



ALBION STREET CENTRE  
INFECTION PREVENTION & CONTROL UNIT

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## **RESOURCE PACKAGE NUMBER 22**

# **SHIGELLA**

### **HISTORICAL OVERVIEW**

Shigellosis, or bacillary dysentery, is a severe form of diarrhoea caused by a group of gram-negative, nonmotile, nonsporeforming rod-shaped bacteria of the genus *Shigella*. *Shigella* is most commonly referred to as a facultative aerobe because laboratories grow the bacteria in aerobic media. This species was named after the Japanese microbiologist Kiyoshi Shiga.

Medical writings since the beginning of recorded history have dealt with the problems of dysentery in civilian and military populations. Nearly every long campaign and extended siege has produced epidemics of bacillary dysentery, particularly when sanitary and food sources could not be adequately controlled. During the Crimean War, the American Civil War, the Franco-Prussian War and the Chino-Japanese War, a heavier toll was ascribed to bacillary dysentery than to war-related injuries.

### **RECENT DEVELOPMENTS**

There are four species of pathogenic *Shigella*: *S. sonnei*, *S. flexneri*, *S. boydii* and *S. dysenteriae*. These bacteria are residents only of the intestinal tract of humans, apes and monkeys. *S. dysenteriae* sometimes called Shiga bacillus is often associated with serious disease and severe complications.

Faecal-oral spread is the major mode of transmission. In Australia 700 cases of shigellosis are notified annually.

*Shigella* produce exotoxins that kill cells. The bacteria proliferate to immense numbers in the small intestine, but the damage they cause is to the large intestine. There they produce tissue destruction in the intestinal mucosa, causing

severe diarrhoea with blood and mucous in the stools. Infected people may have as many as 20 bowel movements in a day. The ulceration in the intestinal mucosa eventually heal but form scar tissue. Additional symptoms of infection are abdominal cramps and fever which may result in hospitalisation and prolonged duration of illness.

Worldwide, it is estimated that shigellosis causes about 600,000 deaths per year. Two thirds of the cases, and most of the deaths, are in children under 10 years of age. Secondary attack rates in households can be as high as 40%.

Outbreaks commonly occur in sexually active gay men in Australia. In the year 2000, an inner-city laboratory reported 148 cases of *S. sonnei* in homosexual men. Outbreaks can occur under conditions of crowding and where personal hygiene is poor, such as in jails, institutions for children, day care centres and crowded refugee camps. Shigellosis is endemic in both tropical and temperate climates.

**MODES OF TRANSMISSION** - by direct or indirect faecal oral transmission from a symptomatic patient or a short-term asymptomatic carrier. Individuals primarily responsible for transmission are those who fail to clean hands and under fingernails thoroughly after defecation. They may then spread infection to others directly by physical contact or indirectly by contaminating food.

**INCUBATION PERIOD** - Usually 1-3 days which may range from 12-96 hours and up to 1 week for *S. dysenteriae*.

**COMMUNICABILITY** - During acute infection and until the infectious agent is no longer present in faeces, usually within 4 weeks after illness. Appropriate antimicrobial treatment usually reduces duration of carriage to a few days.

## **PREVENTATIVE MEASURES**

Educate the general public regarding the importance of hand washing. Provision of suitable hand washing facilities, this is particularly important for food handlers and persons involved in the care of patients and children.

Disposal of human faeces in a sanitary manner and maintain fly proof latrines. Stress use of sufficient toilet paper to minimise finger contamination. Under field conditions, dispose of faeces by burial at a site distant and downstream from the source drinking water.

Provide safe water and sewerage systems and while travelling or in the field, treat water chemically or by boiling.

Use scrupulous cleanliness in food preparation and handling. Particular attention should be directed to the correct storage of salads and other foods served cold.

These requirements apply equally to home and public eating places. If uncertain, about sanitary practices, foods that are cooked and served hot and fruit that can be peeled by the consumer should be selected.

Although antibiotic therapy may not be necessary to relieve the symptoms of mild shigellosis, it is recommended in all cases for public health reasons as this organism causes infection with a very low inoculum. Antibiotic therapy is indicated in moderate and severe shigella dysentery, to relieve symptoms and to eradicate the organism.

Persons infected with shigella must not be involved in the preparation of food or the care of children or patients until there have been 2 successive faecal specimens or rectal swabs (collected 24 hours or more apart, but no sooner than 48 hours following cessation of antimicrobials) found to be free of shigella.

The antibiotics of choice are: Norfloxacin, Trimethoprim and Ampicillin.

**STANDARD PRECAUTIONS** - should be practiced at all times.

**CONTACT PRECAUTIONS** - should be implemented if a patient is suspected of having shigella. The patient should have dedicated bathroom facilities and be nursed in a single room or cohort with patients with like condition.

**NOTIFICATION TO THE PUBLIC HEALTH UNIT** - Shigella is a notifiable disease to the Public Health Unit.

## REFERENCES

Heymann, D. (ed) 2004, Control Of Communicable Diseases Manual. 18th edn, American Public Health Association, Washington.

NSW Health Department 2007, Infection Control Policy, PD2005\_247, AIDS/ Infectious Diseases Unit, Sydney.

NSW Health Department 2006, Notification of Infectious Diseases Under the Public Health Act 1991, PD2006\_014, Communicable Diseases Branch Sydney.

O'Sullivan, B. Delpech, V. et al. 2002, Shigellosis Linked to Sex Venues. Emerging Infectious Diseases, Vol 8, No 8, pp 862-864, Atlanta, USA.

2003 Therapeutic Guidelines: Antibiotic. 12<sup>th</sup> version, Therapeutic Guidelines Limited, North Melbourne, Victoria.

Wilson, W.R. Sande, M. Current Diagnosis & Treatment in Infectious Diseases. 2001, Lange Medical Books/McGraw Hill Medical Publishing Division, New York.

## WEB SITES

[www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis\\_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm)  
[www.ohioline.osu.edu/hyg-fact](http://www.ohioline.osu.edu/hyg-fact)  
[www.amm.co.uk/pubs/fa\\_shigella.htm](http://www.amm.co.uk/pubs/fa_shigella.htm)

## SUGGESTED VIDEOS – AVAILABLE THROUGH THE IPCU

- **#1.1 Food Poisoning the Choice is Yours (24 minutes)**
- **# 5 The Importance of Food Safety (17 minutes)**
- **# 46 Hands First-Johnson & Johnson (12 minutes)**