

VACCINATION GUIDELINES

Catch-up vaccination in the general population

Unknown, incomplete or incompletely known immunisation status

December 2019

OBJECTIVES

To provide vaccination healthcare professionals with guidelines to facilitate the catch-up vaccination of individuals who are not up-to-date with the French vaccination schedule (mainland France, Mayotte and Guyana).

GENERAL PRINCIPLES OF CATCH-UP

Any occasion with a health professional and in particular at key moments (consultation for any medical reason, education, university, hospitalisation, pregnancy, prevention or recruitment visit) is an opportunity to check the immunisation status and to undertake catch-up.

Ensuring the traceability of vaccinations carried out is essential to continue catch-up.

General rules

- **All doses of vaccines received count**, regardless of the time since the last dose received, once the minimum age, minimum interval between doses and the recommended dose of antigen for age have been observed.
- Prefer the use of combined vaccines in accordance with their age limit set by the MA (e.g. hexavalent and Infanrix quinta® vaccines not indicated after 3 years).
- Up to four injections can be performed during one vaccination session subject to agreement by the vaccinated person.
- Use different sites for multiple injections, spaced at least 2.5 cm apart, favouring the deltoids in older children and adults and the anterolateral aspect of the thigh in infants. Injections into the buttocks should be avoided. Following a BCG vaccination, do not vaccinate on the same limb for 3 months.
- All vaccines can be given **on the same day or at any interval**, except for live viral vaccines which must be given on the same day or 4 weeks apart. Co-administration of a yellow fever vaccine and an MMR vaccine, however, should be avoided and a minimum period of 4 weeks is recommended between these vaccines;
- There is no danger in administering vaccines to a person who may already be immune to this disease, and hence catch-up is indicated in the event of unknown status;



- Increased reactogenicity when administering excess doses of tetanus toxoid or diphtheria antigen vaccines is possible, though these reactions are infrequent and do not cause complications. When extensive oedema of the limb or an Arthus-like phenomenon occurs, however, DTPCa/dTPca vaccination should be interrupted and an assay for tetanus antibodies should be proposed.
- The presence of a minor infection or a low-grade fever should not delay catch-up. The existence of a febrile illness (>38 °C) or acute moderate to severe infection does not contraindicate vaccination, but can lead to this latter being delayed for a few days.
- Definitive medical contraindications to vaccination are extremely rare: severe allergy during a previous vaccine injection, Guillain Barré syndrome within 6 weeks of administration of a vaccine, and, for live attenuated vaccines, congenital or acquired immunosuppression. Live MMR, chickenpox and BCG vaccines are contraindicated during pregnancy.
- Catch-up vaccination must, moreover, respect the vaccination obligations in force and ensure that the vaccinations required for entry or maintenance in communities are observed (11 valences for children born after 1 January 2018 and 3 valences - DTP- for children born before this date).

STEPS TO TAKE DURING CATCH-UP

- **Determine, for each valency, the number of doses that the individual should have received**, taking into account the age at the time of catch-up, of previous doses received with proof of vaccination, ensuring that the minimum interval between previous doses received (primary vaccination and booster) have been respected, regardless of the age of the doses administered.
- For this, doses administered too soon after a previous dose will not be taken into account. Conversely, if certain doses have been administered after an excessive period, the doses administered are still taken into account and only the missing doses to complete a primary vaccination schedule and the first booster will be administered.
- **Draw up a catch-up programme**, preferably starting with vaccines protecting against invasive infectious diseases and/or those requiring several doses, while respecting the minimum interval between each dose.
- Combine catch-up with screening for hepatitis B (HBsAg, anti-HBsAb, anti-HBcAb) in the event of high-risk exposure and at post-vaccination dosage after a dose of tetanus and hepatitis B.
- When the immunisation status is unknown, **assay the tetanus antibodies 4 to 8 weeks after an age-appropriate dose** of tetanus vaccine and take the result into account for further catch-up.
- When the immunisation status is unknown, **assay the anti-HBs antibodies 4 to 8 weeks after an age-appropriate dose** of hepatitis B vaccine and take the result into account for further catch-up.

Table. Number of doses required (including previous documented doses) and minimum interval to be respected according to age during catch-up

Age at time of catch-up	Vaccines	Number of doses required including doses previously	Minimum interval between dose 1 and dose 2	Minimum interval between dose 2 and dose 3	Next booster
2 months - 1 year	DTCaP	3	2 months	6 months	At 6 years
	Hib	3	2 months	6 months	none
	HepB	3	2 months	5 months	
	PCV 13	3	2 months	5-6 months	
	Men C	1 dose from 5 months (with Neisvac®)	From 12 months with a min. interval of 6		
	BCG (special)	1	-	-	none

Age at time of catch-up	Vaccines	Number of doses required including doses previously	Minimum interval between dose 1 and dose 2	Minimum interval between dose 2 and dose 3	Next booster
1 year - 5 years	DTCaP	3	2 months	6 months	At 6 years old (or 11-13 years old if last injection at the age of 4
	Hib	1	2 months	-	
	HepB	3	1-2 months	5-6 months	
	PCV 13 (if <2 years or special recommendations)	2	If <24 months: 2 months If ≥24 months: no indication unless specific recommendation: PCV 13: 2 months	If <24 months and 1 st dose received before 12 months: 5-6 months If <24 months and 1 st dose received after 12 months: no 3 rd dose If ≥24 months: no indication unless specific recommendation: 1 dose of PPV 23: 2	booster (special recommendations) : PPV 23 ≥5 years after a dose of PPV 23
	Men C	1 dose from 12 months	6 months if a dose received before 1 year (booster)		
	MMR	2	1 months	-	none
	Hep A (special	2	6 months		
6 years - 13 years	DTCaP	3	2 months	6 months	At 25 years: dTcaP then dtP at 45, 65, 75, etc.
	HepB	3 (or 2 adult dose for 11-15 year olds)	2 months	6 months	
	Men C	1	-	-	
	MMR	2	1 months		
	HPV (if >11 years old)	2	6 to 13 months	no 3 rd dose	
≥14 years	dTcaP	3 including 2 of dTP	2 months	6 months	≥ 5 years later a DTCaP/dTcaP/dTP booster Re-alignment with schedule, with boosters at 25, 45, 65,
	HepB	3 (or 2 adult dose for 11-15 year olds)	1-2 months	6 months	
	Men C (if < 24 years old)	1	-	-	
	MMR	2	1 months		
	HPV (girl up to 19 years old and MSM up to 26 years old)	2 or 3 doses depending on the age at administration of the 1 st dose, 3 doses in MSM	If 1 st dose before 14 years of age: 6 to 13 months and, If 1 st dose >15 years old or MSM	If 1 st dose before 14 years of age: no 3 rd dose If 1 st dose >15 years old or MSM <26 years old: 4-5	

Age at time of catch-up	Vaccines	Number of doses required including doses previously	Minimum interval between dose 1 and dose 2	Minimum interval between dose 2 and dose 3	Next booster
	Flue during the season (if >65 or special recommendations)	1	-	-	yearly
	Shingles (between 65 and 74 years of age)	1	-	-	
	Chickenpox (if 12-18 years of age, women of childbearing age, with no history of chickenpox and HIV negative)	2 doses	4 to 8 weeks (Varivax®) 6 to 10 weeks (Varilrix®)		
	PCV 13-PPV23	2 (1 of each in order, VPC13 then PPV23)	8 weeks		≥5 years after a dose of PPV 23

SEROLOGY TESTS USEFUL FOR CATCH-UP

If conditions allow, certain serology tests are useful for catch-up insofar as they make it possible to take into account the person's true immunity and to avoid the injection of unnecessary doses of vaccine. This is the case only tetanus and hepatitis B serology results. Other serology tests, except in special situations, have no place in the catch-up strategy.

Recommended serology tests: pre-vaccination hepatitis B serology (HBsAg, anti-HBs Ab, anti-HBc Ab) and post-vaccination assay of anti-HBs antibodies and anti-tetanus antibodies

- Some are recommended in certain specific conditions: hepatitis A, chickenpox.
- Pre-vaccination serology tests for measles, mumps, rubella, diphtheria and tetanus are not, however, recommended in catch-up situations.

Interpretation of pre-vaccination hepatitis B serology

Hbs Ag	Anti-HBs	Anti-HBc	Interpretation	Steps to take
Positive	Negative	Positive	Acute or chronic infection by Hepatitis B virus	Referral for specialist care No vaccination indication
Negative	Negative or <10 IU/l	Negative	Non-immune or post-immunity with loss of anti-HBs Ab	If indicated, 3-dose vaccination or administer one dose then titrate anti-HBs antibodies 4 to 8 weeks later
Negative	Positive 10-99 IU/l	Negative	Acquired post-vaccination immunity	Failing any evidence of vaccination, the duration of immunity is unknown, a single additional dose of Hep B vaccine may be administered
Negative	Positive ≥100 IU/l	Negative	Long-term acquired post-vaccination immunity	No vaccination indication
Negative	>10 IU/l	Positive	Immunity acquired after illness	No vaccination indication
Negative	Negative	Positive	Anti-HBc antibody isolated. Post-illness acquired immunity in most cases ¹	No indication for vaccination or HBV DNA test outside of a specific context (immunosuppression and pregnancy)

1. After exclusion of a possible false positive result from the anti-HBc Ab assay by means of a second test.

Interpretation of post-vaccination hepatitis B serology (4 to 8 weeks after a dose)

Anti-HBs antibody level	Steps to take
If anti-HBs Ab \geq 100 IU/l	Anamnestic response. No additional dose
If anti-HBs Ab $<$ 100 IU/l	Complete regimen to be continued: administer a dose at 1 month and 6 to 12 months later

Interpretation of post-vaccination tetanus serology (4 to 8 weeks after a dose of DTPaP/dTcaP \pm other valences)

Anti-tetanus antibody level	Steps to take	Modalities for continuing the vaccination schedule
\geq 1 IU/ml	Anamnestic response. No additional dose	Resumption of the vaccination schedule according to age with a minimum interval of 2 years for the next dose (DTPaP/dTcaP) for 6-13 year olds and 5 years for 14 year olds and over. Whenever possible, readjust to the French schedule in force for subsequent doses (2, 4, 11 months, 6 years, 11-13 years, 25-45-65 years then every 10 years)
0.1 to 1 IU/ml	Potentially incomplete previous schedule. Repeat one dose 6 months later	
$<$ 0.1 IU/ml	Has probably never been vaccinated. Repeat a dose at 2 months and 8-12 months after the 1 st dose	

CATCH-UP MODALITIES

Two approaches are proposed depending on the conditions and circumstances of the catch-up to facilitate its implementation:

Simplified catch-up can be envisaged, in particular for any person likely not to be seen again, and for whom it is desirable to carry out as many vaccinations as possible during a single consultation.

Simplified catch-up vaccination in the event of a single vaccination session

	Simplified catch-up
Catch-up modalities procedure	Administer the vaccines indicated by age, prioritising vaccines that protect against invasive diseases and/or requiring several injections: <ul style="list-style-type: none"> in a single step during the same consultation at different injection sites without restrictions on the number of injections or antigens, but within the limit of the number accepted by the person to be vaccinated (in practice up to 4 injections)
Pre-vaccine serology, failing this a Rapid diagnostic test	In the event of exposure to the risk of contamination by the hepatitis B virus, screen for hepatitis B, ideally using complete pre-vaccination serology (HBsAg, anti-HBs Ab, anti-HBc Ab) (combined with HIV and HCV serology tests and a migrant health check-up if indicated), or failing this using a HBsAg rapid diagnostic test (combined with HIV and HCV rapid diagnostic tests where indicated)
Modalities for continuing catch-up	In the event of a new consultation, complete the primary vaccination schedule, then resume the vaccination schedule according to age, respecting the minimum intervals between boosters

Advanced catch-up can be considered as soon as the risk of drop-out is considered to be low. It is based on the adaptation of catch-up to the individual's true immunity documented by the use of serology tests.

Advanced catch-up vaccination if several catch-up sessions are possible

Advanced catch-up	
Catch-up vaccination modalities	Administer the indicated vaccines according to age, favouring vaccines protecting against invasive diseases and/or requiring multiple injections: <ul style="list-style-type: none"> at different injection sites without limiting the number of injections and antigens, within the limits of what is accepted by the person to be vaccinated and/or their legal representative
Pre-vaccination serology tests	If the patient belongs to a population at risk of hepatitis B, carry out a complete pre-vaccination serology of hepatitis B (HBsAg, anti-HBs Ab, anti-HBc Ab) associated, where indicated, with HIV and HCV screening.
Post-vaccination serology tests	<ul style="list-style-type: none"> Perform a tetanus antibody assay 4 to 8 weeks after a dose of tetanus vaccine (DTPaP ± HibHepB/dTcaP/dTP according to age) Perform an anti-HBs antibody assay 4 to 8 weeks after a hepatitis B vaccine dose (if vaccination is indicated and has been undertaken)
Modalities for continuing catch-up vaccination	<ul style="list-style-type: none"> Continue DTPaP/dTcaP/dTP and hepatitis B primary vaccination according to the result of the post-vaccination antibody assay Complete the schedule of primary vaccinations started at the first consultation Perform catch-up for vaccinations that could not be initiated at the first consultation Then resume the vaccination schedule according to age, respecting the minimum intervals between two boosters

CATCH-UP TRACEABILITY

Ensuring the traceability of the vaccinations carried out is essential for the continuation of catch-up, which may be undertaken by other healthcare professionals.

Systematic traceability of vaccinations carried out is necessary. As such, whenever possible, a vaccination record should be issued to vaccinated persons and in all cases a certificate of vaccination specifying the batch number of the vaccine. Moreover, the use of digital solutions or photographing the vaccination record are encouraged.

Any pre- or post-vaccination serology tests performed should be reported on the vaccination record in order to facilitate the implementation of catch-up (consequences on doses to be completed) and avoiding unnecessary or redundant serology tests.



This document presents the main points of the vaccination recommendation:

"Catch-up vaccination in the general population. Unknown, incomplete or incompletely known immunisation status".

This guideline and the associated scientific argument can be viewed in full at www.has-sante.fr December 2019