TYPHOID FEVER: Notes about the Disease

The causative organism for typhoid fever has long been known as *Salmonella typhi*. However, modern taxonomists classify the typhoid bacillus as *Salmonella enterica* subspecies *enterica* serovar Typhi, or *Salmonella* Typhi for short. Full acceptance of this new name may be a long time coming.

Although classified with the *Salmonella*, it differs in two important ways from the "non-typhoidal" *Salmonella*:

- *S. typhi* naturally colonizes and infects only humans, not the variety of wild and domestic animals that can harbor other *Salmonellae.*

- Typhoid is generally a significantly more severe disease clinically than most other salmonellosis. However, mild and inapparent infections with *S. typhi* do occur.

Parenthetically, paratyphoid fever (which is rare in the United States) clinically resembles typhoid and is thus usually lumped with typhoid in disease classifications. There are three distinct *Salmonella* serovars that can cause paratyphoid, and they are usually (but not exclusively) human microorganisms.

Typhoid is a much less common disease in North Carolina than it was a century ago, and—despite the availability of typhoid vaccines for much of this time—it cannot be considered a disease brought under public health control by immunization. First, the older typhoid vaccines were poorly immunogenic but quite reactogenic, and public acceptance accordingly lagged. Far more important in reducing typhoid morbidity rates were the vast improvements in sanitation and hygiene of the early 20th century. Unfortunately, because of the different epidemiology of non-typhoidal salmonellosis, control of those infections has not been nearly as effective.

Nowadays, only a handful of typhoid cases are reported annually in NC, and the majority of these occur in foreign travelers or recent immigrants from countries where typhoid is still endemic. Thus, perhaps the most important practical aspect of preventing typhoid in NC is educating our citizenry about the risk associated with international travel and how to keep from acquiring the disease. Aside from the usual admonitions about avoiding transmission of fecal-oral agents through personal hygiene, familiarity with the two currently available typhoid vaccines should be acquired.[1]

Infection with *S. typhi* can occur directly or indirectly (e.g., via contaminated food or water) from someone acutely infected with the organism or from a **typhoid carrier**. A chronic typhoid carrier is arbitrarily defined as someone who continues to excrete *S. typhi* in his or her stool or urine over six months after acquiring infection. Fortunately, only a small percentage (<5%) of infected individuals become chronic carriers; the most common risk factor here is gallbladder disease.

The typhoid carrier state is reportable in NC. Public health has had an interest in identifying typhoid carriers ever since the somewhat infamous "Typhoid Mary" (Mary Mallon, a cook) managed to transmit typhoid to 47 people (with three fatalities) in New York during the early 1900s. In this era of threatened bioterrorism and pandemic influenza, when civil liberties could come into conflict with public health's quarantine and isolation authority, it may be well to learn from the mistakes made by public health authorities when they dealt with Mary Mallon.[2]

1. "Typhoid Vaccine: What You Need to Know," *Vaccine Information Statements, Centers for Disease Control and Prevention*, 2004, www.cdc.gov/nip/publications/VIS/vis-typhoid.pdf.
2. Judith Walzer Leavitt, "Typhoid Mary: Villain or Victim?" *The Most Dangerous Woman in America, NOVA*, 2004. www.pbs.org/wgbh/nova/typhoid/.