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- * NOTE: Many trade names of the vaccines are included in the text for the sake of clarity.

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VACCINOLOGY II

COVID VACCINES - AN UPDATE

***Vidya Krishna**

Abstract: From the time COVID-19 infection was first reported from Wuhan, China by the end of December 2019, vaccine production and trials geared up globally and have been successful in bringing out vaccines for use in the community in a year's time. This was made possible as the genome of the SARS-CoV-2 was released by Chinese researchers on 11th January 2020. The scientific advancements and lessons learnt from the previous pandemics due to H1N1 (Spanish flu), H2N2 (Asian flu), H3N3 (Hong Kong Flu) and SARS outbreak also helped in this regard. This article highlights conventional and newer technologies used in the development of vaccines and the types of vaccines available.

Keywords: SARS-CoV-2, Vaccines, Technologies.

Points to remember

- *SARS-CoV-2 is an enveloped, positive sense, single strand RNA virus, that is responsible for the current COVID-19 pandemic.*
- *Humoral and cellular immune responses in the form of neutralizing antibodies to the receptor binding domain of ACE 2 receptor and Th1 response respectively, have protective effect against the disease and re-infection.*
- *Several mRNA, viral vector, protein subunit and inactivated vaccines have entered phase 2/3 trials and based on interim safety and efficacy data, obtained emergency use authorization.*
- *While these vaccines do not have a live virus component and should be safe in the immunocompromised, pregnant and lactating women, we still await safety and efficacy data from trials enrolling these sub-groups.*
- *COVID-19 causes mild / asymptomatic infections in majority of the children. Currently, no COVID vaccine is approved in children below 16 years of age.*

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VACCINOLOGY II

INFLUENZA VACCINES – INDIAN CONTEXT

***Surendranath M**
**** Rama Kaja**

Abstract: *Influenza is a single stranded RNA virus belonging to orthomyxovirus family. Influenza virus is classified into subgroups A,B,C and D. Influenza A and influenza B viruses cause respiratory illness leading to significant mortality and morbidity in children and adults. Influenza can cause epidemics and pandemics due to antigenic shift in the genetic structure of viruses. Influenza B is also capable of causing serious disease in children. Influenza illness can be prevented by hand hygiene, cough etiquette, safe social distancing and yearly vaccination with influenza vaccine. Indian Academy of Pediatrics Advisory Committee on Vaccines and Immunization Practices has recommended yearly quadrivalent inactivated influenza vaccination for routine immunization for children above 6 months of age through 5 years to prevent influenza in children. Live attenuated vaccine can be given intranasally for the age group above 2 years through 49 years. In the year 2020 Indian Academy of Pediatrics Advisory Committee on Vaccines and Immunization Practices has recommended a uniform dose of 0.5ml of inactivated influenza vaccine for all age groups above 6 months.*

Keywords: *Influenza virus, Inactivated vaccine, Live attenuated vaccine, Quadrivalent, Trivalent, Children.*

Points to Remember

- *Immunisation against influenza may play an important role in reducing the morbidity and mortality in children and adults. ACVIP IAP recommended influenza vaccine for all children from 6 months of age to 5 years as a routine vaccine yearly*
- *Influenza A and Influenza B cause mild to severe respiratory illness in children and adults leading to significant morbidity and mortality.*
- *Quadrivalent flu vaccine is recommended routinely for children from the age of 6 months through 5 years of age.*
- *Uniform dose of 0.5 ml intramuscular quadrivalent influenza vaccine is recommended for all age groups.*
- *Influenza vaccine is a priority vaccine during COVID-19 pandemic.*

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VACCINOLOGY II

PNEUMOCOCCAL VACCINES - PAST, PRESENT AND FUTURE

***Rosemol Varghese**

****Jones Lionel Kumar**

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Abstract: *Streptococcus pneumoniae* is a major cause of mortality and morbidity among children under five years of age. India is one among the countries with high mortality due to invasive pneumococcal disease. With the emerging resistance of pneumococcus to penicillin, especially in meningal isolates, the focus is on prevention, which is mainly by pneumococcal vaccines. Since the current vaccines are serotype specific, it protects against invasive pneumococcal disease and is affected by geographic diversity of the serotypes, use of other targets such as pneumococcal surface protein A is explored. This commentary gives an overview of the pneumococcal vaccines that are in use and that are under development.

Keywords: *Streptococcus pneumoniae*, PCV, PPV, India.

Points to Remember

- *WHO recommends conjugate (PCV10 or PCV13) for routine immunization as three doses (2p+1 or 3p+0) and polysaccharide (PPSV) vaccines for adult immunization.*
- *PPSV vaccines generate a T- cell independent immune response without memory B- cells, whereas conjugated vaccines can induce a T-cell- dependent and B cell mediated response.*
- *The pneumococcal vaccine impact is measured by decrease in endpoints such as mortality, invasive pneumococcal disease, pneumonia, AOM and the nasopharyngeal carriage.*
- *Surveillance of PCV impact in developing countries using endpoints other than nasopharyngeal carriage is challenging, and the best possible approach in such case would be the nasopharyngeal surveillance.*
- *Continuous pneumococcal surveillance is important in India, so as to monitor the serotype replacement.*

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VACCINOLOGY II

VACCINATION IN SPECIAL SITUATIONS

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Abstract: *The concept of immunization is to enable development of immunity in healthy non-immune individuals. However, certain special situations such as immunosuppression, prematurity and exposure to infectious diseases, pose a greater risk to a child who may become unwell or present with serious post-vaccine events and require selective use of vaccines, adopting a different schedule or even vaccine deferral. Specific knowledge of these unique clinical scenarios improves the chances of better immune protection and decreases the incidence of vaccine related adverse events.*

Keywords: *Special situations, Immune-compromised, Transplant, Febrile seizures, Bleeding diathesis.*

Points to Remember

- *Routine vaccination schedule can be followed in mild illnesses, febrile or afebrile.*
- *Egg allergy is not a contraindication for receiving MMR, Rabies and Influenza Vaccines.*
- *All live bacterial and viral vaccines are to be deferred in children with congenital immune deficiencies.*
- *In the COVID-19 pandemic era, pediatricians should counsel parents regarding the importance of adhering to routine immunization schedule in order to prevent emergence of Vaccine preventable diseases.*

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VACCINOLOGY II

ADVERSE EVENTS FOLLOWING IMMUNIZATION - PREVENTION, MONITORING AND REPORTING IN INDIA

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Abstract: *The Adverse Event Following Immunization, although considered rare, is not uncommon. Establishing a system to manage it is an important element to ensure the quality of vaccines, safe immunization practices and retaining vaccine confidence in the public. India has established a robust national Adverse Event Following Immunization surveillance system spanning from the lowest level of immunization delivery to the national level with its guidelines updated most recently in 2015. The systematic Adverse Event Following Immunization reporting, investigation, causality assessment, monitoring and taking corrective actions are a crucial part of the system. The participation of private sector immunizations service providers is a key to its success.*

Keywords: *Adverse Event Following Immunization, Surveillance, Monitoring, Reporting.*

Points to Remember

- *Understanding the background rates of adverse events in the population is important for informed decisions.*
- *Management of AEFI is an important activity to retain and gain public trust in vaccines.*
- *Serious and severe adverse events although used interchangeably, are not the same.*
- *AEFI surveillance, monitoring and causality assessment are cornerstones for preventive actions.*
- *Private sector immunization partners have a crucial role in AEFI surveillance and AEFI prevention.*

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VACCINOLOGY II

LEGAL AND ETHICAL ISSUES IN IMMUNIZATION

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Abstract: *Epidemiology, economics and ethics demand that the health professionals and the policy makers should alleviate the misery caused by various infectious diseases and related complications. Adequate immunization is an important and time-tested health intervention in preventing infectious diseases. The need is to prepare a standardized national recommendations or guidelines regarding vaccination. Many pediatricians are facing ethical dilemma regarding the need of costly vaccines for the general population at the cost of basic necessities of life like nutrition, safe drinking water, pollution free environment, etc. Medical graduates should keep themselves updated with the recent advances in the field of immunization. There is a need for strengthening the surveillance of adverse events following immunizations in the country. All the necessary safe guards should be in place and the regulations should be followed in letter and spirit in vaccine trial in vulnerable child population. Right things should be done so that the future generation can live a healthy life.*

Keywords: *Informed Consent, Vicarious liability, Medical Negligence, Child Rights, Conflict of interest, Crosspathy.*

Points to Remember

- *There is a need to have quality control in the manufacture, transport and storage of vaccines.*
- *Issue of clear guidelines is an increasing responsibility on the government and the academic organizations in this era of biased and confusing promotions.*
- *Millions of children suffer from morbidity and mortality for either want of vaccine or optimal, ethical and rational use of vaccines.*
- *We should understand the various legal issues related to vaccinations, otherwise there may be allegations of negligence in future.*
- *The profession and commerce need to be separated and conflict of interest of various stake-holders shall be kept in mind.*

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VACCINOLOGY II

FREQUENTLY ASKED QUESTIONS IN VACCINOLOGY

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GENERAL ARTICLE**PRACTICAL TIPS FOR EFFECTIVE PRESENTATION ON THE PHYSICAL AND VIRTUAL STAGE**

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****Supraja Chandrasekar**

Abstract: *Most of us believe that an effective speaker is born that way. But the truth is that public speaking is a skill that ought to be learnt and mastered. As medical teachers and academicians we are routinely required to make presentations both to the medical community and sometimes to the general public. Online presentations have become the rule rather than the exception in these COVID days. The subsequent article aims to elucidate some of the practical tips for an effective presentation both on stage as well as online.*

Keywords: *Public speaking, Presentation, skills.*

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DRUG PROFILE

PARENTERAL IRON PREPARATIONS FOR CHILDREN AND ADOLESCENTS

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Abstract: Iron deficiency remains the most common nutritional deficiency in Indian children. Oral supplementation of iron is highly effective in prevention and treatment of iron deficiency anemia except in rare conditions where oral supplementation could be rendered ineffective. Parenteral iron therapy is an option in these situations. Serious hypersensitivity reactions are known to occur with parenteral preparations. Judicious use of newer parenteral iron products reduces these events to a great extent.

Keywords: Iron deficiency, Children, Parenteral, Iron dextran, Iron sucrose, Ferric gluconate, Ferric carboxymaltose.

Points to Remember

- *Iron deficiency anemia continues to be one of the major public health challenges in Indian children.*
- *Oral supplementation is the preferred method to treat even severe forms of iron deficiency.*
- *Parenteral iron supplementation is not superior to oral route but has definite advantages in some clinical settings where efficacy of oral supplementation is compromised*
- *Intravenous iron preparations carry a risk of allergic reactions or anaphylaxis and careful monitoring of patient is necessary*
- *Newer iron preparations have better safety profile than older ones like iron dextran or iron sucrose*

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DERMATOLOGY

**TOPICAL ANTIFUNGAL DRUGS
- AN OVERVIEW*****Madhu R**

Abstract: *In tropical countries like India, there has been an increase in the prevalence of dermatophytosis among adults and children over the last 6-7 years. This has been associated with rampant abuse of irrational topical corticosteroid, antifungal, antibacterial combination creams and change in the etiological agent from *Trichophyton rubrum* to *T. mentagrophytes*. Topical azoles, allylamines, benzylamines, hydroxy pyridone, morpholine, tolnaftate, Whitfield's ointment and polyenes are the various antifungals available to treat fungal infections. Topical antifungals are seen as a big advantage in the treatment of superficial mycoses like dermatophytosis, pityriasis versicolor and candidiasis in the pediatric population, especially in neonates and infants. High local concentration, ease of application, negligible systemic absorption and minimal adverse effects are the merits of topical antifungals. Limited infections are treated with only topical antifungals, while extensive lesions, presence of comorbid conditions, immunosuppressive therapy and infection of hair/nail warrant the use of topical antifungal agent along with a systemic antifungal drug. Topical imidazoles, allylamines, ciclopirox olamine and amorolfine are the various options currently in vogue for the treatment of dermatophytosis of skin and pityriasis versicolor. Topical imidazoles and ciclopirox olamine are effective in the treatment of mucocutaneous candidiasis. Various antifungals available for the treatment of onychomycosis are 5% amorolfine and 8% ciclopirox olamine nail lacquers, with the newer options being 10% efinaconazole and 5% tavabarole solutions, which are yet to be available in India. Counselling plays a pivotal role in the management of dermatophytosis of glabrous skin.*

Keywords: *Dermatophytosis, Topical antifungals, Systemic antifungals, Fungistatic, Fungicidal.*

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Points to Remember

- *Fungal infections in children could include superficial mycoses to subcutaneous and opportunistic invasive mycoses, wherein the treatment may be topical or systemic antifungal drug or a combination of both.*
- *Topical antifungal agents, are very useful preparations in view of ease of application, high local concentration, better bioavailability, minimal side effects, negligible systemic absorption and drug – drug interactions.*
- *“Rule of Two” in usage of topical antifungals means it should be applied 2 cm beyond the margin of the lesion twice a day for at least 2 weeks beyond clinical resolution.*
- *In children with extensive lesions, hair/nail infection or steroid modified / chronic / recurrent dermatophytosis, combination of topical and systemic antifungals are needed.*
- *Emollients could be applied immediately after bath, after patting the skin dry and could be repeated if there is dryness of skin. Topical antifungal drug could be applied thirty minutes after emollient application.*

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ADOLESCENCE

SCHOOL BASED ADOLESCENT HEALTH CARE - CUDDALORE MODEL

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Abstract: *Health care of adolescents is an important aspect of pediatrics and paediatricians play a vital role in supervising their overall well being - physical, psychological, social, reproductive and spiritual. The Cuddalore model of school based adolescent care with emphasis on the ten-point program is a simple, feasible, and acceptable means of achieving this goal. The components include growth monitoring, age appropriate immunization, life skills education, handling peer group pressures and avoiding internet addiction. Our experience in implementing this project is shared in this brief write-up.*

Keywords: *Adolescents, School based care.*

Points to Remember

- *Pediatricians need to be trained to educate adolescents in schools on 10 major aspects - cleanliness, balanced diet, exercise, eyecare, hair and skin care, dental care, adequate sleep, hydration, pleasant communication and reproductive health.*
- *Growth monitoring and regular immunisation to be completed and charted on adolescent health cards.*
- *Visual problems should be screened as part of school health checks.*
- *Anemia must be identified early by screening and Iron + folic acid supplementation given especially to adolescent girls.*
- *Family life education needs to be imparted to adolescents as an insurance against teenage pregnancies, sexually transmitted diseases like HIV and dysfunctional relationships that can ensue from inappropriate interactions.*
- *Life skill education is an essential aspect of adolescent care which can help protect them from risk taking behaviours like smoking, alcohol and drugs.*
- *Psychological issues may be prevented by mass counselling in schools and to offer one-to-one counselling to students with specific problems.*

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CASE REPORT**INSULIN EDEMA AFTER TREATMENT OF DIABETIC KETOACIDOSIS IN A CHILD WITH TYPE I DIABETES**

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Abstract: *One of the lesser known side effects of insulin therapy is the development of generalised edema, especially in underweight patients on intensive insulin regimen. We report the case of a 15 year old type 1 diabetic, who presented with diabetic ketoacidosis, after achieving glycemic control with insulin on day 5, developed generalised edema with weight gain on day 8. As all investigations were within normal limits, a possibility of insulin edema was entertained and child managed conservatively. Edema resolved spontaneously within a week.*

Keywords: *Insulin, Edema, Diabetes mellitus.*

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CASE VIGNETTE - 1**PRIAPISM IN NEWBORN**

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CASE VIGNETTE - 2**A CASE OF CHRONIC IMMUNE
THROMBOCYTOPENIC PURPURA
PRESENTING WITH INTRACRANIAL
HEMORRHAGE AND CEREBRAL
HERNIATION TREATED WITH
DECOMPRESSIVE CRANIECTOMY**

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