

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

Antigen		Age of 1st Dose	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	
<b>Recommendations for all immunization programmes</b>							
<b>BCG<sup>1</sup></b>		As soon as possible after birth	1 dose	NA	1 dose	1 dose	Not recommended
<b>Hepatitis B<sup>2</sup></b>		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
<b>Polio<sup>3</sup></b>	<b>bOPV + IPV</b>	bOPV 6 weeks IPV 14 weeks	5 (3 bOPV and 2 IPV)	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
	<b>IPV / bOPV Sequential</b>	8 weeks (IPV 1 <sup>st</sup> )	1-2 doses IPV and 2 doses bOPV (4 weeks)	Resume without repeating previous dose	1-2 doses IPV and 2 doses bOPV	1-2 doses IPV and 2 doses bOPV	Not recommended
	<b>IPV</b>	8 weeks	3 doses (4 weeks)	Resume without repeating previous dose	3 doses	3 doses	If the primary series begins < 2 months of age, booster to be given at least 6 months after the last dose
<b>DTP-containing vaccine (DTPCV)<sup>4</sup></b>		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
<b>Haemophilus influenzae type b<sup>5</sup></b>	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  At least 6 months (min) after last dose
	Option 2		2-3 doses (8 weeks if 2 doses; 4 weeks if 3 doses)		2-3 doses		
<b>Pneumococcal (Conjugate)<sup>6</sup></b>		6 weeks (min)	3 doses (3p+0) with DTPCV (4 weeks) or 2 doses (2p+1) (8 weeks)	Resume without repeating previous dose	2-3 doses	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
<b>Rotavirus<sup>7</sup></b>		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
<b>Measles<sup>8</sup></b>		9 or 12 months (6 months min, see footnote)	2 doses (4 weeks)	Resume without repeating previous dose	2 doses	2 doses	Not recommended
<b>Rubella<sup>9</sup></b>		9 or 12 months	1 dose with measles containing vaccine	NA	1 dose	1 dose	Not recommended
<b>HPV<sup>10</sup></b>		As soon as possible from 9 years of age (females)	2 doses (5 months)	If 1st dose given before 15 years of age resume without repeating previous dose	NA	Girls: 9-14 years 2 doses (see footnote)	Not recommended

\* 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 ([www.who.int/immunization/documents/positionpapers/](http://www.who.int/immunization/documents/positionpapers/)).

\*\*\* Same interval as primary series unless otherwise specified.

**Table 3: Recommendations\* for Interrupted or Delayed Routine Immunization Summary of WHO Position Papers** (Updated November 2021)

Antigen		Age of 1st Dose	Doses in Primary Series (min interval between doses)**	Interrupted primary series***	Doses for those who start vaccination late		Booster Dose
					If ≤ 12 months of age	If > 12 months of age	
<b>Recommendations for certain regions</b>							
Japanese Encephalitis 11	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 12		9-12 months	1 dose with measles containing vaccine	NA	1 dose	1 dose	Not recommended
Tick-Borne Encephalitis 13	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
<b>Recommendations for some high-risk populations</b>							
Typhoid 14	TCV-Typbar	>6 months	1 dose	NA	1 dose	1 dose	Every 3 years
	Vi PS	2 years (min)	1 dose	NA	Not recommended	1 dose	
	Ty21a	Capsules 5 years (min) (see footnote)	3-4 doses (1 day) (see footnote)	If interruption between doses is < 21 days resume without repeating previous dose; If > 21 days restart primary series	Not recommended	> 5 yrs: 3-4 doses	
Cholera 15	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 16	MenA conjugate (5µg)	9-18 months	1	NA	2 doses if < 9 months with 8 week interval	1 dose of 5µg up to 24 months	Not recommended
	MenC conjugate	2-11 months	2 (8 weeks min)	Resume without repeating previous dose	2 doses	1 dose	2-11 months of age after 1 year
		>12 months	1	NA			
	Quadrivalent conjugate	9-23 months	2 (12 weeks min)	Resume without repeating previous dose	2 doses	1 dose	
≥ 2 years		1	NA				
Hepatitis A 17		1 year (min)	At least 1 dose		Not recommended	At least 1 dose	Not recommended
Rabies 18		As required	2 (1st to 2nd 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 (CYD-TDV) 19		9 years (min)	3 doses (6 months)	Resume without repeating dose	Not recommended	3 doses ≥ 9 years	Not recommended
<b>Recommendations for immunization programmes with certain characteristics</b>							
Mumps 20		12-18 months	2 doses with measles containing vaccine (4 weeks)	Resume without repeating previous dose	Not recommended	2 doses	Not recommended
Seasonal influenza (inactivated tri- and quadri-valent) 21		6 months (min)	< 9 yrs: 2 doses (4 weeks) ≥ 9 yrs: 1 dose	Resume without repeating previous dose	2 doses	< 9 yrs: 2 doses ≥ 9 yrs: 1 dose	Revaccinate annually 1 dose only
Varicella 22		12-18 months	1-2 (4 weeks – 3 months, depending on manufacturer)	Resume without repeating previous dose	Not recommended	1-2 doses	

## Summary Table 3 - Notes

- 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.
- Refer to <http://www.who.int/immunization/positionpapers/> for the most recent version of this table (and Tables 1 and 2) and position papers.

### <sup>1</sup> BCG

- Position paper reference: [Weekly Epid. Record \(2017, 92:369-392\)](#) [pdf 660KB]
- 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 and those moving from low to high TB incidence/ leprosy burden settings.

### <sup>2</sup> Hepatitis B

- Position paper reference: [Weekly Epid. Record \(2017, 92:369-392\)](#) [pdf 2.4MB]
- 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.

### <sup>3</sup> Polio

- *A revised Polio Vaccine Position Paper is forthcoming in 2022.* Position paper reference: [Weekly Epid. Record \(2016, 9:145-68\)](#)[pdf 611KB] and Meetings of the Strategic Advisory Group of Experts on immunization: Conclusions and Recommendations. [Weekly Epid. Record \(2021, 96:133-144\)](#) [pdf 448KB], [Weekly Epid. Record \(2020, 95: 585 - 607\)](#) [pdf 468.8Kb], [Weekly Epid. Record \(2020, 95: 241-256\)](#) [pdf 480.8Kb]

#### OPV plus IPV

- All countries that currently administer three bOPV and one IPV dose should add a 2nd IPV dose in their routine immunization schedule. (*Oct 2020 SAGE Meeting Report*)
- Regardless of the 2 dose IPV schedule used, introduction of the second IPV dose does not reduce the number of bOPV doses (three) used in the routine immunization schedule. (*Oct 2020 SAGE Meeting Report*)

- The preferred schedule is to administer the first IPV dose at 14 weeks of age (with DTPCV3/Penta3), and to administer the second IPV dose at least 4 months later (possibly coinciding with other vaccines administered at 9 months of age). This schedule provides the highest immunogenicity and may be carried out using full dose IPV or fractional intradermal IPV (fIPV) without loss of immunogenicity. (*Oct SAGE 2020 Meeting Report*). Sabin-IPV (sIPV) may be used interchangeably with wIPV, but sIPV is not recommended to be used as a fractional dose due to current lack of evidence. (*March 2021 SAGE Meeting Report*)
- Based on local epidemiology, programmatic implications and feasibility of delivery, countries may choose an alternative early IPV schedule starting with the first dose at 6 weeks of age (with DTP1/Penta1) and the second dose at 14 weeks (with DTPCV3/Penta3). This alternative schedule offers the advantage of providing early-in-life protection; however, there is a lower total immunogenicity achieved. If this schedule is chosen, full dose IPV (for both wIPV and sIPV) should be used rather than fIPV due to lower immunogenicity of fIPV at early ages. (*Oct 2020 SAGE Meeting Report*)
- In polio-endemic countries and in countries at high risk for importation and subsequent spread of poliovirus, WHO recommends a bOPV birth dose (zero dose) followed by a primary series of 3 bOPV doses and at least 2 IPV doses. (*2016 PP; adjusted for 2 IPV doses*)
- The zero dose of bOPV should be administered at birth, or as soon as possible after birth, to maximize seroconversion rates following subsequent doses and to induce mucosal protection. (*2016 PP*)
- Both OPV and IPV may be co-administered concurrently and both may be given with other infant vaccines. (*2016 PP*)
- For infants starting the routine immunization schedule late (age >3 months) the IPV dose should be administered at the first immunization contact along with bOPV and the other routinely recommended vaccines. (*2016 PP*)
- The implementation of 3 bOPV doses + 2 IPV doses does not replace the need for supplementary immunization activities (SIAs). (*2016 PP*)
- Countries that delayed the introduction of IPV or experience stock-outs should provide catch-up vaccination to all children who were missed as soon as the vaccine becomes available. (*2016 PP*)

#### Sequential IPV-OPV schedule

- In countries with high vaccination coverage (e.g. 90%-95%) and low importation risk (neighbouring countries and major population movement all having similarly high coverage) an IPV-bOPV sequential schedule can be used when VAPP is a significant concern. (*2016 PP*)
- The initial administration of 1 or 2 doses of IPV should be followed by  $\geq 2$  doses of bOPV to ensure both sufficient levels of protection in the intestinal mucosa and a decrease in the burden of VAPP. (*2016 PP*)
- For sequential IPV-bOPV schedules, WHO recommends that IPV be given at 2 months of age (e.g. a 3-dose IPV-bOPV-bOPV schedule), or at 2 months and 3-4 months of age (e.g. a 4-dose IPV-IPV-bOPV-bOPV schedule) followed by at least 2 doses of bOPV. Each of the doses in the primary series should be separated by 4-8 weeks depending on the risk of exposure to poliovirus in early childhood. (*2016 PP*)

#### IPV-only schedule

- In the current epidemiological context and as a general principle, SAGE expressed the need for regions or countries to be cautious about moving from a bOPV + IPV schedule to an IPV-only schedule in their routine immunization programmes and recommended that instead they take a gradual approach, by first introducing a second dose of IPV into their routine immunization schedules. (*March 2020 SAGE Meeting Report*)
- An IPV-only schedule may be considered in countries with sustained high vaccination coverage and very low risk of both WPV importation and transmission. (*2016 PP*)

#### **4 DTP-containing vaccines (Diphtheria, Tetanus and Pertussis)**

- Position paper reference: Diphtheria - [Weekly Epid. Record \(2017, 92:417-436\)](#) [pdf 526KB];
- Tetanus - [Weekly Epid. Record \(2017, 92: 53-76\)](#) [pdf 636KB]; Pertussis - [Weekly Epid. Record \(2015, 90: 433-460\)](#) [pdf 667KB]
- 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 vaccine: 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.

#### **5 Haemophilus influenzae type b (Hib)**

- Position paper reference: [Weekly Epid. Record \(2013, 88: 413-428\)](#) [pdf 209KB]
- 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.

#### **6 Pneumococcal (Conjugate)**

- Position Paper Reference: [Weekly Epid. Record \(2019, 94: 85-104\)](#) [pdf 444KB]
- 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.
- 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
- 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.

## 7 Rotavirus

- Position paper reference: [Weekly Epid. Record \(2013, 88: 49-64\)](#) [pdf 950KB]
- Early immunization is favoured with the first dose of rotavirus vaccine to be administered from 6 weeks of age, however, in order to benefit those who may come late infants can receive doses without age restriction. Because of the typical age distribution of rotavirus gastroenteritis (RVGE), rotavirus vaccination of children >24 months of age is not recommended.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.
- Rotavirus vaccinations can be administered simultaneously with other vaccines in the infant immunization programme.

## 8 Measles

- Position paper reference: [Weekly Epid. Record \(2017, 92:205-228\)](#) [pdf 600KB].
- Reaching all children with 2 doses of measles vaccine should be the standard for all national immunization programmes. In addition to the first routine dose of MCV1, all countries should add a second routine dose of MCV2 to their national immunization schedules regardless of the level of MCV1 coverage.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.
- 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.
- The minimum interval between MCV1 and MCV2 is 4 weeks.

## 9 Rubella

- Position paper reference: [Weekly Epid. Record \(2020, 86: 301-316\)](#) [pdf 413KB]
- Because rubella is not as highly infectious as measles and because the effectiveness of 1 dose of an RCV is > 95% even at 9 months of age, only 1 dose of rubella vaccine is required to achieve rubella elimination if high coverage is achieved. However, when combined with measles vaccination, it may be easier to implement a second dose of RCV's using the same combined MR vaccine or MMR vaccine for both doses.
- RCV's can be administered concurrently with inactivated vaccines. As a general rule, 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.
- Interference may occur between MMR and yellow fever vaccines if they are simultaneously administered to children < 2 years of age.
- Because of a theoretical, but never demonstrated, teratogenic risk rubella vaccination in pregnant women should be avoided in principle, and those planning a pregnancy are advised to avoid pregnancy for 1 month following vaccination.
- Administration of blood or blood products before or shortly after vaccination may interfere with vaccine efficacy. If using only rubella vaccines persons who received blood products should wait

at least 3 months before vaccination and, if possible, blood products should be avoided for up to 2 weeks post-vaccination. Vaccinated persons are not eligible to donate blood for 1 month after vaccination.

## 10 Human Papillomavirus (HPV)

- Position paper reference: [Weekly Epid. Record \(2017, 92:241-268\)](#) [pdf 2.9MB].
- Recommended target population for the prevention of cervical cancer: females aged 9–14 years, prior to becoming sexually active.
- A 2-dose schedule with a 6-month interval between doses is recommended for individuals receiving the first dose before 15 years of age. Those aged ≥15 years at the time of the second dose are also adequately covered by 2 doses.
- If the interval between doses is shorter than 5 months, then a third dose should be given at least 6 months after the first dose.
- A 3-dose schedule (0, 1-2, 6 months) should be used for all vaccinations initiated ≥15 years of age, including in those younger than 15 years known to be immunocompromised and/or HIV infected (regardless of whether they are receiving antiretroviral therapy). It is not necessary to screen for HPV infection or HIV infection prior to HPV vaccination.
- All three HPV vaccines can be co-administered with other live and non-live vaccines using separate syringes and different injection sites.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.

## 11 Japanese Encephalitis (JE)

- Position paper reference: [Weekly Epid. Record \(2015, 90: 69-88\)](#) [pdf 950 KB].
- 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 setting
  - 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.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.

## 12 Yellow Fever

- Position paper reference: [Weekly Epid. Record \(2013, 88: 269-284\)](#) [pdf 1.24MB]
- 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.
- YF vaccine may be administered simultaneously with other vaccines

## 13 Tick-Borne Encephalitis (TBE)

- Position paper reference: [Weekly Epid. Record \(2011, 86: 241-256\)](#) [pdf 318KB]
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.

## 14 Typhoid

- Position paper reference: [Weekly Epid. Record \(2018, 93: 153-172\)](#) [pdf 297KB].
- 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 is recommended as 3-doses to be administered orally every second day from 6 years of age.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.
- Typhoid vaccination is recommended in response to confirmed outbreaks of typhoid fever and may be considered in humanitarian emergency settings depending on the risk assessment in the local setting.
- 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.

## 15 Cholera

- Position paper reference: [Weekly Epid. Record \(2017, 92:477-500\)](#) [pdf 676KB]
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.
- 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.
- For control of cholera outbreaks vaccination should be considered to help prevent the spread to new areas. For vaccination campaigns, a single-dose strategy using WC vaccines (Shanchol, Euvchol or mORCVAX) could be considered in areas experiencing cholera outbreaks.

## 16 Meningococcal

- Position paper reference: [Weekly Epid. Record \(2011, 86: 521-540\)](#) [pdf 1.1MB] and Update for MenA conjugate [Weekly Epid Record \(2015, 90: 57-68\)](#) [pdf 852KB]
- MenA conjugate vaccine (5µg) a 1-dose schedule is recommended at 9-18 months of age based on local programmatic and epidemiologic considerations.
- There is no reason to expect interference when co-administered with other vaccines. The need for a booster dose has not been established.
- 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.

## 17 Hepatitis A

- Position paper reference: [Weekly Epid. Record \(2012, 87: 261-276\)](#) [pdf 1.24 MB]
- Inactivated HAV vaccine is licensed for intramuscular administration in a 2-dose schedule with the first dose given at the age of 1 year or older. The interval between the first and second dose is flexible (from 6 months up to 4-5 years) but is usually 6-18 months. Countries may consider a 1-dose schedule as this option seems comparable in terms of effectiveness, and is less expensive and easier to implement. However, in individuals at substantial risk of contracting hepatitis A and in immunocompromised individuals, a 2-dose schedule is preferred. Inactivated HAV vaccines produced by different manufacturers, including combined hepatitis A vaccines, are interchangeable. Apart from severe allergic reaction to the previous dose, there is no contraindication to their use. These vaccines can be co-administered simultaneously with other routine childhood vaccines, and should be considered for use in pregnant women at definite risk of HAV infection.
- Live attenuated HAV vaccine is administered as a single subcutaneous dose to those ≥ 1 year of age. Severe allergy to components included in the live attenuated hepatitis A vaccine is a contraindication to their use. As a rule, live vaccines should not be used in pregnancy or in severely immunocompromised patients. There is no information available on co-administration of live attenuated hepatitis A vaccines with other routinely used vaccines.

## 18 Rabies

- Position paper reference: [Weekly Epid. Record \(2018, 93: 201-220\)](#) [pdf 370 KB].
- 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.

## 19 Dengue (CYD-TDV)

- Position paper reference: [Weekly Epid. Record \(2108, 93, 457-76\)](#) [pdf 513KB].
- CYD-TDV is recommended as a 3-dose series given 6 months apart. Should a vaccine dose be delayed for any reason, it is not necessary to restart the course and the next dose in the series should be administered as soon as possible.

## 20 Mumps

- Position paper reference: [Weekly Epid. Record \(2007, 82: 49-60\)](#) [pdf 311KB]
- In countries that decide to use mumps vaccine, the combination of mumps vaccine with measles and rubella vaccines is recommended.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.

## 21 Seasonal Influenza (Inactivated Vaccine)

- Position paper reference: [Weekly Epid. Record \(2012, 87: 461-476\)](#) [pdf 1.9 MB]
- Previously unvaccinated children aged <9 years should receive 2 doses administered at least 4 weeks apart. Children aged 6–35 months should receive a paediatric dose.
- If previously vaccinated, children require only one-dose.
- A single dose of the vaccine is appropriate for children aged ≥9 years and healthy adults.
- Annual vaccination (or re-vaccination, if the vaccine strains are identical) is recommended, particularly for high-risk groups.

## 22 Varicella

- Position paper reference: [Weekly Epid. Record \(2014, 89: 265-288\)](#) [pdf 889KB]
- 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.
- Regardless of the duration of delay, interrupted schedules should be resumed as soon as possible without repeating previous doses.