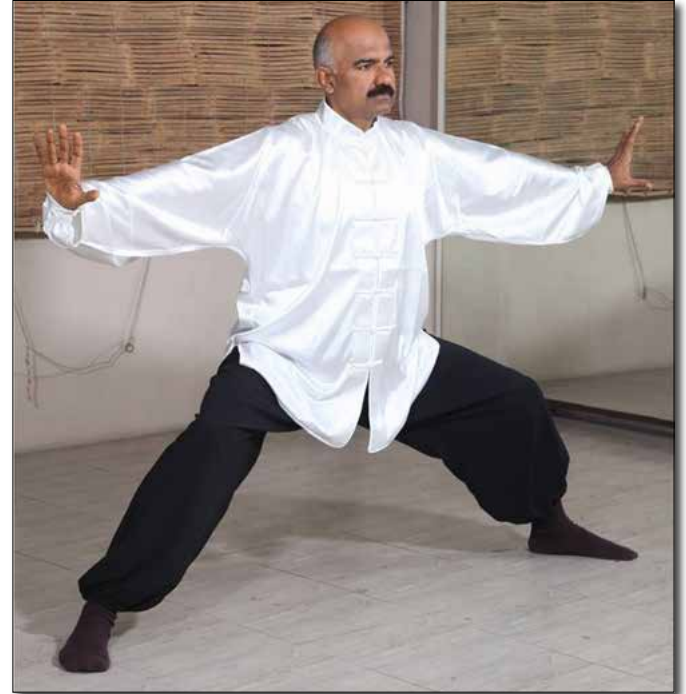
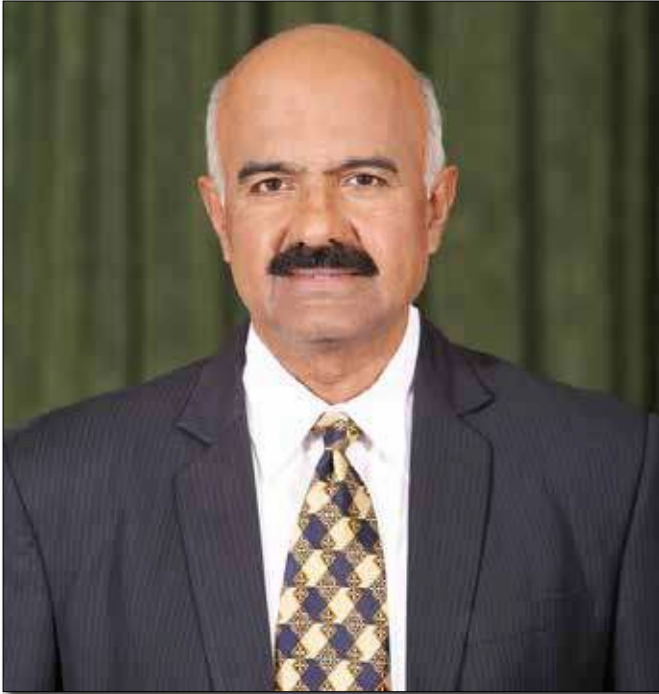
Hidden Gems - South Zone

Dr Anas



Consultant pediatrician @ APEX HEALTH CARE, Aluva, Ernakulam. Composed and produced 8 music albums. 9th album released - Ninavai sung by Mridula Warriar. One more album is in the preproduction stage.

Other than music direction, i have directed music videos and have acted in two Malayalam movies "Maheshum maruthiyum " & "EZHA"

President's Action Plan 2023**Hidden Gems - South Zone****Dr. Sunil Srinivasan****PEDIATRIC HIGHLIGHTS**

1. Founded the first ever state branch of Adolescent Chapter of IAP
2. Conducted the first ever “Computers for Pediatricians” workshop in 1991
3. Created the ‘The art and science of Pediatric practice’ module and hosted the first ever meeting of the above in Trichy.
4. State president IAP Tamil Nadu in 2018.
5. Created and convened the module on “Smart Clinic 2.0” in 2018
6. Faculty on Happiness for the “Life beyond Pediatrics’ module in 2023

NON-ACADEMIC HIGHLIGHTS

1. International Tai Chi instructor having learnt the ancient energy arts of Tai Chi from 2 authentic masters. Teaching Tai Chi for the past 7 years
2. Happiness coach having conducted 7 national and one international workshops on Happiness.
3. Veteran Himalayan trekker having trekked the Himalayas many times including one difficult trek to the base of Mount Kailash in Tibet.
4. Certified Neurolinguistic programmer.
5. Passionate singer. Finalist at IAP music competition in Mumbai , 2018
6. Trained and qualified Vipassana meditator.

President's Action Plan 2023

Hidden Gems - South Zone

Dr H Paramesh



Dr H Paramesh along with the teams of winners and 1st runners up of the IPL Tournament 2023

Dr H Paramesh one of the senior most paediatricians in Karnataka is known to all as a pulmonologist of repute, a crusader for environmental health and allergy, who has done doyen work in improving childcare across the globe. He has the distinction of representing our the paediatricians of our country at the COP26 summit.

However, one aspect that has not been known to many of us, is the passion that Dr Paramesh has for the game of tennis. He has been playing this sport since almost half a century now! As his passion grew, he was instrumental in training several youngsters in the sport. He was also instrumental in forming the AITA (All India Tennis Association), a national body that governs all tennis players in the country. To this day, Dr H Paramesh continues to play tennis every single day.

Besides this, his passion for saving the sparrows and the environment continues.

President's Action Plan 2023

Hidden Gems - South Zone

Dr Ashok Datar

Dr. Ashok R Datar, MBBS, DCH

**Practicing as Pediatrician, Family Physician and Developmental Pediatrician at Hospet since 1977
Director of Bijoy Child Guidance Clinic at Bijoy Hospital, Hospet for the past 12 years**



Photography has been my hobby for more than 30 years and in the last 15 years I have travelled extensively within and outside our country pursuing my hobby. Hampi, Karnataka has always been and will remain so as the main center of attraction to pursue my hobby of photography. What started as a Sunday activity gradually evolved into a hobby and later it became a passion.

I graduated from a 'Yashika' box camera to a point and shoot Canon camera for a short while, finally I landed up with a DSLR camera which helped me take satisfactory photos and presently it is a mirrorless Canon Camera.

I have always stuck to a theme during my photography outings and in my initial few years the

theme was photographing "balancing boulders" in Hampi, which I actively pursued for about two decades and learnt some of the nuances of the play of light on my subjects.

One day while waiting for the light to be just right, I happened to meet some photographers who were photographing a special and not so commonly encountered bird. After the initial round of

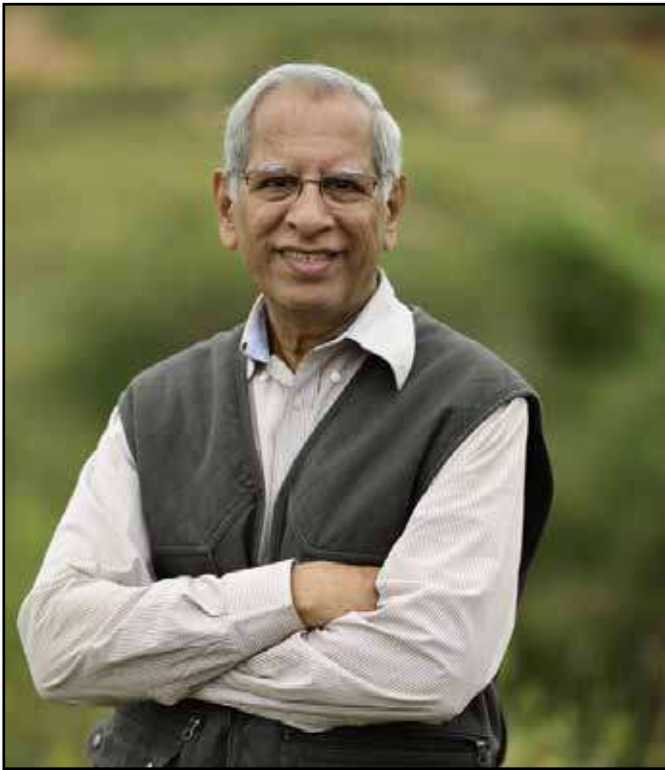


introductions one of the bird photographers lightly suggested that I too join them and photograph that live bird while wait for the right light to fall on the lifeless balancing boulder; fortunately I did so, and while reviewing my photos of the day I was pleasantly surprised to see a beautiful and colourful bird which I had photographed.

Over the next two years I got into the habit of looking out and photographing birds in the vicinity while searching for the Balancing boulders in Hampi. Then came a time for me to switch my interest from Balancing boulders to Birds as I had already covered the entire Hampi and nearby regions looking for the balancing boulders.

I have covered almost half the world photographing Birds and will continue until I have the physical ability to do so.



President's Action Plan 2023**Hidden Gems - South Zone****Dr Pramod Govind Shanbhag**

Born on 22 September 1947 at Honavar, Coastal Karnataka.

Qualifications: MBBS from KMC, Hubli in 1971

DCH from KEM Hospital in 1974

Started private practice in a rural area in 1975. I have been practicing in Bangalore since 1981.

I was always fascinated by nature and wildlife and, of late, street photography. I was inspired by magazines like Life, Time and NG.

I took to photography in 1992 along with a friend under the tutelage of Mr. Perumal - a doyen of nature photography. I have been pursuing the hobby more passionately since 2014. I take part in National and international Photo competitions, and I have more than 7000 acceptances and 1200 awards so far.

I have travelled widely and to very remote areas.

Honors: ARPS, MPSA, EFIAP/PLATINUM

President's Action Plan 2023

Hidden Gems - South Zone

Dr V Vijayakumar



**Prof V.Vijayakumar MD(Ped) DCH Neonatal Fellow)
Australia**

DOB 28/9/1952

Posts held : Retd Prof of Neonatology MMC Chennai (Fr) Expert Advisor Child Health NHM Fr Project Cordinator Regional collaborative centre (SS)for FBNC GOI First Govt servant to undergo newborn training abroad & was instrumental in starting DM (Neonatology) in TN Community work done 1) only Paediatrician to work in Gujarath equarthquake relief 2001 for 3 weeks 2)Led the team of45 medical personol for Ptsunami relief operations at Tranquobar TN 2004 3) organised numerous health camps for polio prevention in collaboration with ICCW & Lionsclub in late70s 4) Worked in iCDS Madras urban slums as MO& SRF (AIIMS) to bring down Grade 3&4 malnutrition1978 National facilitator for NRP / NSSK/ FBNC/ IMNCi & conducted innumerable Tots & training for paed/ Mos / VHN/ AWW.

Advisor Voluntary agencies like Ekam & Aid india

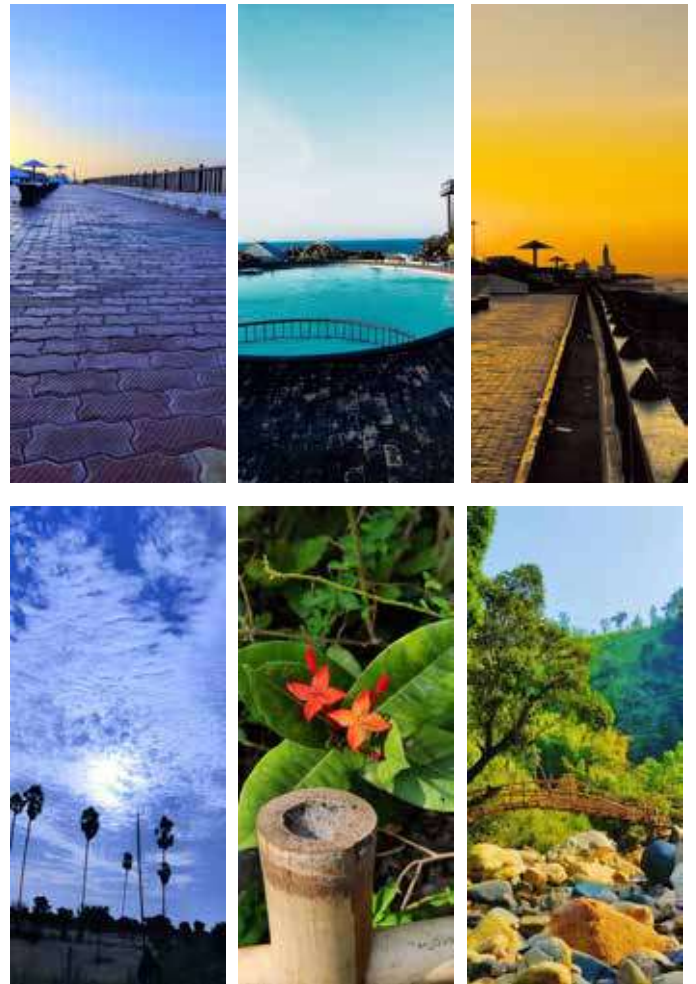
I have played key role in IAP camps& part of disaster management groups.

1. Only Pediatrician from Tamilnadu Government to participate in the earthquake relief operation at Bhuj, Gujarat in 2001 with "Vivekananda Yuva kendra"
2. Lead a team of 45 members for Tsunami relief work from Madras Medical college in 2004 at Tharangambadi
3. Participated in the post Tsunami Relief Camps conducted by TN State IAP
4. Senior Research Fellow (AIIMS) in the first Pilot Project of ICDS at Madras Urban Slums 1977-78 and participated in national health and nutrition survey in Anganwadis and project identification and prevention of blindness in coastal fishermen communities
5. As School health Medical Officer, examined more than 1000 corporation school children for morbidity in the year 1999
6. Attended many health camps conducted by Institute of Child Health in collaboration with Indian Council of Child Welfare (ICCW) and Lions Club of Madras when Polio cases were rampant in !977-78
7. Evening clinics at St. Thomas Mount Orphanage and for children of quarry workers and slums in Mylapore - 1978-79
8. Honorary technical advisor for voluntary agencies - EKKAM foundation and AID INDIA. Conducted a health camp on April 7th 2023 for Tribal children at Tirutani.

President's Action Plan 2023

Hidden Gems - South Zone

Dr Ashwath Doraiswamy



Dr Ashwath Doraiswamy - Consultant at KMCH, Kovai.

Bird watching as a weekend pastime for the past 13 years. Member of the Coimbatore Nature Society. Takes young children on trips to sensitise them on nature related issues. Shares material with interested colleagues.

A poet .. written many poems

A photographer par excellence

Religious philosophy .. interest is exceptional.. able thereby to know self and therefore others too..

President's Action Plan 2023

Hidden Gems - South Zone

Dr T V Padmanabhan



Dr. TV Padmanabhan - IAPian of Kanhangd, a Socio Medical Activist Served Kerala Health Services as a Pediatrician and health administrator for 30 years was the recipient of State Family Welfare Award and WHO Fellowship for outstanding achievement in UIP (Universal Immunisation Programme); was Vice President of IAP Kerala, Member of Ethics Committee and Chairman of Anti Quackery Committee of IMA, Kerala State Branch.

Achievements:

1. Physiotherapists, practising with 'Dr' prefix was stopped after a 6 year long legal fight initiated by

him. The fight went through local police station, court, DME, Health & FW Kerala Departments, Hon'ble High Court of Kerala ending at DME, with a Govt order stating categorically, physiotherapists were paramedics and not doctors. The GO also reiterated that physiotherapists cannot have separate council that may empower them with the right for independent practice.

2. As the Chairman of Anti Quackery Committee of IMA, Kerala he

a) Two fake specialists, practising as Consultant Sonologist and Diabetologist working in Kasaragod and Wyanad, respectively, were deregistered by Travancore Cochin Medical Council

b) A former Chief Secretary (IAS) of Bihar was booked by local police and drug authorities, while he was peddling ayurvedic "magic drinks", claiming cure for incurable diseases, from a hotel hall

3. Saved the stadium of local Government Higher Secondary School from encroachment and illegal construction of an old age home by Muncipal Authorities by filing a PIL (Public Interest Litigation), supported strongly by IAP Kerala State Branch, in Hon'ble High Court of Kerala IAP KSB adopted the stadium, in association with local Rotary Club, constructed compound wall and gate, planted trees, plants and sapling in the perimeter of the Stadium - named it as "IAP - Rotary Stadium Garden"

Acute Liver Failure in Children

NEELAM MOHAN¹BIKRANT BIHARI LAL²VIKRANT SOOD²SAPNA JAIN³SAILEN KUMAR BANA¹SOMASHEKAR H.R.⁴

INTRODUCTION & DEFINITION

Paediatric acute liver failure (PALF) is a rapidly progressive clinical syndrome characterized by sudden acute deterioration of liver function.

PALF is a medical emergency and carries a significant mortality rate of around 85% without liver transplantation. The high mortality in PALF is attributable to multiorgan dysfunction, sepsis, cerebral edema, coagulopathy and bleeds. Patients with acute liver failure need intensive clinical support, often provided by the collaborative efforts of hepatologist, liver transplant surgeons. Orthotropic liver transplantation (OLT) is the definitive therapeutic modality in the management of ALF. Newer liver support devices like molecular adsorbent recirculating system (MARS) and extracorporeal liver assist device (ELAD) help as bridge to liver transplantation.

Definition of ALF or FHF

Historically, children were assigned an ALF diagnosis based upon the adult definition that included hepatic encephalopathy (HE). To mitigate the challenge of accurate HE assessment in infants and children, the PALF Study Group (PALFSG) utilized consensus entry criteria for their longitudinal study enabling enrollment without HE which are as follows

PALFSG study entry criteria—all three components required

- Acute onset of liver disease without evidence of chronic liver disease.
- Biochemical evidence of severe liver injury Coagulopathy not corrected by vitamin K
- Prothrombin time (PT) 15 s or INR 1.5 with evidence of hepatic encephalopathy or
- PT 20 s or INR >2 with or without encephalopathy

-
- 1 Department of Pediatric Gastroenterology, Hepatology & Liver Transplantation, Medanta, The Medicity, Gurugram
 - 2 Department of Pediatric Hepatology and Liver Transplantation, Institute of Liver and Biliary Sciences, Vasant Kunj, New Delhi, India
 - 3 Department of Pediatrics, Medanta, The Medicity, Gurugram
 - 4 Consultant Pediatric Hepatologist, Gleneagles Global Health City, Chennai

ETIOPATHOGENESIS OF ALF

Etiology of ALF in Neonates

Etiology	Disease
Infection	Hepatitis-B, herpes viruses, echovirus, adenovirus, sepsis
Metabolic	Galactosemia, tyrosinemia, neonatal hemochromatosis, mitochondrial hepatopathies
Ischemic	Congenital heart disease, cardiac surgery, myocarditis, severe perinatal asphyxia
Vascular	Hepatic vein outflow tract obstruction, hemangioma, hemangioendothelioma
Others	Congenital leukemia, neuroblastoma, hemophagocytic histiocytosis

Etiology of ALF in older children

Infective	<p>Viral Viral hepatitis A, B, B + D, E Non-A–E hepatitis (seronegative hepatitis) Adenovirus, Epstein-Barr virus, Cytomegalovirus, Echovirus, varicella, Measles, Yellow fever rarely, Lassa, Ebola, Marburg virus, Dengue, Toga virus</p> <p>Bacterial Salmonellosis, Tuberculosis, septicaemia</p> <p>Others: Malaria, Bartonella, Leptospirosis</p>
Drugs	<p>Dose-dependent Acetaminophen, Halothane</p> <p>Idiosyncratic reaction Isoniazid, Nonsteroidal anti-inflammatory drugs Phenytoin, Sodium valproate, Carbamazepine, Ecstasy, Antibiotics (penicillin, erythromycin, tetracyclines, sulphonamides, quinolones) Allopurinol, Propylthiouracil, Amiodarone, Ketoconazole, Antiretroviral drugs</p> <p>Synergistic drug interactions Isoniazid + rifampicin Trimethoprim + sulfamethoxazole Barbiturates + acetaminophen Amoxicillin + clavulanic acid</p>

Toxin	Amanita phalloides (mushroom poisoning), Herbal medicines, Carbon tetrachloride, yellow phosphorus, Industrial solvents, Chlorobenzenes
Metabolic	Wilson's disease, hereditary fructose intolerance, alpha-1 antitrypsin deficiency, Fatty acid oxidation defects, urea cycle disorder
Autoimmune	Type 1 autoimmune hepatitis, type 2 autoimmune hepatitis, Giant cell hepatitis with Coombs-positive haemolytic anemia
Vascular	Budd–Chiari syndrome, Acute circulatory failure, Heatstroke, Acute cardiac failure Cardiomyopathies
Infiltrative	Leukemia, Lymphoma, HLH

ETIOLOGY IN INDIA

INFECTION: Viral hepatitis is the leading cause of acute liver failure (ALF) in India. Hepatitis A is the commonest cause of ALF in India. HBV could cause ALF due to acute hepatitis in infants, reactivation in immunosuppressed children or as a consequence of hepatitis delta superinfection.

Occasionally other viral infections like Adenovirus, Epstein-Barr virus, Cytomegalovirus, Echovirus, varicella, Measles, Lassa, Ebola, Marburg virus, Dengue, Toga virus can lead to ALF.

Bacterias like salmonellosis, tuberculosis, septicaemia, protozoas like Malaria, Bartonella, Leptospira can also lead to ALF.

AIH: presents with raised transaminases (ALT usually <2000 IU/L), positive autoantibodies (>1:20), high immunoglobulin G and exclusion of other diseases. The autoantibodies may be negative at onset. Mildly positive autoantibodies may be detected in Wilson disease and viral hepatitis B and C. The classical histological pattern of AIH (including interface hepatitis, plasma cell infiltrate and hepatocyte rosettes) can be masked, mixed, or replaced by a picture of massive necrosis and/or multilobular collapse, which is a common feature also of other causes of

ALF. Type 2 AIH (LKM-1 positive) often presents at younger age, including during infancy (usually < 5 years), and has a higher tendency to present as ALF compared to type-1 AIH (ANA/SMA positive).

WILSONS DISEASE: presents with Coombs-negative hemolysis, relatively low serum transaminases (AST:ALT > 2.2), low serum alkaline phosphatase (ALP:TB <4). Coombs-negative hemolysis and Kayser-Fleischer rings, which are uncommon at onset in mild pediatric cases, are present in 92% and 74% of children with WD-ALF. Markers of copper metabolism are of limited interest in WD-ALF due to possible falsely positive results. Serum ceruloplasmin is reduced in a high proportion of children with ALF from causes other than WD due to protein-synthetic failure. Urinary copper excretion above the normal range is common in non-WD ALF, whereas WD children presenting with ALF may exhibit basal urinary copper content as high as 30-fold the upper limit of normal

NEONATAL HEMOCHROMATOSIS: it is the Leading cause of neonatal liver failure. Presents with severe coagulopathy, progressively increasing bilirubin (often with a significant unconjugated fraction), low or normal ALT, serum ferritin level >800 ng/mL, MRI confirmation of extrahepatic siderosis, particularly in brain and pancreas, biopsy of the oral mucosa. A definitive diagnosis is made by liver biopsy showing positive C5b-9 staining,

IEM- can be suspected when there is a Positive family history, Recurrent episodes of metabolic decompensation (eg. hypoglycemia, hyperammonaemia, acidosis), Recurrent vomiting, Selective food aversion, Unusual odour of body fluids and neurological signs and multi-organ involvement

TOXINS: ALF due to mushroom poisoning should be suspected in children presenting with profuse vomiting, diarrhoea, abdominal cramping, and liver injury, which occur within hours to a day from mushroom ingestion.

DRUG INDUCED ALF: it could be Idiosyncratic, dose-independent hepatotoxicity. Could be due to Isoniazid, rifampicin, Non-steroidal anti-inflammatory drugs, phenytoin, sodium valproate, carbamazepine, antibiotics (penicillin, erythromycin, tetracycline, trimethoprim-sulfamethoxazole, amoxicillin-clavulanic acid, and quinolones), Allopurinol, propylthiouracil, amiodarone, ketoconazole, antiretrovirals, recreational drugs, complementary or alternative medical therapies.

REYE-LIKE SYNDROME: presents with early neurological symptoms (vomiting, disorientation, loss of consciousness, seizures), Hepatomegaly, Hyperammonemia, absence of jaundice, histological features of microvesicular fatty changes and centrilobular necrosis. In children with Reye-like syndrome, medical history and laboratory investigations should be focused on ruling out Metabolic, Toxic and Infectious causes.

CRYPTOGENIC: When no underlying etiology is identified.

PATHOGENESIS AND ORGAN INVOLVEMENT:

Hepatic encephalopathy: is a neuropsychiatric syndrome seen in association with liver dysfunction in ALF in the absence of a pre-existing brain disease there are various theories that explain the pathogenesis of hepatic encephalopathy in ALF.

- the hyperammonemia theory
- the false- neurotransmitter theory,
- the neuroinhibition, or GABA-benzodiazepine theory
- the liver-brain inflammatory axis theory

Kernicterus may precipitate HE, direct bilirubin is >26 mg/dL, especially if blood-brain barrier permeability is increased (acidosis, hypoxemia). Kernicterus typically occurs in cases of fulminant Wilson disease

HEMODYNAMICS: ALF can lead to cardiac dysfunction by causing cardiac hyperkinesia with elevated cardiac index and low systemic vascular resistance. Dysrhythmias, such as sinus tachycardia, ectopic rhythms, and atrioventricular conduction block, are less frequent in children than in adults and are usually associated with electrolyte abnormalities.

VENTILATION: central neurogenic pulmonary edema coupled with fluid overload (SIADH, hyperaldosteronism) leads to ventilation-perfusion mismatch (loss of hypoxic vasoconstriction due to circulating vasodilatory substances) and results in severe refractory hypoxemia and the hepatopulmonary syndrome of platypnea (shortness of breath when upright) and orthodeoxia (desaturation when upright).

RENAL: Renal failure may be secondary to hypovolemia, acute tubular necrosis, or functional renal failure. Hepatorenal syndrome is defined as a progressive renal insufficiency in patients with liver disease and is characterized by low urine sodium and elevated urinary-to-plasma ratios for creatinine and osmolarity. It is the result of the action of vasoconstrictor systems on the renal circulation. Recognized risk factors are portal hypertension, low mean arterial blood pressure, and dilutional hyponatremia. Hepatorenal syndrome may be precipitated after GI bleeding, septicemia, and dehydration. Tubular nephropathy is frequently observed and results in low blood phosphate, magnesium, and potassium. Nephrotoxic drugs should be avoided.

ADRENAL: Adrenal insufficiency is frequently found in adults with ALF (up to 68% of cases) and is associated with hemodynamic instability.

SEPSIS: The risk of developing sepsis in the course of ALF is elevated, which may be related to a decreased immune response to pathogens and may be aggravated by invasive procedures inherent in the critically ill condition. Incriminated pathogens are Gram-negative bacteria, cutaneous bacteria, and fungi (13%–

32%).

BLEEDING: Chances are less than 10% in the absence of a provocative invasive procedure, as even procoagulants decreased.

METABOLIC: Severe hypoglycemia is seen in patients with ALF. The utilization of fat and protein stores leads to the breakdown of muscle and adipose tissue. Increased glucagon and growth hormone levels further increase catabolism. Total energy expenditure is increased in ALF. Electrolyte abnormalities, such as hyponatremia, hypokalemia, hypophosphatemia, and hypomagnesemia, can be found in patients with ALF.

CLINICAL SYMPTOMS AND SIGNS

The clinical presentation of PALF varies based on age and etiology. Frequently, a prodromal phase with non-specific symptoms of fatigue, malaise, nausea, and abdominal pain is elicited. A history of fever is occasionally reported. Identification of liver disease may not occur until jaundice becomes clinically apparent, or clinical decline prompts liver function testing. While a precise timeline of symptoms is important, it is often difficult to ascertain, and may not correlate with onset of liver injury.

Physical examination

Physical examination may be normal in the early stages of ALF; however, initial, and serial neurological examinations should be performed to assess mental (e.g., attentiveness, confusion, orientation) and neurological (e.g., brisk reflexes, Babinski sign) signs of HE. (table 5)

Signs on initial examination suggestive of an underlying chronic liver disease are essential. Physical examination may reveal growth failure, dysmorphic features, digital clubbing rachitic rosary, xanthomas, abdominal varices or spider angiomas, peripheral edema, hepatosplenomegaly suggestive of portal hypertension, ascites.

Table 5: Staging of hepatic encephalopathy

Stage	Clinical sign	Reflex	Neurological sign	EEG
0	None	Normal	None	Normal
1	Inconsolable crying, inattention to task; child is not acting like self to parents	Normal or Hyperreflexia	Difficult or impossible to test adequately	Normal or diffuse slowing to theta rhythm
2	Inconsolable crying, inattention to task; child is not acting like self to parents	Normal or Hyperreflexia	Difficult or impossible to test adequately	Abnormal, generalized slowing, triphasic waves
3	Stuporous, but may obey simple commands.	Hyperreflexia	Difficult or impossible to test adequately	Abnormal, generalized slowing, triphasic waves
4	Comatose, arouses with painful stimuli (4a) or no response (4b)	Absent	Decerebrate/Decorticate	Abnormal, very slow, delta activity

DIAGNOSIS

Diagnosis is established by a combination of clinical and biochemical features and specific diagnostic tests (Table 7,8). Biochemical features demonstrate marked conjugated hyperbilirubinemia, elevated aminotransferases, raised plasma ammonia and coagulopathy. Liver histology is usually impossible to obtain because of the abnormal coagulation.

The common differential diagnosis of ALF includes complicated malaria, enteric fever, leptospirosis, dengue hemorrhagic fever and Reye's syndrome.

Wilson's disease in ALF needs special consideration, as it may be difficult to diagnose because low ceruloplasmin level can be present in most patients with ALF, regardless of etiology. KF rings are not uniformly present and serum copper levels may take several days to obtain. In this scenario, the Ratio of serum alkaline phosphatase to total bilirubin below 4 and Serum AST to ALT above 2.2 suggest Wilson's disease.¹⁰

Table 7: General laboratory investigations

Systems	Laboratory investigations
Hematological	Complete blood cell count with platelets PT - International normalized ratio, aPTT fibrinogen, D – dimer, blood group, cross match
Electrolytes	Blood glucose, lactate, arterial ammonia, serum osmolarity. Blood gas with pH, sodium, potassium, calcium, magnesium, bicarbonate, Creatinine
Sepsis	Procalcitonin, urinalysis and microscopic analysis, blood cultures, urine cultures, tracheal cultures (if intubated)
Imaging and other testing	Chest radiograph, electrocardiogram, abdominal ultrasound with doppler study of the liver
CNS	EEG, BIS, ICP monitor ?
BIS indicates bispectral index; ICP, intracranial pressure	

**Table 8:
Specific diagnostic tests to evaluate etiology of acute liver failure**

Cause	Test
Hepatitis A infection	Anti-HAV antibody (IgM)
Hepatitis B infection	HbsAg, Anti-core antibody (HbcAb IgM)
Hepatitis D infection	Anti-hepatitis D virus antibody (IgM)
Hepatitis C infection	Anti-hepatitis C virus antibody (IgM)
Other Infections	HHV-1, 2, ; CMV; EBV; VZV; echovirus; parvovirus B19; malaria; dengue; leptospirosis
Autoimmune hepatitis	Autoantibodies ANA, ASMA, anti-LKM1, immunoglobulins IgG
Haemophagocytic Lymphohistiocytosis	Bone marrow aspiration (typical cells), raised ferritin , raised TGs, low/absent NK cell activity
Neonatal haemochromatosis / Congenital allo immune hepatitis	Buccal mucosal biopsy, raised ferritin, high transferrin saturation
Veno-occlusive disease / Malignancies	Doppler ultrasonography/ venography Imaging (computed tomography/ magnetic resonance imaging) and histology
Toxicology screen and drug panel	Acetaminophen, Opiates, Barbiturates, Cocaine, Alcohol
Metabolic Liver Disease	
Galactosaemia	Galactose-1-phosphate uridyl transferase assay (provided child not recieved blood transfusion in last 3 months)
Tyrosinaemia	Urinary succinylacetone
Wilson’s disease	Urinary copper (>100microgm/day), Kayser– Fleischer ring, Coombs negative haemolytic anaemia, low serum ceruloplasmin (<10mg/dL)
Urea Cycle Defect (UCD)	Plasma aminoacidogram, Orotic acid estimation in urine to diagnose supplementation OTC deficiency
Fatty Acid Oxidation Defect	Carnitine - acyl carnitine profile
Mitochondrial hepatopathies	Muscle and liver biopsies for quantitative assay of respiratory chain enzymes, tandem mass spectroscopy

MEDICAL MANAGEMENT OF PEDIATRIC ACUTE LIVER FAILURE

PALF management is a multi-disciplinary collaborative effort between pediatric hepatologists/gastroenterologists, critical care experts, infection control experts and well trained nursing staff along with other allied specialties like neurology, nephrology, physiotherapy etc as per the requirement. All patients with PALF should ideally be managed in a centre with liver transplant facilities (if eventually needed). If diagnosed in a non LT centre, they should be

referred early in case of any clinical or laboratory worsening such as new onset or worsening encephalopathy, increasing INR to a center with such facilities. Further evaluation of need of ICU admission, listing for liver transplantation, early detection and subsequent management of PALF related complications (for e.g, encephalopathy/ raised intracranial pressure, sepsis, fluid/ electrolyte imbalance etc) and need for bridging therapies should be decided based on consultations amongst the inter-departmental team (as shown in the management algorithm below)

Management Algorithm

Early referral-

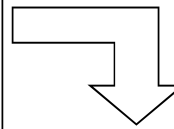
- ✓ Timely transfer to a higher center, preferably with LT facilities.
- ✓ High likelihood of cerebral oedema in Grade III or IV encephalopathy– Intubate and Secure airway before transport.
- ✓ Communicate with centre patient is being referred to and follow safe transport guidelines

Assess need of ICU Admission (> Grade 2 HE)-

- ✓ Manage in a ICU/HDU setting as pre requirement

Look for criteria (centre specific) for Liver Transplantation (LTx) listing

- Etiology specific/non specific
 - King's College criteria
 - PELD/MELD
 - Peds HAV Model
 - Liver Injury Unit score



If patient meets criteria for LTx,

- ✓ Initiate recipient workup for Living donor related LTx (LDLT)
- ✓ Transplant surgery team opinion for LDLT
- ✓ Look for potential donor and initiate workup
- ✓ Continue medical management in ICU
- ✓ If no potential donor or contraindications for LDLT, continue supportive measures

Subsequent management

Clinical assessment (variable frequency)

- Features of Raised ICT 2 hourly
- Hepatic encephalopathy every 4 hourly
- Liver span 12 hourly

Laboratory testing (Depends on patient's clinical status)

- Blood glucose 2-4 hourly
- Electrolytes 6-12 hourly
- Prothrombin time-INR daily
- LFT daily
- KFT daily (frequently if renal dysfunction)

Early Enteral Nutrition

- No role of keeping NPO or protein free diet, irrespective of HE
- Ensure adequate calories & protein intake (1-1.5 g/kg/day)



Look for Complications and Manage (see below)

Specific Management of Complications

Hepatic encephalopathy (HE), Cerebral edema and Raised intracranial tension (ICT)

- Elevate head of the bed (30 degrees)
- **Minimal stimulation** and handling
- Fluid Restriction (90 % Maintenance unless dehydrated - Titrate as per CVP or IVC filling on USG)
- **Osmotherapy**- Mannitol (For episodes of elevated ICP, 2-3 doses provided Sr Osmolality < 320- No prophylactic role) or 3% normal saline (Goal Na 145-155 meq/L)
- **Control of hypoglycemia, hypoxemia, fever**
- Optimise Blood Pressure- Maintain cerebral perfusion
- Avoid benzodiazepines/other sedatives
- **Elective intubation (≥ Stage 3 HE)**
- **Drug induced coma** (Propofol) -Decrease cerebral blood flow
- **Hyperventilation** (If impending herniation- Goal pCO₂ 30-35 mmHg)
- Barbiturates – Thiopentone for refractory ICP
- Non-invasive ICP monitoring (≥ Stage 3HE)

Infections and sepsis

- Send cultures – Blood, Urine, Endotracheal, CVP line-tip
- Use Antibiotics if:
 - Worsening encephalopathy
 - Unstable hemodynamic status
 - Renal failure
 - Presence of Fever and/or other SIRS* components
- Broad spectrum antibiotic coverage – Gram positive & negative; and Anti-fungal (If prolonged hospital stay)
- Deescalate as per sensitivity reports

Hypotension

- Fluids as per CVP monitoring
- Volume repletion with blood or colloid
- Alpha-Adrenergic agents (Noradrenaline)
- Vasopressin infusion in non-responders

Dyselectrolytemia

Manage:

- Hypokalemia
- Hypomagnesemia
- Hypophosphatemia
- Hypernatremia

Coagulopathy

- Avoid FFP unless:
 - Active bleed
 - INR >7 (relative indication)
- Avoid over-transfusion

Hypoglycemia

- Regular glucose monitoring 2-4 hourly
- Maintain between 120-150 mg/dL
- Infusion of 10-25% Dextrose solution as per need

If further deterioration

Consider:

- **Initiate CRRT and/or High Volume Therapeutic Plasma Exchange (HV-TPE)**
 - Consider early initiation (as per available resources) for potential spontaneous recovery or as a bridge to LT
 - For ALF, HV-TPE has Grade 1A recommendation as per American Society for Apheresis (ASFA) Guidelines 20
- **N-acetylcysteine**- Though role in Non-PCM ALF is controversial, it is universally used

Key Messages

1. Early Referral to a centre equipped for LT is a must if worsening coagulopathy or HE.
2. There may be rapid clinical evolution in PALF- Maintain high index of suspicion as diagnosis of hepatic encephalopathy may be difficult in children
 - Ensure close neurological monitoring- Essential to detect early HE
 - Initiate strategies to manage raised ICP at an early stage
3. Consider elective ventilation for Grade > 3 HE
4. Inadvertent use of FFP to be avoided
5. Bridging therapies should be instituted early e.g. CRRT, TPE etc, as per available logistics.
6. Appropriate timing for the LT is very important.

LIVER TRANSPLANTATION FOR PEDIATRIC ACUTE LIVER FAILURE

In the pre-LT era, outcomes for pediatric acute liver failure (PALF) were either survival with their native liver or death. Mortality rates from acute liver failure (ALF) ranged from 70% to 85%. With the advent and advancement of pediatric liver transplantation (LT), the survival rates for children with PALF have dramatically increased. PALF accounts for 10–15% of all pediatric LTs.

Indications

Given the emergency nature of the surgical procedure, the results of LT for PALF are very good, with one- and five-year patient survival rates of up to 87%. However, up to 40 % - 50 % of patients of PALF will survive with medical management alone. It is important to emphasize that the outcome of PALF with native liver regeneration (without LT) differs by etiology, with survival being better in children with paracetamol overdose and worse in children with indeterminate etiology. The risks of emergency LT in patients with developing or existing multi-organ failure must be considered against the risks of survival with medical management alone. Patients who will eventually need LT should

be carefully identified using a combination of prognostic algorithms and clinical judgment.

Prognostic Scores and Liver Transplant Decisions

PALF is a rapidly evolving dynamic clinical condition with no current satisfactory tools to predict outcomes. It is important to note that LT alters the natural history of PALF and those patients who undergo LT would have either survived with native liver or died if transplant had not interrupted their clinical course. Commonly used Prognostic scores are briefly discussed below.

1. King's College Hospital Criteria (KCHC):

KCHC remains most extensively studied and widely applied (table 1). The KCHC formulated in 1989. The original derivation cohort for this model comprised of 588 patients which included both children and adults in the pre-LT era. The positive predictive value (PPV) for mortality in non-paracetamol (non-PCM) induced ALF was 97%, indicating a high risk of death if criteria were met. KCHC was applied to a large cohort of patients (n=522) with non-PCM-induced PALF, who did not undergo LT. 66.9% of patients

Table 1: King’s College Hospital Criteria

King’s College Hospital Criteria	
All other causes of Acute Liver Failure	Paracetamol Induced Acute Liver Failure
Any grade HE or INR > 6.5	Arterial PH < 7.3 (after adequate fluid resuscitation)
OR Three of the following variables	OR Combination of the following
INR > 2.3	INR > 6.5
Serum bilirubin > 17.5 mg/dl	Serum creatinine > 3.4 mg/dl
AGE < 10 years or > 40 years	Grade III–IV encephalopathy
Unfavorable Cause (DILI, Indeterminate etiology)	Lactate > 3

who fulfilled KCHC survived whereas 11.8% of who didn’t fulfil KCHC died. Hence, although specificity for mortality was similar to adult ALF, sensitivity was lower at 61%. Missing data, in particular for HE, was a significant limitation to this study. Ciocca et al., demonstrated sensitivity and specificity of 72% and 96%, respectively, for mortality without LT in their large cohort (n=210), but infants were excluded and etiology was dominated by hepatitis A. Also, it’s important to note that KCHC uses encephalopathy as one of the criteria, which is difficult to assess in young children and is not always present.

2. Pediatric End Stage Liver Disease (PELD) Score

PELD Score, is primarily used for estimation of disease severity and likely survival of patients < 12 years awaiting LT. PELD score was developed using the data from the Studies of Pediatric Liver Transplantation (SPLIT), a consortium of 29 U.S. and Canadian centers in order to aid allocation and prioritization of LT to children (up to 12 years old) and infants listed with end-stage liver disease. It incorporates Bilirubin, INR, albumin, age, and growth failure. It has been validated and approved for use in organ allocation in many countries outside United States. After 12 years of age, the MELD scoring system has been validated. In a retrospective analysis from Australia, PELD-

MELD score was assessed at different time points (admission, PALF diagnosis, and peak) in children admitted with PALF. Scores were significantly different between spontaneous survivors and nontransplant death at diagnosis and peak values, but not at admission. PELD-MELD score cutoffs of >27 and >42 at PALF diagnosis led to sensitivity of 76% and 66% and specificity of 60% and 92%, respectively. In another small study a PELD score of 33 at admission showed 81% specificity and 86% sensitivity for poor outcome (positive predictive value 92% and negative predictive value 69% .

3. International normalized ratio (INR)

Numerous studies have assessed the role INR as marker for predicting need for LT/death for PALF patients both in pre-LT and post-LT era. A study from King’s College Hospital in the pre-transplantation era reported a higher chance of death if PT > 90 seconds.

Studies done during post LT era have also shown that PT and INR predict death/LT or death alone. There is heterogeneity of reported INR thresholds values for predicting prognosis of PALF in the literature. UK organ allocation is based on INR > 4, conversely according to the PALF Study database INR > 2.5 is a significant predictor of death.

4. Individual Parameters

Jain et al., showed that combination 4 parameters (INR, Bilirubin, White cell count and age) predicted near 100% mortality without LT in PALF patients (figure 1).

Variable	% Mortality
Age \leq 2 years	96
Peak INR \geq 4	93
Peak Bilirubin \geq 13.74	92
WBC \geq $9 \times 10^9/L$	93



Variable	% Mortality
Any 1 variable	76
Any 2 variables	93
Any 3 variables	96
Any 4 variables	100

Fig 1: Four PALF prognostic variables associated with cumulative risk of mortality.

Contraindications

Following are considered as general contraindications for LT in PALF setting.

- Irreversible brain damage
- Severe uncorrectable multiorgan dysfunction
- Invasive (active) fungal infection
- Multisystemic disease like hemophagocytic lymphohistiocytosis (HLH), mitochondrial cytopathies

Timing of LT for acute liver failure

The exact time of LT for a patient with PALF is very difficult to determine. It should not be timed too early (not giving a chance for native liver survival) or should not be timed too late (poor prognosis despite LT if LT done too late) (fig 2). The exact timing of LT for PALF should be taken based on combination multiple factors like- etiology of PALF, availability of liver donor, clinical assessment of patient using various scores discussed above and clinical judgement by experienced clinician. Transplant decision should be made by a multidisciplinary team involving the hepatologist, critical care specialist, and LT surgeon. As it is not possible accurately decide when a child with PALF would need LT,

it is imperative that all children with PALF are managed in a center where liver transplant facilities are readily available.

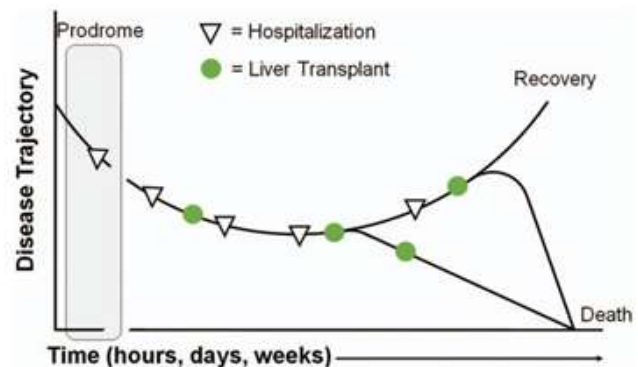


Figure 2. The clinical course of child with acute liver failure. LT interrupts the natural history of acute liver failure.

Liver Transplant Procedures

1. Living-donor liver transplantation (LDLT)

LDLT is commonly performed in India and eastern countries. Tanaka et al., performed first LDLT for ALF in 1990. PALF is an emergency situation where deceased donor organs may not be available in time. Living donor organ represents alternative lifesaving measure. With live donation there are benefits in terms of good quality organ, shortened waiting time and reduced cold ischemic time. Since pediatric

recipients usually require smaller grafts Left lobe (LL)/left lateral segment (LLS) graft, donor morbidity is also less with LLS/LL donation. Live donors are usually close family members and they are heavily influenced by the severe nature of illness. Decision to donate should be completely voluntary and adequate time should be given for the donor to decide on donation. As the donor needs expedited workup, psychological support should be given throughout the donation process and transplant team should ensure that there is no coercion involved. LDLT for PALF has got excellent results with 1- and 5-year patient survival rates 87% and 80% respectively.

2. Deceased donor liver transplantation (DDLTL)

DDLTL is commonly performed in western countries where deceased donor organs are easily available. Organ allocation is prioritized to ALF patients in most countries, but availability of an organ of same blood group and good quality is an issue. ALF patients require good quality organs to meet their metabolic demands. Urrunga et al documented similar patient and graft survival in DDLTL vs LDLTL in adult patients with ALF. However, a study from Poland comparing DDLTL vs LDLTL for PALF patients reported high incidence of primary non function (PNF) in DDLTL group and inferior patient and graft survival in DDLTL group.

3. Auxiliary transplantation (AT)

Auxiliary transplantation (AT) plays a significant role in ALF, in which partial graft liver (live donor liver or split liver from deceased donor) is implanted either below the native liver (heterotopic) or replacing the resected right or left native lobe (auxiliary transplantation). The grafted liver in AT will supplement function of native liver until it recovers from the insult. However, timing of native liver regeneration is unpredictable and varies depending on etiology of ALF. Once native liver recovers, immunosuppression is slowly weaned off and the implant atrophies or removed. Thus, the

patient is spared of lifelong immunosuppression. AT is technically challenging procedure requires expertise. It is done in situations where the native liver has good chance of recovery and patient is reasonably stable enough to tolerate additional hepatectomy. Graft liver has to be of adequate quality and size as done in conventional LDLTL, as the implanted graft has to support the metabolic requirement of the recipient. Weiner et al reported 100% survival with AT and 10/13 children were weaned off immunosuppression.

4. ABO incompatible transplant (ABOi-LT)

Emergency ABOi-LT is still not a standard procedure and is usually considered as a last option. Reported outcomes of ABOi-LT in children are similar to ABO- Compatible liver transplant (ABOc-LT). Most children beyond 1–2 years of age will need desensitization to overcome the immunological barrier of incompatible blood groups. The current standard protocol for desensitization is Rituximab that targets B lymphocytes and is given 2–3 weeks prior to LT. However, this timeline may not be feasible in children requiring emergency LT for ALF. These children need rapid desensitization procedures (29). Stewert ZA et al., in a large series (n=326) reported similar graft survival rates for infants and children with ABOi-LT versus age matched ABOc-LT (30). ABOi-LT may be a viable option in countries with limited access to deceased donor grafts when a blood group compatible living donor is not available or not suitable for live donation.

Conclusions

The results of Liver transplantation LT for PALF are very good, with excellent patient survival.

LT should be timed in such a way that it is not too early, thus allowing time for spontaneous recovery or too late leading on to poor outcomes. Currently there is no ideal score to predict prognosis of PALF. Patients who need LT should

be carefully identified using a combination of prognostic algorithms and clinical judgement. As ALF is a dynamic condition its important that these children are managed in a center where facilities for LT are readily available.

SUGGESTED READING

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PEDICON 2024 – ANNOUNCEMENT




RATES PEDICON 2024 KOCHI

Category	Early Bird upto 31Mar 23	Up to 30 Jun 23	Upto 30 Sep 23	upto 31 Dec 23	From 01 Jan 24
IAP member	11000	18700	27500	37400	45000
Accompanying	11000	18700	27500	37400	45000
Non IAP	16000	37400	44000	55000	66000
Accompanying	16000	37400	44000	55000	66000
PG student	6000	9000	10000	12000	16000
Accompanying	11000	18700	27500	37400	45000
SR citizen	-			11000	11000
Accompanying	11000	18700	27500	37400	45100
SAARC	\$250	\$250	\$300	\$550	\$750
Non SAARC	\$450	\$450	\$550	\$750	\$950
Corporates	25000	38500	44000	49000	60000
Accompanying	25000	38500	44000	49000	60000

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IAP Jalandhar



IAP ORS WEEK JULY 25-31, 2023

IAP ORS day & ORS week were celebrated by all members of Jalandhar Academy of Pediatrics with great enthusiasm. Following activities were conducted

1. At PIMS hospital Jalandhar, on July 25, 2023, a poster making competition was conducted for nursing students of DAV nursing college.

IAP Jalandhar



Dr Rohit Chopra, President Jalandhar Academy of Pediatrics conducted an educational activity for parents and distributed ORS packets to needy patients. He also educated staff nurses about oral rehydration and how to prepare ORS

Dr Anuradha Bansal, Secretary Jalandhar Academy of Pediatrics, conducted a quiz on ORS for staff nurses at PIMS.



IAP Jalandhar



Our senior member Dr Kunj Lalwani conducted a health check up camp for students of Govt School, Jalandhar cantt in association with Rotary club. ORS packets were distributed

IAP Jalandhar



Breastfeeding week celebration August 1-7

Dr Rohit Chopra, President Jalandhar Academy of Pediatrics, conducted an awareness session for staff nurses, stressing the importance of exclusive breastfeeding for first six months.

At PIMS Jalandhar,
Breastfeeding quiz was
conducted for staff nurses.



IAP Jalandhar



Breastfeeding week celebration August 1-7

Dr Anuradha Bansal, Secretary, Jalandhar Academy of Pediatrics, organised a poster making competition on “Lets make breastfeeding and work, work” for nursing students of DAV nursing college



In association with FOGSI, department of Obstetrics and Gynaecology PIMS, conducted an awareness activity for antenatal mothers

IAP Kerala



R DIET Programme IAP Kerala

IAP Kerala



ORS week IAP Malappuram



ALS/BLS Training IAP Kasaragode

IAP Kerala



ORS week IAP Kannur

IAP Kerala

ORS TRUCK Awareness to public



ORS week IAP Vadakara

IAP Kerala



ORS week State level Inauguration IAP Trivandrum

IAP Kerala



Meet the stalwarts -IAP & AHA Kerala

IAP Pune

Pune Pedimeet

6th August 2023

Pune IAP organised Annual Conference Pune Pedimeet - on 6th August 2023. It was full day CME with around 180 delegates and 23 faculties with all crisp and Short sessions which were useful for office practice and for Indoor practice pediatricians.

All sessions were excellent and presentation given by all faculties were short and crisp with topics as follows

- Updates-Epilepsy Classification & Febrile Seizure
- Delayed Puberty-Early Identification (Tanner Staging) and Diagnostic Approach
- Dental Issues in Office Practice
- Sleep Disorders in Children
- Basic Genetics Tests – Pediatrician’s Perspective
- GER / GERD Revisited
- Early Clues for Developmental Delay
- Common Ortho Problems

Panel discussions were well conducted by the moderators.

The highlight of the conference was Dr Achyut Kalantre sir oration, superbly delivered by Humble , Polite and great academician Prof Dr. Sanjay Lalwani sir on ‘**PAEDIATRIC – PAST, PRESENT AND FUTURE, MY JOURNEY AND BEYOND**’.

Around 180 delegates attended this conference.



IAP Pune

Outreach Program Community Service Breast Feeding Week Celebration @ Velhe

This year IAP Pune conducted a outreach program as a community service at Velhe which is 65 km far from Pune.

IAP Pune team along with Dnyanprabodhi NGO conducts antenatal check up camps for pregnant ladies on 19th July 2023. Women from Velhe and nearby villages visit the camp. A team of Gynecologist from Pune conducts examinations of pregnant ladies and provide them essential suppliments

Dr Ujjwala Mudgerikar and Dr.Anand Deshpande gave them information about the importance of breast milk, how to improve breast milk and correct method of feeding with the help of video. Dr.Meenakshi Deshpande, Gynecologist advised them about diet during lactation period.

Followed by a short video on the same topic. Later we answered their queries.

Around 30-40 pregnant mothers were present.

Program went very well.



IAP Pune

Breastfeeding Week Celebration

1-8 August 2023

@ Jehangir Hospital, Pune

It was a grand celebration of Breast Feeding Week in association with Pediatric Dept, Obgy and Gynac Dept along with IAPEAN, lactation consultant at Jehangir auditorium. We had five important talks along with emphasis on human milk banking. There was a play staged by the staff of paediatric Dept followed by poster competition and slogan competition. Quiz was a major hit. This was followed by snacks and high tea sponsored by Jehangir. Program was attended by CEO, Medical director, manager operations along with staff and patients.



IAP Pune

Breast Feeding Week Celebration @ Smt Kashibai Navale Medical College & Hospital

Department of Paediatrics, Smt. Kashibai Navale Medical College and General Hospital successfully carried out “World Breast feeding Week” from 1st August to 7th August 2023. Theme for this year was “**Enabling Breast feeding: making a difference for working parents**”.

Following activities were conducted during this period.

1. **Informational posters on the topic were displayed for patients and relatives** at various places in the hospital complex and Informational talk was delivered by faculty of dept of Pediatrics so as to increase the awareness about importance of breastfeeding as well as sensitize the hospital staff and caretakers of patients/ANC patients/mothers attending immunization OPD. This was done daily for the week by Drs Anjali Parekh, Dr Aboli Dahake and Dr Ved Tiwari. Queries of the caretakers and mothers were answered by the faculty and the myths and misconceptions regarding breastfeeding were cleared.
2. **Wise mother competition** was conducted in the postnatal ward. A questionnaire in Marathi was given to the mothers to assess their knowledge and attitude towards breast feeding. This was conducted over the whole week. A total of 88 mothers (post natal ward) and 155 expectant mothers (ANC OPD) completed the quiz. Post assessment, their concern and queries were addressed. Three mother b(two to post natal and one antenatal) were awarded the prizes for their knowledge in the competition.
3. **Seminar on Breastfeeding** was presented by Postgraduate residents in Department of Pediatrics. This seminar included pathophysiology, correct positions, issues of breastfeeding, breastfeeding in special situations, milk banking and relevant government programmes in India. This was attended by all the PGs from Pediatrics, Ob-Gyn and Community medicine department as well as interns posted in these departments.

IAP Pune

5. **Breastfeeding poster competition** was conducted for all students, teaching and non-teaching staff by Dept of Pediatrics. A total 19 posters were submitted for the competition from the whole institute including nurses, nursing students, physiotherapy students, MBBS students and interns, clerical and other staff from the institute. Posters were judged by senior faculties, Dr. Sharmishtha Deshpande, Professor & HOD, Dept. of Psychiatry & Dr. M. K. Behera, Professor, Dept of Pediatrics. Top two posters were awarded prizes.
6. A very interesting **Quiz session** was conducted for post- graduate trainee students in the department & four teams participated in the quiz which was attended enthusiastically by all the interns along with faculty from Pediatrics Dept. Prizes and certificates were awarded to the winning team.



IAP Pune

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IAP Pune

IAP Postgraduate Quiz

17th IAP PG Quiz Divisional Round was conducted on 17th August 2023 at Bharati Vidyapeeth Medical College, Pune.

14 teams including 10 from various PG institutes in Pune as well as outstation teams from Miraj, Kolhapur and Karad participated in the elimination round. Out of 4 teams selected for the stage quiz round. Armed Force Medical College emerged the winner, B J Medical College were first Runners Up.

Dr Shilpa Dudhgaonkar President, IAP Pune and Dr Sanjay Natu Divisional Coordinator for the quiz handed over the prize of Rs 5000 to the winners and Rs 3000 to the first Runners up along with trophies and certificates.



IAP Pune

IAP Undergraduate Quiz

The Dept of Pediatrics, AFMC, Pune successfully conducted the Divisional round of the 36th IAP UG Quiz at AFMC Pune on Wednesday 23 Aug 2023 from 1030 hrs to 1200 hrs.

A total of seven teams reported at 0930 hrs for the screening/ elimination round and six teams (after elimination) participated in the quiz. Dr Suchi Acharya, Assoc Prof, Dept of Pediatrics, AFMC Pune was the Quiz Master.

The team from AFMC (Medical Cadet Ayush Jaiswal & Neha Joshi) were the winners of the Divisional round and were given a prize money of Rs 5000/- and the trophy. The team from SKNMC & GH were runners-up and received a prize money of Rs 3000/-.



IAP Mumbai

RACE - "RISK STRATIFICATION- ASSESSMENT- CLINICAL MONITORING- EARLY STIMULATION IN HIGH RISK NEONATE"

IAP Mumbai conducted the RACE - "Risk Stratification- Assessment- Clinical Monitoring- Early Stimulation in high risk neonate" under the CIAP Action Plan 2023 -24 on 6th August, 2023 at the Fortis Hospital, Mulund.

Senior National Faculties Dr Zafar Meenai, Dr Samir Dalwai, Dr Leena Deshpande, Dr Leena Shrivastav and Dr Samir Sadawarte, all of them doyens of Neuro-developmental Pediatrics graced the workshop.

Various aspects of monitoring and management of high risk newborns and assessment of their neurological development was emphasised through tools such as ASQ3 and HINE.

The workshop was attended by 24 practising paediatricians from across the city.

The local co ordinators for the module were Dr Vinay Mishra and Dr Sameer Sadawarte.



IAP Mumbai

BASIC LIFE SUPPORT AWARENESS SESSION AT BMC CTC PHO AND BMT HOSPITAL AT BORIVALI

IAP Mumbai organised a basic life support awareness session at BMC CTC PHO and BMT hospital at Borivali East on 3rd August 2023, as a part of National CPR week (17th to 24th July).

The session was attended by 53 staff members of the hospital which included office, nursing, laboratory, security staff, and a few doctors.

The session started with a welcome address by Dr Mamta Manglani, Director of the Centre.

An introduction to basic life support was shared, followed by videos demonstrating the CPR sequence. CPR technique and steps of BLS were explained to the participants. The staff members practised the CPR technique on mannequins in batches. The entire session was well appreciated. The session was conducted by Dr Rajesh Chokhani and Dr Amruta Shirodkar. All the participants were awarded attendance certificates at the end of the session. Refreshments were served to all participants by the hospital.

The session was coordinated by Dr Mamta Manglani and Dr Rajesh Chokhani.



IAP Mumbai

SEMINAR ON BREASTFEEDING AND LACTATION MANAGEMENT

As part of the World Breastfeeding Week celebrations, a Seminar was organized at the Pediatric Department, Sir JJ group of Hospitals, Mumbai on “ Breastfeeding and Lactation Management”.

The seminar was presented by Junior Resident Dr Vishal and co ordinated by Senior Resident Dr Shantanu Sarpatе. The talk was attended by the Faculty and Resident Doctors of the department.



IAP Mumbai

A TALK ON THE VARIOUS ASPECTS OF BREASTFEEDING

A talk on the various aspects of Breastfeeding was organized at the NICU of the Sir JJ group of Hospitals, Mumbai in collaboration with IAP Mumbai on August 2, 2023 as a part of the WBFW celebrations.

The nurses and the mothers of the NICU babies participated in the session with great enthusiasm.

The senior NICU nurses discussed the topic with the help of illustrative posters and a dummy.



IAP Mumbai

HEALTH TALKS

IAP Mumbai in collaboration with the Pediatric Department, Sir JJ group of Hospitals Mumbai celebrated the World Breastfeeding Week on August 4, 2023 in the Out patient department.

There were health talks regarding the importance of exclusive breastfeeding and its benefits to the mother and the baby by staff nurses and Resident doctors.

They also discussed about the common problems and myths associated with Breastfeeding.

There was active participation by the Undergraduate students attending the OPD in the talk.



IAP Mumbai

ROLE PLAY WAS ORGANIZED AT THE RUXMANI LYING-IN HOSPITAL

As part of the World Breastfeeding Week celebrations, a Role play was organized at the Ruxmani Lying-in Hospital.

Dr Nehal Shah and Lactation Consultant , Dr Rujuta Parikh performed a skit on the common lactation concerns and the myths associated with Breastfeeding in mothers. The issues with latching, inadequate lactation, nipple problems, storage and handling of expressed milk for working mothers and many such other problems of concern to young mothers were discussed by means of role play. There were many queries by the mothers that were answered by them.

The program was attended by about 44 mothers and their relatives along with 12 nurses and 6 paramedical staff.

“Poshan” - Nutritional packets containing bajra flour, dry coconut and jaggery were distributed for 50 mothers on behalf of Team IAP Mumbai.

The event was organized by Dr Nehal Shah on behalf of Team IAP Mumbai.



IAP Mumbai

POSTER COMPETITION AT THE RUXMANI LYING-IN HOSPITAL

A Poster Competition was organized at the Ruxmani Lying-in Hospital, Hughes Road, Mumbai on the 2nd August, 2023 as a part of the World Breastfeeding Week celebrations.

The theme of the competition was “Breastfeeding - The Tree of Life“

There were 15 entries from the staff nurses and the paramedical staff. The judges were Gynaecologists Dr Aditi Dani and Dr Tejal Soni and Medical Director Dr J Pandey. Certificates and cash prizes were given away to the first 3 winners.

The event was organized by Dr Nehal Shah on behalf of Team IAP Mumbai.



IAP Navi Mumbai

NAVI MUMBAI IAP BRANCH REPORT AUGUST 2023

Academic –

1. 4th August 2023 – Diamond Jubilee Academic Series: **Pg Reach of CIAP**
Topic: **IAP PG Teaching Sessions - Supported by Apollo Institute of Child Health**
Experts: **Prof Dr S Balasubramanian & Prof Dr Srinivasan.**
<https://diapindia.org/event-details.php?event=2247&title=IAP-PG-Teaching-Sessions---Supported-by-Apollo-Institute-of-Child-Health>
2. 6th August 2023 – **PEP Talk with Experts**
Pneumococcal education & prevention.
Moderator – **Dr Jeetendra Gavhane**
Expert – **Dr Vijay Yewale**
3. 6th August 2023 – **RACE – Risk Stratification assessment clinical monitoring early stimulation in high-risk neonates.**
Venue – **Fortis Hospital Mulund.**
Topic- **Introduction to ASQ3 Tool D**
Speaker – **Dr Leena Deshpande**
4. 13th August 2023 – **RHTYM (Rheumatology Training Module)**
Venue – **Bhillai**
Expert – **Dr Vijay Vishwanathan**
5. 16th August 2023 - **IAP President Dr Upendra Kinjawadekar** leading a **panel discussion** on:
Pre-referral Do's and Don't's in Pediatric Shock – What a General Pediatrician must know
with **Dr Suchithra Ranjith, Dr Namit Jerath, Dr Mahesh Mohite & Dr Mihir Sarkar** as experts.
Dr Suchithra will be delivering a **short lecture on Pediatric Septic Shock Management in LMIC - Challenges & Solutions.**
6. 17th August 2023 – **IAP Adolescent Health Chapter**
Growth & Development of Adolescents
Moderator – **Dr Kalyani Patra**

IAP Navi Mumbai

<https://diapindia.org/event-details.php?event=2259&title=IAP-ADOLESCENT-HEALTH-CHAPTER>

7. 18th August 2023 - Diamond Jubilee Academic Series: Pg Reach of CIAP

Topic: **IAP PG Teaching Sessions - Supported by Apollo Institute of Child Health**

Experts: **Prof Dr S Balasubramanian & Prof Dr Srinivasan.**

<https://diapindia.org/event-details.php?event=2247&title=IAP-PG-Teaching-Sessions---Supported-by-Apollo-Institute-of-Child-Health>

8. 20th August 2023 – **Super-speciality Monsoon CME.**

Navi Mumbai IAP in association with Kokilaben Dhirubhai Ambani Hospital Navi Mumbai

1. Growing pains by **Dr Vikas Basa**

2. Interesting case scenarios in Hematology by **Dr Omkar Khandkar**

3. Neonatal TORCH infections by None other than ID Expert **Dr Tanu Singhal**

4. Pulmonary interesting cases by our Budding Pulmonologist **Dr Kaustubh Mohite**

5. **Dr Alok Sardesai** Current scenario in precious puberty in pediatric practice.

Guest of Honor - Central IAP Eb member **Dr Pramod Kulkarni**

MOC – **Dr Divya Ramadoss.**

9. 24th August 2023 – **Mahalap Case Challenge**

Presenter – **Dr Amit Saxena**

10. 25th – 27th August 2023- **Issues in Vaccinology – National Vaccinology Module**

National Scientific Convenor – **Dr Vijay Yewale**

Topic – Immunology, Vaccine Schedule – **Dr V N Yewale**

General Principles & Cold Chain – **Dr Upendra Kinjawdekar**

11. 26th August 2023 – **Navi Mumbai Raigad Ophthalmologist's Association along with NMIAP organised a Hybrid Meet on Allergy Management**

Chief Guest – **Dr V N Yewale**

Chairperson – **Dr Veeranna K**

IAP Navi Mumbai

Speaker – Dr Vikram Patra (Diagnosing Childhood Allergies)

12. 27th August 2023 – RHYTM Module – Under IAP Action Plan 2023

Rheumatology Workshop by Dr Vijay Vishwanathan

Venue – Goa Medical College

13. 31st August 2023 – 17th IAP PG Quiz

Host – IAP NaviMumbai & IAP Raigad

Organised by Dept of Pediatrics MGM Hospital, Kamothe.

Quiz Master – Dr Amol Madve

Central IAP Eb Membar Dr Jeetendra Gavhane, Head of the pediatric Department Dr Vijay Kamle, Iap Raigad President Dr Vikas More secretary Dr Ajay Koli, Iap Navi Mumbai President Dr Satish Shahane, Professor Anjali Otiv graced the occasion with their presence.



IAP Navi Mumbai



Awards, Recognitions & Publications –

1. **Dr Dhanya D**, is elected as the **Fellow of Pediatric Infectious Disease Society, based in USA**. First recipient from a country outside North America to receive this prestigious global recognition. <https://pids.org/2023/08/23/pediatric-infectious-diseases-society-honors-24-distinguished-physicians-scientists/>

IAP Navi Mumbai

आयुष्य आरोग्य विभाग, नवी मुंबई

आयुष्य आरोग्य विभाग, नवी मुंबई

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IAP Navi Mumbai



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