

Please read this bit first

The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a “Journal Club” activity. This means that you must record those attending for CEU purposes. Thistle will **not** issue a certificate to cover these activities, nor send out “correct” answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT00025**.

Each attendee should claim **THREE** CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

Cycle 21 Organism 8:

Salmonella species – not S. typhi

Salmonella is a genus of the family Enterobacteriaceae. Two species are currently recognized in the genus *Salmonella*, *Salmonella enterica* and *Salmonella bongori*. *Salmonella enterica* is further divided into 6 subspecies that are designated by names or Roman numerals. The Roman numerals are simpler and more commonly used. Subspecies 111a and 111b were historically considered a separate genus, *Arizonae*, and are still sometimes referred to by this name¹.

Salmonella enterica subspecies

1	<i>enterica</i>
11	<i>salamae</i>
111a	<i>arizonae</i>
111b	<i>diarizonae</i>
1V	<i>houtenae</i>
V1	<i>indica</i>

Salmonella bongori was originally designated *S. enterica* subspecies V. It has since been determined to be a separate species of *Salmonella*.

Subspecies 1 strains are usually isolated from humans and warm-blooded animals (*S. enterica* subspecies *enterica*). Subspecies 11, 111a, 111b, 1V, and V1 strains and *S. bongori* are usually isolated from cold-blooded animals and the environment (rarely from humans).

The World Health Organization (WHO) Collaborating Centre for Reference and Research on *Salmonella*, designates serotypes (serovars) belonging to *S. enterica* subsp. *enterica* (subspecies 1) with a name which is related to the geographical place where the serotype was first isolated. The serotype name is written in roman (not italicized) letters, and the first letter is a capital letter (e.g., *Salmonella* serotype [ser.] Typhimurium or *Salmonella* Typhimurium). All *Salmonella* serotypes can thus be designated by a formula that consists of: the subspecies, O antigen, Phase 1 H antigen, Phase 2 H antigen and name².

Examples

1 4, 5, 12: i: 1, 2 (*S. Typhimurium*) – Group B

1 9, 12: g, m: - (*S. Enteritidis*) – Group D

Currently, there are 2501 *Salmonella* serotypes. Most of these serotypes, including *Salmonella* serotype Typhi, belong to subspecies 1, and are found in O groups A, B, C₁, C₂, D, and E. The two most commonly isolated serotypes are *Salmonella* serotypes Typhimurium and Enteritidis².

Strains of nontyphoidal *Salmonella* usually cause an intestinal infection that often lasts 1 week or longer. Less commonly, nontyphoidal *Salmonella* can cause local infections, (e.g. osteomyelitis or urinary infections) or bacteraemia³.

References

1. Reeves MW, *et al.* 1989. Clonal nature of *Salmonella typhi* and its genetic relatedness to other salmonellae as shown by multilocus enzyme electrophoresis and proposal of *Salmonella bongori comb. Nov.* J Clin Microbiol. 27: 313-320.
2. Popoff MY. *et al.* 2001. Supplement 2000 (no. 44) to the Kauffman-White scheme. *Res Microbiol.* 152: 907-909.
3. Hohmann EL. 2001. Nontyphoidal salmonellosis. *Clin Infect Dis.* 32: 263-269.

Questions

1. How would you isolate and biochemically identify a *Salmonella* species?
2. Describe how you would serotype a *Salmonella* isolate to the species?
3. What infections are caused by nontyphoidal *Salmonella* species?