PNEUMOCOCCAL DISEASE

- Pneumococcal disease is caused by the *Streptococcus pneumoniae* bacterium.
- To date, there are more than 100 serotypes of *S. pneumoniae*.
- The 3 major clinical syndromes caused by these bacteria include...
  - Pneumonia: inflammation of the lungs
  - Bacteremia: presence of bacteria in the blood
  - Meningitis: inflammation of the lining of brain or spinal cord

PNEUMOCOCCAL VACCINES AVAILABLE

<table>
<thead>
<tr>
<th>Pneumococcal Conjugate Vaccines (PCVs)</th>
<th>Pneumococcal Polysaccharide Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV13 (Prevnar13®)</td>
<td>Contains polysaccharide antigen from 23 types of pneumococcal bacteria</td>
</tr>
<tr>
<td>PCV15 (Vaxneuvance®) NEW</td>
<td>PPV23 (Pneumovax23®)</td>
</tr>
<tr>
<td>PCV20 (Prevnar20®) NEW</td>
<td></td>
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</tbody>
</table>
HOW WELL DO THESE VACCINES WORK?

- PCV15 and PCV20 are new vaccines, so there are no data yet on how well these vaccines work in real-world conditions.

- However, these vaccines were approved because clinical trial data indicate they cause an immune response similar to PCV13, which has been shown to protect against serious pneumococcal infections.

HOW WELL DO THESE VACCINES WORK?

Studies* show that getting at least 1 shot of PCV13 protects:
- At least 8 in 10 babies from serious infections called invasive pneumococcal disease

Studies* show that getting 1 shot of PPSV23 protects:
- Between 6 to 7 in 10 healthy adults against invasive pneumococcal disease

*Studies looked at protection against pneumococcal infections caused by the serotypes covered by the specific vaccine used.

Pneumococcal Vaccination: What Everyone Should Know | CDC
In North Dakota, the percent of children ages 19-35 months vaccinated with the indicated number of PCV doses has decreased from 77.5% in Q4 of 2018 to 70.3% in Q4 of 2021.

Childhood Pneumococcal Vaccination Guidance

- Children Ages ≤ 2 years
- Children Ages 2-4 years (catch-up)
- Children Ages 2-5 years with certain medical conditions (catch-up)
- Children Ages 6-18 years with certain medical conditions (catch-up)
FOR CHILDREN AGES ≤2 YEARS

CDC RECOMMENDATION

Children ≤2 years old:
• CDC recommends PCV13 for all infants as a series of 4 doses.

FOR CHILDREN ≤2 YEARS

✓ Give 1 dose at 2 months, 4 months, 6 months, and 12 through 15 months.

• Children who miss their shots or start the series later should still get the vaccine. The number of doses recommended and the intervals between doses will depend on the child's age when vaccination begins. See the Childhood/Adolescent Immunization Catch-up Schedule for additional details.
FOR CHILDREN AGES 2-4 YEARS (CATCH-UP)

CDC RECOMMENDATION

Children 2-4 years old:
- CDC recommends PCV13 vaccination for children 2 through 4 years old who are unvaccinated or received an incomplete PCV13 series.
- Incomplete series = Not having received all doses in either the recommended series or an age-appropriate catch-up series.

FOR CHILDREN 2-4 YEARS (CATCH-UP)

✓ Give 1 dose of PCV13.
- 1 dose for healthy children aged 24–59 months with any incomplete PCV13 series.

✓ See the Childhood/Adolescent Immunization Catch-up Schedule for additional details.
FOR CHILDREN AGES 2-5 YEARS WITH CERTAIN MEDICAL CONDITIONS
(CATCH-UP)

Children 2 through 5 years old:

- CDC recommends pneumococcal vaccination for children 2 through 5 years old who have certain medical conditions.

CDC RECOMMENDATION

- For a child with any of these conditions:
  - Cerebrospinal fluid leak, Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), Chronic lung disease (including asthma if treated with prolonged high-dose oral corticosteroid therapy), Cochlear implant, and/or Diabetes mellitus
  - Give 2 doses of PCV13 if they are unvaccinated or received an incomplete PCV13 series with <3 doses. Give the second dose at least 8 weeks after the first.
  - OR
  - Give 1 dose of PCV13 if they received 3 doses of PCV13 but none were given after 12 months of age.
  - AND
  - Give 1 dose of PPSV23 at least 8 weeks after the PCV13 series is complete.
FOR CHILDREN 2-5 YEARS WITH CERTAIN MEDICAL CONDITIONS

- For a child with any of these conditions:
  - Chronic renal failure or nephrotic syndrome,
  - Congenital immunodeficiency (B- (humoral) or T-lymphocyte deficiency), Complement deficiency, particularly C1, C2, C3, or C4 deficiency, Phagocytic disorder, excluding chronic granulomatous disease), Congenital or acquired asplenia, or splenic dysfunction
  - Diseases associated with treatment of immunosuppressive drugs or radiation therapy, Hodgkin disease, Leukemia, Lymphoma, Malignant neoplasm, Solid organ transplant, HIV infection, Sickle cell disease or other hemoglobinopathies

- Give 2 doses of PCV13 if they are unvaccinated or received an incomplete PCV13 series with <3 doses. Give the second dose at least 8 weeks after the first.
  OR
- Give 1 dose of PCV13 if they received 3 doses of PCV13 but none were given after 12 months of age.
  AND
- Give 2 doses of PPSV23 after the PCV13 series is complete. Give the first dose at least 8 weeks after any prior PCV13 dose, then give the second dose of PPSV23 at least 5 years after the first PPSV23 dose.

FOR CHILDREN AGES 6-18 YEARS WITH CERTAIN MEDICAL CONDITIONS (CATCH-UP)

Children 6 through 18 years old:
- CDC recommends pneumococcal vaccination for children 6 through 18 years old who have certain medical conditions.

CDC RECOMMENDATION

- CDC recommends pneumococcal vaccination for children 6 through 18 years old who have certain medical conditions.
FOR CHILDREN 6-18 YEARS WITH CERTAIN MEDICAL CONDITIONS

- For a child with any of these conditions:
  - Cerebrospinal fluid leak
  - Cochlear implant
  - Give 1 dose of PCV13 if they have not received any doses of PCV13. Administer PCV13 before giving any recommended doses of PPSV23.
  - AND
  - Give 1 dose of PPSV23 (if not already given earlier in childhood) at least 8 weeks after PCV13.

FOR CHILDREN 6-18 YEARS WITH CERTAIN MEDICAL CONDITIONS

- For a child with any of these conditions:
  - Chronic renal failure or nephrotic syndrome, Congenital immunodeficiency (B-, humoral), or T-lymphocyte deficiency, Complement deficiency, particularly C1, C2, C3, or C4 deficiency, Phagocytic disorder, excluding chronic granulomatous disease), Congenital or acquired asplenia, Diseases associated with treatment of immunosuppressive drugs or radiation therapy (Hodgkin disease, Leukemia, Lymphoma, Malignant neoplasm, Solid organ transplant), HIV infection, Sickle cell disease or other hemoglobinopathies
  - Give 1 dose of PCV13 if they have not received any doses of PCV13. Administer PCV13 before giving any recommended doses of PPSV23.
  - AND
  - Ensure the child receives 2 doses of PPSV23. The first dose of PPSV23 should be given at least 8 weeks after any prior PCV13 dose, then the second dose of PPSV23 should be given at least 5 years after the first dose of PPSV23.

FOR CHILDREN 6-18 YEARS WITH CERTAIN MEDICAL CONDITIONS

- For a child with any of these conditions:
  - Chronic heart disease, particularly cyanotic congenital heart disease and cardiac failure,
  - Chronic lung disease, including asthma if treated with prolonged high-dose oral corticosteroid therapy
  - Diabetes mellitus
  - Give 1 dose of PPSV23 (if not already given earlier in childhood).
Adult Pneumococcal Vaccination Guidance
• Adults ages 19-64 years with certain chronic medical conditions or other risk factors
• Adults ages 65 years or older

NEW 2022 PNEUMOCOCCAL VACCINE RECOMMENDATIONS
• On October 20, 2021, the Advisory Committee on Immunization Practices (ACIP) recommended 15-valent PCV (PCV15) or 20-valent PCV (PCV20) for PCV-naïve adults who are either aged ≥65 years or aged 19–64 years with certain underlying conditions.

• What are the implications for public health practice?
  • Pneumococcal vaccination recommendations were simplified across age and risk group. Eligible adults may receive either PCV15 in series with PPSV23 or PCV20 alone.
  • PCV13 is no longer preferred for use in these populations.

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2023
FOR ADULTS AGES 19-64 YEARS
WITH CERTAIN UNDERLYING MEDICAL CONDITIONS OR OTHER RISK FACTORS

CDC RECOMMENDATION

Adults 19 through 64 Years Old:
• CDC recommends pneumococcal vaccination for adults 19 through 64 years old who have certain chronic medical conditions or other risk factors.

CERTAIN CHRONIC MEDICAL CONDITIONS OR OTHER RISK FACTORS (19-64 YEARS)

For adults ages 16-64 years with any of the conditions or risk factors listed below:
• Alcoholism
• Cerebrospinal fluid leak
• Chronic heart disease, including congestive heart failure and cardiomyopathies
• Chronic liver disease
• Chronic lung disease, including chronic obstructive pulmonary disease, emphysema, and asthma
• Chronic renal failure
• Cigarette smoking
• Cochlear implant
• Congenital or acquired asplenia
• Congenital or acquired immunodeficiency
• B (humoral) or T-lymphocyte deficiency
• Complement deficiency, particularly C1, C2, C3, or C4 deficiency
• Phagocytic disorder, excluding chronic granulomatous disease
• Diabetes mellitus
• Generalized malignancy
• HIV infection
• Hodgkin disease
• Iatrogenic immunosuppression, including long-term systemic corticosteroids and radiation therapy
• Leukemia
• Lymphoma
• Multiple myeloma
• Nephrotic syndrome
• Sickle cell disease or other hemoglobinopathies
• Solid organ transplant
NEW GUIDANCE FOR ADULTS 19-64 YEARS WITH CERTAIN MEDICAL CONDITIONS

- For those who have not previously received any pneumococcal vaccine:
  ✓ Administer 1 dose of PCV15 or PCV20
    • If PCV15 is used follow up with 1 dose of PPSV23 at least 1 year later.

- For those who have only received PPSV23:
  ✓ May give 1 dose of PCV15 or PCV20 (at least one year after the most recent PPSV23 vaccination).
  An additional dose of PPSV23 is not recommended since they already received it.

- For those who have received PCV13 with or without PPSV23:
  Vaccination dependent on individual’s specific medical condition.
  - See CDC’s Pneumococcal Vaccine Timing for Adults who Previously Received PCV13
FOR ADULTS AGES ≥65 YEARS

CDC RECOMMENDATION

Adults 65 Years or Older:
- CDC recommends pneumococcal vaccination for all adults 65 years or older.

NEW GUIDANCE FOR ADULTS 65 YEARS OR OLDER

- For adults 65+ years who have not previously received any pneumococcal vaccine:
  - Give 1 dose of PCV15 or PCV20.
  - If PCV15 is used, this should be followed by a dose of PPSV23 at least one year later.
  - The minimum interval is 8 weeks and can be considered in adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak.

- For adults 65 years or older who have only received PPSV23:
  - May give 1 dose of PCV15 or PCV20 (at least one year after the most recent PPSV23 vaccination).
  - An additional dose of PPSV23 is not recommended since they already received it.

- For adults 65 years or older who have received PCV13 with or without PPSV23:
  - Give 1 dose of PPSV23.
  - Note: Interval between PCV13 and/or previous PPSV23 dose is dependent on any underlying medical conditions and age in which PPSV23 was received, see CDC’s Pneumococcal Vaccine Timing for Adults who Previously Received PCV13.
BEFORE ADMINISTERING VACCINE

- After screening a person and determining that pneumococcal vaccination is appropriate, you need to educate that person about:
  - The vaccine
  - Its risks and benefits
  - What to do if someone experiences a vaccine-related adverse event

CONTRAINDICATIONS AND PRECAUTIONS

- Do not administer a pneumococcal conjugate vaccine to:
  - A person who has ever had a severe allergic reaction (e.g., anaphylaxis) after a previous dose of PCV7, PCV13, PCV15, or PCV20, or to any vaccine containing diphtheria toxoid
  - A person with a severe allergy to any component of these vaccines
- Do not administer PPSV23 to:
  - A person who has ever had a severe allergic reaction (e.g., anaphylaxis) after a previous dose
  - A person with a severe allergy to any component of this vaccine
- Clinicians may administer pneumococcal vaccines, if the provider and parent or patient deems the benefits of vaccination to outweigh the risks, to:
  - A person who has a moderate or severe acute illness with or without fever

CONTRAINDICATIONS AND PRECAUTIONS

- One temporary precaution for all vaccines is moderate or severe acute illness. Defer pneumococcal vaccination when moderate or severe illness is present.
- However, pneumococcal vaccine can be given, as appropriate, when a person:
  - Has a mild illness
  - Is in the convalescent phase of an acute illness
  - Is taking antimicrobials
The safety of PPSV23 for pregnant women has not been studied, although no adverse consequences have been reported among newborns whose mothers were inadvertently vaccinated during pregnancy.

Women who are at a high risk of pneumococcal disease and who are candidates for pneumococcal vaccination should be vaccinated before pregnancy, if possible.

The ACIP has not published pregnancy recommendations for PCV13, PCV15, or PCV20 at this time.

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**CONTRAINDICATIONS AND PRECAUTIONS**

- The safety of PPSV23 for pregnant women has not been studied, although no adverse consequences have been reported among newborns whose mothers were inadvertently vaccinated during pregnancy.
- Women who are at a high risk of pneumococcal disease and who are candidates for pneumococcal vaccination should be vaccinated before pregnancy, if possible.
- The ACIP has not published pregnancy recommendations for PCV13, PCV15, or PCV20 at this time.

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**RESOURCES**

- CDC Pneumococcal Vaccination: Summary of Who and When to Vaccinate
- CDC Pneumococcal Vaccination: Information for Healthcare Professionals
- Pneumococcal Vaccine Timing for Adults: February 16, 2022 (cdc.gov)
- ACIP Pneumococcal Vaccine Recommendations
- Child and Adolescent Immunization Schedule (≤18 years)
- Adult Immunization Schedule (≥19 years)
- [https://www.immunize.org/askexperts/experts_pneumococcal_vaccines.asp](https://www.immunize.org/askexperts/experts_pneumococcal_vaccines.asp)
The PneumoRecs VaxAdvisor mobile app helps vaccination providers quickly and easily determine which pneumococcal vaccines a patient needs and when. The app incorporates recommendations for all ages so internists, family physicians, pediatricians, and pharmacists alike will find the tool beneficial.

- Users simply:
  - Enter a patient’s age.
  - Note if the patient has specific underlying medical conditions.
  - Answer questions about the patient’s pneumococcal vaccination history.
- Then the app provides patient-specific guidance consistent with the immunization schedule recommended by the U.S. Advisory Committee on Immunization Practices (ACIP).

Download the app today!
Post-test

- Nurses interested in continuing education credit, visit https://ndhealth.co1.qualtrics.com/jfe/form/SV_8dWRwCYuOUnJUW
- Successfully complete the five-question post-test to receive your certificate
- Credit for this session available until May 10, 2022
- This presentation will be posted to our website: www.health.nd.gov/immunize

Post-test

- If you are not receiving the emailed certificate after passing your post-test, please reach out to your IT staff and use the information link provided by Qualtrics to attempt to resolve this issue.

Post-test certificates

- We know not all providers are receiving their certificates once they have passed the post-test.
- For the next few months, we will be sending those providers who have successfully passed the post-test a copy of their certificate. If you have already received the emailed certificate after taking the post-test you can ignore the emails.
- These certificates will be emailed the second Wednesday of every month, after the post-test closes.