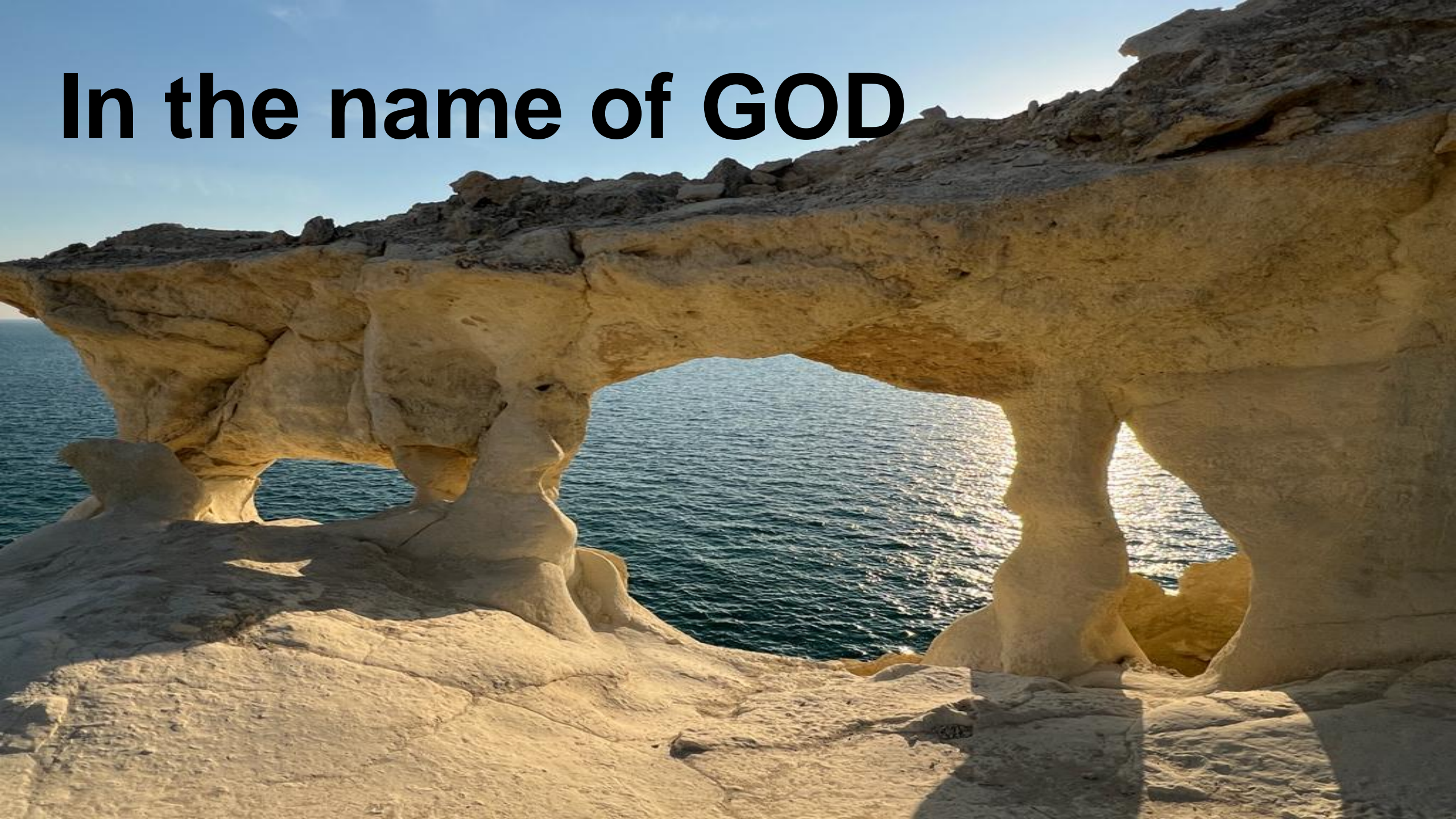


**In the name of GOD**



# Pneumococcal vaccines

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# Active immunization

- Four pneumococcal vaccines are available for use in children:
  - 1) PCV13
  - 2) PCV15
  - 3) PCV20
  - 4) PPSV23

## **Immunization with PPSV23 :**

does not induce immunologic memory or boosting with subsequent doses  
has not effect on nasopharyngeal carriage,  
does not interrupt transmission  
and indirectly protect unimmunized people

# Routine immunization with Pneumococcal conjugate vaccine

- PCV15/PCV13/PCV20  **all** infants and children **2 through 59 mo** of age
- *For infants: 2, 4, 6 and 12 through 15 mo of age.*
- **Iran:** 2, 4, 12mo
- Infants of VLBW( 1500 g or less) should be immunized when they attain a chronologic age of 6 to 8 weeks, regardless of their gestational age at birth.



# Catch-up immunization for previously unimmunized and partially immunized children 2-59 months of age

- 2 through 6 mo
- 7 through 11mo
- 12 through 23 mo
- 24 through 59 mo

- 0 doses
- 1 dose
- 2 doses
- 3 doses

For children immunized at younger than 12 mo, the minimum interval between doses is 4 weeks.  
Doses at 12 mo or older should be at least 8 weeks apart

# Summary

<b>Age at first dose(mo)</b>	<b>Primary PCV15,PCV13,OR PCV20 SERIES</b>	<b>PCV15 OR PCV20 booster dose</b>
<b>2-6</b>	<b>3 doses</b>	<b>1 dose at age 12-15 mo</b>
<b>7-11</b>	<b>2 doses</b>	<b>1 dose at age 12-15 mo</b>
<b>12-23</b>	<b>2 doses</b>	<b>–</b>
<b>24-59 (healthy children)</b>	<b>1 dose</b>	<b>–</b>
<b>24-71( chronic dx, immunocompromising conditions)</b>	<b>2 doses</b>	<b>–</b>

# 2 through 6 mo

<b>0 doses</b>	<b>4 doses: 3 doses, 8 wk apart; fourth dose at age 12-15 mo</b>
<b>1 dose</b>	<b>3 additional doses: 2 doses, 8 wk apart; last dose at age 12-15 mo</b>
<b>2 doses</b>	<b>2 additional doses: 1 dose 8 wk after most recent dose; last dose <math>\geq</math> 8 wk later at age 12-15 mo</b>
<b>3 doses</b>	<b>1 additional dose at age 12-15 mo</b>

# 7 through 11 mo

<b>0 doses</b>	<b>3 doses: 2 dose, <math>\geq 4</math> wk apart ; third dose <math>\geq 8</math> wk later at age 12-15 mo</b>
<b>1 or 2 dose(at age &lt; 7 mo)</b>	<b>2 additional doses: 1 dose 8 wk after more recent ; last dose <math>\geq 8</math> wk later at age 12-15 mo</b>
<b>3 dose(at age &lt;7mo)</b>	<b>1 additional dose at age 12-15 mo</b>
<b>1 dose( at age&gt;7mo)</b>	<b>2 additional doses: 1 dose 8 wk after most recent dose; last dose <math>\geq 8</math> wk later at age 12-15 mo</b>
<b>2 dose( at age &gt; 7 mo)</b>	<b>1 additional dose at age 12-15 mo</b>



# 12 through 23 mo

<b>0 doses</b>	<b>2 doses, <math>\geq 8</math> wk apart</b>
<b>1 dose( at age &lt;12mo)</b>	<b>2 additional doses: 1 dose <math>\geq 8</math> wk after most recent dose; last dose <math>\geq 8</math> wk</b>
<b>1 doses( at age <math>\geq 12</math> mo)</b>	<b>1 additional dose, <math>\geq 8</math> wk after most recent dose</b>
<b>2 or 3 doses( at &lt;12 mo)</b>	<b>1 additional dose, <math>\geq 8</math> wk after most recent dose</b>

# 24 through 59 mo Healthy children

- **A single dose** should be administered to all healthy children 24 through 59 months of age with any incomplete schedule.

# High Risk Conditions

## Immunocompetent

- CHD (cyanotic, heart failure)
- CKD( excluding maintenance dialysis and nephrotic syn)
- Chronic liver dx
- Chronic lung dx (Asthma)
- DM
- CSF leak
- Cochlear implant

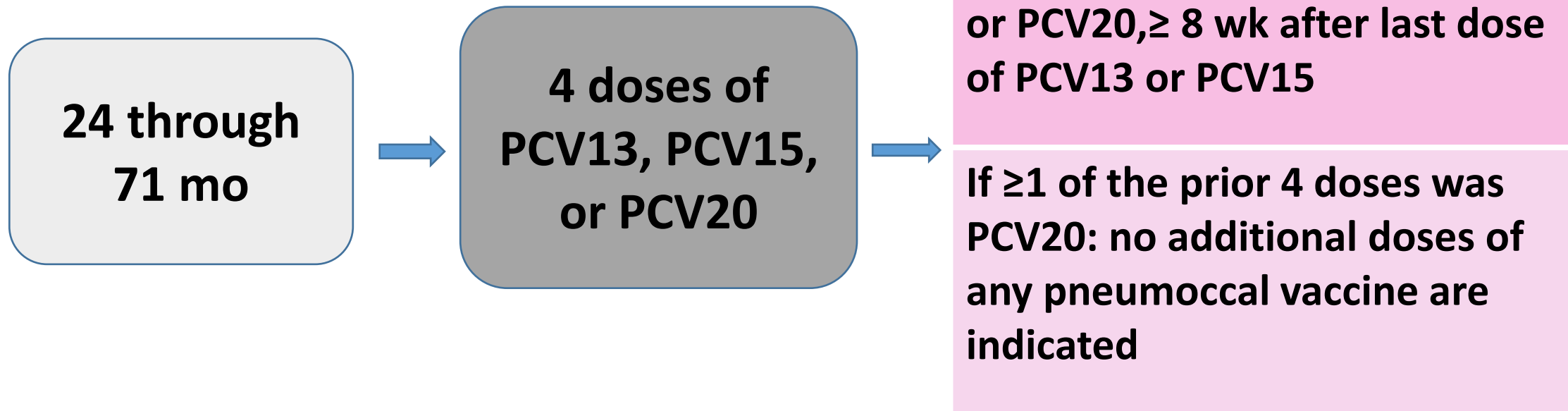
## Immunocompromising conditions

- Dialysis or nephrotic syn
- Asplenia or splenic dysfunction
- Immundeficiencies
- HIV infection
- SCD
- Immunosuppressive drugs or radiation therapy ( Tx, leukemia,lymphoma,...)

# Children at High Risk

- 23 mo or younger → none → PCV15/PCV13 or PCV20 as routine

- 24 through 71 mo:



**24 through 71 mo**



Incomplete series of 3  
previous doses of  
PCV13, PCV15, OR  
PCV20 before 24 mo



**1 dose of PCV15 or PCV20**

If PCV 15 is used for this dose and there are no prior doses of PCV20, 1 dose of PPSV23  $\geq$  8 WK after the last dose of PCV15.

If PCV20 is used for this or any prior dose, no additional doses of any pneumococcal vaccine are indicated

**24 through 71 mo**



Incomplete series  
of < 3 doses of  
PCV13, PCV15, or  
PCV20 before 24  
mo of age

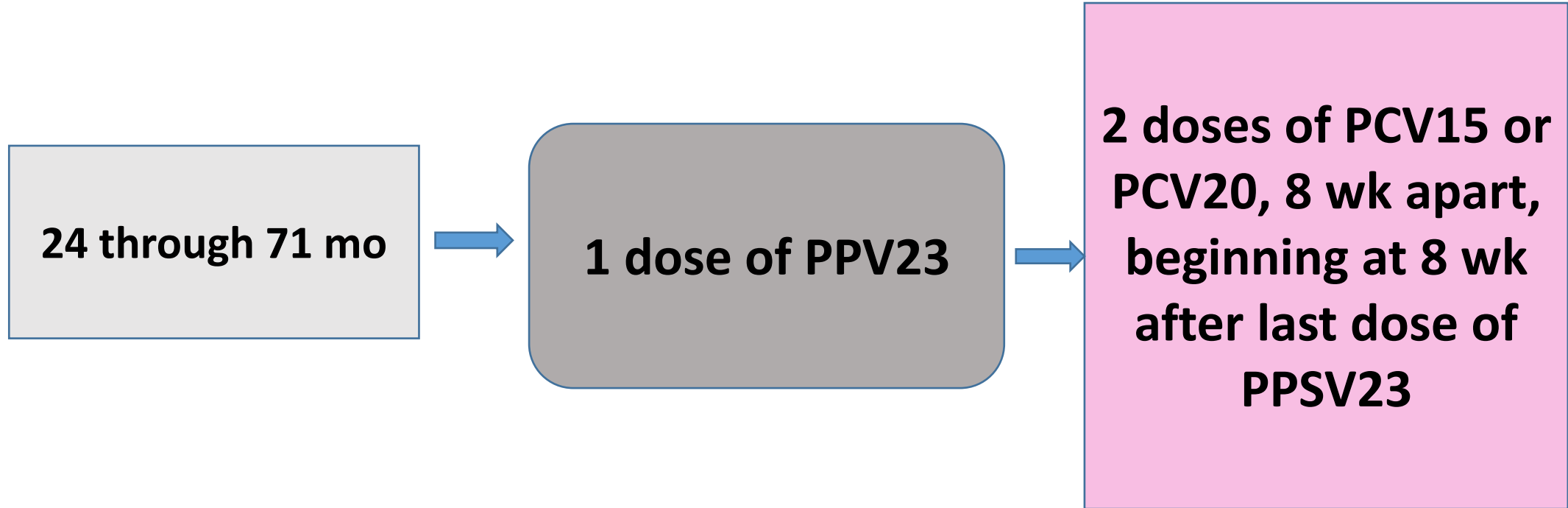


**2 doses of PCV15 or PCV20,  $\geq 8$  WK  
after last dose of PCV13, PCV15, or  
PCV20( IF applicable)**

If PCV15 is used for this dose, 1 dose  
of PPSV23 vaccine,  $\geq 8$  WK after the  
last dose of PCV13 or PCV15

IF PCV20 is used for this dose, no  
additional dose of any pneumococcal  
vaccine are indicated





6 years through 18 years with immunocompromising condition

**no previous doses of PCV13, PCV15, PCV20 or PPSV23**



**1 DOSE OF PCV15/PCV13 followed by 1 dose of PPSV23 at least 8 weeks later and a second dose of PPSV23 5 years after the first ; or 1 dose of PCV20 with no additional dose of any with no additional doses of any pneumococcal vaccine indicated thereafter**

**1 dose of PCV13, PCV15, or PCV20**



If prior dose was with PCV13 or PCV15: 1 DOSE OF PPSV23 and a second dose of PPSV23 5 years after the first  
If prior dose was with PCV20 : NO ADDITIONAL doses of any pneumococcal vaccine are indicated

**≥ 1 dose of PPSV23 and no previous dose of PCV13, PCV15, or PCV20**



1 dose of PCV15 or PCV20 ( even if PCV7 previously administered) ≥ 8 wk after the last PPSV23 dose; if a second PPSV23 dose is indicated , it should be administered ≥ 5 years after the first PPSV23 dose

# SECOND DOSE OF PPSV23

- A second dose of PPSV23 or a first dose of PCV20 ( if no prior PCV20 has been administered) is recommended **5 years after** the first dose of PPSV23 in children with:
  - **Sickle cell disease/ functional or anatomic asplenia, HIV, or other immunocompromising conditions**
  - **No more** than a total of **2 PPSV23 dose** should be administered before 65 years of age.

# General recommendations for use of pneumococcal vaccines

- PCV15/PCV20 can be administered **concurrently** with all other age – appropriate childhood immunization

**Except PPSV23 and MenACYW-D(Menactra)**

- Elective splenectomy/ cochlear implant:

PCV15/PCV20/ PCV13: At least 2 weeks before procedure

PPSV23 8 or more weeks after PCV13/PCV15

# Pneumococcal vaccination in adults

- Available PCV formulations include:

13-valent PCV ([PCV13](#); Prevnar 13)

15-valent PCV ([PCV15](#); Vaxneuvance)

20-valent PCV ([PCV20](#); Prevnar 20)

21-valent PCV ([PCV21](#); Capvaxive)

[PCV21](#) was developed **specifically for adults** and includes serotypes that are more likely to infect adults

# Indication for vaccination in adults

- All adult  $\geq$  65 years (CDC:  $>50$  years)
- Adult aged 19 to 64 years with:
  - chronic medical conditions( CLD, CKD, heart failure, chronic liver dx, DM)
  - cochlear implant, CSF leak
  - immunocompromising conditions( HIV, hematologic malignancies,...)
  - functional or anatomical asplenia



# vaccination in adults

- The ACIP recommends:
  - 21-valent PCV ([PCV21](#)) alone
  - 20-valent PCV ([PCV20](#)) alone
  - 15-valent PCV ([PCV15](#))/**PCV13** followed by 23-valent PPSV ([PPSV23](#)) for all adults with indications for vaccination.
- **If PCV15/PCV13 is administered:**
  - PPSV23 should be administered **one year after** PCV15/PCV13 (or **≥8 weeks** after PCV15/PCV13 in patients with an immunocompromising condition, cochlear implant, or CSF leak)

# Adults $\geq 65$ years of age

## Both PCV10/PCV13 and PPSV23

- Those who received both the [PCV10/PCV13](#) and [PPSV23](#) prior to age 65 years should receive:

[PCV21](#) (or [PCV20](#) if PCV21 is not available)  $\geq 5$  years after their last pneumococcal vaccine dose.

If **neither PCV21 nor PCV20** are available, **PPSV23** can be given instead

