

# Guideline

## Management Guideline for Non-typhoidal Salmonellosis in Children

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### Purpose

This guideline is to provide a standardised approach to the initial assessment and management of non-typhoidal salmonellosis in children.

### Scope

This guideline provides information for Children's Health Queensland staff caring for paediatric patients with suspected non-typhoidal salmonellosis infections.

### Related documents

#### Procedures, Guidelines, Protocols

- [CHQ-PROT-63105-1 Isolation table – Symptom / Disease Organism](#)
- [CHQ-PROC-01035 Antimicrobial: Restrictions](#)
- [CHQ Antimicrobial restrictions list](#)
- [CHQ-GDL-01067 Paediatric Bone and Joint Infection Management](#)

## Guideline

### Management guideline for Non-Typhoidal Salmonellosis (NTS) in children

#### *Salmonella sp. present in stool, no bacteraemia*

<b>Less than six (6) months of age</b>	Treat with seven (7) days of antibiotics (oral therapy reasonable if child well). <sup>a</sup> If febrile or unwell: <ul style="list-style-type: none"> <li>• A blood culture +/- Cerebrospinal fluid (CSF) is required.</li> <li>• Commence parenteral antibiotic therapy pending culture results.</li> </ul>
<b>More than six (6) months of age</b>	If well despite diarrhoea: observe. No treatment required. If unwell or febrile or localising signs present: <ul style="list-style-type: none"> <li>• Blood culture +/- CSF and consider empirical parenteral antibiotics particularly if less than 12 months of age.</li> <li>• If blood culture is negative at 48 hours and clinically well, switch to oral antibiotics to complete seven (7) days.</li> </ul>
<b>Prolonged carriage</b>	Repeated stool testing is not recommended. There is no evidence to support treatment of prolonged carriage.
<b>Persistent diarrhoea</b>	Consult Paediatric Infectious Diseases Specialist.

#### **Salmonella Bacteraemia (uncomplicated)<sup>b</sup>**

<b>Less than 3 months of age:</b>	Ten days parenteral antibiotics. CSF analysis in all cases.
<b>3 to 12 months of age:</b>	Seven days parenteral antibiotics. CSF analysis if clinically indicated.
<b>More than 12 months of age:</b>	Seven days antibiotics (sequential parenteral / oral therapy reasonable if child well).

#### **Complicated infection**

##### Meningitis

- Intravenous Cefotaxime or Ceftriaxone for 4 to 6 weeks.
- Consider repeat lumbar puncture after 48 to 72 hours of therapy to ensure CSF sterility.
- If persistent growth in CSF, **add** Ciprofloxacin (if susceptible) to Cefotaxime or Ceftriaxone for duration of therapy.

##### Osteomyelitis

- Four to six weeks antibiotics (the required parenteral duration is not established, suggest minimum 2 to 4 weeks parenteral antibiotics).

## Selection of antibiotics

Choice of antibiotics depends on antibiotic sensitivities of *Salmonella sp.*

Recommended parenteral empiric therapy while awaiting sensitivities is:

- Cefotaxime IV 50 mg/kg/dose (maximum 2 g/dose) 6-hourly.

or

- Ceftriaxone IV 100 mg/kg 24 hourly (maximum 4 g/day).

Recommended empiric oral therapy:

- Oral Azithromycin: 20 mg/kg (maximum 1 g) for first dose then 10 mg/kg (maximum 500 mg) once daily for further 6 days.

Alternative oral options:

- Oral Amoxicillin 30 mg/kg/dose (maximum 1 g/dose) three times daily.

or

- Oral Trimethoprim-sulfamethoxazole 4 mg/kg/dose (maximum 160 mg trimethoprim component per dose) twice daily.

Targeted antibiotic therapy is based on antibiotic susceptibilities of *Salmonella* species.

- There is very limited evidence to guide treatment recommendations for NTS gastroenteritis in young infants (less than six (6) months of age). Due to the increased risk for invasive disease and severe sequelae of invasive infection, we recommend treating all infants in this age group although risk of extra-intestinal dissemination needs to be balanced against the well-established risk of prolonged excretion.
- Current literature suggests 7 to 10 days of antibiotics is sufficient for most age groups. Due to the increased risk for complications following bacteraemia, it is recommended a CSF analysis is performed in all infants under three (3) months.
- Regular review of resistance patterns recommended to guide empiric antibiotic therapy. Recommended empirical oral therapy is Amoxicillin, Trimethoprim-sulfamethoxazole or Azithromycin. Azithromycin should be used particularly if there are concerns about resistance (e.g. returned travellers). Some caution is needed if using Trimethoprim-sulfamethoxazole in infants less than two (2) months (risk of kernicterus) and in using Azithromycin in infants less than one (1) month (risk of hypertrophic pyloric stenosis).
- Salmonella* is a notifiable disease. Contact [Public Health](#).

## Acknowledgement

Children's Health Queensland would like to acknowledge the contribution made by:

- Dr Sophie Wen (Paediatric Infectious Diseases Consultant, CHQ)
- Dr Clare Nourse (Paediatric Infectious Diseases Consultant, CHQ)

## Consultation

Key stakeholders who reviewed this version:

- Director, Infection Management and Prevention services, Immunology and Rheumatology (CHQ)
- Consultant Paediatricians, Infection Management and Prevention service (CHQ)
- Pharmacist Advanced - Antimicrobial Stewardship Pharmacist (CHQ)

## References and suggested reading

1. Therapeutic Guidelines: Antibiotics version 15 2014 Therapeutic Guidelines Ltd Australia.
2. Consensus: management of Salmonella infection in the first year of life PIDJ 1988;9:615-621.
3. The Red Book; 2012 Report of the Committee on Infectious Diseases. 29<sup>th</sup> Edition. American Academy of Pediatrics.
4. Zaidi et al, Non-typhi *Salmonella* bacteremia in children. PIDJ 1999;18:1073-77.
5. Price et al, Antibiotics for *Salmonella* meningitis in children. JAC 2000;46:653-5.
6. Wen SCH et al. Non-typhoidal Salmonella infections in children: Review of literature and recommendations for management. Journal of Pediatrics and Child Health. 2017; 53 (10): 936-941.

## Guideline revision and approval history

Version No.	Modified by	Amendments authorised by	Approved by
1.0	Infectious Diseases Consultant, Infection Management and Prevention services	Antimicrobial Stewardship Team	EDMS, Chair Medicines Advisory Committee
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<b>Accreditation references</b>	National Safety and Quality Health Service Standards (1-8) – <b>Standard 3:</b> Preventing and Controlling Healthcare-Associated Infection <b>Standard 4:</b> Medication Safety