

Typhoid Fever on Dominica

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Prevalence of Typhoid Fever on the Island of Dominica

Due to a combination of high risk factors, typhoid fever was once a major concern on the island of Dominica. Its lack of development with poor sanitation and hygiene, in addition to the tropical climate, led to one epidemic after another. In fact, up until 1985, Dominica led with the most known cases of typhoid fever in the world. New procedures have been implemented however to identify carriers, and also to educate people, in order to control typhoid fever.

Typhoid fever, is caused by the bacteria *Salmonella typhi*. It is an infectious disease found only in humans. It can be spread by contaminated food, soil, and water and also by flies. Food becomes contaminated when it comes in contact with urine and or excrements from an infected individual. The major source of food contamination is from food handlers, whether in the home or in restaurants, who pass the germ along to the food and then on to others. Individuals who defecate or urinate on the ground also pose a threat because they contaminate

the soil. Rain washes the bacteria down to the river (or to some other water source) causing an outbreak in a town. Flies may also serve as a means of transmission for the typhoid bacteria. When flies land in or swallow the germ, they have the potential to later deposit them on food.

Typhoid fever may appear 2-3 weeks after exposure to the bacteria and last an additional 1-2 weeks, possibly longer depending on the individual. Typhoid fever is characterized by a continued fever, rising in a steplike curve for the first week. A multitude of symptoms can be experienced in addition to the high fever. Symptoms may include: chills, cough, headache, constipation and/or diarrhea, sore throat, skin rash (rose spots), abdominal pain, enlargement of the spleen, slowness of heartbeat, delirium, reduction in the number of leukocytes, intestinal hemorrhaging, and perforation of the bowels.

Individuals are diagnosed by culturing the causative organism *Salmella typhi* from the urine, feces or blood. The antibiotics: Ciprofoxacin, Ampicillin, and Chloramphenicol have proven effective in the treatment of typhoid fever. If a patient has experienced severe diarrhea then fluid replacement may also be necessary. Only about 3% of the cases.

To determine what methods have been employed in order to control typhoid fever in Dominica, I interviewed R.A.J. Fortune, the epidemiologist on the island. The interview went as follows:

Question: What areas of Dominica had the greatest number of cases of typhoid fever?

Answer: Three major health districts were responsible for 80% of all the cases. They were Marigot, Portsmouth, and Grand Bay. Our initial attempts to control typhoid fever began in these three areas.

Question: How often does one water source contaminate another causing an outbreak in several neighboring villages whose water sources connect?

Answer: The source of epidemic in 1983 was a river. An individual on higher ground contaminated the river and it washed down to the lower parts of the island causing many people to become infected. However, this does not happen very often. It is more common for the spread of typhoid fever to be caused by food handlers.

Question: What steps have been taken to decrease the number of cases of typhoid fever in Dominica?

Answer: The introduction of a way to identify carries, in particularly asymptomatic ones, made the difference. This resulted in a major decline in the typhoid fever cases as can be seen from 1983 to 1986. (see figure 1) In addition, efforts have been made to educate the public. Vector control operators go out into the villages and into schools, holding presentations to teach individuals about sanitation and proper food handling procedures.

Question: What is the criteria for identifying a carrier?

Answer: The first step is to do a blanket blood screening. We use a Vi Haemagglutination test for detecting Vi antibodies in the blood. Those individuals with a titre of greater than or equal to 1:160 in blood are subjected to stool test. Six different stool samples are taken in order to isolate the bacteria responsible for typhoid fever. This process is 90% accurate in identifying individuals with typhoid fever.

Question: What should someone do if they have typhoid fever?

Answer: They should do the following:

- Report to a nurse or doctor in the area immediately to have stool, urine, and blood tests.
- Drink plenty of fluids: soup or fruit juice.
- Stay in bed until the fever is completely gone.
- Take all medicines as instructed.
- Wash hands before eating and after using the latrine/toilet.
- Individuals with typhoid fever should stay in a separate room.
- No one should eat or drink from the cups and dishes of the sick person.
- All clothing, dishes, cups etc...of the sick person should be washed separately from those of other members of the household.

Question: What should someone do if they have typhoid fever in their area?

Answer: They should do the following:

- Boil all drinking water.
- Make sure all food is stored correctly and away from flies.

- Buy foods and drinks from approved food handlers who maintain a high standard of personal hygiene.
- Keep their surroundings clean.
- Practice proper hygiene.
- Individuals without a latrine or toilet should bury their feces and urine in a deep hole.

Question: I observed in the Typhoid Register of Dominica that initially (starting in 1965) the male to female ratio was about one to one, then it changed (in 1977) to a higher number of infected females than males on average. What caused this change?

Answer: We are not exactly sure, but we do know that no one gender is more susceptible than the other.

Question: What age group is the most affected by typhoid fever?

Answer: We see the most infections in ages 1 to 21 years old.

Question: Has anyone ever died from typhoid fever in Dominica?

Answer: To my knowledge, there have been no deaths from typhoid fever since 1975. There are a few cases where the same person will become infected two times, but this does not happen very often.

Question: Are there any issues dealing with typhoid fever which have yet to be addressed?

Answer: Due to a lack of personnel, we are unable to keep all infected individuals from entering the island through the ports. Checks are done only once or twice a week. There needs to be a permanent port health presence to prevent typhoid fever and other diseases from entering the island.

Typhoid fever is on the decline in Dominica due to the diligence of the Environmental Health Agency working alongside with the Center for Disease Control. The three major areas of concern on Dominica are now relatively free of typhoid fever, as is the rest of the island.

Sources

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Salmonella typhi Isolates per 100,000 in Dominica

