Vaccination in immunocompromised children

By
Doaa Youssef
Professor of pediatrics and pediatric nephrology
Zagazig university


ماذا اقول ..واي شي يقال
بعد كل ماقيل ..

Ministry of Health & Population
First Undersecretary
Preventive Sector

وزارة الصحة والسكان
رئيس قطاع
الطب الوقائي

جدول تطعيمات الأطفال الإجبارية يعمل به من ٢٠٢١/٢/٢٢

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
أول ٢٤ ساعة	السابقة	كبدي B رضع	الالتهاب الكبدي الفيروسي B	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيمن
عند الميلاد	الصفرية	سابين	شلل الأطفال	نقطتان	بالفم
	الدرن	بي سي جي	الدرن	٠,٠٥ سم³	حقناً داخل الجلد (في الطبقة الأولى) أعلى الذراع الأيسر للطفل
شهرين	الأولى	سابين	شلل الأطفال	نقطتان	بالفم
		الخماسي	*	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيمن
		سولك	شلل الأطفال	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيسر
٤ شهور	الثانية	سابين	شلل الأطفال	نقطتان	بالفم
		الخماسي	*	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيمن
		سولك	شلل الأطفال	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيسر
٦ شهور	الثالثة	سابين	شلل الأطفال	نقطتان	بالفم
		الخماسي	*	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيمن
		سولك	شلل الأطفال	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيسر
٩ شهور	الرابعة	سابين	شلل الأطفال	نقطتان	بالفم
١٢ شهر	الخامسة	سابين	شلل الأطفال	نقطتان	بالفم
		ام ام ار	الحصبة والنكاف والحصبة الألماني	٠,٥ سم³	حقناً تحت الجلد بالذراع الأيمن
١٨ شهر	السادسة	سابين	شلل الأطفال	نقطتان	بالفم
		ام ام ار	الحصبة والنكاف والحصبة الألماني	٠,٥ سم³	حقناً تحت الجلد بالذراع الأيمن
		الثلاثي البكتيري	الدفتريا و التيتانوس و السعال الديكي	٠,٥ سم³	حقناً بالعضل في الجزء الخارجي من العضلة الأمامية بالفخذ الأيسر

* الدفتريا والسعال الديكي والتيتانوس والالتهاب الكبدي الفيروسي B والأنفلونزا المستدمية النزلية نمط B

يعطى كبسولة واحدة (زرقاء) فيتامين أ عند ٩ شهور وتعطى كبسولتان (زرقاء) فيتامين أ عند ١٨ شهر.

3 Magles El Shaab St. - Al Aini - Cairo
Tel. : 27948555 - Fax : 27924156 - P.O.Box : 11516

٣ شارع مجلس الشعب - قصر العيني - القاهرة
ت : ٢٧٩٤٨٥٥٥ - ف : ٢٧٩٢٤١٥٦ - ص.ب : ١١٥١٦

Items of this lecture

1- Who is immunocompromised

2- General principle of their immunization

3- Vaccination of CKD patient

4- Biological therapy

5- Covid-19

CDC, KIDIGO, the Canadian Immunization Guide (CIG)

1- Who is immunocompromised

•Children who are immunocompromised, either by congenital immune deficits or an immunosuppressive illness or therapy

• they are at increased risk for severe illness from many vaccine-preventable infections.

•The goal of immunization for an immunocompromised child is to provide the maximum possible protection while minimizing harm

•**Primary immunodeficiencies** are inherited and include conditions with an absence or deficiency of cellular and/or humoral components that provide immunity.
Examples include diseases such as Severe Combined Immune Deficiency (SCID) and X-linked agammaglobulinaemia.

•**Secondary (acquired) immunodeficiency** is associated with loss or qualitative deficiency in cellular and/or humoral immune components occurring as a result of a disease or its therapy.
•Examples include HIV infection, haematologic malignancies, acquired asplenia and hyposplenia, and treatment with **immunosuppressive** drugs or radiation.

•**Primary care providers** and specialists who care for immunocompromised patients share responsibility for ensuring that appropriate vaccinations are administered to immunocompromised patients and their households.

•If a vaccine is given inappropriately, it may not work; if it is a 'live' vaccine, it may cause adverse effects.

•When in doubt, **consult** an institution or a physician with experience in managing patients with the specific immunocompromising condition of concern.

2- General principle of their immunization

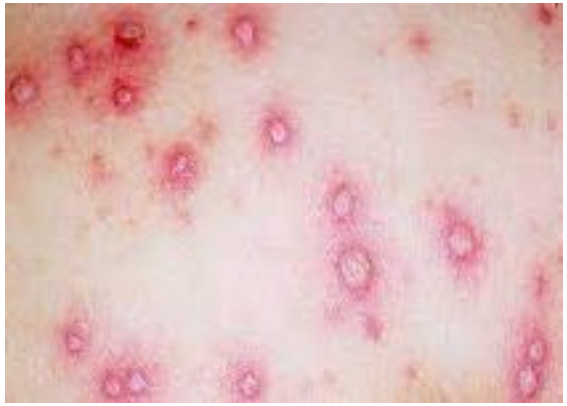
1. **Indirect protection is provided by ensuring that all family members and household contacts** members and other close contacts are immunized against infections that they may transmit to the immunocompromised child (i.e., all routine vaccines MMR, pertussis, rotavirus, and varicella vaccines (seronegative persons only) and yearly influenza vaccine) .

Household pets should also receive all routine vaccines

- When household contacts of immunocompromised individuals receive **rotavirus** vaccine, careful hand washing by household members should be used to minimize the risk of transmission of vaccine virus.

• If a varicella vaccine-associated rash developes in an immunocompetent individual **, post exposure prophylaxis should be considered for the immunocompromised contact.**

•Therefore individuals at high risk of severe complications from varicella infection should be assessed for the need for post exposure management with **varicella zoster immunoglobulin**.



2- Inactivated vaccines may be given safely to immunocompromised patients, but responses may be diminished or absent, and **increases** in dose or in number of doses may be indicated (e.g., hepatitis B, conjugate pneumococcal vaccines)

3- Live vaccines may cause disease by uncontrolled replication and

are usually **contraindicated** in immunocompromised individuals,

with the exception of those with isolated IgA deficiency, IgG subclass deficiency, complement deficiency, or anatomical or functional asplenia. Another exception is that live viral vaccines are safe for most children with phagocyte or neutrophil disorders (including chronic granulomatous disease)

- live bacterial vaccines (e.g., BGG, live typhoid vaccine) are

contraindicated .

Live vaccines may be given to individuals with HIV infection who are not severely immunocompromised

4- Additional vaccines: Immunocompromised children may require vaccines that are **not** routinely recommended for **all** children (*e.g., 23-valent pneumococcal polysaccharide), or not routinely given beyond a certain* ***age*** *(e.g., Haemophilus influenzae type b).*

5- The ***duration of the immune response (protection) may be diminished,*** necessitating extra booster doses (e.g., children at ongoing risk of hepatitis B exposure should undergo **annual** testing for hepatitis B antibody and receive booster doses if indicated)

6- Timing: Vaccines should be given at the time when maximum immune response can be anticipated:

- *If immunosuppression is planned (e.g., a non-urgent organ transplant or start of immunosuppressive therapy for an inflammatory condition) and time permits,* ***provide all live and inactivated vaccines*** *before immunosuppression.*
- ***Inactivated*** *vaccines should be given at* ***least two weeks***
- ***live*** *vaccines must be given* ***at least four weeks*** *before onset of immunosuppressive therapy.*
- measles, mumps, rubella and varicella vaccines may be given to solid organ transplant **candidates as early as 6 months** of age, if necessary.

•If immunosuppression is **urgent** but **temporary**, defer immunizations until the immune system has **recovered**.

•If the risk of exposure to a specific infection is high, **inactivated** vaccines may be given although the response may be diminished; doses given during immunosuppression should be **repeated** when the immune system has recovered.

7- In general

live vaccines may be given

- **1 month after discontinuation**

of high dose steroid therapy

- **3 months or more after completion of other**

immunosuppressive chemotherapy

- **or 6 months after treatment with anti-B-cell antibodies,**

provided that the underlying disease is not

immunosuppressive or is no longer active.

Neither the dose nor duration of systemic corticosteroids that cause immunosuppression, nor the duration of altered immunity following cessation of therapy are well defined.

The degree of associated immunosuppression depends on the dose and duration of steroid use.

Recovery of immune competence depends on the dose, frequency of administration (daily or alternate day) and duration of therapy.

High dose steroid therapy is defined as systemic treatment with the equivalent of prednisone ≥2 mg/kg/day or ≥20 mg/day if weight >10 kg for **≥14 days**.

Live vaccines are not contraindicated with lower doses or shorter durations of treatment or with topical, or locally injected steroid therapy

- short term (<7days) irrespective of dose
- long term (≥2 weeks) < 20mg/day of prednisolone or equivalent
(<2mg/kg/day in children <10kg)
- long-term, alternate-day treatment with short-acting preparations
- maintenance physiologic doses (replacement therapy)
- topical (skin or eyes) or by inhalation
- intra-articular, bursal, or tendon injection
- fludrocortisone <300 micrograms/day

8- When **long-term** immunosuppression is required, **inactivated** vaccines are given when the patient is on the lowest anticipated dose of immunosuppressive agents.

Also, if feasible, immunosuppression is held or reduced temporarily to maximize response.

9- For solid organ transplants,

•inactivated vaccines are initiated 3 to 6 months post transplant if baseline immunosuppression levels are attained.

• Live vaccines are generally contraindicated

but are occasionally given under special circumstances if recommended by transplant specialists

Table 3.9 Vaccines for SOT candidates and recipients aged ≥10 years.

Vaccine	Pre-SOT	Post-SOT, if immunisation not completed pre transplant
COVID-19*	Yes	Yes
Hep A (if seronegative)	Yes	Yes
Hep B (if HBsAg negative & anti-HBs<10miu/L)	Yes (i.e. HBVAXPRO40® or Fendrix®)	Yes
Hib (consider for lung transplant)	Yes	Yes
HPV	Yes	Yes
Inactivated influenza (annual)	Yes	
MenACWY (if at increased risk)	Yes	
MenB (if at increased risk)	Yes	
MMR (unless laboratory evidence of immunity to each antigen or documented prior vaccination)	Yes (mont	
PCV13	Yes	
PPV23 (at least 2 months post PCV)	Yes	
Tdap or **Tdap/IPV**	Yes, if not received within 10 years Use if not fully immunised with IPV	Yes, if not received within 10 years Use if not fully immunised with IPV
Varicella (unless seropositive or documented prior vaccination)	Yes (complete at least 1 month prior to transplant)	**No**

Tdap or **Tdap/IPV** | Yes, if not received within 10 years
Use if not fully immunised with IPV | Yes, if not received within 10 years
Use if not fully immunised with IPV

10- Donors of hematopoietic stem cells and solid organs should receive all age-appropriate routine vaccines.

However, parenteral live vaccines should not be administered within four weeks before transplant

11- Response to a vaccine should not be assumed:

•The response to vaccines is **variable** and influenced by the underlying disease and the specific immunosuppressive drugs used.

• When **assays** are available (for hepatitis B, measles, mumps, rubella, varicella, tetanus and diphtheria and, in some locations, others), measure antibody response to the vaccine.

•In general, tests should be done within **1 to 3** months of vaccination.

• If antibody response **cannot** be determined, other protective measures may be required in the event of an exposure (e.g., immune globulin) or outbreak (e.g., exclusion from school).

12- Immune globulin: People with defective antibody production can be protected from some vaccine-preventable infections with regular infusions of replacement immune globulin.

- **Pathogen-specific** immune globulins are indicated after exposure to varicella or hepatitis B, or after an injury with a tetanus risk.
- Administration of **parenteral live vaccines** must be deferred for **3 to 11** months after receiving immune globulin because this may interfere with the immune response to these vaccines.
- **No delay** is required for live oral or intranasal vaccines or for inactivated vaccines

13- Vaccination after cessation of immunosuppressing treatment

•The safe time intervals for the administration of live vaccines after cessation of immunosuppressing/immunomodulatory drugs **vary** depending on

•the pharmacokinetic and pharmacodynamic features of the drugs.

•There is no strong evidence on which to base recommendations for timing of vaccination following cessation of immunosuppressants.

• Decisions should be made taking into account the likely degree and the duration of immunosuppression.

•Some medications have a relatively short duration of action (e.g. etanercept) whereas with others (e.g. rituximab) the effects can last for months after discontinuation of therapy.

• Therefore, whenever **possible, recommended vaccines should be administered at least 4 weeks prior to rituximab therapy.**

14- Infants of mothers receiving immunosuppressive medication

- Certain immunosuppressants given during pregnancy for management of a medical condition (e.g. biological disease modifying anti-rheumatic drugs [bDMARDs]) may cross the placenta and be detectable in the infant, particularly if given during the third trimester.
- In this setting, administration of BCG vaccine in the first six months of life is contraindicated

- There are **little data available** regarding the use of rotavirus vaccine in infants of mothers who received immunosuppressants in pregnancy.

3- Vaccination of CKD patient

• **Infections** are recognized as the most common cause of hospitalization and mortality in (ESRD) patients, particularly in (HD) patients, after cardiovascular disease.

•In fact, the incidence of the common infections (urinary tract infections (UTIs), pneumonia, sepsis) is **three times** greater among CKD patients who have not yet initiated dialysis than in the general population, whereas, dialysis patients have higher annual mortality rates caused by sepsis compared with the general population

• therefore decreased morbidity and mortality in hospitals adopting vaccination regimen in CKD and ESRD patients

•But, these patients, regardless of their initial nephropathy or comorbidities, are less efficiently immunized than the general population.

• In fact, the particularly dysfunctional immune system of the (CKD) patients, with impaired innate and adaptative immunity, is partly responsible for an increased susceptibility to infection as well as low response to vaccines

- In fact, B lymphocyte and CD4+ T lymphocyte are decreased in this population as well as the T-cell response to antigenic stimuli.
- impaired monocyte functioning results in inadequate antigen presentation to the antigen-presenting cells, generating weakened memory cells and inadequate antibody production after vaccination.
- These disturbances are mostly noted in CKD stages 4, 5.
- Besides, uremic toxins, oxidative stress, endothelial dysfunction, low-grade inflammation as well as mineral and bone disorders are involved and may contribute to the impaired immune system in these patients

- Additionally, CKD patients are known to have impaired function of neutrophils, with a lower capacity of phagocytosis and a greater rate of apoptosis although their number remains unchanged.
- In addition, the underlying mechanisms of the impaired immune system in CKD are multifactorial.
- Several studies have discussed the potential link between endothelial dysfunction and impaired immune function. CKD patients have higher levels of endothelial dysfunction markers compared to controls.

- **Early-stage CKD patients can be safely vaccinated as they have mild immune impairment and ESRD patients should not be excluded from routine vaccination with Live-attenuated vaccines (LAV).**

- **The immune status of transplant candidates must be assessed, and complete appropriate vaccination must be performed in the pretransplant period at least 4 weeks prior to kidney transplantation.**

Hepatitis B vaccines for chronic kidney disease, dialysis and renal transplant patients

Age (years)	Vaccine	Dose	Schedule (months)
0 to ≤15	Engerix B® (10mcg)	20mcg (2x10mcgs at different sites)	0, 1, 6 or 0, 1, 2, 12[1]

Anti HBs (mIU/ml)	Interpretation and management	Follow Up
≥ 10	Good response	Re-check anti-HBs annually If anti-HBs < 10 mIU/ml, give booster dose of vaccine
<10	Non-response. Repeat vaccination course (different brand). Check anti-HBs 2 months later: • If anti-HBs ≥10 mIU/ml, good response • If anti-HBs < 10 mIU/ml, non-responder	Test for HBsAg three monthly while on dialysis

Immunisation of Immunocompromised Persons • March 2022

Influenza Vaccine

Over the years, epidemics of influenza have caused thousands of deaths, and ESRD patients are likely to present complicated forms of influenza due to their disturbed immune system. Nonetheless, vaccinations have clear benefits in this vulnerable group

Live, Attenuated Influenza Vaccine

(LAIV) CONTRAINDICATED

●Vaccination with polyvalent **Pneumococcus** vaccine every **5** years unless contraindicated in CKD stages 4 and 5 and patients at high risk of pneumococcal infection (nephrotic syndrome, diabetes, or those undergoing immunosuppression).

Pneumococcal Vaccine

Due to their weak immune protection, CKD patients, especially children with Nephrotic syndrome and on dialysis, are remarkably vulnerable to severe pneumococcal infection.

- In fact, dialysis patients have a high incidence of respiratory infections with mortality rates up to 16-fold higher compared to the general population.
- Moreover, community-acquired pneumonia in both dialysis patients and kidney transplant recipients is mainly caused by Streptococcus pneumonia

Currently, there are 2 different anti-pneumococcal vaccines:

- The **13-valent** pneumococcal conjugate vaccine (PCV- 13: Prevnar 13)
- The **23-valent** (PPV-23: Pneumovax 23)

The use of both pneumococcal vaccines might provide broader protection.

Thus, PCV13 in combination with the PPSV23 vaccine has been included in the vaccination recommendations of immunocompromised individuals including CKD patients.

•In practice, based on the current knowledge, IM vaccination is recommended in all ESRD patients with the PCV 13 vaccine and the PPSV23 at least 8 weeks later, then A booster dose of the PPSV23 is administered every 5 years.

Table 13

Recommendation for administering PCV13 and PPSV23 vaccines for patients with chronic kidney disease

Infants and children (ages 0-18)			
Vaccine history	**Recommended regimen**		
Never vaccinated with PCV7 or PCV13 up to age	Routine vaccination for PCV13 (4 dose series)	Administer 1 dose of PPSV23 at age ≥2 years and ≥8 weeks after last indicated dose of PCV13	Administer 1 dose of PPSV23 after 5 years
Completed all recommended doses of PCV7	Administer 1 dose of PCV13 ≥8 weeks later	Administer 1 dose of PPSV23 at age ≥2 years and ≥8 weeks after last indicated dose of PCV13	Administer 1 dose of PPSV23 after 5 years
Children aged 24-71 months who received <3 doses of PCV7 before age 24 months	Administer 2 doses of PCV13 now	Administer 1 dose of PPSV23 ≥8 weeks later after last indicated dose of PCV13	Administer 1 dose of PPSV23 after 5 years
Children aged 24-71 months who received any incomplete schedule of 3 doses of PCV7 before age 24 months	Administer 1 dose of PCV13 now	Administer 1 dose of PPSV23 ≥8 weeks later	Administer 1 dose of PPSV23 6 year after
Completed all recommended doses of PCV13	Administer 1 dose of PPSV23 at age ≥2 years and ≥8 weeks after last indicated dose of PCV13	Administer 1 dose of PPSV23 after 6 years	
Children aged 6-18 years who have not received PCV13	Administer 1 dose of PCV13 now		

•Regarding **Pertussis**, although vaccines induced protection declines over time, vaccination remains the best protection available against this disease

•Therefore, three doses of the vaccine are recommended at (**0,1, and 6–12 months**) including One dose of TdaP (vaccine against Tetanus, Diphtheria and Pertussis) should be administered to patients who previously did not receive a dose as child, followed by a dose of tetanus and diphtheria toxoids (Td) booster every 10 years.

• In dialysis patients with open wounds, a tetanus toxoid booster should be administered if in doubt regarding the seroresponsiveness

- **Vaccination to hepatitis A virus (HAV)** is not universally recommended, infection with HAV usually provides lifelong immunity in most healthy subjects while vaccination offers about 99% seroconversion

- vaccination with 2 doses IM at 0 and 6–12 months is recommended in these patients. In endemic area (EGYPT)

- The Food and Drug Administration has licensed 2 inactivated vaccines, Harvix (GlaxoSmithKline) and Vaqta (Merck) offered in a 2-dose series.54 Studies on the safety and efficacy of HAV vaccine in patients with CKD are mitigated. The subcutaneous (SC) route is as effective as the IM route

•**(MMR) and Varicella Vaccine (VAR)**

•**In fact, MMR and varicella serology should be assessed prior to transplantation and transplant candidates should be immunized.**

•**One or 2 doses of MMR and varicella should be done.**

• **If seroconversion does not occur, the dose can be repeated once, if time permits prior to transplantation.**

• **Additionally, two live vaccines, MMR and varicella for instance, can be both given on the same day; otherwise, the second live vaccine should be given > 28 days later.**

List of Vaccines and their use for Dialysis or CKD Patients

Vaccine	Recommended for Dialysis or CKD Patients	Recommended for All Adults	May Use if Otherwise Indicated*	Contraindicated
Anthrax			X	
DTaP/Tdap/Td		X	X	
Hib			X	
Hepatitis A			X	
Hepatitis B	X			
Human papillomavirus			X	
Influenza (TIV)		X (see p. 6)		
Influenza (LAIV)				X
Japanese Encephalitis			X	
MMR		X	X	
Meningococcal			X	
Pneumococcal	X			
Polio (IPV)			X	
Rabies			X	
Rotavirus			X	
Smallpox			X	
Typhoid			X	
Varicella		X	X	
Yellow Fever			X	
Zoster			X	

*No specific ACIP recommendation for this vaccine exists for dialysis patients or patients with chronic kidney

Table 12

Recommendations for all vaccines in chronic kidney disease patients

Vaccine	Age	Dose	Vaccination schedule/ route of administration	Booster doses
Hepatitis B, Engerix B®	≥20 years	40 mcg	0, 1, 2, and 6 months/IM	Yes, when anti-HBs <10 UI/l
	<20 years	10 mcg	0, 1, and 6 months/IM	Yes, when anti-HBs <10 UI/l
Pneumococcal	.....	.....	.....Refer Table 13.....	.....
Influenza	3-8 years	15 µg	Each year/IM	No
	9-12 years	15 µg	Each year/IM	No
	>12 years	15 µg	Each year/IM	No
Varicella	1-12 years	0.5 ml	One single dose/SC	No
Hepatitis A, Havrix®	>17 years	1440 U	0, 6–12 months/IM	No
Measles, mumps, and rubella	>18 years	0.5 ml	One single dose/SC	No
Inactivated poliovirus	<18 years	0.5 ml	Three doses with an interval of 1-2 months	No (revaccination 1 year after the third dose)
Diphtheria and tetanus toxoids	7 years	0.5 ml	Three doses/IM	No

IM: Intramuscular, SC: Subcutaneous

12: VACCINATION

•12.1: We recommend giving all KTRs approved, **inactivated** vaccines, according to recommended schedules for the general population, except for HBV vaccination. (1D)

• 12.1.1: We suggest HBV vaccination (**ideally prior to transplantation**) and HBsAb titers 6–12 weeks after completing the vaccination series. (2D)

•12.1.1.1: We suggest **annual** HBsAb titers. (2D)

•12.1.1.2: We suggest revaccination if the antibody titer falls below **10 mIU/ml.** (2D)

KDIGO

•12.2: We suggest **avoiding live** vaccines in KTRs. (2C)

• 12.3: We suggest avoiding vaccinations, **except influenza** vaccination, in the **first 6 months** following kidney transplantation. (2C)

•12.3.1: We suggest **resuming** immunizations once patients are receiving minimal maintenance doses of immunosuppressive medications. (2C)

•12.3.2: We recommend giving all KTRs, who are at least 1 month post-transplant, influenza vaccination prior to the onset of the annual influenza season, regardless of status of immunosuppression. (1C)

KDIGO

•12.4: We suggest giving the following vaccines to KTRs who, due to **age**, direct **exposure**, **residence** or **travel** to endemic areas, or other epidemiological risk factors are at increased risk for the specific diseases: **K rabies, (2D) K tick-borne meningoencephalitis, (2D) K Japanese B encephalitis-inactivated, (2D), Meningococcus, (2D) K Pneumococcus, (2D) K Salmonella typhi-inactivated. (2D)**

• 12.4.1: Consult an infectious disease specialist, a travel clinic, or public health official for guidance on whether specific cases warrant these vaccinations.

4- Biological treatment

Biologics,

such as TNFα blocking agents (adalimumab,

etanercept, infliximab),

and others including abatacept, anakinra,

ecolizumab, **rituximab** and tocilizumab.

Non-live vaccines: When possible, recommended vaccination should be completed at least **2 weeks** before commencing imunomodulators.

- but post vaccination antibody titres are usually sufficient to provide protection for the majority of immunised individuals.
- **Severely reduced immunogenicity** can occur from treatment with particularly rituximab

Patients on **eculizumab** (SolirisR), a terminal complement inhibitor are at very high risk of **meningococcal** disease due to strains that do not normally cause disease but are frequently carried asymptomatically in the nasopharynx. These are usually non-groupable strains.

Vaccination offers limited or possibly no protection against these strains but will protect against those commonly associated with invasive disease.

- **Live vaccines: these should not be given to those patients**
- When possible complete age appropriate immunisation **prior** to therapy. In addition, **MenACWY, PCV followed by PPV23 ≥2 months later, and annual influenza vaccine should be given.**
- **Non-live vaccines may safely be administered during short or medium term** therapy.
- However, as the immune response may be suboptimal, if suchvaccines are given **≤ 2 weeks** prior to or during therapy they should be **repeated ≥6 months** after treatment if immune competence is restored.
- **COVID-19**: Give primary course followed by an additional dose at least 6 months later

5- Covid


اكيد ده برد جايلك من المروحه
بس انا مبشغلش المروحه!
يبقى تشغلها عشان يبقى من المروحه

Rijksinstituut voor Volksgezondheid
en Milieu
*Ministerie van Volksgezondheid,
Welzijn en Sport*

Nederlands

and sustainability

Topics About RIVM Publications International Contact Search

Home › COVID-19 vaccination › COVID-19 vaccination questions and background information › Vaccination of immunocompromised people

Vaccination of immunocompromised people

Modification date 09/19/2022 - 16:50

News

Vaccination figures

Vaccinations can be less effective for some people with moderately or severely impaired immunity. That is why these people need more vaccinations than others. This page contains

•In regards to COVID-19 vaccines, all 3 products with EUA in the United States contain warnings that "immunocompromised persons, including those receiving immunosuppressant therapy," may have a diminished immune response to the COVID-19 vaccine.

• However, both the (CDC) and the British Society for Immunology (BSI) have released statements regarding their recommendations for COVID-19 vaccination in this population, they acknowledges limited data is available to establish COVID-19 vaccine safety and efficacy in this patient population but recognizes the population's increased risk for severe COVID-19.

•Since the 3 currently authorized COVID-19 vaccines are not live, CDC confirms these vaccines can be safely administered to immunocompromised individuals.

- **However, data to inform optimal timing of COVID-19 vaccination among those planning to receive immunosuppressive therapy is lacking; thus, CDC recommends following the *General Best Practice Guidelines for Immunization* by completing vaccination ideally at least 2 weeks prior to initiation of immunosuppressive therapies.**
- **If that is not possible, patients on immunosuppressive therapy may still receive the COVID-19 vaccine.**
- **CDC does not recommend antibody testing to assess for immunity to SARS-CoV-2 following vaccination, as the clinical utility of postvaccination testing has not been established.**
- **Additionally, revaccination is not recommended in the setting of low antibody titers or if patients regain immune competence.**

Can children and adolescents get vaccinated against COVID-19?

The Pfizer vaccine can be safely administered to children from 5 years of age. Both Moderna and Pfizer vaccines are licensed for use in children from 12 years of age.

WHO recommends that children aged 5 and above with comorbidities that put them at significant risk of severe COVID-19 should be offered vaccination, at a reduced dosage, alongside other high-risk groups.

Countries may now consider vaccinating healthy children from the age of 5 years of age and adolescents as part of their national vaccination strategies. However, WHO strongly recommends that countries should vaccinate children only when high vaccine coverage with primary vaccination series has been achieved in higher priority-use groups, as identified in the WHO Prioritization Roadmap.

Vaccine trials for children and adolescents and other COVID-19 vaccines are ongoing and WHO will update its recommendations when the evidence or epidemiological situation justifies a change in policy.

If you are moderately or severely immunocompromised or severely allergic to COVID-19 vaccines, you may be eligible for Evusheld, a medicine given every six months by your healthcare provider **to help prevent you from getting COVID-19**. Talk to your healthcare provider to find out if this option is right for you.

EVUSHELD for pre-exposure prophylaxis for preventing COVID-19 infection

EVUSHELD is an investigational medicine used in adults and adolescents (12 years of age and older who weigh at least 88 pounds [40 kg]) for pre-exposure prophylaxis for prevention of COVID-19 in persons who are:

- Not currently infected with SARS-CoV-2 and who have not had recent known close contact with someone who is infected with SARS-CoV-2 **and**
  - Who have moderate to severe immune compromise due to a medical condition or have received immunosuppressive medicines or treatments **and** may not mount an adequate immune response to COVID-19 vaccination **or**
  - For whom vaccination with any available COVID-19 vaccine, according to the approved or authorized schedule, is not recommended due to a history of severe adverse reaction to a COVID-19 vaccine(s) or


THANK YOU!

1- In immunocompromised children inactivated vaccines are:

A- totally contraindicated

B- can be given safely

C- not indicated

D- no difference in response in comparison to immune competent

2- Regarding hepatitis B vaccine:

A- titer should be measured in immunocompromised cases

B- extra doses may be needed

C- protection titer more than 10 in dialysis patients

D- all of the above

3- Vaccination can be resumed :

A- after 6 months of high dose steroid session

B- after 4 weeks of session of low dose steroid

C- after 6 months of stopping

immunosupressants

D- immediately after transplantation