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# VACCINATION FOR ELDERLY PEOPLE

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## INTRODUCTION

It is well known that as we grow old, our immune system weakens and we become vulnerable to various kinds of infection related diseases. Moreover, these diseases may occur in old age with greater severity. In spite of the fact that many of such diseases are vaccine preventable, we have not shown due concern in preventing these diseases in geriatric population. On the other hand, over the last many years our efforts have been chiefly directed towards preventing these diseases in our pediatric population. There is national immunization schedule very much in place for children in various countries including India and a mass awareness exists for such an initiative. Picture is however different for elderly persons. Although, rapidly burgeoning population of elderly persons all over the world is a reality today, vaccination has become a standard method in the practice of preventive geriatric health only in developed nations.

Reasons for lack of enthusiasm in vaccination programs for elderly persons in India include absence of availability of precise epidemiological data of such diseases, effectiveness of vaccines in Indian geriatric population, and financial and attitudinal issues in old age. No wonder, while Centers for Disease Control (CDC) in the U.S., WHO and European Parliament give clear recommendations on these issues, there are no such recommendations in India. The expert group of Association of Physicians of India quotes lack of data as a reason for not recommending vaccines for the geriatric age group in India. Much work is, therefore, required to provide simplified, inexpensive and valid methods for obtaining crucial data at the country level, such as the burden and costs of disease.

## VACCINE PREVENTABLE DISEASES IN ELDERLY

List of such diseases is long and effective vaccines are available against them. However, in our country, no uniform national guidelines on geriatric vaccination are available. Clinical practice ranges from indiscreetly giving certain vaccines to elderly persons, or use them only in high risk elderly or not to use the vaccines for elderly persons at all. Following description will include pneumonia, influenza, tetanus, hepatitis B, and herpes zoster while other general immunizations applicable to adults e.g. against rabies, typhoid, cholera, meningococcal disease, Japanese encephalitis, Yellow fever, human papilloma virus, chicken pox and many others will not be discussed here.

**Pneumonia** is a serious disease for all ages but children and elderly are especially vulnerable. Complications include bacteremia, meningitis and involvement of other body systems. Pneumonia in elderly carries a high mortality. Risk factors like advancing age, smoking, malnutrition, overcrowding, pollution, and co-existing morbidities such as COPD, CHD, CKD, diabetes, chronic liver disease, malignancies are of special concern in the elderly population.

Pneumococcal vaccines are mainly two: PPSV 23 (pneumococcal polysaccharide vaccine 23 or PPV) and a recent one called PCV 13 (pneumococcal conjugate vaccine 13 or PCV).While PPV is known since several decades in advanced countries, PCV has been claimed to be holding certain advantages *al beit* not conclusively. PCV has been successfully used by some in preventing serious forms of disease like bacteremic pneumonia and when meningitis supervenes. Advantages of PCV suggested for elderly are higher levels of protection against the vaccine serotypes and the ability to prolong the duration of protection by use of repeated vaccinations over time.16,17 low serotype coverage however remains the major limitation of PCV.

In general, pneumococcal vaccine is recommended as a single dose (0.5 ml.) by i.m. or s.c. route in elderly persons. Only in certain cases revaccination is required. CDC of USA recommends that all elderly adults should receive a single dose of pneumococcal polysaccharide vaccine. Blanket use of pneumococcal vaccine in India elderly is however controversial due to questions raised regarding its efficacy. In India, the API (Association of Physicians of India) expert group states that the available evidence is insufficient to recommend routine use of PPV in adults. As a policy, it should possibly be reserved for those elderly who are in higher risk. Otherwise after a certain age, any one can be given this vaccination on the discretion of the physician.

**Influenza** ia another significant cause of morbidity and mortality in elderly. The term flue is often taken lightly since it is a very common ailment and is generally a self limiting disease within few days. However, serious pandemics of different kinds of influenza have swept many nations over last many decades and have resulted in large number of deaths. In the elderly, otherwise also, influenza is responsible for high incidence of hospitalizations and death. Risk factors of concern to elderly people are more or less the same as have been mentioned in case of pneumonia above. Influenza is a contagious viral disease and is often seasonal. Viruses belong to orthomyxoviridae family, of which there are four genera – influenza viruses A, B, C and thogotoviruses. Influenza A virus causes epidemics most years, influenza B causes a less severe illness and spreads less extensively and influenza C causes only acute pharyngitis. Influenza can get complicated by bacterial infections including pneumonia and such a combination is dreadful in case of elderly patients.

Current Influenza vaccines are also of two types: trivalent inactivated vaccine (TIV) and a live attenuated influenza vaccine (LAIV), latter being of use through intranasal route. According to WHO recommendations (2005), vaccines contain the two A subtypes H3N2 and H1N1 and one type B virus. TIV contains two Influenza A and one Influenza B virus and is given as intramuscular injection (0.5 ml.) annually and is well tolerated. It can be given in high risk individuals. Although influenza vaccine is less efficacious in preventing clinical illness in older adults as compared to younger adults, it has been proved that it lessens the severity of infection and is 80% effective in preventing death in this population As per the recommendations of CDC

of USA, all adults older than or equal to 65 years of age should receive influenza vaccine annually. However, despite its usefulness, vaccination against influenza is a neglected issue in our country. Presently, the expert group of API also does not recommend routine use of influenza vaccine in India. However, individuals specially the high risk ones should take the vaccine and other individuals should take it if they can afford its cost.

**Tetanus** is a highly fatal disease but in advanced countries its incidence has drastically come down on account of widespread use of TT. In India, we still come across many cases although here also the incidence has significantly if not drastically come down. One important change has been that owing to increasing population of elderly persons and their vulnerability to falls and injuries, prevalence of tetanus in geriatric population is on the rise.

Tetanus vaccine for active immunization is tetanus toxoid which is available from quite a few companies in India. It is available in various combinations also e.g. with diphtheria (DT), both diphtheria and pertussis (DTaP) or with hepatitis B. Use of tetanus vaccine is generally coupled with those of diphtheria and pertussis since childhood in the form of a triple vaccine. Immunity to diphtheria, tetanus and pertussis acquired through childhood immunization if not reinforced by a constant natural exposure wanes relatively quickly and adults may become susceptible to disease. However, use of these three vaccines in elderly in India is virtually unheard of. According to the recommendations of CDC, all elderly adults (older than or equal to 65 years) should have completed a primary series of diphtheria and tetanus toxoids (dT) and thereafter should receive a booster dose every 10 years to provide protection against both diseases. If not immunized earlier, the primary series should be 3 doses of Td given at least 1 month apart, of this one dose should be replaced by Tdap. Subsequently, Td boosters should be given every 10 years. In India, the API expert group recommends Tdap for all adults not immunized earlier and then a booster dose of Td vaccine once every 10 years. Two new Tdap include Adacel and Boostrix. Dose is 0.5 ml. by i.m. injection. A previous history of Gullain-Barre syndrome following administration of another vaccine is a contraindication.

**Hepatitis B** virus (HBV) infection when acute can sometimes be serious manifesting as fulminant hepatitis. This is more common especially in the elderly where mortality rates may be as high as 10 to 15%. On the other hand, persons with chronic HBV infection may be asymptomatic for decades after infection; however, these persons are at high risk of eventually developing liver cirrhosis and/or primary liver cancer. Elderly persons who are at greater risk of contracting HBV infection include those with comorbidities like chronic liver disease, diabetes (especially those who frequently prick themselves for glucose monitoring), and chronic renal failure especially on dialysis, elderly undergoing major surgery, institutionalized elderly etc.

HBV vaccine is available for prevention of HBV infection. This vaccine is highly effective and is entirely safe, except for minor local adverse effects. The protection provided by the vaccine is long lasting. Although the effectiveness of hepatitis B vaccine is 80 to 95%; among those 50 to 59 years of age, effectiveness is 70%; and it further decreases to 50% in adults older than 60 years. Hence, it has been recommended that vaccination against hepatitis B infection in the elderly is required only if he/she falls into any one of the high risk categories. At the same time,

if anyone wishes to take the vaccination against HBV infection with his/her own funds, irrespective of the risk, the individual's decision should be respected. Adult dose of vaccine is 20 ug of recombinant vaccine by i.m. injection administered at 0, 1 and 6 months.

**Herpes Zoster (HZ)** or the Varicella Zoster is another infection to which the geriatric age group is susceptible. HZ causes debilitating pain and sometimes eye complications. There is a increased risk of pulmonary and nervous system complications as well.

Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination of all persons aged more than or equal to 65 years with one dose of zoster vaccine. Alternatively, a single dose of herpes zoster vaccine is recommended for adults aged 60 years and older regardless whether they have had a previous episode of herpes zoster. However in India, the expert group presently does not recommend herpes zoster vaccine in adult population, with or without comorbid conditions due to lack of reliable epidemiological data from the country regarding the burden of herpes zoster

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