

Highlights on Immunisation in Childhood

Zafer Kayyali M.D.-F.A.A.P., Al-Amal Hospital, Amman - Jordan

Questions and Answers:

Q1. What is the ideal schedule for routine immunisations in children?

There is no universal program. Each community has to decide the most efficacious and cost-effective program that fulfills the needs of its citizens. An accepted program is shown in figure (1):

Q2. At what age should premature babies receive their immunisation?

Premature babies should receive their immunisation according to their chronological age. DPT, polio and hemophilus influenza vaccines should be started at 2 months of age although hepatitis B vaccine may be delayed because of poor seroconversion rates and should also be started at 2 months of age rather than the first month of life.

Q3. What about complications of pertussis vaccination?

Whole cell pertussis vaccine consists of whole cell inactivated nonviable bacteria. The cell wall components result in adverse side effects. Acellular vaccines are made of proteins that are free of such components and have a much lower incidence of side effects that may include:

- ◆ Anaphylaxis
- ◆ Encephalopathy with in 7 days.
- ◆ Persistent crying for more than 3 hours.
- ◆ Shock-like state within 2 days of vaccination
- ◆ Fever of more than 40oC

These effects may be contraindications to pertussis vaccine and DT should be administered instead.

Neurological complications occur in approximately 1:110,000 doses. In the 1980's, this led to withholding the vaccine from the general population in a western country with catastrophic consequences. An expert panel found no evidence to support a causal relation between DTP vaccine

and permanent neurologic damage. However, it is advised that the vaccine should not be given to children above 7 years of age and if exposed antimicrobial prophylaxis is advised.

Q4. Is there any evidence to support the claim that MMR vaccination causes autism?

Reports form Great Britain suggested an apparent relationship between MMR vaccination and autism. This became a public debate; however, recent studies did not support any such association. MMR today is alive and well and constitutes one of the milestones in the history of vaccinations. Cases of measles, mumps, and rubella are extremely rare encounters in

Vaccine	Months	Boosters
a. D.P.T + O.P.V (or I.P.V) +	2-4-6	18 m-5 yrs
b. Hemophilus influenza	2-4-6	18 m
c. Hepatitis B	1-2-6	6 yrs or as needed
d. MMR	15m	4-6 yrs or as needed
e. Influenza	≥ 6 m	
f. Varicella	≥ 12 m	
g. Hepatitis A	≥ 2 yrs	
h. Pneumococcal	} — Optional	
i. Meningococcal		
j. BCG		

Figure 1

the life of practicing young pediatricians: Thanks to the routine use of MMR. The vaccine is given at 12-14 months of age with a booster dose at the age of 4-6 years or as needed.

Q5. Is the administration of multiple vaccines simultaneously an accepted policy?

Most vaccines can be given simultaneously without interference in their effectiveness. Work is being done on a hep-

In the autumn of every year a new preparation of influenza vaccine is made which aims to cover the expected antigenic types for the winter season

tavalent (7) vaccine after the successful use of pentavalent vaccines. Exceptions for this rule are rare and include interference among the 3 oral poliovirus serotypes and simultaneous administration of cholera and yellow fever vaccines.

Q6. What are the recent recommendations of hepatitis A and B vaccinations?

Hepatitis B is an infection that has scourged mankind in the last few decades with a great increase in the incidence of liver cirrhosis and carcinoma in highly endemic areas. It is now part of the routine immunisation programs in almost all Arab countries. It is given at 0, 1, and six months intervals and can be started at birth. If the mother is HBs Ag positive immunoglobulin is also given to the newborn. Additional booster doses may be given 7 years later as needed. Hepatitis A vaccine is given in 2 doses 6

months apart. Recommendations for the use of hepatitis A vaccine include:

- ◆ As pre-exposure prophylaxis for susceptible people traveling to countries with intermediate or high endemic rates of hepatitis A infection. In this circumstance, vaccine is preferable; but, immunoglobulin is an acceptable alternative.
- ◆ For children living in communities with consistently elevated hepatitis A rates.
- ◆ For people with chronic liver disease.
- ◆ For patients with clotting factor disorders.
- ◆ For people at risk of occupational exposure to hepatitis A.

Hepatitis A vaccine should also be considered for staff at day care centers, staff at custodial care institutions, hospital, and food handlers.

Q7. What is the best location for intramuscular injections in infants and children?

In the younger age group the anterolateral part of the thigh is the preferred site of IM injections. The deltoid and the upper outer quadrant of the buttocks may be used in the older child. Influenza and hepatitis B vaccines are less effective if injected into fat (buttocks).

Q8. When should the influenza vaccine be given and for what age groups?

In the autumn of every year a new preparation of influenza vaccine is made which aims to cover the expected antigenic types for the winter season.

When the vaccine is given for the first time, two doses are given, 1 month apart; in subsequent years, the same patient should be given one dose. Lately, it has been recommended that the vaccine be started after 6 months of age.

Between 6 months and 2 years of age, half the dose is given.

Children at high risk for severe influenza infection who should be vaccinated

include those with:

- ◆ Chronic lung diseases, e.g., asthma, bronchopulmonary dysplasia, cystic fibrosis
- ◆ Congenital heart disease significant hemodynamic disturbance
- ◆ Sickle cell anemia and other hemoglobinopathies
- ◆ Immunosuppressive disorders or therapy.
- ◆ Chronic renal dysfunction.
- ◆ Chronic metabolic disease, including diabetes mellitus.

Q9. Meningococcal infections can occur in young adults and pilgrims to Mecca: when should the vaccine be given?

Routine vaccination against meningococcal disease is not recommended in children because in this population the rate of disease is low and the immune response is poor and relatively short-lived. However, vaccination is considered advisable for children ≥ 2 years of age in high-risk groups, including those with functional or anatomic asplenia or complement deficiency.

Changes in vaccination policies according to the needs of different communities should be the policy of every vaccination program

It is also recommended that, whenever possible, the quadrivalent meningococcal vaccine containing capsular polysaccharide from serogroups A, C, Y and W135 be given to college freshmen living in dormitories as well as to pilgrims going to Hajj to Mecca.

Q10. How effective is varicella vaccine?

Highly effective (95% for prevention of any disease, 100% for prevention of

moderate to severe disease) when used within 36 hours after exposure in an environment involving close contact. The reason may be that natural varicella infection may require 5-7 days for the wild virus to propagate in the respiratory tract before primary viremia and dissemination occurs while the vaccine virus may elicit humoral and cellular immunity in significantly less time.

The vaccine is recommended for children above 1 year of age as 0.5 ml s.c. of vaccine in a single dose.
If more than 13 years: 2 doses 6-10 weeks apart.

A volley of varieties in vaccination valuables:

1. The initial antibody response is IgM. The IgM titer diminishes and the IgG titer rises during the 2nd week.
2. The lack of detectable serum antibody may not mean that the individual is unprotected, particularly with infections that have a long incubation period, such as hepatitis B.
3. Inactivated or killed vaccines, which have a lesser antigenic mass than live vaccines require booster vaccinations to provide protection.
4. In developed countries: pneumococcal, influenza and varicella are part of routine vaccination programs.
5. In the Arab World routine vaccination of Hepatitis A must be included in national programs after two years of age.
6. Administration of live-virus vaccines (e.g., MMR, OPV and varicella) generally is contraindicated in immunocompromised persons, including recipients of high-dose corticosteroids.
7. Live-virus vaccines - in most cases - are not recommended during pregnancy.
8. However, inadvertent vaccination is not a reason for termination of pregnancy and some live-virus vaccines (e.g., OPV, influenza and yellow fever) can be given to pregnant women. Influenza vaccine is specifically recommended for all pregnant women who will be in the 2nd or 3rd trimester during the influenza season because of increased morbidity of influenza in pregnant women.
9. Prematurity does not increase the incidence of vaccine-related adverse effects.
10. Varicella-zoster immune globulin (VZIG) is recommended for a newborn infant whose mother had the onset of chicken pox within 5 days before or 2 days after delivery.
11. Changes in vaccination policies according to the needs of different communities should be the policy of every vaccination program.