(updated: December 2025)

Table 3: Recommendations* for Interrupted or Delayed Routine Immunization - Summary of WHO Position Papers

Antigen		Age of 1st Dose (minimum)	Doses in Primary Series (min interval between doses)**	Interrupted primary series***	Doses for those who start vaccination late		Booster
					If ≤ 12 months of age	If > 12 months of age	
Recommendations for all immunization programmes							
RSV 1	**Option 1** Maternal vaccination	Third trimester	1	NA	Ideally no later than 2 weeks before delivery		NA
	Option 2 Monoclonal antibody	As soon as possible after birth (see footnotes)	1	NA	Earliest opportunity (see footnotes)	NA	NA
BCG [2]		As soon as possible after birth	1 dose	NA	1 dose	1 dose	Not recommended
Hepatitis B [3]		As soon as possible after birth (<24h)	Birth dose <24 hrs plus 2-3 doses with DTPcv (4 weeks)	Resume without repeating previous dose	3 doses	3 doses	Not recommended
Polio [4]	**bOPV + IPV** (fractional permitted; early option full dose only)	bOPV 6 weeks IPV 14 weeks (preferred) *-or-* bOPV 6 weeks IPV 6 weeks (early option)	5 [3 bOPV (min 4 weeks) + 2 IPV (min 8 weeks)]	Resume without repeating previous dose	5 doses (if >3 months old IPV to be given with 1st & 3rd dose of bOPV)	5 doses (IPV to be given with 1st dose & 3rd dose of bOPV)	Not recommended
	bOPV + IPV (Hexavalent option) (IPV in combination with DTPcv)	bOPV 6 weeks IPV 6 weeks (as part of DTPcv)	6 [3 bOPV (min 4 weeks) + 3 IPV (as part of DTPcv, min 4 weeks)]		6 [3 bOPV (min 4 weeks) + 3 IPV (as part of DTPcv)]	6 [3 bOPV + 3 IPV (follow schedule for late DTPcv, ensure at least 2 IPV doses)]	
	IPV / bOPV Sequential (fractional permitted)	8 weeks (IPV1) bOPV (4-8 weeks after IPV2)	4 (2 IPV followed by ≥ 2 bOPV) (min 4-8 weeks)		2 doses of IPV followed by 2 doses of bOPV	2 doses of IPV followed by 2 doses of bOPV	
	IPV-only (3-dose option) (full dose only)	6 or 8 weeks	3 (min 4-8 weeks)		3 doses	3 doses	
	Post-cessation option: IPV-only (2-dose option) (fractional permitted)	≥14 weeks	2 (min 4 months)		2 doses	2 doses	
DTP-containing vaccine (DTPcv) [5]		6 weeks (min)	3 doses (4 weeks)	Resume without repeating previous dose	3 doses	3 doses with interval of at least 4 weeks between 1st & 2nd dose, and at least 6 mos between 2nd & 3rd dose (if > 7 yrs use only aP containing vaccine; if > 4 yrs Td containing vaccine is preferred and should only be used for >7 yrs)	3 boosters: 12-23 months (DTP-containing vaccine); 4-7 years (Td/DT containing vaccine), see footnotes; and 9-15 yrs (Td containing) (if > 7 yrs use only aP containing vaccine) If tetanus vaccination started during adolescence or adulthood only 5 doses required for lifelong protection
***Haemophilus influenzae* type b** [6]	Option 1	6 weeks (min)	3 doses (4 weeks)	Resume without repeating previous dose	3 doses	1 dose >5 yrs not recommended if healthy	None
	Option 2		2-3 doses (8 weeks if 2 doses; 4 weeks if 3 doses)		2-3 doses		At least 6 months (min) after last dose

Refer to **https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers** for latest position paper updates.
* For some antigens the WHO position paper does not provide a recommendation on interrupted or delayed schedules at this present time. When the position paper is next revised this will be included. In the meantime, some of the recommendations are based on expert opinion. ** See Table 2: Summary of WHO Position Papers - Recommended Routine Immunizations for Children for full details. *** Same interval as primary series unless otherwise specified.

Table 3: Recommendations* for Interrupted or Delayed Routine Immunization - Summary of WHO Position Papers

Antigen		Age of 1st Dose (minimum)	Doses in Primary Series (min interval between doses)**	Interrupted primary series***	Doses for those who start vaccination late		Booster
					If ≤ 12 months of age	If > 12 months of age	
Pneumococcal (Conjugate) [7]		6 weeks (min)	3 doses (**3p+0**) with DTPcv (4weeks) or 2 doses (**2p+1**) (4-8 weeks)	Resume without repeating previous dose	2-3 doses	12-24 months: 2 doses 2-5 yrs: 1 dose 1-5 yrs at high-risk: 2 doses	Booster at 9-18 months if following 2 dose schedule Another booster if HIV+or preterm neonate Vaccination in older adults
Rotavirus [8]		6 weeks (min)	2 or 3 depending on product given with DTPCV	Resume without repeating previous dose	2 or 3 depending on product	>24 months limited benefit	Not recommended if > 24 months old
Measles [9]		9 or 12 months (6 months min, see footnote)	2 doses (4 weeks)	Resume without repeating previous dose	2 doses	2 doses	Not recommended
Rubella [10]		9 or 12 months	1 dose with measles containing vaccine	NA	1 dose	1 dose	Not recommended
HPV [11]		As soon as possible from 9 years of age (females)	1-2 doses (6-12 months)	Resume without repeating previous dose	NA	Girls: 9-14 years 1-2 doses (see footnote)	Not recommended
Recommendations for certain regions							
Japanese Encephalitis[12]	**Inactivated Vero cell-derived vaccine**	6 months	2 (4 weeks) generally	Resume without repeating previous dose	2 doses (generally)	2 doses (generally)	Not recommended
	Live attenuated	8 months	1	NA	1 dose	1 dose	
	Live recombinant vaccine	9 months	1	NA	1 dose	1 dose	
Yellow Fever [13]		9-12 months	1 dose with measles containing vaccine	NA	1 dose	1 dose	Not recommended
Tick-Borne Encephalitis [14]	**FSME-Immun & Encepur**	≥ 1 yr	3 doses (1st to 2nd 1-3 mos; 2nd to 3rd 12 mos)	Resume without repeating previous dose	3 doses	3 doses	At least 1 booster
	TBE_Moscow & EnceVir	≥ 3 yr	3 doses (1st to 2nd 1-7 mos; 2nd to 3rd 12 mos)	Resume without repeating previous dose	3 doses	3 doses	Every 3 years
Recommendations for some high-risk populations							
Typhoid [15]	**TCV-Typbar**	>6 months	1 dose	NA	1 dose	1 dose	
	Vi PS	2 years (min)	1 dose	NA	Not recommended	1 dose	Every 3 years
	Ty21a	Capsules 6 years (min) (see footnote)	3-4 doses (1 day) (see footnote)	If interruption is < 21 days, resume without repeating previous dose; If > 21 days restart primary series	Not recommended	> 6 yrs: 3-4 doses	Every 3-7 years

Refer to **https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers** for latest position paper updates.

* For some antigens the WHO position paper does not provide a recommendation on interrupted or delayed schedules at this present time. When the position paper is next revised this will be included. In the meantime, some of the recommendations are based on expert opinion. ** See Table 2: Summary of WHO Position Papers - Recommended Routine Immunizations for Children for full details. *** Same interval as primary series unless otherwise specified.

Table 3: Recommendations* for Interrupted or Delayed Routine Immunization - Summary of WHO Position Papers

Antigen		Age of 1st Dose (minimum)	Doses in Primary Series (min interval between doses)**	Interrupted primary series***	Doses for those who start vaccination late		Booster
					If ≤ 12 months of age	If > 12 months of age	
Cholera [16]	**Dukoral (WC-rBS)**	2 years (min)	2-5 yrs: 3 doses ≥ 6 yrs: 2 doses (≥ 7 days)	If interval since last dose ≥ 6 weeks restart primary series	Not recommended	2-5 yrs: 3 doses > 6 yrs: 2 doses	2-5 yrs: every 6 months. If booster is delayed > 6 months the primary series must be repeated. >6 yrs: every 2 years. If booster is delayed > 2 yrs the primary series must be repeated
	Shanchol, Euvchol and mORCVAX	1 year (min)	2 doses (2 weeks)	Resume without repeating previous dose	Not recommended	2 doses	After 2 years
Meningococcal [17]	**MenA conjugate**	9-18 months	1	NA	2 doses if < 9 months with 8 week interval	1 dose	Not recommended
	MenC conjugate	2-11 months	1	NA	2 doses	1 dose	2-11 months of age: after 1 year
		>12 months	2 (8 weeks min)	Resume without repeating previous dose			
	Quadrivalent conjugate	*(See footnotes for schedule alternatives based on vaccine product options)*					
	Pentavalent conjugate (Men5CV)	9-18 months	1		1 dose	1 dose	Not recommended
Hepatitis A [18]	**Inactivated**	> 12 months	1 or 2	Resume without repeating previous dose	Not recommended	1 or 2	Not recommended
	Live attenuated	18 months	1			1	
Rabies [19]		As required	2 (7 days)	Resume without repeating previous dose	2 doses	2 doses	Only if occupation puts a frequent or continual risk of exposure, titres should be tested if possible
Dengue (TAK-003) [20]		6 years (min)	2 doses (3 months)	Resume without repeating previous dose	Not recommended	2 doses 6-16 years	Not recommended
Malaria [21]		5 months	4 doses (4 weeks)	Resume without repeating previous dose	4 doses	4 doses	
Recommendations for children receiving vaccinations from immunization programmes with certain characteristics							
Mumps [21]		12-18 months	2 doses with measles and rubella containing vaccine (4 weeks)	Resume without repeating previous dose	Not recommended	2 doses	Not recommended
Seasonal influenza (inactivated tri- and quadri-valent) [22]		6 months (min)	2 (6 month to 8 years) 1(≥ 9 years)	Resume without repeating previous dose	2 doses	2 (6 month to 8 years) 1(≥ 9 years)	Revaccinate annually 1 dose only
Varicella [23]		12-18 months	1-2 (4 weeks – 3 months, depending on manufacturer)	Resume without repeating previous dose	Not recommended	1-2 doses	
Pneumococcal (Conjugate) [7] (Alternative 1p + 1 schedule)		6 weeks (min)	1 dose (**1p+1**)	Resume without repeating previous dose	1 dose (plus booster at 9-18m)	12-24 months: 2 doses 2-5 yrs: 1 dose 1-5 yrs at high-risk: 2 doses	Booster at 9-18 months Another booster if HIV+ or preterm neonate Vaccination in older adults

Refer to **https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers** for latest position paper updates.

* For some antigens the WHO position paper does not provide a recommendation on interrupted or delayed schedules at this present time. When the position paper is next revised this will be included. In the meantime, some of the recommendations are based on expert opinion. ** See Table 2: Summary of WHO Position Papers - Recommended Routine Immunizations for Children for full details. *** Same interval as primary series unless otherwise specified.

Summary Table 3 - Notes

- Refer to http://www.who.int/immunization/documents/positionpapers for the most recent version of the tables and position papers.
- The attached table summarizes the WHO recommendations for interrupted or delayed routine vaccination. Its purpose is to assist national decision-makers and programme managers to develop appropriate policy guidance in relation to their national immunization schedule.
- This table is designed to be used together with two other summary tables - Table 1: Summary of WHO Position Papers - Recommendations for Routine Immunization; and Table 2: Summary of WHO Position Papers - Recommended Routine Immunization for Children.
- Vaccines can generally be co-administered (i.e. more than one vaccine given at different sites during the same visit). Recommendations that explicitly endorse co-administration are indicated in the footnotes. Lack of an explicit co-administration recommendation is often due to a lack of evidence and does not necessarily imply that the vaccine cannot be co-administered. Exceptions to co-administration are stated.

[1]Respiratory Syncytial Virus (RSV)

- Position paper reference: Weekly Epid. Record (2025, 22:193–218)

Maternal RSV vaccine

- For countries using maternal RSV vaccine , WHO recommends a single dose in the third trimester of pregnancy, as defined in the local context (≥28 weeks gestation in most settings).
- Ideally vaccination should occur more than 2 weeks before delivery to ensure adequate transfer of antibodies to protect the baby. However, even when administered in the weeks immediately before delivery, some protection is likely. Therefore no upper limit of week of gestation is recommended, except for women in active labour who should not receive the RSV vaccine.

Long-acting monoclonal antibody (mAb)

- For countries deciding to use RSV mAb to protect young infants, WHO recommends a single dose at birth, or at the earliest opportunity thereafter if year-round administration is adopted.
- In a seasonal approach, administration of a single dose of RSV mAb is recommended for infants and should begin shortly before the start of the RSV season, as well as at birth or earliest opportunity thereafter for infants born during the RSV season.
- The greatest impact in preventing severe RSV disease will be achieved by administering the mAb to infants aged under 6 months; however there is still potential benefit among infants up to 12 months of age.

[2] BCG

- Position paper reference: Weekly Epid. Record (2018, 93:73-96).
- BCG vaccination is recommended for unvaccinated TST- or IGRA-negative older children, adolescents and adults from settings with high incidence of TB and/or high leprosy burden, those moving from low to high TB incidence/ leprosy burden settings and persons at risk of occupational exposure in low and high TB incidence areas (e.g. health-care workers, laboratory workers, medical students, prison workers, other individuals with occupational exposure).

[3]Hepatitis B

- Position paper reference: Weekly Epid. Record (2017, 92:369-392).
- In general, the dose for infants and children (aged < 15 years) is half the recommended adult dose.
- Co-administration of HepB vaccine does not interfere with the immune response to any other vaccine and vice versa.
- If delayed or interrupted scheduling of vaccination for children, adolescents and adults, 3 doses are recommended, with the second dose administered at least 1 month after the first, and the third dose 6 months after the first dose. If the vaccination schedule is interrupted it is not necessary to restart the vaccine series.

[4]Polio

- Position paper reference: Weekly Epid. Record (2022, 97:277-300).

bOPV plus IPV

- For infants late in starting the routine immunization schedule (age >3 months) the first IPV dose should be administered at the first immunization contact along with bOPV and the other routinely recommended vaccines.
- Countries using a hexavalent vaccine should follow the delayed schedule for DTP-containing vaccines, ensuring at least 2 IPV doses are provided.

Sequential IPV–bOPV

- For sequential IPV– bOPV schedules, WHO recommends that the first dose of IPV be given starting from 8 weeks of age with an interval of 4–8 weeks before administration of the second IPV dose. This should be followed by at least 2 doses of bOPV separated by 4–8 weeks, depending on the risk of exposure to poliovirus in early childhood.

IPV-only

- A primary 3-dose series of IPV administered beginning at 6 or 8 weeks of age, with a minimum 4 week interval between doses, is recommended.
- Alternatively, a 2-dose or fractional dose IPV schedule, starting at 14 weeks of age or older, with a second dose 4 months or more later, can be considered. This schedule is currently **only** recommended for use after OPV cessation.

[5] DTP-containing vaccine (Diphtheria, Tetanus, Pertussis)

- Position paper reference: Diphtheria – Weekly Epid. Record (2017, 92:417-436); Tetanus - Weekly Epid. Record (2017, 92: 53-76); Pertussis - Weekly Epid. Record (2015, 90: 433-460).
- If either the start or the completion of the primary series has been delayed, the missing doses should be given at the earliest opportunity with an interval of at least 4 weeks between doses.
- 3 booster doses of diphtheria toxoid-containing vaccine should be provided during childhood and adolescence. The diphtheria booster doses should be given in combination with tetanus toxoid using the same schedule, i.e at 12–23 months of age, 4–7 years of age, and 9–15 years of age, using age-appropriate vaccine formulations. Ideally, there should be at least 4 years between booster doses.
- **Tetanus:** To ensure lifelong protection against tetanus all people should receive 6 doses (3 primary plus 3 booster doses) of tetanus toxoid-containing vaccine (TTCV) through routine childhood immunization schedules.
- If tetanus vaccination is started during adolescence or adulthood, a total of only 5 appropriately spaced doses are required to obtain lifelong protection.
- To provide and sustain both tetanus and diphtheria immunity throughout the life course and for both sexes, age-appropriate combinations of tetanus and diphtheria toxoids should be used. For children <7 years of age DTwP or DTaP combinations may be used. For children aged 4 years and older Td containing vaccine may be used and is preferred.
- From 7 years of age only Td combinations should be used. Age-appropriate combinations containing pertussis vaccine with low-dose diphtheria antigen are also available.
- Pregnant women and their newborn infants are protected from birth-associated tetanus if the mother received either 6 TTCV doses during childhood or 5 doses if first vaccinated during adolescence/adulthood (documented by card, immunization registry and/or history) before the time

of reproductive age. Vaccination history should be verified in order to determine whether a dose of TTCV is needed in the current pregnancy.

- **Pertussis:** Only aP-containing vaccines should be used for vaccination of persons aged ≥7 years.
- **Pertussis-containing booster:** A booster dose is recommended for children aged 1–6 years, preferably during the second year of life (≥6 months after last primary dose), unless otherwise indicated by local epidemiology; the contact could also be used to catch up on any missed doses of other vaccines. This schedule should provide protection for at least 6 years for countries using wP vaccine. For countries using aP vaccine, protection may decline appreciably before 6 years of age.
- **Delayed or interrupted DTP-containing series:** For children whose vaccination series has been interrupted, the series should be resumed without repeating previous doses. Children aged 1 to < 7 years who have not previously been vaccinated should receive 3 doses of vaccine following a 0, 1, 6 month schedule. Two subsequent booster doses using Td or Tdap combination vaccines are needed with an interval of at least 1 year between doses.

[6] Haemophilus influenzae type b (Hib)

- Position paper reference: Weekly Epid. Record (2013, 88: 413-428).
- The number of primary doses should be set after consideration of the local epidemiology, vaccine presentation (Hib conjugate monovalent vaccine versus Hib conjugate vaccine in combination with other antigens) and how this fits into the overall routine immunization schedule.
- If the vaccination course has been interrupted, the schedule should be resumed without repeating the previous dose. Children who start vaccination late, but are aged under 12 months, should complete the vaccination schedule (e.g. have 3 primary doses or 2 primary doses plus a booster).
- When a first dose is given to a child older than 12 months of age, only one dose is recommended.
- Hib vaccine is not required for healthy children after 5 years of age.

[7] Pneumococcal (Conjugate)

- Position paper reference: Weekly Epid. Record (2025, 39: 411-437).
- For administration of PCV to infants, WHO recommends a 3-dose schedule administered either as 2p+1 or as 3p+0, starting as early as 6 weeks of age.
- If the 2p+1 schedule is selected, an interval of ≥8 weeks is recommended between the 2 primary doses. The booster dose should be given at 9–18 months of age, according to programmatic considerations; there is no defined minimum or maximum interval between the primary series and the booster dose.
- If the 3p+0 schedule is used, a minimum interval of 4 weeks should be maintained between doses.
- Off-label 1p+1 (see position paper for criteria): The first dose of the 1p+1 schedule can be given at ≥6 weeks of age, and the booster can be given at ≥9 months of age.
- Interrupted schedules should be resumed without repeating the previous dose.
- If a series cannot be completed with the same type of vaccine, the available PCV product should be used. Restarting a series is not recommended, even for the primary series.
- Wherever possible, catch-up vaccination at the time of introduction of PCV should be used to accelerate its impact on disease in children aged 1–5 years, particularly in settings with a high disease burden and mortality. If there is limited availability of vaccine or of financial resources for catch-up vaccination, the youngest children (e.g. <2 years of age) should be prioritized to receive catch-up doses of PCV because of their higher risk for pneumococcal disease.
- Catch-up vaccination can be done with a single dose of vaccine for children ≥24 months.
- Previously unvaccinated or incompletely vaccinated children who recover from invasive pneumococcal disease should be vaccinated according to the recommended age-appropriate regimens.
- Unvaccinated children aged 1–5 years who are at high risk for pneumococcal infection because of underlying medical conditions, such as HIV infection or sickle-cell disease, should receive at least 2 doses separated by at least 8 weeks.
- WHO does not currently have recommendations on the use of PCV in individuals over 5 years of age.

[8] Rotavirus

- Position paper reference: Weekly Epid. Record (2021, 96: 301-320).
- Early administration is favoured, with the first dose of rotavirus vaccine to be administered as soon as possible after 6 weeks of age, however, in order to benefit those who may come late should be vaccinated.
- If a child <24 months of age misses a rotavirus dose or series for any reason, WHO recommends rotavirus vaccination for that child. Because of the typical age distribution of RVGE, rotavirus vaccination of children >24 months of age is not recommended.
- Regardless of the duration of the delay, interrupted schedules should be resumed as soon as possible without repeating the previous dose.
- The rotavirus vaccination series for each child should be completed with the same product whenever feasible. However, if the product used for a prior dose is unavailable or unknown, the series should be completed with any available licensed product.
- Rotavirus vaccinations may be administered simultaneously with other vaccines of the childhood immunization programme.

[9] Measles

- Position paper reference: Weekly Epid. Record (2017, 92: 205-228).
- Reaching all children with 2 doses of measles vaccine should be the standard for all national immunization programmes.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible, without repeating previous doses.
- The minimum interval between MCV1 and MCV2 is 4 weeks.
- Because many cases of measles occur in children aged >12 months who have not been vaccinated, routine delivery of MCV1 should not be limited to infants aged 9–12 months and routine delivery of MCV2 should not be limited to infants 15 to 18 months of age. Every opportunity (e.g. when children come into contact with health services) should be taken to vaccinate all children that missed one or both MCV routine doses, particularly those under 15 years of age. Policies which prohibit use of vaccine in children >1 year of age, older children, and teenagers, should be changed to allow these individuals to be vaccinated.
- As a general rule, live vaccines should be given either simultaneously or at intervals of 4 weeks. An exception to this rule is OPV, which can be given at any time before or after measles vaccination without interference in the response to either vaccine.

[10] Rubella

- Position paper reference: Weekly Epid. Record (2020, 95: 301-324).
- As of September 2024, the requirement that countries attain 80% MCV coverage in routine immunization or campaigns before RCV introduction has been lifted. This component of the Rubella Position Paper will be amended in the next update; in the meantime, the new policy recommendation can be found in the Meeting of the Strategic Advisory Group of Experts on Immunization, September 2024: conclusions and recommendations.
- All countries that have not yet introduced RCV should plan to do so.

- RCV's can be administered concurrently with inactivated vaccines.
- Live vaccines should be given either simultaneously with RCV's, or at least 4 weeks apart. An exception to this is oral polio vaccine, which can be given at any time before or after RCV's without interfering in the response to either vaccine. WHO recommends co-administration of RCV and YF vaccines.
- Rubella vaccination should be avoided in pregnancy because of a theoretical (but never demonstrated) risk of teratogenic outcomes. Women planning a pregnancy are advised to avoid pregnancy for 1 month after rubella vaccination.
- WHO recommends that people who receive blood products wait at least 3 months before vaccination with RCV, and, if possible, avoid administration of blood products for 2 weeks after vaccination.

[11] Human Papillomavirus (HPV)

- Position paper reference: Weekly Epid. Record (2022, 97: 645-672).
- The current evidence supports the recommendation that a 2-dose schedule be used in the primary target group from 9 years of age and for all older age groups for which HPV vaccines are licensed.
- The minimum interval between first and second dose is 6 months. A 12-month schedule results in higher GMTs and is suggested for programmatic and efficiency reasons.
- There is no maximum recommended interval between doses and longer intervals – up to 3 or 5 years – can be considered if useful from a programme perspective.
- **Alternative single-dose schedule:** As an off-label option, a single-dose schedule can be used in girls and boys aged 9–20 years. Current evidence suggests that a single dose has comparable efficacy and duration of protection as a 2-dose schedule and may offer programme advantages, be more efficient and affordable, and contribute to improved coverage. From a public health perspective, the use of a single dose schedule can offer substantial benefits that outweigh the potential risk of a lower level of protection if efficacy wanes over time, although there is no current evidence of this.
- Individuals known to be immunocompromised or HIV-infected (regardless of age or antiretroviral therapy status) should receive at least two HPV vaccine doses (minimum 6 months interval) and, where possible, three doses.
- HPV vaccines can be co-administered with other non-live and live vaccines using separate syringes and different injection sites. Co-administration of a booster dose of tetanus-diphtheria (Td) vaccination should be considered to improve programme efficiency and avoid missed opportunities to receive needed vaccinations.
- As a precaution HPV vaccine is not recommended in pregnancy. If pregnancy occurs following the first dose of vaccination, the subsequent dose should be delayed until after the pregnancy. Termination of pregnancy is not indicated if vaccination was carried out inadvertently during pregnancy. Breastfeeding is not a contraindication for HPV vaccination.

[12] Japanese Encephalitis

- Position paper reference: Weekly Epid. Record (2015, 90: 69-88).
- The most effective immunization strategy in JE endemic settings is a one-time campaign in the primary target population, as defined by local epidemiology (typically children aged <15 years), followed by incorporation of JE vaccine into the routine childhood immunization programme.
- The following vaccine dosing schedules and age of administration are recommended. The need for a booster dose in endemic settings has not been clearly established for any of the vaccines listed below:
  - *Inactivated Vero cell-derived vaccine*: Primary series according to manufacturer's recommendations (these vary by product), generally 2 doses at 4-week intervals starting the primary series at ≥6 months of age in endemic settings
  - *Live attenuated vaccine*: Single dose administered at ≥8 months of age
  - *Live recombinant vaccine*: Single dose administered at ≥9 months of age
- Despite a lack of comprehensive immunogenicity/effectiveness and safety data for all possible combinations of JE and other routine vaccines, co-administration for programmatic reasons seems acceptable, even in the context of mass campaigns.
- As a general rule, any live vaccine may be given either simultaneously or at an interval of 4 weeks.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.

[13] Yellow Fever

- Position paper reference: Weekly Epid. Record (2013, 88: 269-284).
- A single dose of YF vaccine is sufficient to confer sustained life-long protective immunity against YF disease; a booster dose is not necessary.
- The vaccine is contraindicated in children aged <6 months and is not recommended for those aged 6-8 months, except during epidemics when the risk of infection with the YF virus is very high. Other contraindications for YF vaccination are severe hyper-sensitivity to egg antigens and severe immunodeficiency.
- Vaccine should be offered to all unvaccinated travelers aged ≥ 9 months, travelling to and from at-risk areas, unless they belong to the group of individuals for whom YF vaccination is contraindicated.
- YF vaccine may be administered simultaneously with other vaccines. As a general rule, any live vaccine may be given either simultaneously or at an interval of 4 weeks. Oral polio vaccine may be given at any time in relation to YF vaccination.

[14] Tick-Borne Encephalitis (TBE)

- Position paper reference: Weekly Epid. Record (2011, 86: 241-256).
- Vaccination against the disease requires a primary series of 3 doses; those who will continue to be at risk should probably have ≥1 booster doses.
- Within the considerable range of acceptable dose intervals, the relevant national authorities should select the most rational primary schedule for their national, regional or district immunization programmes.
- Although there is a strong indication that the spacing of boosters could be expanded considerably from the intervals currently recommended by the manufacturers (every 3-5 years), the evidence is still insufficient for a definitive recommendation on the optimal frequency and number of booster doses. Countries should therefore continue to recommend the use of vaccines in accordance with local disease epidemiology and current schedules until more definitive information becomes available.
- Regardless of the duration of the delay, interrupted schedules should be resumed without repeating previous doses.

[15] Typhoid

- Position paper reference: Weekly Epid. Record (2018, 93: 153-172)
- TCV is recommended for infants and children from 6 months of age and in adults up to 45 years. Administration of TCV at the same time as other vaccine visits at 9 month of age or in the second year of life is encouraged. ViPS – single dose from 2 years of age. Ty21a – 3-doses to be administered orally every second day from 6 years of age.
- Regardless of the duration of the delay, interrupted schedules should be resumed without repeating previous doses.

- Catch-up vaccination with TCV up to 15 years of age is recommended when feasible and supported by epidemiological data.
- The potential need for revaccination with TCV is currently unclear. Revaccination is recommended every 3 years for ViPS, and every 3-7 years for Ty21a.

[16] Cholera

- Position paper reference: Weekly Epid. Record (2017, 92:477-500).
- WC vaccines (Shanchol, Euvchol, and mORCVAX) 2 doses should be given 14 days apart to individuals ≥1 year of age. For WC-rBS vaccine (Dukoral) 3 doses should be given to children 2-5 years of age, and 2 doses to children aged ≥6 years and adults, with an interval of 1-6 weeks between doses in both groups.
- For WC vaccines, interrupted schedules should be resumed without repeating previous dose, regardless of delay. For WC-rBS vaccine, if ≥6 weeks has passed since last dose, restart the series.
- Revaccination is recommended where there is continued risk of V. cholerae infection. For WC vaccines revaccination is recommended after 3 years. For WC-rBS vaccine: children age 2-5 years revaccination is recommended within 6 months. If less than 6 months have passed, 1 dose for revaccination. If more than 6 months have passed, the primary series of 3 doses should be repeated. For those aged ≥6 years of age, if less than 2 years have passed, 1 dose for revaccination. If more than 2 years have passed, the primary series of 2 doses should be repeated.
- Pregnant and lactating women and HIV infected individuals should be included in OCV campaigns since there is a high potential benefit and minimal risks.

[17] Meningococcal

- Position paper references: Weekly Epid. Record (2011, 86: 521-540); Updated guidance for MenA conjugate - Weekly Epid. Record (2015, 90: 57-68); Updated guidance for multivalent meningococcal vaccines – Weekly Epid. Record (2023, 98: 599-620); and Weekly Epid. Record (2024, 99: 1-10).
- WHO now recommends the use of **Men5CV (pentavalent meningococcal conjugate vaccine)** as a single-dose schedule beginning at 9 months of age, in alignment with routine immunization schedules. The need for a booster dose is currently under review, based on accumulating programmatic experience.
- For countries still using **MenA conjugate vaccine**, MenA conjugate vaccine (5µg) a 1-dose schedule is recommended at 9-18 months of age based on local programmatic and epidemiologic considerations. MenA (10µg) should be used for catch-up and periodic campaigns from 12 months of age onwards.
- If in a specific context there is a compelling reason to vaccinate infants younger than 9 months, a 2-dose schedule should be used starting at 3 months of age, with an interval of at least 8 weeks between doses.
- For **monovalent MenC conjugate vaccine** one single intramuscular dose is recommended for children aged ≥12 months, teenagers and adults. Children 2-11 months require 2 doses administered at an interval of a least 2 months and a booster about 1 year after.
- If the primary series is interrupted, vaccination should be resumed without repeating the previous dose.

[18] Hepatitis A

- Position paper reference: Weekly Epid. Record (2022, 97: 493-512).
- Vaccination against hepatitis A should be part of a comprehensive plan for the prevention and control of viral hepatitis, including measures to improve safe drinking-water, sanitation and hygiene (such as hand washing) and measures for outbreak control.
- WHO recommends that vaccination against hepatitis A virus be introduced into national immunization schedules for individuals aged ≥12 months, if indicated on the basis of: i) an increasing trend over time of acute hepatitis A disease, including severe disease, among older children, adolescents or adults; ii) changes in the endemicity from high to intermediate; and iii) considerations of cost– effectiveness.
- In highly endemic countries, most individuals are asymptomatically infected with HAV in childhood, which prevents clinical hepatitis A in adolescence and adulthood. In these countries, large-scale hepatitis A vaccination programmes are not routinely recommended, because they carry a risk of a paradoxical increase in disease incidence in unvaccinated people. If a highly endemic country nevertheless wishes to consider largescale vaccination, it is essential to undertake a thorough prior analysis of risks vs benefits and ensure a high vaccination coverage to avoid this risk.
- Groups at higher risk of hepatitis A should be vaccinated. Such groups include travelers from low-endemic countries to areas of intermediate or high endemicity, men who have sex with men, at-risk occupational groups (such as sewage workers or laboratory personnel handling hepatitis A virus specimens), people who inject drugs, people who experience homelessness, migrants, refugees, incarcerated persons; and patients with chronic liver disease or people living with HIV, particularly in countries with low and very low endemicity.
- Countries with improving socioeconomic status may rapidly move from high to intermediate hepatitis A endemicity, rendering a larger proportion of the adolescent and/or young adult population susceptible to HAV infection. In such countries, large-scale hepatitis A vaccination in early childhood is likely to be cost–effective and is therefore recommended. When introducing the vaccine, these countries should consider the need for catch-up immunization based on age- specific seroprevalence rates or other markers of susceptibility.

Inactivated vaccine:

- For children, inactivated hepatitis A vaccines can be given as a single- or 2-dose schedule, and administered intramuscularly. With a 2-dose schedule, the first dose should be given starting from age ≥12 months. The interval between doses is flexible, from 6 months up to 4–5 years or more, but is usually 6–18 months. Data on vaccine effectiveness, antibody persistence, and modelling on long-term seroprotection indicate that an off-label, single dose schedule is equivalent to the two-dose schedule in children, in addition to being less costly and easier to implement.
- For adults aged >40 years, vaccination with inactivated vaccines using the 2-dose schedule is preferred since there is insufficient evidence on the immunogenicity and long-term protection from a single dose in this age group.
- Inactivated hepatitis A vaccines produced by different manufacturers, including combined hepatitis A vaccines, are interchangeable.
- For immunocompromised individuals, until further experience has been obtained with a single-dose schedule, a 2-dose schedule of inactivated vaccine is recommended. Inactivated hepatitis A vaccines should also be considered for use in pregnant women at risk of HAV infection.

Live attenuated vaccine:

- Live attenuated vaccines are licensed for individuals aged ≥18 months and are administered as a single subcutaneous dose.
- Hepatitis A vaccines can be administered simultaneously with any of the vaccines routinely used in childhood immunization programmes.

[19] Rabies

- Position paper reference: Weekly Epid. Record (2018, 93: 201-220).
- If any doses are delayed, vaccination should be resumed, not restarted. A change in the route of administration or in vaccine product during a PEP or PrEP course is acceptable if such a change is unavoidable.
- No further PrEP booster doses following a primary series of PrEP or PEP are required for individuals living in, or travelling to, high-risk areas.

[20] Dengue (TAK-003)

- Position paper reference: Weekly Epid. Record (2024, 99: 203-224)
- WHO recommends the use of TAK-003 in children aged 6–16 years in settings with high dengue transmission intensity.
- Catch-up vaccination can also be considered for other age groups within the 6–16 year age range at the time of vaccine introduction.
- The vaccine is recommended as a 2-dose schedule with a minimum interval of 3 months between doses. It is not advised to reduce the interval between doses.
- If the second dose is delayed for any reason, it is not necessary to restart the series and the second dose should be administered at the first available opportunity.
- A booster dose is not recommended.
- TAK-003 may be co-administered with other inactivated, subunit, or mRNA vaccines, except for live vaccines, for which more data are required.
- TAK-003 is not recommended during pregnancy and pregnancy should be avoided for at least 1 month following vaccination. Inadvertent vaccination of a pregnant person is not a reason to terminate the pregnancy.
- TAK-003 is contraindicated for mothers during breastfeeding, in persons with congenital or acquired immune deficiency, including those receiving immunosuppressive therapies such as chemotherapy or high doses of systemic corticosteroids within 4 weeks prior to vaccination (as with other live attenuated vaccines), and in individuals with symptomatic HIV infection or with asymptomatic HIV infection associated with evidence of impaired immune function.

[21] Malaria

- Position paper reference: Weekly Epid. Record (2024, 99: 225-248)
- Malaria vaccines should be provided in a 4-dose schedule in children from 5 months of age.
- The minimum interval between any doses is 4 weeks; however, to achieve prolonged protection, the fourth dose should be given 6–18 months after the third dose.
- To improve coverage, there can be flexibility in the timing of the fourth dose, including by aligning it with vaccines given in the second year of life. Alternatively, because vaccine efficacy is highest in the first months after vaccination, the fourth dose can be given just prior to seasonal peaks in malaria transmission to optimize vaccine efficacy.
- A fifth dose, given one year after the fourth dose, may be provided in areas of highly seasonal transmission and may be considered in other areas – depending on a local assessment of feasibility and cost-effectiveness – where a significant malaria risk remains for children.
- At the time of vaccine introduction, catch-up vaccination can be considered in children up to 5 years of age, subject to local epidemiology and age of high risk, feasibility, affordability and vaccine availability.
- Malaria vaccines may be administered simultaneously with other childhood vaccines.

[22] Mumps

- Position paper reference: Weekly Epid. Record (2024, 82: 49-60).
- If implemented, mumps vaccine should be administered with measles and rubella as MMR or MMRV combination vaccine and follow the same schedule.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.
- Minimum interval between doses is 4 weeks.

[23] Seasonal Influenza (Inactivated Vaccine)

- Position paper reference: Weekly Epid. Record (2022, 97: 185-208).
- A single dose is appropriate for those ≥ 9 years of age and healthy adults.
- Children aged 6 months -8 years should receive 2 doses at least 4 weeks apart.
- Those who have previously been vaccinated at least once should subsequently receive 1 annual dose.
- Live attenuated influenza vaccines (LAIVs) are currently not recommended for children under 2 years of age and adults, including older adults and those with comorbidities, because VE has not been consistently demonstrated in these age groups. Because LAIV is a live-virus vaccine and data on its administration to pregnant women and the associated maternal and fetal risks are limited, LAIV is also not recommended during pregnancy.
- Inactivated influenza vaccine is safe to give throughout pregnancy.
- Co-administration of influenza vaccine, including with COVID-19 or live vaccines is acceptable. When 2 vaccines are administered at the same visit, the contralateral limb should be used.

[24] Varicella

- Position paper reference: Weekly Epid. Record (2025, 47: 567-590).
- The number of doses recommended depends on the goal of the vaccination programme. For effective prevention of varicella, WHO recommends a 2-dose schedule of a varicella-containing vaccine given the higher effectiveness of 2 doses versus a single dose. Countries may choose to use a one-dose schedule but if they do, they should note that, while such a programme may be sufficient to reduce mortality and severe morbidity from varicella, it is less effective than a 2-dose schedule in preventing virus circulation and occasional outbreaks.
- For catch-up vaccination in adolescents and adults, a 2-dose schedule of varicella vaccine should also be used.
- Varicella vaccine can be administered concomitantly with other vaccines. Unless given together with other live viral vaccines (measles, MR, MMR), it should be administered at a minimum interval of 28 days (4 weeks).
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.