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CONTENTS

15TH IAP-IJPP CME 2023 TOPICS

Birth injuries	5
Sindhu Sivanandan	
Urinary tract infection management – What's new?	10
Sunil Reddy KG, Sudha Ekambaram	
Antibiotics in respiratory tract infections	17
Lakshmi S. Velmurugan, Niveditha Thangamani	
Role of Indian Academy of Pediatrics - Advanced Life Support concepts in identifying sick children in a busy clinic	27
Nikhil Jha, Bala Ramachandran	
Heated humidified high flow nasal cannula - Practical aspects	35
Gowrishankar NC	
Trouble shoots in mechanical ventilation	40
Poovazhagi Varadarajan	
Dietary management in inborn errors of metabolism	44
Umamaheswari Balakrishnan	
Liver transplantation in children - Role of pediatricians	53
Akhil Raj MS, Naresh P Shanmugam	
How to read a research article?	57
Sridevi A Naaraayan	

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GENERAL ARTICLE

Adoption hurdles before and hurdles after – FAQs **62**

Shyamala J

DRUG PROFILE

Update on use of the newer antiseizure medications in children and adolescents **68**

Jeeson C Unni, Mohammed Kunju PA

RADIOLOGY

Plain radiography and its value in the assessment of pediatric cardiac patients - Part II **76**

Sudeep Varma

CASE REPORT

Neonatal presentation of familial glucocorticoid deficiency with melanocortin-2-receptor mutation **88**

Sandhya K, Devimeenakshi K

LEARNING TOGETHER

OSCE in fluid electrolytes minerals **91**

Thangavelu S, Annamalai Vijayaraghavan

ADVERTISEMENTS **96,97,100**

CLIPPINGS **9,26,39,43,52,61,67**

NEWS AND NOTES **90**

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IAP - IJPP CME 2023**BIRTH INJURIES*****Sindhu Sivanandan**

Abstract: Birth injury is a trauma sustained during birth, which can be an anatomical defect or functional impairment. Birth injuries commonly occur during the second stage of labour due to the forces of labour or due to obstetric intervention such as traction or instrumentation. They can also be caused inadvertently by intrapartum monitoring devices such as fetal scalp electrodes and heart rate monitors. Effects of fetal procedures such as amniocentesis and intrauterine transfusions and injuries that occur due to neonatal resuscitation are not considered birth injuries. Management depends on the site and severity. Monitoring is very important as the presentation and severity can change rapidly. Physician should document the exact nature of the injury in case records and inform the parents about the severity, management and expected outcome.

Keywords: Birth injury, Obstetric intervention, Life-threatening injury.

Points to Remember

- Birth injuries occur despite best perinatal care.
- Important risk factors for birth injuries include macrosomia, instrumental deliveries, malpresentation and shoulder dystocia.
- Subgaleal hemorrhage is an emergency requiring aggressive fluid resuscitation.
- Erb's palsy is the most common brachial plexus injury and most cases improve by 3-4 months of age. Treatment is conservative with range of motion exercises.
- Long bone fractures are rare. With immobilization and splinting most heal with good outcomes.

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**URINARY TRACT INFECTION
MANAGEMENT - WHAT'S NEW?*****Sunil Reddy KG**
****Sudha Ekambaram**

Abstract: Urinary tract infection, one of the commonest bacterial infections in pediatric population requires a structured approach and treatment. This article presents an overview of the recently published guideline on urinary tract infection management. Some of the key changes from the earlier guidelines are as follows. Clean catch should be tried even in non-toilet trained children as the initial method for urine collection. Urine culture of $\geq 10^5$ colony forming units/mL in a clean catch is considered significant in the presence of symptoms, especially in infants. Urine dipstick can be used as a first line screening test alternative to urine microscopy in urinary tract infection. Oral antibiotics can be used in acute pyelonephritis treatment in non-toxic infant for 7-10 days. Micturating cystourethrography is indicated in children with (a) abnormal kidneys in ultrasound, (b) <2 years of age with non-E. coli urinary tract infection, (c) recurrent urinary tract infection. Dimercaptosuccinic acid scan is performed in children with high grade (3-5) vesicoureteric reflux and recurrent urinary tract infection after 4-6 months of an urinary tract infection episode to diagnose scarring. Antibiotic prophylaxis is indicated in children with low grade vesicoureteric reflux with recurrent urinary tract infection, high grade vesicoureteric reflux and bowel bladder dysfunction. Antibiotic prophylaxis can be stopped in children >2 years if the child is toilet trained, free of bowel bladder dysfunction and has not had urinary tract infection in

the last 1 year. Surgical intervention is considered for parental preference or in high grade vesicoureteric reflux with recurrent urinary tract infection despite antibiotic prophylaxis. During follow-up, ultrasound is done periodically to monitor the kidney growth in children with persistent high grade vesicoureteric reflux. Repeat micturating cystourethrography is indicated only in case of recurrent urinary tract infection to detect new scarring. Routine repeat micturating cystourethrography is not indicated for documenting resolution of reflux.

Keywords: Urinary traction infection, Vesicoureteric reflux, Bowel bladder dysfunction.

Points to Remember

- **UTI diagnosis requires a positive culture in symptomatic children, not just leukocyturia.**
- **Oral antibiotics can be used in acute pyelonephritis treatment in non-toxic infant for 7-10 days.**
- **Renal ultrasound is universally done in all young children with the first febrile UTI.**
- **Micturating cystourethrography (MCU) is indicated in children with recurrent UTI, abnormal kidney ultrasound, and in patients below 2 years of age with non-E. coli UTI.**
- **Dimercaptosuccinic acid scan (DMSA scan) is indicated in children with recurrent UTI and high-grade vesicoureteral reflux (VUR).**
- **Antibiotic prophylaxis is indicated in children with low grade VUR with recurrent UTI, high grade VUR and bowel bladder dysfunction (BBD).**

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ANTIBIOTICS IN RESPIRATORY TRACT INFECTIONS

***Lakshmi S. Velmurugan**
****Niveditha Thangamani**

Abstract: Respiratory tract infections are the commonest community-acquired infections and are classified as upper and lower respiratory tract infections. Viruses are the most common cause of most upper respiratory tract infections and among the bacteria, *Streptococcus pneumoniae*, *Hemophilus influenzae* and *Moraxella catarrhalis* are the common causative organisms. Amoxicillin is the drug of choice to cover these organisms and high-dose amoxicillin is preferred due to increasing penicillin resistance among pneumococci. Amoxicillin-clavulanate is preferred when *Hemophilus* is the suspected organism. *Streptococcus pyogenes* is the commonest organism for pharyngitis and hence, both penicillin and amoxicillin are preferred in these cases. Gram-negative coverage is usually not needed for upper respiratory tract infections while retropharyngeal abscess and Lemierre syndrome are the two conditions needing anaerobic coverage. Macrolides have no role in upper respiratory tract infections except in cases of diphtheria when the patient is allergic to penicillin. Community acquired pneumonia is also commonly caused by viruses, especially in infants. *Pneumococcus*, *Hemophilus influenzae*, *Mycoplasma*, *Chlamydia* and *Staphylococcus aureus* are the other causes. Amoxicillin is effective even in severe pneumonia. Azithromycin is used when atypical organisms are suspected, and vancomycin or clindamycin is added when Methicillin resistant *staphylococcus aureus* is suspected.

Keywords: Upper respiratory tract infections, Lower respiratory tract infections, Antibiotics.

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Points to Remember

- *In today's era of increasing antimicrobial resistance, our antibiotic regimens have to be narrow-spectrum; etiology and evidence based rather than conventional.*
- *In most of the cases since distinction between viral and bacterial etiology is not clearly evident, we rely on clinical scores and recommendations.*
- *In sinusitis, antibiotics are initiated when the three clinical criteria for ABS are fulfilled and in otitis media, factors considered are age, temperature and otalgia. High-dose amoxicillin is the drug of choice and amoxicillin-clavulanate is used when there is suspicion of *Hemophilus*.*
- *Pharyngotonsillitis is commonly caused by GAS. Modified Centor's scoring is used and cases are subjected to throat swab and started on penicillin or amoxicillin. Cases of diphtheria are treated with penicillin and anti-toxin.*
- *Though most pneumonia are caused by viruses, different organisms can be suspected based on age and clinical presentation. For most cases, empirical treatment is given with amoxicillin and macrolides are added when atypical organisms are suspected.*
- *Non-response or deterioration in any case warrants proper microbiological investigations and escalation of antibiotic regimen.*

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ROLE OF INDIAN ACADEMY OF PEDIATRICS - ADVANCED LIFE SUPPORT CONCEPTS IN IDENTIFYING SICK CHILDREN IN A BUSY CLINIC

***Nikhil Jha**
****Bala Ramachandran**

Abstract: *A child who requires an urgent medical intervention to prevent further decompensation is commonly referred to as a 'sick child'. In a busy clinic, physicians often face the challenge of identifying a sick child amongst a multitude of patients seeking care. The Advance Life Support concepts play a vital role in providing them with the necessary clinical acumen and triaging skills to identify and manage a sick child effectively. This article reviews existing literature on managing office emergencies and describes how Indian Academy of Pediatrics-Advance Life Support principles can be useful to quickly identify outpatient clinic/office emergencies.*

Keywords: *Indian Academy of Pediatrics - Advanced Life support, Outpatient department, Office emergencies, Emergency medical services.*

Points to Remember

- *Conduct a self-assessment of your office preparedness.*
- *Develop a comprehensive office emergency plan that includes a protocol for recognizing emergencies, effective staff communication, clearly defined roles and responsibilities during emergencies, and guidelines for calling for external assistance if needed.*
- *Regularly maintain and update the recommended emergency equipment and medications in your office.*
- *Implement a plan for ongoing education and training of staff in IAP-BLS protocol.*
- *Practise mock codes and skill drills regularly; establish partnership with the nearest hospital or facility.*

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HEATED HUMIDIFIED HIGH FLOW NASAL CANNULA – PRACTICAL ASPECTS

***Gowrishankar NC**

Abstract: Heated humidified, high flow, nasal cannula, oxygen therapy is a form of non-invasive respiratory support which may reduce the need for either continuous positive airway pressure or invasive ventilation. It delivers heated fully humidified mixture of air and oxygen with high flow via a non-sealing nasal interface (nasal cannula). It can be used in any condition with respiratory distress but not if there is altered sensorium, central apnea and upper airway obstruction. Escalation of respiratory support is indicated if the degree of respiratory distress remains unchanged or worsens within two hours. The complications are few. This article deals with only the practical aspects of high flow nasal cannula oxygen therapy outside intensive care settings.

Keywords: Oxygen therapy, Respiratory distress, High flow, Indications, Flow rate, Monitoring.

Points to Remember

- *HHHFNC acts as a bridge between simple flow nasal cannula therapy and continuous positive airway pressure therapy and is increasingly used outside intensive care units.*
- *While on HHHFNC, monitoring of heart rate, respiratory rate and oxygen saturation is mandatory.*
- *Failure of treatment is indicated if there is no reduction in heart rate and respiratory rate in the first two hours after initiating HHHFNC.*
- *Choosing nasal cannula size correctly is highly essential.*
- *Use of HHHFNC in emergency room promptly reduces the need for intubation.*
- *Flow rate based on weight is superior to the one based on age.*

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TROUBLE SHOOTS IN MECHANICAL VENTILATION***Poovazhagi Varadarajan**

Abstract: *Trouble shooting is a systematic approach to problem-solving that is often used to find and correct issues during mechanically ventilating a patient as much for handling any mechanical device. Trouble shooting in mechanical ventilation is a necessity which comes often during the course of ventilating a child. A thorough knowledge as regards to the type of ventilators used and the familiarity with the initial ventilator settings help reduce the need for such trouble shoots. Humidifiers need to be verified for temperature and heat and moisture exchange filters when used, have to be of appropriate size with appropriate calibration done. Recognition of alarms to be followed by attending to the child first before muting the alarm. Common issues include desaturation, tube leaks, secretions, disconnections, auto positive end-expiratory pressure, improper trigger, poor lung compliance and airway resistance. Displacement, obstruction, pneumothorax and equipment failure should be ruled out in any child with dropping saturation. Basic knowledge of reading ventilator graphs will help in prompts troubleshooting.*

Keywords: *Ventilator alarms, Trigger, Auto PEEP, HME filter, Humidifiers, Trouble shoot.*

Points to Remember

- *DOPE should be ruled out in any child desaturating on a ventilator.*
- *Trigger should be appropriately set and adjusted according to the respiratory effort.*
- *High-pressure alarms need to be attended to and pressure time curve interpreted for airway and compliance issues.*
- *Low pressure, low volume and apnoea alarms should alert for tube leaks and disconnection.*
- *Airway secretions causing high frequency alarms have to be identified.*
- *Auto PEEP generated should be identified in children with high PEEP alarms.*
- *Clinical examination complemented by graphics helps in troubleshooting.*

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IAP - IJPP CME 2023**DIETARY MANAGEMENT IN INBORN ERRORS OF METABOLISM*****Umamaheswari Balakrishnan**

Abstract: *Inborn errors of metabolism are individually rare, but collectively common. They pose challenges not only in diagnosis, but also in management. Dietetic interventions/ therapy plays a key role in both acute and chronic management of inborn errors of metabolism and helps prevent long-term complications. Adequate knowledge of diet therapy helps the clinicians effectively manage these children. This review article elaborates on the dietary principles and diet management in aminoacidopathy, organic acidemia, urea cycle disorders, fatty acid oxidation disorders, galactosemia, glycogen storage disorders and gluconeogenetic defects. The role of breast milk feeds in these disorders and the dos' and don'ts in diet therapy are also discussed.*

Keywords: *Inborn errors of metabolism, Diet, Dietary management.*

Points to Remember

- *Dietary management is the mainstay of therapy for disorders of intermediary metabolism.*
- *Reduction in substrate and providing deficient metabolite are the main principles of management which are based on diet therapy.*
- *Breast milk is the main source of natural protein during infancy and should not be stopped with exceptions being infantile onset VLCADD and galactosemia.*
- *Alteration in diet should be based on biochemical and clinical findings.*
- *A multidisciplinary approach is recommended in the management of IEM.*

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IAP - IJPP CME 2023

LIVER TRANSPLANTATION IN CHILDREN - ROLE OF PEDIATRICIANS***Akhil Raj MS******Naresh P Shanmugam**

Abstract: *Pediatricians play a vital role in managing children with liver diseases. With growing numbers of liver transplantations in India it has become imperative that pediatricians identify the need for liver transplantation in children, provide adequate counselling to the families, refer them to a liver transplant centre and provide community care after liver transplantation is done. This article deals with basic concepts of liver transplantation in children that will help pediatricians in their day to day practice.*

Keywords: *Liver transplantation, Indications, Counselling, Supportive care, Community care.*

Points to Remember

- *Pediatricians play a crucial role in the early identification and timely referral of children in need of liver transplants, which helps reduce post-transplant morbidity and mortality.*
- *Liver transplantation is indicated in ALF, CLD, metabolic liver disease and unresectable tumors. Amongst the CLDs, biliary atresia is the most common indication for liver transplantation.*
- *Pediatricians are involved in various aspects of pre-transplant care including monitoring, management of complications of liver disease (coagulopathy, encephalopathy, metabolic crises), essential guidance on nutrition and immunization.*

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IAP - IJPP CME 2023**HOW TO READ A RESEARCH ARTICLE?**

***Sridevi A Naaraayan**

Abstract: *Reading a research article is essential for medical professionals involved in clinical care and academics alike. Knowledge of research methodology and biostatistics aids in interpreting a given article in the right manner. All sections of the research article have their own significance. It is imperative to read the entire article to understand and interpret it comprehensively to derive useful conclusion. Validity, reliability and generalizability are the key parameters to be considered while interpreting a research article.*

Keywords: *Research article, Critical appraisal, Validity, Reliability, Generalizability.*

Points to Remember

- *Reading research articles methodically and critically appraising them is essential for academicians and clinicians.*
- *Reading the title and abstract will give preliminary information on whether the article is relevant to the reader.*
- *Reading the entire article is necessary to understand and interpret the article correctly.*
- *Validity and reliability are key parameters to be considered while interpreting an article.*
- *Tools available for critical appraisal of articles are a set of questions that help in understanding the correctness and usefulness of the article.*

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GENERAL ARTICLE**ADOPTION HURDLES BEFORE AND HURDLES AFTER - FAQs*****Shyamala J****Bibliography**

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DRUG PROFILE**UPDATE ON USE OF THE NEWER ANTISEIZURE MEDICATIONS IN CHILDREN AND ADOLESCENTS**

***Jeerson C Unni**
****Mohammed Kunju PA**

Abstract: Administration of antiseizure medications is the first-line treatment for epilepsy, one of the most common neurological diseases. There were very few medications for treating children with seizure disorder till two and a half decades ago. Though some newer drugs have been approved, there continues to be an unmet need for efficacious newer antiseizure medications with good safety profile. Research for an ideal antiseizure medication is the need of the hour. This article attempts to highlight the travails of pediatric neurologists in the pharmaco-management options for difficult to treat seizure disorders.

Keywords: Newer antiseizure medications, Intractable seizures, Children, Adolescents.

Points to Remember

- *Most of the newer antiseizure medications are used for controlling difficult (to control) seizures.*
- *The most useful advantage is their safety profile.*
- *As per Nice Guidelines lamotrigine and levetiracetam are first line monotherapy for focal seizures.*

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RADIOLOGY**PLAIN RADIOGRAPHY AND ITS VALUE
IN THE ASSESSMENT OF PEDIATRIC
CARDIAC PATIENTS - PART II*****Sudeep Verma****References**

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CASE REPORT**NEONATAL PRESENTATION OF
FAMILIAL GLUCOCORTICOID
DEFICIENCY WITH MELANOCORTIN-2-
RECEPTOR MUTATION*****Sandhya K******Devimeenakshi K**

Abstract: *Familial glucocorticoid deficiency is a rare autosomal recessive disorder resulting from adrenal unresponsiveness to adrenocorticotrophic hormone. This disorder is characterized by low cortisol and high adrenocorticotrophic hormone. Affected children present with hyperpigmentation, hypoglycemic seizures, failure to thrive and recurrent infections. We report a female neonate who presented with hyperpigmentation at birth. Neonate also had recurrent hypoglycemia, convulsions and circulatory collapse requiring inotropes. Preliminary investigations suggested primary cortisol deficiency and elevated adrenocorticotrophic hormone with good response to hydrocortisone treatment. Subsequent whole exome sequencing showed Homozygous Frameshift variant in Exon 2 of the melanocortin-2-receptor mutation gene which confirmed the diagnosis of familial glucocorticoid deficiency.*

Keywords: *Adrenal insufficiency, Familial glucocorticoid deficiency, MC2R mutation.*

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