Protocol for Typhoid Vaccines
(Typhim Vi®, Vivotif®)

1. What's New

A. N/A

2. Immunization Protocol

A. Administer a 0.5-mL dose, IM, of Typhim Vi® vaccine to persons ≥7 years of age if indicated **OR**

B. Dispense Vivotif® vaccine to persons ≥7 years of age if indicated and provide manufacturer's instructions and review with patient: https://vivotif.com/downloads/VIVOTIF_CLING-Z.pdf.

C. Typhoid-containing vaccines can be given with all other ACIP-recommended vaccines.

3. Vaccine Schedule

Typhoid (Typhim Vi®)[1] Dose and Route – 0.5-mL, IM		
Dose	**Acceptable Age range**	**Minimum Acceptable Spacing**
1	≥ 7 years	
Booster		2 years since last dose

Typhoid (Vivotif®)[2] Dose and Route – 4 capsules, oral		
Dose	**Acceptable Age Range**	**Minimum Acceptable Spacing**
1	≥ 7 years	
2		48 hours
3		48 hours
4		48 hours
Booster	Entire series may be repeated every 5 years, if needed	

4. Licensed Vaccines

Product Name	**Vaccine Components**	**Presentation**	**FDA Approved Age Range**	**Thimerosal**
Typhim Vi®[1]	Salmonella Typhi Ty[2] strain: 25 mcg	Single-dose syringe, 0.5 mL Multi-dose vial, 20 Dose	≥2 years	None
Vivotif®[2]	Salmonella Typhi Ty21a: 2.0–10.0x10^9 colony-forming units Nonviable S. Typhi Ty21a: 5–50x10^9 bacterial cells	A single foil blister contains 4 doses of vaccine in a single package	≥6 years	N/A

5. Recommendations for Use

A. Immunization against typhoid fever[3] 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. Use of Typhim Vi®:[1]

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 S. Typhi.[1,3]
c. Immunization should occur at least two weeks prior to potential exposure to S. Typhi.[1]

C. Use of Vivotif®:[2]

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.[1]
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.[5]
d. Immunization (i.e., ingestion of all four doses) should be completed at least one week prior to potential exposure to S. Typhi.[1]
e. 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)
   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 S. Typhi.[1]

6. Contraindications

A. Severe allergic reaction (e.g., anaphylaxis) to a previous dose or to any vaccine component.[1-2]

Vaccine	Contains[7]
Typhim Vi®	Formaldehyde, phenol, polydimethylsiloxane, disodium phosphate, monosodium phosphate, sodium chloride.
Vivotif®	Sucrose, ascorbic acid, amino acids, lactose, magnesium stearate, gelatin.

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]

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.[3]
When needed, administer higher doses of proguanil ≥10 days after the last dose of Vivotif®.[3]

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.[1]
   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.[1]

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.[4]

C. 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.[4]

D. Typhoid vaccines will not protect against serotypes of *Salmonella* other than Typhi.[2,3]

9. Side Effects and Adverse Reactions

Typhim Vi®[1] Adverse Events	**Frequency**
Injection site reactions (pain at the injection site, redness, swelling)	Up to 97%
Systemic reactions (malaise, nausea, diarrhea)	Up to 8%
Headache	Up to 16%
Fever	Up to 3%
Vivotif®[2] Adverse Events	**Frequency**
Abdominal pain	Up to 6.5%
Nausea, diarrhea, vomiting	Up to 6%
Fever	Up to 3.3%

10. Storage and Handling

A. Store medications according to OAR 855-041-1036.

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Vaccine	Temp	Storage Issues	Notes
Typhim Vi®[3]	2°to 8°C (36˚F to 46˚F)	Do not freeze	Not stable when exposed to ambient temperatures. Manufacturer expiration date is valid only if the cold chain has been maintained.
Vivotif®[2]	2° to 8°C (36˚F to 46˚F)		

11. References

1. Typhoid Vi Polysaccharide Vaccine (Typhim Vi®) package insert 2020. Available at: www.fda.gov/media/75993/download. Accessed 13 April 2023.
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12. Appendix

A. N/A