

DISCUSSION ON VACCINES

DR.NANDHINI KUMARAN
CONSULTANT PEDIATRICIAN
COIMBATORE



IAP RECOMMENDED VACCINES FOR ROUTINE USE

IAP Recommended Vaccines for Routine Use

Age (completed weeks/months/ years)	Vaccines	Comments
Birth	BCG OPV0 Hep-B1	<ul style="list-style-type: none"> Administer these vaccines to all newborns within 7 days, preferably within 24 hours
6 weeks	DTwP1/DTaP1 IPV1 (or bOPV1 and ID-fIPV1) Hep-B2 Hib1 Rotavirus 1 PCV1	<p><i>DTP:</i></p> <ul style="list-style-type: none"> Both DTwP and DTaP or their combinations can be used in primary series Immunogenicity and longevity of immune response is better with DTwP DTaP combinations may be offered as an alternative in view of nonavailability of standalone IPV preparations in the private sector and parental anxiety of increased reactogenicity with DTwP. <p><i>Polio:</i></p> <ul style="list-style-type: none"> No child should leave the facility without polio immunization (IPV or OPV). Continue birth dose OPV, and OPV on SIAs. IPV should replace OPV completely as early as possible.

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		<ul style="list-style-type: none"> • Three doses of IM IPV in primary series is the best option. • Two doses of IM IPV instead of three for primary series if started at 8 weeks, with an interval of at least 8 weeks between two doses is the second option. • In case IPV (standalone or in combination) is not available or feasible, the child should be offered bOPV (three doses). In such cases, two fractional doses of IPV at a government facility at 6 and 14 weeks or at least one dose of a IM IPV (either standalone or as a combination) at 14 weeks should be recommended. <p><i>Rotavirus:</i></p> <ul style="list-style-type: none"> • Two doses of RV1 or three doses of RV5 and RV116E and BRV-PV • RV1 can be given at 6 and 10 weeks. <p><i>PCVs:</i></p> <ul style="list-style-type: none"> • Minimum age: 6 weeks • Both PCV10 and PCV13 are licensed for children from 6 weeks to 5 years of age. • Additionally, PCV13 is also licensed for the prevention of pneumococcal diseases in adults >50 years of age. • Primary schedule (for both PCV10 and PCV13): three primary doses at 6, 10, and 14 weeks with a booster at age 12 through 15 months.
10 weeks	DTwP2 Hepatitis B3 IPV2 (or bOPV2) Hib2 Rotavirus 2 PCV2	<ul style="list-style-type: none"> • Only two doses of RV1 are recommended. • If RV1 is chosen, the second dose should be given at 10 weeks.

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Age (completed weeks/months/ years)	Vaccines	Comments
14 weeks	DTwP3 Hepatitis B4 IPV3 (or bOPV3 and ID-fIPV2) Hib3 Rotavirus 3 PCV3	<ul style="list-style-type: none"> If any dose in series was RV5 or RV116E or BRV-PV, a total of three doses of RV vaccine should be administered.
6 months	Influenza vaccine	<p><i>Influenza vaccine:</i></p> <ul style="list-style-type: none"> IIV is recommended for routine immunization of children 6–59 months of age. Children 6–59 months are grouped as “high risk” and should be offered as routine influenza vaccine. Both IIV3 and IIV4 are licensed in India and can be used. <p><i>Minimum age:</i> 6 months for trivalent (IIV3)/quadrivalent (IIV4).</p> <ul style="list-style-type: none"> <i>First time vaccination:</i> <ul style="list-style-type: none"> 6 months to below 9 years: Two doses 1 month apart 9 years and above: Single dose Vaccination can be started after 6 months of age as early as the vaccine for that season is made available, preferably 2 weeks before the season begins. Annual revaccination with single dose.
6 months onward	TCV	<ul style="list-style-type: none"> Single dose of any of the licensed TCV can be administered. Can be administered with MMR vaccine if started at 9 months.
9 months	MMR1/MR	<p><i>MMR/MR:</i></p> <ul style="list-style-type: none"> Standalone measles will no more be available. Measles-containing vaccine (MMR/MR) ideally should not be administered before completing 9 months of age. The second dose must follow in the second year of life.

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Age (completed weeks/months/ years)	Vaccines	Comments
		<ul style="list-style-type: none"> MR is not available in private sector as on date. If available, it should be offered instead of MMR Additional dose during MR campaign for children of 9 months to 15 years, irrespective of previous vaccination status
12 months	Hep A1	<p><i>Hepatitis A:</i></p> <ul style="list-style-type: none"> Single dose for live attenuated H2-strain Hep A vaccine Two doses for all inactivated Hep A vaccines are recommended
15 months	MMR2 Varicella 1 PCV booster	<p><i>MMR:</i></p> <ul style="list-style-type: none"> The second dose must follow in the second year of life However, it can be given at any time 4–8 weeks after the first dose <p><i>Varicella:</i></p> <ul style="list-style-type: none"> The risk of breakthrough varicella is lower if given 15 months onward MMRV as a combination vaccine is more reactogenic at this age
16–18 months	DTwP B1/DTaP B1 IPVB1 (or bOPV B1) Hib B1	<ul style="list-style-type: none"> The first booster (fourth dose) may be administered as early as age 12 months, provided at least 6 months after the third dose Both DTwP and DTaP as combination vaccine can be offered No child should leave the facility without booster dose of IPV (standalone or combination) or bOPV vaccination
18 months	Hep A2	<p><i>Hepatitis A:</i></p> <ul style="list-style-type: none"> Second dose for inactivated vaccines only
2 years or more	Typhoid polysaccharide vaccine	<ul style="list-style-type: none"> A dose of typhoid vi-polysaccharide (Vi-PS) vaccine can be given only if conjugate vaccine is not available or feasible Revaccination every 3 years with Vi-PS vaccine. TCV is preferred even at 2 years of age or more.

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<i>Age (completed weeks/months/ years)</i>	<i>Vaccines</i>	<i>Comments</i>
4–6 years	DTwP B2/DTaP B2	<ul style="list-style-type: none"> • Tdap is not recommended here.
	MMRV or MMR3 + Varicella 2	<p><i>Varicella:</i></p> <ul style="list-style-type: none"> • A total of two doses of varicella vaccine should be administered. • The second dose of varicella vaccine should be given at 4–6 years of age or at 3 months after the first dose. • MMRV can be used without increased risk of adverse reactions at this age. • MMR third dose is recommended at 4–6 years of age
9–12 years	Tdap/Td	<p><i>Tdap:</i></p> <ul style="list-style-type: none"> • Recommended age is 10 years. • Tdap is preferred to Td followed by Td every 10 years.
	HPV	<p><i>HPV:</i></p> <ul style="list-style-type: none"> • Only two doses of either of the two HPV vaccines for girls aged 9–14 years • For girls of 15 years and older as well as for immunocompromized individuals, three doses are recommended. • For two-dose schedule, the minimum interval between doses should be 6 months. • For three-dose schedule, the doses can be administered at 0, 1, 2 (depending on brand), and 6 months.

(BCG: Bacillus Calmette–Guérin; OPV: oral poliovirus vaccine; Hep B: Hepatitis B; DTwP: diphtheria, tetanus and whole-cell pertussis; DTaP: diphtheria, tetanus and acellular pertussis; DTP: diphtheria, tetanus toxoids and pertussis; IPV: inactivated polio vaccine; bOPV: bivalent oral poliovirus vaccine; ID-fIPV: intradermal fractional oral poliovirus vaccine; PCV: pneumococcal conjugate vaccine; SIA: supplemental immunization activity; IM: intramuscularly; RV: rotavirus vaccine; BRV-PV: bovine-human reassortant pentavalent rotavirus vaccine; IIV: inactivated influenza vaccine; TCV: typhoid conjugate vaccine; MMR: measles, mumps, and rubella; MR: Measles-rubella; MMRV: measles, mumps, rubella, and varicella; Tdap: diphtheria toxoid and acellular pertussis; Td: tetanus and diphtheria; HPV: human papillomavirus; IAP: Indian Academy of Pediatrics)

IMMUNISATION OF ADOLESCENTS

TABLE 1: IAP recommended vaccines for adolescents (10–18 years).

<i>Vaccine</i>	<i>Schedule</i>
Tdap/Td*	10 years
HPV†	9 years

* Tdap preferred to Td, followed by repeat Td every 10 years (Tdap to be used once only).

† Only females, two doses at 0 and 6 months (ages 9–14 years) or 0, 1, or 2 (depending on the vaccine used) and 6 months (above 14 years).

(IAP: Indian Academy of Pediatrics; HPV: human papillomavirus; Td: tetanus and diphtheria; Tdap: diphtheria toxoid and acellular pertussis)

TABLE 2: IAP recommendations for catch-up immunization in adolescents.

<i>Vaccine</i>	<i>Schedule</i>
MMR	Two doses at 4–8 weeks interval*
Hepatitis B	Three doses at 0, 1, and 6 months†
Hepatitis A	Two doses at 0 and 6 months (prior check for anti-HAV IgG may be cost effective)†,‡
Typhoid TCV®	Single dose
Varicella	Two doses at 4–8 weeks of interval

*One dose if previously vaccinated with one dose.

† Combination of hepatitis B and hepatitis A may be used in 0, 1, and 6 months of schedule.

‡ A minimum interval of 3 years should be observed between two doses of typhoid vaccine.

(IAP: Indian Academy of Pediatrics; IgG: Immunoglobulin G; HAV: Hepatitis A; MMR: measles, mumps, and rubella; TCV: typhoid conjugate vaccine)

TABLE 1: IAP recommendations for immunization of HIV-infected children.

<i>Vaccine</i>	<i>Asymptomatic</i>	<i>Symptomatic</i>
BCG	Yes (at birth)	No
DTwP/DTaP/TT/Td/Tdap	Yes, as per routine schedule at 6, 10, 14 weeks, 18 months, and 5 years	
Polio vaccines	IPV at 6, 10, 14 weeks, 12–18 months, and 5 years	
	If indicated IPV to household contacts	
	If IPV is not affordable, OPV should be given	
Measles	Yes, at 9 months	Yes, if CD4+ count >15%
MMR	Yes, at 15 months and 5 years	Yes, if CD4+ count >15%
Hepatitis B	Yes, at 0, 1, and 6 months*	Yes, four doses, double dose, check for seroconversion and give regular boosters
Hib	Yes, as per routine schedule at 6, 10, 14 weeks, and 12–18 months	
Pneumococcal vaccines (PCV and PPSV23)	<i>PCV</i> : Yes, as per routine schedule at 6, 10, 14 weeks, and 12–15 months <i>PPSV23</i> : One dose 2 months after PCV, 2nd dose 5 years after first dose (not more than two doses)	
Inactivated influenza vaccine	Yes, as per routine schedule beginning at 6 months, revaccination every year	
Rotavirus vaccine	Insufficient data to recommend, to be given as per ACIP/WHO recommendations in asymptomatic	
Hepatitis A vaccine	Yes	Yes, check for seroconversion, boosters if needed

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Vaccine	Asymptomatic	Symptomatic
Varicella vaccine	Yes, two doses at 4–12 weeks interval. Use single antigen vaccine, MMRV in HIV infected children have not been studied**	Yes, if CD4 count $\geq 15\%$ <5 years for ≥ 6 months, CD4 count $> 200/\text{mm}^3$ for ≥ 6 months Two doses at 4–12 weeks apart
Vi-typhoid/Vi-conjugate vaccine	Yes, as per routine schedule	
HPV vaccine	Yes (females only), as per routine schedule of 3 doses at 0, 1–2 and 6 months starting at 10 years of age	

* Hepatitis B virus surface antigen (HBsAg) positive mothers, infant to be given hepatitis immunoglobulin (HBIG) within 12 hours of birth as per birth weight, if status unknown <2,000 g infant to be given both HBV vaccine and HBIG. If >2,000 g to check the status and give HBIG accordingly (not later than 1 week)

** As per ACIP/Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO). If varicella vaccine was given before initiation of combination antiretroviral therapy (c-ART), repeat the doses of varicella vaccine after start of c-ART. (ACIP: Advisory Committee on Immunization Practices; BCG: Bacille Calmette-Guérin; CD: cluster of differentiation; DTP: diphtheria, tetanus, and pertussis; Hib: Haemophilus influenzae type b; HIV: human immunodeficiency virus; HPV: human papillomavirus; IAP: Indian Academy of Pediatrics; IPV: inactivated poliovirus vaccine; MMR: measles, mumps, and rubella; OPV: oral polio vaccine; PCV: pneumococcal conjugate vaccine; PPSV: pneumococcal polysaccharide vaccine; TT: tetanus toxoid)

TABLE 1: Categories of rabies exposure and recommended postexposure prophylaxis.

<i>Category</i>	<i>Type of contact</i>	<i>Type of exposure</i>	<i>Recommended post-exposure prophylaxis</i>
I	<ul style="list-style-type: none">• Touching or feeding of animals• Licks on intact skin	None	None, if reliable case history is available
II	<ul style="list-style-type: none">• Nibbling of uncovered skin• Minor scratches or abrasions without bleeding	Minor	Wound management + Antirabies vaccine

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Category	Type of contact	Type of exposure	Recommended post-exposure prophylaxis
III	<ul style="list-style-type: none">• Single or multiple trans-dermal bites or scratches, licks on broken skin• Contamination of mucous membrane with saliva (i.e. licks)	Severe	Wound management + Rabies immunoglobulin + Antirabies vaccine

NB: Bites from unidentified animal is classified as category III.



Fig. 1: Ice-lined refrigerator.

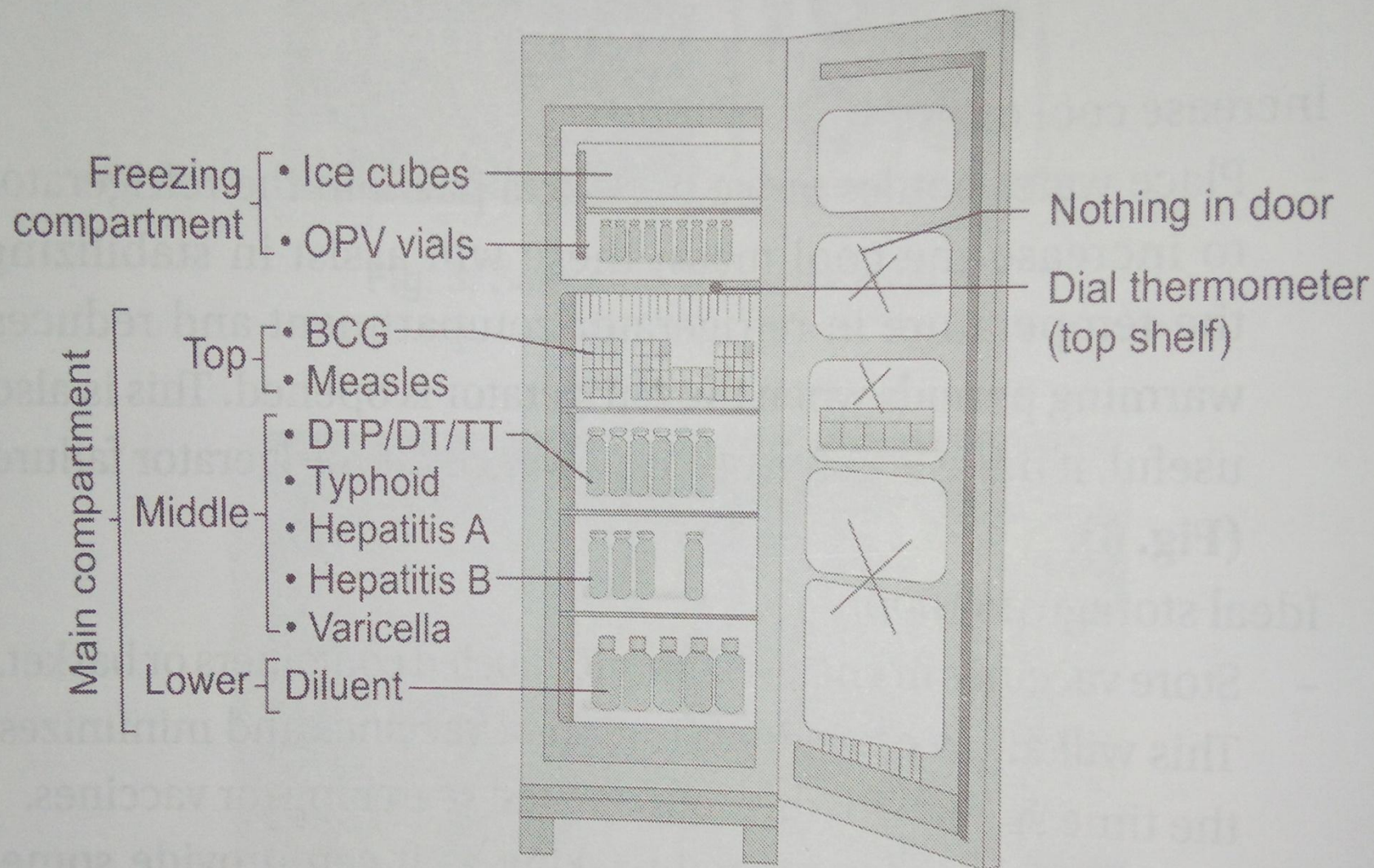


Fig. 8: Storage protocol in domestic fridge.

(OPV: oral poliomyelitis vaccine; BCG: Bacillus Calmette-Guérin; DTP: diphtheria, tetanus, and pertussis; DT: diphtheria and tetanus; TT: tetanus toxoid)

VACCINE VIAL MONITORS



The Vaccine Vial Monitor says...

if the expiry date is not passed,



USE the vaccine



USE the vaccine
FIRST



DO NOT USE
the vaccine



DO NOT USE
the vaccine

THANK YOU

