Immunization Pharmacy Protocol

Typhoid Vaccines (Typhim Vi®, Vivotif®)

<table>
<thead>
<tr>
<th>Last Reviewed</th>
<th>16 December 2022</th>
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</thead>
<tbody>
<tr>
<td>Last Revised</td>
<td>16 December 2022</td>
</tr>
<tr>
<td>This order expires</td>
<td>31 December 2024</td>
</tr>
</tbody>
</table>

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1. What’s new
Thorough review and updated formatting.

2. Oregon immunization protocol
A. Check the ALERT Immunization Information System (IIS) to determine whether the patient needs this vaccine and any other vaccines.
B. Screen clients for contraindications and precautions.
C. Provide a current Vaccine Information Statement (VIS), answering any questions.
D. Record all required data elements in the client’s permanent health record.
E. For injectable typhoid vaccine, verify needle length for intramuscular (IM) injection.

F. To avoid injury related to vaccine administration, make sure staff who administer vaccines recognize the anatomic landmarks for identifying the deltoid muscle and use proper IM administration technique.

G. Ask client to remain seated in the clinic for 15 minutes after vaccination to decrease the risk of injury should they faint.

H. For oral typhoid vaccine, provide manufacturer’s instruction card. Instruct patient and review the instructions.

I have read, understand, and agree to participate by the terms of this protocol.

| Immunizing pharmacist | Date |

3. Vaccine schedule for Typhoid

**Typhim Vi³**

| Dose and Route: 0.5 mL, IM |
|---|---|---|---|
| | Dose | Preferred age | Minimum acceptable age | Minimum acceptable spacing |
| | 1 | ≥7 years | ≥7 years | |
| | Booster | | | 2 years since last dose |

**Vivotif²**

| Dose and Route: 1 capsule, oral |
|---|---|---|---|
| | Dose | Preferred age | Minimum acceptable age | Minimum acceptable spacing |
| | 1 | ≥7 years | ≥7 years | |
| | 2 | | | 48 hours |
| | 3 | | | 48 hours |
| | 4 | | | 48 hours |
| | Booster | | Entire series may be repeated every 5 years, if needed. | |

4. Licensed Typhoid vaccine

| Product Name | Vaccine Components | Acceptable Age Range |

<table>
<thead>
<tr>
<th>Typhim Vi&lt;sup&gt;3&lt;/sup&gt;</th>
<th><em>Salmonella</em> Typhi Ty2 strain: 25 µg</th>
<th>≥7 years</th>
</tr>
</thead>
</table>
| Vivotif<sup>2</sup>  | *Salmonella* Typhi Ty21a: 2.0–10.0x10⁹ colony-forming units  
Nonviable *S*. Typhi Ty21a: 5–50x10⁹ bacterial cells | ≥7 years |

### 5. Recommendations for use

A. Immunization against typhoid fever<sup>1</sup> is indicated for the following groups:

   a. Travelers to areas in which there is a recognized risk of exposure to *S*. *Typhi*, particularly those who will have prolonged exposure to potentially contaminated food and drink.

   b. Persons with intimate exposure (e.g., continued household contact) to a documented *S*. *Typhi* carrier.

   c. Microbiology laboratorians who frequently work with *S*. *Typhi*.

B. Current CDC advisories should be consulted regarding areas with a risk of exposure to *S*. *Typhi*. Typhoid vaccines are 50–80% effective. Travelers should use caution in selecting food and water, even if vaccinated. Infections with drug resistant strains can be fatal.<sup>5</sup>

C. Typhoid vaccines will not protect against serotypes of *Salmonella* other than *Typhi*.<sup>2,3</sup>

D. Use of Typhim Vi:<sup>3</sup>

   a. May be used in patients ≥7 years of age.

   b. Booster doses may be given every 2 years if there is expected to be repeated or continued risk of exposure to *Salmonella* Typhi.<sup>1,3</sup>

   c. Immunization should occur at least two weeks prior to potential exposure to *Salmonella* Typhi.<sup>1</sup>

E. Use of Vivotif:<sup>2</sup>

   a. May be used in patients ≥7 years of age.

   b. Oral vaccines can be administered simultaneously or at any interval before or after other live vaccines (injectable or intranasal) if indicated. This includes live, attenuated yellow fever vaccine or immune globulin if indicated.<sup>1</sup>
c. When indicated: oral cholera vaccine should be administered before
the oral typhoid vaccine, and at least 8 hours should separate the
cholera vaccine and the first dose of typhoid vaccine.6

d. Immunization (i.e., ingestion of all four doses) should be completed at
least one week prior to potential exposure to *Salmonella* Typhi.1

e. Provide manufacturer’s instruction card. Instruct patient and review the
following instructions:2

i. Inspect blister pack to ensure that foil seal and capsule are
intact.

ii. Each capsule should be taken on an empty stomach, ≥ 2 hours
after eating and at least 1 hour before the next meal. Swallow
one capsule one hour before a meal with cold or lukewarm water
(≤37°C or 98.6°F), on alternate days (days 1, 3, 5, 7). Indicate
days on instruction card.

iii. Do not chew capsule.

iv. Swallow as soon as possible after placing in mouth.

v. Do not expose capsule to direct sunlight.

vi. It is essential to replace unused vaccine in the refrigerator
between doses.

vii. Patient should call vaccine administrator if vaccine is taken
incorrectly or mishandled.

f. Dispense vaccine with prescription label and provide client with
adequate insulation for safe transport (e.g., provide sufficient ice on
warm days to protect vaccine until client can get the vaccine into cold
storage).

g. Re-immunization is recommended every five years for persons under
conditions of repeated or continued exposure to *Salmonella* Typhi.1
6. Contraindications:

A. History or hypersensitivity to any component of the vaccine.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Excipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typhim Vi</td>
<td>Formaldehyde, phenol, polydimethylsiloxane, disodium phosphate, monosodium phosphate, sodium chloride.</td>
</tr>
<tr>
<td>Vivotif</td>
<td>Sucrose, ascorbic acid, amino acids, lactose, magnesium stearate, gelatin.</td>
</tr>
</tbody>
</table>

B. Vivotif:

a. Do not give during an acute febrile illness. Postpone vaccination if persistent diarrhea or vomiting is occurring.

b. Do not use during pregnancy.¹

c. Do not use in immunocompromised patients.¹

d. Oral typhoid vaccine should not be given to people taking antibacterial agents, as these may inactivate the vaccine. Vivotif should not be given until at least 3 days after the last dose of antimicrobial agent and, if possible, antimicrobial agents should not be started within 3 days of the last dose of Vivotif vaccine. A longer interval should be considered for long-acting antimicrobials (e.g., azithromycin).¹

e. Do not administer to children less than six years of age.²

7. Warnings and precautions:

A. Vivotif: The antimalarial agents mefloquine and chloroquine and the combinations atovaquone/proguanil and pyrimethamine/sulfadoxine can, at doses used for prophylaxis, be administered together with Vivotif; however, the manufacturer advises that other antimalarial agents only be administered ≥3 days after the last vaccine dose.²

When needed, administer higher doses of proguanil ≥10 days after the last dose of Vivotif.²

B. Typhim Vi:

a. Acute or febrile illness may be reason for delaying use of this vaccine except when, in the opinion of the physician, withholding the vaccine entails a greater risk.³

b. Vaccination of pregnant women should occur only if clearly needed.¹

c. Typhim Vi should not be used to treat a patient with typhoid fever or a documented carrier.³
8. Other considerations

A. **Pregnancy**: Typhim Vi may be used during pregnancy only when clearly indicated. The manufacturer of Typhim Vi recommends not vaccinating during the first trimester.³

B. **Breastfeeding**: Breastfeeding mothers should be vaccinated according to the recommended schedule. Administration of most live or inactivated vaccines does not affect breastfeeding, breast milk, or the process of lactation.⁵

9. Side effects and adverse reactions

<table>
<thead>
<tr>
<th>Adverse Event (Typhim Vi)³</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection site reactions (pain at the injection site, redness, swelling)</td>
<td>Up to 97%</td>
</tr>
<tr>
<td>Systemic reactions (malaise, nausea, diarrhea)</td>
<td>Up to 8%</td>
</tr>
<tr>
<td>Headache</td>
<td>Up to 16%</td>
</tr>
<tr>
<td>Fever</td>
<td>Up to 3%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Adverse Event (Vivotif)²</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>Up to 6.5%</td>
</tr>
<tr>
<td>Nausea, diarrhea, vomiting</td>
<td>Up to 6%</td>
</tr>
<tr>
<td>Fever</td>
<td>Up to 3.3%</td>
</tr>
</tbody>
</table>

10. Storage and handling

All clinics and pharmacies enrolled with the Vaccines for Children (VFC) Program must immediately report any storage and handling deviations to the Oregon Immunization Program at 800-980-9431.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Temp</th>
<th>Storage Issues</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typhim Vi³</td>
<td>2–8°C (36–46°F)</td>
<td>Do not freeze</td>
<td></td>
</tr>
<tr>
<td>Vivotif²</td>
<td>2–8°C (36–46°F)</td>
<td></td>
<td>Not stable when exposed to ambient temperatures. Expiration date is valid only if the cold chain has been maintained.</td>
</tr>
</tbody>
</table>

11. Adverse events reporting

Report adverse events online to the Vaccine Adverse Events Reporting System
(VAERS) at https://vaers.hhs.gov/reportevent.html.

VAERS Reporting Table:
https://vaers.hhs.gov/docs/VAERS_Table_of_Reportable_Events_Following_Vaccination.pdf

<table>
<thead>
<tr>
<th>Event and interval from vaccination</th>
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</thead>
<tbody>
<tr>
<td>N/A</td>
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</table>

A pharmacist who administers any vaccine must report the following elements to the OHA ALERT Immunization Information System in a manner prescribed by OHA within 15 days of administration. This replaces the former requirement to notify the primary health care provider. A pharmacist is not required to notify the primary health care provider. Oregon Administrative Rule 855-019-0290(2).

12. References


To request this material in an alternative format (e.g., Braille) or to clarify any part of the above order, contact the Oregon Health Authority Immunization Program at 0800-
980-9431 and 711 for TTY. For other questions, consult with the vaccine recipient’s primary health care provider or a consulting physician.

Electronic copy of this immunization protocol is available at: immunization protocol

Electronic copy of this pharmacy protocol is available at: pharmacy protocols