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IAP - IJPP CME 2021**TECHNOLOGY REVOLUTION IN HEALTHCARE**

***Bakul Jayant Parekh**

Abstract: *Healthcare technology has a profound impact on the delivery of healthcare and its outcomes. The rapid rate of progress in healthcare technologies will accelerate the process in near future. All four areas of technology i.e. diagnostics, monitoring, diagnostic support and public health governance which impact healthcare will show significant development. Artificial intelligence has a major role to play and we shall see the rapid unfolding of an era of doctor-machine collaboration to deliver better outcomes. While healthcare professionals will necessarily need artificial intelligence support to deliver better care, the need for the human intelligence will not go away and the pediatrician will remain centrally relevant for patients. However, to stay relevant, the pediatrician must stay abreast of new technology, adopt it wholeheartedly and reinvent himself periodically.*

Keywords: *Artificial intelligence, Pediatrician.*

Points to Remember

- *Healthcare industry is seeing a paradigm shift due to technology revolution.*
- *Artificial intelligence is coming up in a big way in diagnostics and patient management.*
- *Embracement of technology is a must for every healthcare person not only for patient management but also for upgrading knowledge.*

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SEPTIC SHOCK- FLUID BOLUS DECISIONS AND ASSESSMENT OF FLUID RESPONSIVENESS

*Suchitra Ranjit
**Rajeswari Natraj

Abstract: *Circulatory shock is defined as acute cardiovascular dysfunction resulting in inadequate delivery of oxygen and substrates necessary to meet tissue metabolic demand. The history includes pertinent issues related to etiology, such as fever, trauma and gastro-intestinal losses. Clinical examination consists of respiratory mechanics and cardiovascular status including oxygenation, respiratory rate, work of breathing, level of consciousness, heart rate, blood pressure, peripheral perfusion and adequacy of urine output. Laboratory evaluation should include markers of global oxygenation, particularly arterial blood gas, lactate and central venous oxygen saturation. While clinical assessment of perfusion may be sufficient to recognize shock and guide initial management, patients in whom shock is unresolved need further cardiovascular monitoring depending on availability and expertise. Fluid bolus decisions may be guided by dynamic tests of fluid responsiveness which rely on cardio-respiratory interactions, while simultaneously assessing for fluid tolerance.*

Shock management is targeted towards treating underlying etiology and implementation of physiologically based therapies.

Keywords: *Shock, Fluid bolus, Physiology, Responsiveness, Tolerance.*

Points to Remember

- *In a child with shock, the history must include pertinent issues related to etiology such as fever, trauma, gastro-intestinal losses.*
- *Clinical evaluation includes assessment of respiratory mechanics and cardiovascular status, including oxygenation, respiratory rate, work of breathing, level of consciousness, heart rate, blood pressure, peripheral perfusion and urine output.*
- *After initial stabilization and initial 10-20 ml/kg fluid bolus, further fluid boluses should ideally be based on tests of fluid-responsiveness.*

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IAP - IJPP CME 2021

FUNDUS EXAMINATION***Vasumathy Vedantham******Sailatha Ganesh*******Praveen Krishna R**

Abstract: Childhood blindness is a major cause of concern and its late diagnosis and treatment can lead to visually challenged adults causing an economic and social burden to the society. Not only parents and caregivers but also pediatricians and ophthalmologists have a collective role in giving better visual potential to the children. The appropriate antenatal and postnatal history along with a good clinical examination is the key for further management. Fundus examination plays an important role in diagnosis and prognostication of many systemic pathologies. Hence, it is recommended for all children to undergo visual assessment, external oculo-facial examination, distant direct ophthalmoscopy and a dilated fundus examination. The Rashtriya Bal Swasthya Karyakram of the Government of India stresses on universal eye examination of all newborns to detect preventable causes of blindness.

Keywords: Fundus examination, Systemic association, Ophthalmoscope, RetCam, Retinopathy of prematurity, Children.

Points to Remember

- *Visual assessment and fundus examination in children can be a guide to systemic diseases.*
- *Direct and indirect ophthalmoscopy are diagnostic equipment for retinal examination.*
- *RetCam is a very important telemedicine tool for retinal examination of preterm babies to detect retinopathy of prematurity.*
- *Role of pediatricians in eye care is very important as they are the primary treating physicians who are in contact with the children.*
- *Early referral to an ophthalmologist can reduce the incidence of childhood blindness.*

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**AUTOIMMUNE ENCEPHALITIS
- A REVIEW*****Gautam Kamila******Sheffali Gulati**

Abstract: Autoimmune encephalitis is a group of immune mediated diseases, with inflammation of the central nervous system that demonstrates a widely variable spectrum of clinical presentations. It is caused by binding of antibodies to the intracellular/cell-surface antigens, producing typical syndromes. Anti-N-methyl-D-aspartate receptor encephalitis is the most common form in children and the clinical presentation differs from that of adults. Children present with alteration in consciousness, seizures, movement disorders, behavioral and sleep disturbances. Investigations, especially antibody detection, along with suggestive history aids in the diagnosis. Treatment is based on immunotherapy and early initiation of therapy is associated with better outcome.

Keywords: Anti-NMDAR encephalitis, Children, Movement disorders, Immunomodulation.

Points to Remember

- *AIE in children as a group is more common than individual viral etiologies of encephalitis in children.*
- *Anti-NMDAR encephalitis is the most common autoimmune encephalitis in children.*
- *AIE in children is commonly post-infectious in etiology and is less commonly associated with malignancy, unlike in adults.*
- *Characteristic clinical features include seizures, movement disorders (peri-oral dyskinesias, choreoathetoid movements), behavioral issues and sleep disturbances.*
- *The antibodies are detected with almost equal sensitivity in both serum and CSF, except in anti-NMDA encephalitis, where the sensitivity in CSF is marginally better.*
- *Treatment options include steroids, IVIG, plasmapheresis and in refractory cases, rituximab and cyclophosphamide.*
- *Early initiation of immunotherapy leads to a better outcome.*

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IAP - IJPP CME 2021**COUNSELING IN DIFFICULT SITUATIONS**

***Krishan Chugh**
****Rohit Vohra**

Abstract: *Pediatric intensive care unit practice has remarkably changed in recent years. These units have experienced transformation in care and humanization of assistance, providing access round the clock. In the current era, the pediatric intensivist plays the role of a healthcare provider and a counsellor who apprises the family members of the prognosis of the disease to allay anxiety about the child's condition. Thus, pediatric intensive care unit-doctor must be an expert in parental counseling. Communication skills, empathy and honesty are attributes that the physician should employ during difficult situations.*

Keywords: *Critically ill child, Intensive care, Counseling, Anxiety, Stress.*

Points to Remember

- *In this era, ordering right tests and prescribing right medications alone is not sufficient. counselling about disease condition is just as important.*
- *Patient counselling is not like one-size-fits-all, every individual has a different way of reacting to unsettling news. Thus, a physician should evolve his counselling skills and use them according to the needs of his patient's family members.*
- *Good communication improves a parent's adjustment to illness, lessens anxiety and fear, increases adherence to treatment, and results in higher rate of satisfaction. Poor communication skills are associated with increased use of ineffectual treatments by the parents, higher rates of conflict between parents and doctor and less adherence to doctors' advice.*
- *A variety of communication tools and road maps can help clinicians find their way through difficult conversations.*
- *Ultimately honesty is the best policy.*

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GENETIC TESTING IN CLINICAL PRACTICE - DIAGNOSTIC STEWARDSHIP***Sankar VH**

Abstract: *Advances in the field of molecular medicine and genetic engineering have found applications in clinical practice in the form of diagnosis, treatment and prevention of genetic disorders. Cytogenetics refers to the description of chromosome structure and the identification of genomic aberrations that cause diseases. 'Fluorescence in situ hybridization' is a process whereby chromosomes or portions of chromosomes are vividly painted with fluorescent molecules that anneal to specific regions. Detecting the changes in DNA (mutation) responsible for the genetic disease is the diagnostic test for single gene disorders. 'Chromosomal microarray' is a high resolution, whole-genome screening technique that can identify most of the chromosomal imbalances detected by conventional cytogenetic analysis, as well as smaller sub-microscopic deletions and duplications that are referred to as copy-number variants that may be missed in the conventional karyotyping. 'Next generation sequencing' is a powerful platform that has enabled the sequencing of thousands to millions of DNA molecules simultaneously. This article review the rational use of various investigations used for the diagnosis of genetic disorders in clinical practice.*

Keywords: *Cytogenetics, Chromosomal microarray analysis, Next generation sequencing.*

Points to Remember

- *The indications of genetic testing include diagnosis of genetic disorders, prenatal diagnosis, carrier testing and pre symptomatic diagnosis.*
- *Genetic testing in clinical situation should be accompanied by pre-test and post-test genetic counselling.*
- *Cytogenetic methods include conventional cytogenetics, FISH and microarray which can detect chromosomal aberrations and copy number variants.*
- *Rational selection of molecular methods depends on the type of mutation to be tested in the specific genetic disorder.*
- *Always consider the three principles – analytical validity, clinical validity and clinical utility when considering a specific genetic test in a given clinical scenario.*

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IAP - IJPP CME 2021**LIMPING CHILD*****Sankar R**

Abstract: *Painful or painless limp or gait disturbances are one of the most common problems encountered in general pediatric practice. The cause for this condition can be benign to life threatening. Thorough history taking with examination along with appropriate investigations help pediatricians to manage children with limp. This article aims to help practicing paediatricians differentiate various causes and approach to investigation and care of the same.*

Keywords: *Limp, Osteomyelitis, Septic arthritis, SCFE.*

Points to Remember

- *Causes of limp varies with age.*
- *Fever with painful limp needs urgent evaluation.*
- *Adolescent with acute onset of limp needs investigation to rule out slipped capital femoral epiphysis.*

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IAP - IJPP CME 2021**DEVELOPMENTAL ASSESSMENT OF A
10 MONTHS OLD INFANT**

***Somasundaram A**

Abstract: *Development of a child is assessed in office practice by simple observation. The way a child plays, learns, speaks, acts and moves offers important clues about the child's development. Developmental milestones are the skills acquired by a growing child at appropriate ages. Even a normal child without any risk factors, who is expected to follow a normal path, should undergo periodic developmental screening. In the absence of established risk factors or parental or provider concerns, a general developmental screen is recommended at 9-18 and 30-month visits. A ten-month old will usually enjoy his new found freedom through an exploration drive and hand-eye coordination which will help him to grasp the objects quickly. The child displays social abilities and emotional temperament and also understands the importance of the social gesture of waving bye-bye. It can imitate basic actions and also displays separation anxiety.*

Keywords: *Developmental assessment, Milestones, Pincer grasp, Object permanence.*

Points to Remember

- *Developmental problems are the “new morbidity in childhood”.*
- *Developmental screening should be part of a routine pediatric practice.*
- *Attainment of mobility from 9 months onwards helps the child to explore*
- *Object permanence, pincer grasp and vocalising bi syllables are the few milestones which develop at 10 months.*
- *Early identification of red flags and timely referral helps in early intervention.*

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IAP - IJPP CME 2021

JUNCS

***Remesh Kumar R**
****Krishna Mohan R**

Abstract: Globally there is a rising trend in consumption of undesirable foods among children in the last few decades. There are multiple reasons for this, including changing demographic patterns, increasing urbanization, affordability and easy availability of these foods. The acronym “JUNCS” has been coined to include a variety of unhealthy foods. Considering the various ill effects, there is an urgent need to curb the consumption of “JUNCS”, especially among children.

Keywords: JUNCS, Caffeinated drinks, Fruit drinks, Negative effects.

Points to Remember

- “JUNCS” should be avoided to the extent possible in all children and adolescents.
- Packaged fruit juices /fruit drinks/sugar sweetened beverages are not to be given to children less than 2 years age, and to be avoided as far as possible in older children.
- No caffeinated drinks are to be given to children and adolescents.
- There must be strict regulations to control advertisements promoting consumption of “JUNCS” in TV, print and social media.

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IAP - IJPP CME 2021

**COMPUTERIZED TOMOGRAPHY HEAD
IN PEDIATRIC EMERGENCIES*****Ilakya Devadas******Sangeetha Yoganathan*******Anitha Jasper*******Gibikote Sridhar********Debasis Das Adhikari**

Abstract: Computerized tomography of the brain has often been used as an initial imaging modality in the assessment of children with neurological emergencies. It is readily available in most centers and it is less expensive. The disadvantages of computerized tomography are radiation exposure and a limited diagnostic value in the evaluation of certain conditions such as early stroke, demyelinating disorders, neurometabolic disorders, infection and tumors. However, skull fractures, calcification and intracranial bleed may be readily diagnosed on computerized tomography head. Computerized tomography plays a vital role in the initial evaluation of accidental and non-accidental brain injury, hydrocephalus, and intracranial space occupying lesion. Brain magnetic resonance imaging is the preferred diagnostic modality in the evaluation of neurological disorders. However, it is expensive, time consuming and poses logistic difficulties in an emergent scenario.

Keywords: Computerized tomography, Pediatric emergency, Neuroimaging.

Points to Remember

- *CT is often readily available, less time consuming and less expensive.*
- *An emergent CT head is useful in the diagnosis of skull fractures, intracranial bleed, space occupying lesions, brain herniation and calcification.*
- *The disadvantages of CT are radiation exposure and a limited diagnostic value in the evaluation of certain conditions such as early stroke, demyelinating disorders, neurometabolic disorders, infection and tumors.*
- *MRI brain is preferred in patients with diffuse axonal injury, acute disseminated encephalomyelitis, posterior reversible encephalopathy syndrome and hypoxic ischemic encephalopathy.*
- *Hypo attenuated lesions appear dark (hypodense) and lesions with high attenuation appear bright (hyperdense) on CT brain.*
- *Children face an increased risk from CT radiation due to larger doses and increased lifetime radiation exposure. The risk of a leukemia three fold and triples the risk of brain cancer.*
- *Though the benefits of CT outweigh the risks, it is imperative to reduce the dosage of radiation as much as possible.*
- *Precautions to minimize radiation-related hazards are use of appropriate radio protective shields, applying ALARA principle (as low as reasonably achievable) to reduce radiation dose and use of non-ionic contrast agents.*

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IAP - IJPP CME 2021**PERIPHERAL SMEAR IN ANEMIA*****Shanthi S**

Abstract: *Peripheral smear is an important tool to diagnose hematological abnormalities. A good smear preparation and proper staining is vital for its correct interpretation. Many common causes of anemia like iron deficiency anemia, megaloblastic anemia and thalassemia can be diagnosed by a blood smear examination. This article discusses the basics of a good smear, methodical examination and interpretation of the smear in anemia.*

Keywords: *Anemia, Peripheral smear, Poikilocytosis, Iron deficiency, Thalassemia.*

Points to Remember

- *A good smear technique and proper staining is essential for correct interpretation.*
- *Methodical examination of all three cell lines is crucial.*
- *Poikilocytosis refers to abnormal shape in RBC and anisocytosis to difference in size.*
- *Many inherited anemias like thalassemia, sickle cell anemia and hereditary spherocytosis can be diagnosed by careful examination of a peripheral smear.*
- *A smear should always be interpreted in collaboration with history, clinical findings and CBC report.*

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GENERAL ARTICLE

ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS - AN UPDATE

***Samir H. Dalwai**

****Aradhana Rohil**

*****Manish R. Garg**

******Supriya Mathur**

Abstract: Attention deficit hyperactivity disorder is one of the most common neurobehavioral disorders of childhood. This is an update on the latest 2019 guidelines American Academy of Pediatrics and will focus on the changes from the previous 2011 guidelines.

Keywords: AAP guidelines 2019, ADHD, Diagnosis, Treatment.

Points to Remember

- *Diagnosis of ADHD as per AAP guidelines-2019 should be based on DSM-5 criteria with documented impairment in more than one major setting and alternative causes ruled out.*
- *In adolescents, the manifestations of ADHD should have been present before 12 years of age instead of 7 years as stated in previous guidelines.*
- *A special focus is laid on screening for co morbid conditions and mimics of ADHD such as substance abuse especially in adolescents which can alter the treatment.*
- *For preschool children (4-6 years) with ADHD, behavioral therapy is the first line of treatment. Methylphenidate is to be considered as second line.*
- *In children (6-12 years) with ADHD, FDA approved medications along with behavioral therapy or behavioral classroom interventions should be prescribed.*
- *There is insufficient evidence to recommend diagnosis or treatment for children younger than 4 years, but they should be referred for behavioral modification in presence of behavioral concerns.*

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DRUG PROFILE

USE OF INOTROPES IN PICU

***Jeelson C Unni**
****Akanksha Jain**

Abstract: *Inotropes increase myocardial contractility and have variable effects on peripheral vascular resistance. The first-line inotropic agents used in pediatrics are dopamine and epinephrine. Further, depending on cardiac output and systemic vascular resistance, other vasoactive agents indicated in the treatment of shock in children include vasoconstrictors (e.g. norepinephrine, phenylephrine) or vasodilators (e.g. dobutamine, milrinone). The effective inotrope indicated for the given etiology of shock depends on the end-diastolic volume and cardiac contractility. This article attempts to throw light on appropriate use of these agents.*

Keywords: *Inotrope, Epinephrine, Dopamine, Norepinephrine, Isoprenaline, Vasopressor, Bipyridines*

Points to Remember

- *Inotropes are one of the most commonly used drugs in intensive care setting, which increases myocardial contractility and have variable effects on peripheral vascular resistance.*
- *The various classes of drugs include catecholamines, bipyridines, vasopressors, glycosides, Ca sensitizer, afterload reducing agents and sympathomimetics.*
- *Selection of appropriate drug is based on the hemodynamic state, blood pressure and systemic vascular resistance.*
- *They have multiple effects and should be used carefully.*
- *One must know the adverse effects and be prepared to deal with side effects.*

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ADOLESCENCE

ADOLESCENT SLEEP PROBLEMS

***Jayashree K**

****Preeti M. Galagali**

Abstract: *Sleep is a universal process in all species. In adolescents due to heightened activity and fulfilling academic needs, the quantity and quality of sleep is getting affected. Chronic lack of sleep is causing deleterious effect on holistic health of adolescents. Pediatricians should advise all adolescents on sleep hygiene during routine health visits and screen for sleep related problems so that appropriate management can be initiated before it manifests into a sleep disorder. Sleep disorders require detailed evaluation and treatment.*

Keywords: *Adolescent sleep hygiene, Sleep quality, Adolescent sleep disorders.*

Points to Remember

- *Good quality and quantity of sleep forms the core for optimal functioning of an adolescent.*
- *Pediatricians should advise about sleep hygiene.*
- *BEARS sleep screening tool can be used in office practice.*
- *Adolescents with serious sleeping disorder need tailored therapy.*
- *Parents should be educated about instilling sleep hygiene from early childhood which needs to continue into adolescent life and thereafter.*

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CASE REPORT

AN UNUSUAL CAUSE OF LIMP***Lipsa Das******Narayan Prasad Modi*****Pitabas Mishra*****Malabika Behera*******Pankaj Garg*******Smruti Dash Mohapatra**

Abstract: *Syringomyelia, though unusual, should be considered in the differential diagnosis of a limping child. This condition is a close mimicker of several other neurological and muscular disorders. Due to its slow progression and symptomatic resemblance to various other more common conditions, diagnosis is often delayed. A negative family history, certain precipitating events, signs and symptoms; and appropriate neuro-imaging clinches the diagnosis. It is important to diagnose syringomyelia early in the course of the disease so as to follow it up regularly and intervene timely to prevent permanent neurological sequelae. A five years old child with syringomyelia as an unusual cause of limping is presented here.*

Keywords: *Syringomyelia, Syrinx, Idiopathic, Secondary.*

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CASE REPORT**ACCIDENTAL INGESTION OF MINOXIDIL*****Sanjana R*****Abinaya S******Suresh Kannan K**

Abstract: *Minoxidil, a potassium channel opener acts as a potent vasodilator. Nowadays it is widely used as a topical applicant in androgenic alopecia. A very few cases of poisoning due to topical minoxidil ingestion are reported in literature. We encountered a child who developed inotrope responsive shock following accidental ingestion of the topical minoxidil solution.*

Keywords: *Minoxidil, Inotrope responsive shock, Noradrenaline, Dopamine.*

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CASE REPORT**TYPHOID FEVER WITH UNUSUAL COMPLICATIONS*****Satheesh C******Mahesh N*******Saravanan M********Jayakumar Reddy**

Abstract: *Typhoid fever is known to medical professionals from time immemorial. Our forefathers in medicine faced complications in patients with typhoid fever during pre-chloramphenicol era. MDR S. Typhi was a challenge till the treatment protocol was revisited with third generation cephalosporins, macrolides and quinolones. Despite these advances it appears that typhoid fever cannot be taken for granted. We are reporting a challenging case of typhoid fever with intestinal complications due to bacterial invasion and extra intestinal complications due to immune mediation involving two organ systems, warranting simultaneous treatment with antibiotics and intravenous immunoglobulins.*

Keywords: *Typhoid fever, Complications, Children.*

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