Review Article

Adult Vaccination: The Current Scenario

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Abstract

Vaccination is the process by which a person is made immune to various preventable diseases. Most of the emphasis is given to childhood vaccination and very little focus goes on towards immunizing the adults. Health care services in India has very less contribution to adult vaccination. Hence a desperate need has emerged to develop strategies and schemes for adult vaccination. The disease burden in India is increasing for both communicable and non-communicable diseases. By vaccinating adults against a disease that are known to be life-threatening can reduce the mortality rates significantly. In a country like India with such a huge population, vaccination can be a major intervention in preventing morbidity, mortality, and disability due to many known and preventable diseases. There is no doubt that adult vaccination in India is negligible as protecting adults by vaccination has never been considered as a preventive strategy. Hence there is a need to sensitize the health care providers in our country regarding the same. By vaccinating adults along with children, the chain of spreading the diseases can be broken and quality of life can be improved in a disease-free world.

Keywords: *Adult Vaccination, Indications to Use, Guidelines.*

Introduction

Vaccination is the process by which a person is made immune to various preventable diseases. Vaccination starts at a very early age, right from birth till old age. However, most of the vaccines given are during childhood and adolescence. (1) Also, most of the emphasis is given to childhood vaccination and very little focus goes on towards immunizing the adults. Vaccinations are important to prevent mortality occurring due to infections that can potentially be prevented. (2-4)

Besides this, the schedule made by the Government of India and World Health Organization for immunization also covers the childhood vaccination with very less focus on adult vaccination. Health care services in India has very less contribution to adult vaccination. Hence a desperate need has emerged to develop strategies and schemes for adult vaccination. The disease burden in India is increasing for both communicable and non-communicable diseases. Framing policies for adult immunization needs infrastructure, strategy, funds, and massive awareness campaign. (5)

By vaccinating adults against a disease that are known to be life-threatening can reduce the mortality rates significantly. This primarily includes communicable diseases such as hepatitis A, hepatitis B, Measles, Mumps, Rubella, Tetanus, Diphtheria, Japanese Encephalitis, human papillomavirus, meningococcus, pneumococcus, typhoid, influenza and others. (5) Hospitalization for diseases as mentioned earlier can be prevented, thus preventing the economical constraints on the patient. The significance lies in the fact that more than 25% of mortality in India is due to infectious diseases. (6)

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In a country like India with such a huge population, vaccination can be a major intervention in preventing morbidity, mortality, and disability due to the diseases mentioned above. The most common problems faced in vaccinating adults includes the cost of developing the vaccines for adults. [7] Also, the availability, efficacy, potency, and effectiveness plays a major role in inadequate vaccination. There is no doubt that adult vaccination in India is negligible as protecting adults by vaccination has never been considered as a preventive strategy. Hence there is a need to sensitize the health care providers in our country regarding the same. [5]

Vaccination depends on various factors such as previous vaccination, age, gender, occupation, location, lifestyle, and traveler. [6] Hence by educating an adult regarding the possible diseases he is at risk of developing, he can be motivated to get vaccinated for, preventing any major hospitalization and possible morbidity to the patient. [8]

VACCINES CURRENTLY IN USE IN INDIA FOR ADULTS INCLUDE:

Ø HEPATITIS B:

§ Recombinant hepatitis B vaccine is recommended for all adults. [9]

§ At risk population group includes health care workers, people living with HIV positive patients, iv drug abusers, multiple and recurrent blood transfusions, multiple sexual partners, chronic diseases of liver and kidney and sexually transmitted diseases.

§ Doses: 1ml (20 mcg) i.m. at 0, 1, and 6 months (STANDARD REGIMEN). But for patients with immunocompromised state and CKD, 4 doses are given at 0, 1, 2 and 6 months as 2ml (40 mcg) i.m.

§ The only contraindication includes Hypersensitivity to yeast.

§ The effectiveness of vaccines can be assessed by measuring Anti-HBs level, which should be above 10 mIU/ml. if the levels are less than 10 in a normal healthy individual who had received 20 mcg doses, it is recommended to give 3 more doses of 20 mcg at least 1 month apart and retest the levels. If the levels are still suboptimal, then the dose is doubled, that is 40 mcg i.m injections are given at 0, 1, and 6 months.

§ Post-exposure prophylaxis can be given with hepatitis B immunoglobulin within 72 hours of exposure, to be followed by a full course of vaccination. [10-13]

Ø HEPATITIS A:

§ Inactivated hepatitis A vaccine is available in India.

§ A combination vaccine with Hepatitis B is also available.

§ API does not recommend Hep A vaccination for all.

§ This vaccine is only indicated in high-risk individuals; post-exposure prophylaxis, hemophiliacs and iv drug users.

§ It is very important to vaccinate a patient of chronic liver disease, post liver transplant and those waiting for liver transplants as the infection is very severe in such individuals.

§ Dose: 2 i.m. doses; the first dose followed by the second dose at 6-18 months. [9]

Ø DIPHTHERIA, PERTUSSIS AND TETANUS VACCINES:

§ Vaccines available for adults are acellular pertussis (ap), tetanus toxoid (TT), reduced diphtheria with tetanus toxoid combinations (Td) and combination of acellular pertussis, reduced diphtheria and tetanus toxoid (Tdap).

§ These are indicated in all adults who did not have any prior immunization.

§ All adults up to 65 years can be vaccinated by Tdap (single dose) as per recommendations.

§ It is contraindicated in individuals with a history of allergic reactions to these vaccines and also in patients with acute neurological deficits.

§ The vaccine used for the pediatric population contains whole cell pertussis, which is contraindicated in adults, as the risk of neurological complications is very high with this vaccine. [14-15]

§ Post-exposure prophylaxis: For any major trauma, TT dose is recommended if the last dose given more than 5 years ago. But in case of minor trauma, TT may not be given if the last dose was within 10 years.

§ In pregnancy, the recommended dose is 3 doses of TT in the second or third trimester with a gap of at least 3 weeks in between. However, if TT or Td is received within 10 years, a single booster immediately after delivery must be given. If more than 10 years have passed, than a single dose is given in the second trimester. (9)

Ø MEASLES, MUMPS, and RUBELLA:

§ It is a live attenuated vaccine.

§ It is given in adults only if the vaccine is not received in childhood.

§ The recommended dose for adults is 2 doses of 0.5 ml s.c. 4 weeks apart.

§ In HIV patients, it can be given if the CD counts are >200 cells/cu.microlitre. (16)

§ Contraindications include fever, pregnancy, history of hypersensitivity and a severely immunocompromised state. (9)

§ Considering teratogenic risk rubella vaccine in particular is avoided in pregnant women and also in those planning a pregnancy should avoid pregnancy after receiving the vaccine for a minimum of 1 month.

§ Current recommendation for any girl ≥15 years is a 3-dose schedule (0, 1-2, 6 months) including younger than 15 years who are immunocompromised and also in HIV infected.

§ This schedule is applied to all types of vaccines (bivalent, quadrivalent, and monovalent vaccines).

§ Rubella is recommended in secondary target populations include females aged ≥15 years or males only if it is affordable and feasible.

Ø VARICELLA AND ZOSTER VACCINES:

§ Both are live attenuated vaccines.

§ It is observed that the incidence of herpes zoster and postherpetic neuralgia is tremendously reduced post vaccination.

§ Varicella vaccine is indicated in patients without prior varicella infections. It is highly recommended in patients of HIV with CD count of >200/cu.microlitre. (16)

§ It is also indicated in post-exposure prophylaxis in adults with no history of infection or immunization. Single dose within 3-5 days post exposure is recommended. (17)

§ Dose: 2 doses (0.5 ml) s.c. four to eight weeks apart.

§ Contraindications to vaccines include pregnancy, hypersensitivity, severe immune compromised host or recent history of blood transfusion.

§ Zoster vaccine is indicated in elderly (>60 years) and individuals with any chronic illnesses. (16)

§ Countries where the varicella infection is acquired in higher age group then average age group can consider alternative vaccination programme. Current recommendations includes a 2-dose schedule as mentioned above.

§ Use of zoster vaccine is not recommended in India as enough evidence are yet to be collected. (17)

Ø PNEUMOCOCCAL VACCINE:

§ It is of two times. One is a polysaccharide vaccine containing 23 serotypes (PPSV23) and another one is conjugate vaccine containing polysaccharide capsules from 13 serotypes (PCV13) bound to diphtheria toxoid.

§ PPSV23 has less immune response but lacks mucosal protection

§ PCV13 is more immunogenic, but also provides good life long immunity. It also protects the mucosal layer. (18-19)

§ CDC guidelines suggest vaccination of adults >65 years of age with single dose PCV13 following which single dose of PPSV23, one year apart.

§ PPSV23 is also recommended individuals aged