

## SALMONELLOSIS

### Introduction

**Salmonellosis** is an acute enteritis and in its more severe manifestations is one of the causes of bacterial dysentery.

The majority of cases are sporadic, but outbreaks in institutions and child care centres and those associated with retail food premises are not uncommon.

Mortality is low, however it may be increased in the elderly and immunocompromised.

The emergence of strains resistant to single or multiple antibiotics is increasing worldwide.

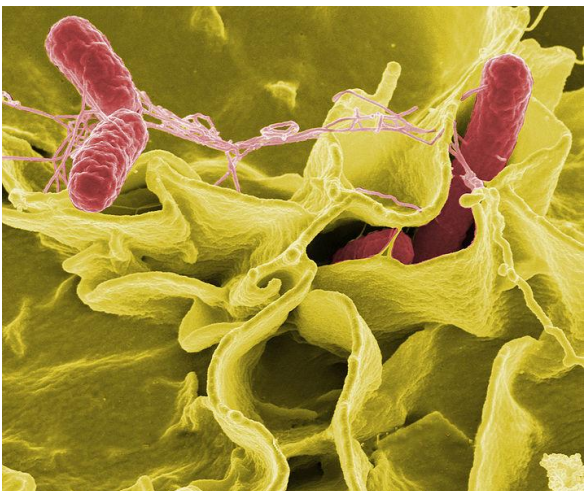
Antibiotic treatment is not usually necessary unless disease is severe

### Epidemiology

- Salmonella infection occurs worldwide and only a small proportion of cases are detected and reported.
- The incidence of infection is highest in infants and young children.
- Mortality is low however it may be increased in the elderly and immunocompromised people.

### Pathology

#### Organism



*Color-enhanced scanning electron micrograph showing Salmonella typhimurium (red) invading cultured human cells (Rocky Mountain Laboratories).*

- There are approximately 2000 known serotypes exist of Salmonella species, but only a very small number account for the majority of clinical infections.
- The most common serovar to cause clinical illness is **S. typhimurium**.

### Transmission

Transmission is via person to person or animal to person spread via the faecal-oral route.

Ingestion of the organisms via contaminated or improperly cooked foods also occurs particularly with:

- Raw and undercooked eggs and egg products
- Raw milk and raw milk products
- Poultry and poultry products
- Raw red meats
- Unwashed salads, fruits and vegetables, grains, seeds and nuts
- Some shellfish and filter feeders such as oysters

### Incubation Period

- The incubation period is usually 6 - 72 hours with an average of 12 - 36 hours.

### Reservoir

- Domestic and wild animals including poultry and reptiles.
- Human cases and convalescent carriers including mild and unrecognised cases can also act as reservoirs.

### Period of Communicability

- Salmonellosis is communicable through the course of infection, usually several days to several weeks.
- One per cent of infected adults and five per cent of children under the age of five years excrete the organism for more than one year.
- Antibiotics given in the acute illness can prolong the carrier state.

### Susceptibility and Resistance

- Susceptibility may be increased by:

- ♥ Immunosuppression (in particular HIV)
- ♥ Prior or concurrent broad-spectrum antibiotic therapy
- ♥ Gastrointestinal surgery/ antacid use/ achlorhydria
- ♥ Malnutrition.
- Severity of the disease varies with:
  - ♥ The serotype
  - ♥ The numbers of organisms ingested
  - ♥ The vehicle of transmission
  - ♥ Host factors.

### Clinical Features

Salmonellosis can present as an acute enteritis with:

1. Fever
2. GIT upset:
  - Nausea
  - Vomiting
  - Abdominal pain
  - Diarrhoea:
    - ♥ Including bloody diarrhoea (dysentery) in more severe cases.
3. Non-specific constitutional symptoms:
  - Anorexia
  - Headache
  - Myalgias

Symptoms usually last three to five days.

In the immunosuppressed more severe disease may be seen including:

4. An invasive dysentery, with significant fluid loss and dehydration, especially among infants and the elderly.
5. Septicaemia
6. Dissemination:

Occasionally infection may be seeded to other body tissues, resulting in:

- Endocarditis
- Pneumonia
- Septic arthritis
- Cholecystitis

#### Differential diagnosis:

The main differential diagnoses will include other causes of invasive dysenteries; these include:

- Salmonella
- Shigella
- Entamoeba histolytica
- E. Coli (some strains)
- Yersinia enterocolitica
- Campylobacter jejuni

#### Investigations

##### Blood tests:

- FBE
- CRP
- U&Es/ glucose
- Blood cultures

##### Microscopy and culture

Infection is confirmed by isolation of Salmonella species from faeces (or blood).

## Management

Prevention is dependent on good personal and food hygiene.

For established disease:

1. Supportive care:

- Such as IV fluid resuscitation and electrolyte replacement is given, as for any dysentery.

2. Antibiotics:

Antibiotic treatment of mild *Salmonella* enteritis is not required as it is usually not clinically beneficial and may prolong the excretion of pathogenic organisms.

Antibiotics are not indicated for the asymptomatic short-term carrier state.

Antibiotic therapy is indicated in:

- Infants/ elderly
- Patients with severe illness, e.g: septicaemic, fever, dysentery, significant dehydration.
- Patients with prosthetic vascular grafts.
- The immunosuppressed

*Oral therapy options include:*

- **Azithromycin**

*Or*

- **Ciprofloxacin**

*IV therapy options include:*

- **Ceftriaxone**

*Or*

- **Ciprofloxacin**

**See latest Antibiotic Therapeutic Guidelines for full prescribing details.**

3. Contact precautions:

- Standard and contact precautions should be used as for any case of gastroenteritis in line with local policies.
- Food handlers, healthcare workers and childcare workers in particular must stay away from work until 48 hours after the last symptom has ended.

### School Exclusion:

Exclude cases from child care and school until there has not been a loose bowel motion for 24 hours.

### Notification:

Salmonellosis (Group B disease) must be notified in writing within five days of diagnosis.

Laboratories are required to notify Salmonella species isolated from food or detected in drinking water.

### References

1. The Blue Book, Website May 2013.
2. Gastrointestinal Therapeutic Guidelines, 5<sup>th</sup> ed 2011.

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