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- Editorial Board
EMERGING INFECTIOUS DISEASES

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**Meet Patel

Abstract: Emerging infectious diseases are infections that have recently appeared within a population or those whose incidence or geographic range is rapidly increasing or threatens to increase in the near future. People coming in to closer contact with wild animals and travelling much more frequently are major contributors. Many emerging diseases arise when infectious agents in animals are passed to humans.

The second annual review in WHO by expert committee consider that given their potential to cause a public health emergency and the absence of efficacious drugs and/or vaccines, there is an urgent need for accelerated research and development for 8 diseases emerged recently. In this article we will discuss about four emerging diseases which include Ebola virus, Middle East Respiratory Syndrome Corona Virus (MERS-CoV), Nipah and Zika virus.

Keywords: Emerging Infectious diseases, Zoonoses, Contagious, Ebola, MERS, Nipah, Zika.

Points to Remember

- Many emerging diseases arise when infectious agents in animals are passed to humans (referred to as zoonoses).
- Ebola viruses are highly contagious. The infected patient sheds infectious viruses in all body secretions. The main way to prevent is to avoid travel to areas where it is endemic.
- MERS - initially, the illness resembles influenza often progresses to dyspnea, hypoxia and RDS.
- Nipah virus infects a wide range of animals, causes severe disease and death in people.
- Zika virus infects human embryonic cortical neural progenitor cells, inducing cell death and providing evidence that human neurons are susceptible to the virus.

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SCrub typhus is one of the oldest known mite borne acute febrile illnesses caused by Orientia (previously known as rickettsia) tsutsugamushi. Literature about scrub typhus which comes from China dates back to 3rd century. World war II was the period during when the understanding of scrub typhus greatly increased because of thousands of cases and deaths in Asia-pacific region.

Abstract: Scrub typhus is an important re-emerging infection caused by the Orientia tsutsugamushi transmitted by the bite of trombiculid mite. The larval stage of the mite (chigger) can also transmit infection. The clinical manifestation is a triad of fever, myalgia and headache and the spectrum can range from a mild disease to multiorgan dysfunction and death. Eschar is pathognomonic of scrub typhus. Even though difficult to diagnose in early phases, delayed diagnosis is synonymous with complication and death. Doxycycline is the drug of choice which causes rapid defervescence of fever. Prevention can be achieved by avoidance of mite bite.

Keywords: Scrub typhus, Doxycycline, Chigger, Eschar.

Points to Remember

- Scrub typhus caused by O. tsutsugamushi is transmitted by trombiculid mites and its larva, chigger.
- It is characterised by a triad of fever, headache and myalgia.
- Eschar is pathognomonic of scrub typhus but the frequency of finding it is variable to the extent of 50%-80%.
- Drug of choice is doxycycline.
- Prevention is mainly by avoidance of bite of mite as no vaccine or post exposure prophylaxis exist.

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DENGUE FEVER - NEWER INSIGHTS

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Abstract: Dengue fever is a self-limiting febrile illness, which usually resolve spontaneously or progress to severe dengue with shock and hemodynamic compromise. Current molecular and gene studies show that NS 1 antigen and antibody dependent enhancement act in concert with complement system and chemokines leading to increased vascular permeability and subsequently multi-organ dysfunction, resulting in morbidity and mortality. Newer insights in entomology give information about the transmission of dengue from vector to host, thereby helping in preventing the disease. However, even with newer insights in prevention and diagnosis, treatment remains largely supportive and morbidity in pediatric population remains high.

Keywords: NS 1 antigen, Antibody dependent enhancement, Immuno-pathogenesis, Chemokines, Cytokine.

Points to Remember

- Dengue is an acute febrile illness caused by 4 types of dengue viruses.
- Host immunity and prior dengue infection influence adverse outcomes.
- Supportive treatment is still the cornerstone of dengue management.

References


Fungal infections are not uncommon in children and a high index of suspicion is required to make an early diagnosis particularly of an underlying primary immune deficiency disorder. In children undergoing chemotherapy and hematopoietic stem cell transplantation, fungal infections pose a huge challenge and adequate prophylaxis and prompt therapy prevents morbidity and mortality. Fungal infections can be classified as probable, possible and proven infections. With the advent of newer antifungal agents, knowledge of medications used in young children and their side effects are of utmost importance. Early diagnosis and effective management result in optimal outcomes.

Keywords: Fungal infections, Antifungal agents, Immunocompromised

Points to Remember

- Fungal infections are more common in an immunocompromised host.
- Systemic antibiotics, mucositis and prolonged steroid use predispose to candida sepsis.
- Invasive aspergillus infection can be diagnosed with a combination of serum markers namely beta D glucan, serum galactomannan and high-resolution computed tomography chest.
- Antifungal agents like azoles, echinocandins and amphotericin are safe to use in newborn and children with frequent monitoring for side effects.
- Early removal of central venous line is essential for prevention of candida infection.

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INFECTIOUS DISEASES - II

UPDATES IN PEDIATRIC HUMAN IMMUNODEFICIENCY VIRUS INFECTION

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Abstract: Human immunodeficiency virus has now evolved from a fatal condition to that of a chronic manageable disease. With newer advances both in antiretroviral drugs and diagnostics, human immunodeficiency virus treatment has become simplified and available to all those who are infected. The recent protocol of prevention of parent to child transmission has simplified therapy as well as holds promise of <2% transmission of human immunodeficiency virus thus almost decreasing new cases of pediatric human immunodeficiency virus. Every pediatrician should have the basic knowledge of retroviral therapy and the current developments. This article gives a review of all the recent advances in pediatric human immunodeficiency virus.

Keywords: Human immunodeficiency virus, Diagnosis, Infants, Children, Treatment, Prevention of parent to child transmission, Antiretroviral therapy.

Points to Remember

- Infants born to HIV infected mothers, may continue to have maternal HIV antibodies up to age 24 months and their HIV status should be tested at 24 months to prevent false positive results.
- Apart from NRTI, NNRTI and PI, there are newer classes of drugs such as entry and fusion inhibitors, integrase strand transfer inhibitors (INSTIs).
- As per WHO, ART should be initiated in everyone infected with HIV at any CD4 cell count, regardless of clinical stage.
- Routine viral load testing is encouraged at 6 months followed by 12 months after initiating ART and if stable every year thereafter.
- As per NACO PPTCT guidelines, HIV exposed infant should be started on postpartum ARV prophylaxis for minimum of 6 weeks.
- Exclusive breastfeeding is recommended for 6 months and continued breastfeeds along with complementary feeds from 6 months to 1 year.
- Early infant diagnosis (EID) by virological testing should be done at 6 weeks of age with a repeat testing at 6 months, 12 months and 6 weeks after cessation of breastfeeds.

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INFECTIONOUS DISEASES - II

RE-EMERGING INFECTIONS

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Abstract: Despite effective and extensive vaccination, infectious diseases such as pertussis, diphtheria, syphilis and Hansen's disease are on the rise since the last few decades in the United States with outbreaks being reported in many other countries like Australia, Brazil, United Kingdom and Chile in the last decade. While certain infections such as syphilis have plausible reason for the resurgence explained by increases in high-risk sexual behavior among people from all socio-demographic backgrounds, re-emergence of infections like Hansen's disease is due to high level of migration from endemic zones, secondary drug resistance or irrational use of antibiotics. Continuous monitoring of antigenic changes in the bacteria and evolution of resistance to antibiotics along with regular surveillance on the duration of immunity achieved by the vaccine is necessary.

The re-emergence could also be due to changes in the transmission patterns and epidemiology of infections like pertussis and possible waning of vaccine induced immunity in adults as seen by the growing trend of cases amongst adults and adolescents. Some of the steps which can be taken to control pertussis are ensuring high on-time vaccine coverage of above 90% all over the globe particularly for the primary vaccination schedule and first booster doses. It is better to protect the newborn by immunisation of pregnant mothers and healthcare workers and by cocooning. Three major measures to counter the resurgence of diphtheria are high immunization coverage nearly 90% of target groups (including children at 5 years and adults), prompt diagnosis and management of diphtheria cases, and rapid identification of close contacts and their proper management to prevent secondary cases. Surveillance must be strengthened to identify new outbreaks of infection especially syphilis, thereby enabling a rapid response for treatment of infected individuals and their contacts and to determine which intervention strategies are working and warrant expansion.

Keywords: Pertussis, Syphilis, Hansen’s disease, Diphtheria, Re-emergence, Vaccines, Antigenic changes.

Points to Remember

• Steps to control pertussis are immunisation of pregnant mothers and healthcare workers, and cocooning besides ensuring a high on-time vaccine coverage of above 90%.

• Diphtheria resurgence can be tackled by at least three major measures - high immunization coverage nearly 90%, prompt diagnosis and management of cases and rapid identification of close contacts.

• Surveillance must be strengthened to identify new outbreaks / re-emergence of infections.

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ACUTE VIRAL RESPIRATORY ILLNESSES

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Abstract: Acute respiratory illness by viruses is a major cause of morbidity and mortality in children. A systematic approach is necessary to diagnose, treat and control the disease and also to prevent inadvertent use of antibiotics. This review article discusses the epidemiology, clinical features, management and prevention of viral respiratory illnesses among children in developing countries with particular emphasis on influenza and respiratory syncytial virus.

Keywords: Acute respiratory illness, Influenza, Respiratory syncytial virus

Points to Remember

• Influenza infection in children may lead to asymptomatic illness to severe respiratory distress. Empirical oseltamivir should be started immediately in epidemics, if suspicion of influenza is present.

• RSV is the most common viral illness in infants, especially below 6 months of age. Palivizumab can be used in high risk group who get exposed to the virus.

• Oxygen and hydration are the only evidence-based therapies approved for bronchiolitis.

• Treatment with anti virals should not be withheld, based on rapid diagnostic tests alone as there are chances of false negative results.

• More epidemiological studies are needed in developing countries, so that it can help in framing guidelines, following preventive measures and framing vaccination policies.

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INFECTION CONTROL IN HOSPITAL PRACTICE

Digant D Shastri

Abstract: Healthcare associated infections are a major cause of morbidity and mortality posing challenge to the treating clinicians. Considering this along with prolonged stay and the cost of medicare, efforts should be made to make the hospitals as safe as possible by preventing such infections. Proper adherence to infection control by healthcare providers is a highly effective strategy in reducing hospital acquired infections. Measures of infection control include observing hand hygiene, identifying patients at risk of nosocomial infections and following standard precautions to reduce transmission. Environmental factors and architectural layout of both inpatient and outpatient areas also needs to be taken care to control spread of infection.

Keywords: Hospital acquired infection, Infection control, Hand hygiene

Points to Remember

- Design of patient care areas, operating rooms, air quality, water supply and the laundry can significantly influence the transmission of HAI.
- In high risk areas, the air handling units designed to provide clean air should have high efficiency particulate air (HEPA) filters.
- Nebulisation machine, preferably use disposable mask and tubing per patient. The mask and T shaped part should be washed with mild soap and water.
- Practicing hand hygiene before every episode of patient contact and after any activity or contact that potentially results in hands becoming contaminated reduces the risk of cross-contamination.

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**ANTICOAGULANTS IN PEDIATRICS**

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**Ranjit Baby Joseph*

Abstract: The incidence of provoked and unprovoked thromboembolism in children is increasing and hence the use of anticoagulants. There are many oral and parenteral anticoagulants in the market. Many of the newer agents are promising but pediatric data on safety and efficacy are scarce. The anticoagulants can be divided into the older multitargeted agents (heparin, low-molecular-weight heparin and warfarin) and the newer targeted agents (argatroban, bivalirudin and fondaparinux). The newer targeted anticoagulants have properties that may make them more attractive for use in specific clinical situations.

**Keywords:** Anticoagulants, Warfarin, Heparin, Lowmolecular weight heparin, Pediatrics

**Points to Remember**

- All the currently used multi-targeted anticoagulants, heparin, LMWH, and VKAs have significant limitations and will most likely eventually be replaced by a wide variety of targeted anticoagulants.

- Heparin utilization in pediatrics is limited by many factors and the most important ones are heparin induced thrombocytopenia and anaphylaxis. Low molecular weight heparin appears to be an effective and safe alternative treatment.

- Direct thrombin inhibitors (DTI) is a promising class over the other anticoagulants since it offers potential advantages.

- Most of the recommendations regarding the use of newer anticoagulants in children have been extrapolated from the adult literature, with very few randomized trials performed in the pediatric population.

**References**


SPECIFIC LEARNING DISABILITY
- DYSLEXIA

*Sivaprakasam V

Abstract: Specific learning disability, is a neuro-developmental and biological disorder which refers to ongoing problems in reading or writing or mathematics. Reading difficulty in a child with normal or above normal IQ, is considered as ‘dyslexia’, writing difficulty as ‘dysgraphia’ and difficulty in mathematics as ‘dyscalculia’. Remedial teaching remains the mainstay of management. Specific learning disability is included in the disability act and children with dyslexia get free remedial teaching and concessions in education by the Government. Early identification of specific learning disability and prompt intervention will result in bright future for these children.

Keywords: Learning disability, Dyslexia, Dysgraphia, Dyscalculia, Remedial teaching

Points to Remember

- Dyslexic children read slowly word by word, hate reading, have poor hand writing, make grammar and spelling mistakes, with reversal tendency and difficulty with maths.
- Their IQ is normal or above normal and have multiple intelligence.
- Remedial teaching is the main mode of management of these children.
- No drug is needed, unless associated with co morbid condition like ADHD.

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EVALUATION AND MANAGEMENT OF CHILDREN WITH DISORDERS OF SEXUAL DEVELOPMENT

*Ramesh Babu

Abstract: The nomenclature, classification, understanding and management of disorders of sexual development (differences of sex development) keep evolving. It is essential to manage them at specialized medical centers involving a multidisciplinary team. Immediately after confirming the diagnosis, the parents should be offered counseling and included in decision making. Sex assignment is dependent on many factors and should be postponed until a complete diagnostic assessment has been performed. Achieving optimal outcomes requires open and transparent dialogue with the family. Delaying the interventions can enable the patient to be involved in the decision process.

Keywords: Intersex, Ambiguous genitalia, Disorders of sexual development, Differences of sexual development

Points to Remember

- The newer terminology for DSD refers to differences of sexual development.
- Molecular genetics and gene sequencing are being widely used in the diagnosis.
- Multidisciplinary team is essential in the management.
- Sex assignment should be postponed until all information is available and all stakeholders are informed/counseled.
- Medical management may be needed lifelong and transitional care should be offered to adolescents. Surgical management is delayed as long as possible so that informed decisions can be made by the patient.

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HEADACHE IN ADOLESCENTS

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Abstract: Headache is a common complaint in adolescents seeking medical advice. Primary headache is more common at this age and migraine is the commonest among them. However, detailed clinical evaluation is required to rule out secondary causes. This article focuses on the approach to adolescent headache with specific emphasis on migraine.

Keywords: Headache, Migraine

Points to Remember

- Primary headache is more common than secondary headache during adolescence, with migraine being the commonest.
- Evaluation requires detailed history, HEEADSSS screening and physical examination to differentiate primary from more serious secondary causes.
- Treatment of migraine should be individualized based on the individual and headache characteristics.
- Secondary headache needs detailed evaluation with imaging and other investigations.

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ANAPHYLAXIS FOLLOWING INTRAVENOUS VITAMIN K IN AN INFANT

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Abstract: Anaphylaxis following intravenous vitamin K in infants is reported rarely in literatures. A 7 month old infant, a childhood wheezer with intrahepatic cholestasis, previously on oral vitamin K supplements developed serious anaphylaxis following administration of intravenous vitamin K during hospital stay. He was resuscitated with appropriate measures. Fatal adverse events following intravenous vitamin K although rare should be anticipated.

Keywords: Vitamin K, Anaphylaxis, Epinephrine, Children

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