

|   | SALMONELLA  | SHIGELLA  |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
|---|---|---|---|---|--|----------------------|--|----------------------------|----------------------|---|---------------------------|---------------------|---|-------------------------|
| <b>Epidemiology</b>   | S typh india, south America, Africa<br>Non-typh worldwide<br>approximately 10 <sup>6</sup> bacteria<br>200,000 death  | Low infective dose < 200 bacilli  |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Microbiology</b>   | Gram negative facultative anaerobic bacilli<br>Non lactose fermenting colonies, nitrate positive but oxidase negative<br>Motile   | Gram negative facultative anaerobic bacilli<br>Non lactose fermenting colonies<br>Non-motile  |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Source</b>   | <i>Salmonella typhi</i> and <i>S. paratyphi</i> the source is human<br>Salmonella Non-Typhi → Cold blooded animal, birds, rodents, turtles, snake and fish  | Human is the only reservoir<br>fecal –oral route ,Flies, fingers,Food and water, Young children in daycare, people in crowded area and anal oral sex in developed countries   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Classification</b>   | <b>Two species</b><br>1-S.enterica (six subspecies I, II, III, IV, V, VI) >2500 serotype<br>2-S.borgori (rare)  | S.sonnei<br>S.flexneri<br>S.dysenteriae and S. boydii   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Virulence</b>  | <table border="1"> <tr> <td>S.Typhi</td> <td>Salmonella non-typhi</td> </tr> <tr> <td>Vi (virulence)</td> <td>K. capsular antigen</td> </tr> <tr> <td>H. Flagellar antigen</td> <td>H. Flagellar antigen</td> </tr> <tr> <td>O. somatic antigen LPS, HS</td> <td>O. somatic antigen (</td> </tr> </table>   | S.Typhi   | Salmonella non-typhi  | Vi (virulence)  | K. capsular antigen  | H. Flagellar antigen | H. Flagellar antigen   | O. somatic antigen LPS, HS | O. somatic antigen ( | <table border="1"> <tr> <td>Shigella (T3SS cytotoxic)</td> </tr> <tr> <td>K. capsular antigen</td> </tr> <tr> <td><b>NO H Flagellar antigen(non-motile)</b></td> </tr> <tr> <td>O. somatic antigen (HL)</td> </tr> </table> | Shigella (T3SS cytotoxic) | K. capsular antigen | <b>NO H Flagellar antigen(non-motile)</b> | O. somatic antigen (HL) |
| S.Typhi   | Salmonella non-typhi  |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| Vi (virulence)  | K. capsular antigen   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| H. Flagellar antigen  | H. Flagellar antigen  |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| O. somatic antigen LPS, HS  | O. somatic antigen (  |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| Shigella (T3SS cytotoxic)   |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| K. capsular antigen   |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>NO H Flagellar antigen(non-motile)</b>   |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| O. somatic antigen (HL)   |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Pathogenesis</b>   | Fimbria - Adherence<br>Enterotoxin  | Penetrate epithelial cells leads to local inflammation, shedding of intestinal lining and ulcer formation   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Clinical</b>   | <table border="1"> <tr> <td><b>Gastroenteritis</b><br/><b>S. enterica subsp. enterica</b><br/>IP 12 – 48 hrs.<br/>fever, chills, watery diarrhea and abd pain<br/>8% bacteremia<br/>In sickle cell, HIV(10-100X) hemolytic disorder and ulcerative colitis<br/>Graft, elderly or very young<br/>Treatment not indicated unless above</td> <td><b>Typhoid Fever</b><br/><b>Salmonella typhi and S. paratyphi A,B and C</b><br/>IP : 9 – 14 days.<br/>Prolong fever, bacteremia and dissemination.<br/>1<sup>st</sup> wk Constipation,<br/>Mesenteric lymph node → blood other organs ie liver (monocytes)<br/>-faint salmon-colored maculopapular skin lesions<br/>2-3 wks prolonged fever, payer's patches and gallbladder → Diarrhea</td> </tr> </table> | <b>Gastroenteritis</b><br><b>S. enterica subsp. enterica</b><br>IP 12 – 48 hrs.<br>fever, chills, watery diarrhea and abd pain<br>8% bacteremia<br>In sickle cell, HIV(10-100X) hemolytic disorder and ulcerative colitis<br>Graft, elderly or very young<br>Treatment not indicated unless above | <b>Typhoid Fever</b><br><b>Salmonella typhi and S. paratyphi A,B and C</b><br>IP : 9 – 14 days.<br>Prolong fever, bacteremia and dissemination.<br>1 <sup>st</sup> wk Constipation,<br>Mesenteric lymph node → blood other organs ie liver (monocytes)<br>-faint salmon-colored maculopapular skin lesions<br>2-3 wks prolonged fever, payer's patches and gallbladder → Diarrhea | <table border="1"> <tr> <td>S.sonnei (US)<br/>S.flexneri (second)<br/>S. dysenteriae T 1 and S. boydii</td> </tr> <tr> <td>IP 1-3 days</td> </tr> <tr> <td>High fever, chill, abdominal cramp and pain accompanied by tenesmus of bloody stool with mucus &amp; WBC</td> </tr> </table> | S.sonnei (US)<br>S.flexneri (second)<br>S. dysenteriae T 1 and S. boydii | IP 1-3 days          | High fever, chill, abdominal cramp and pain accompanied by tenesmus of bloody stool with mucus & WBC |                            |                      |   |                           |                     |   |                         |
| <b>Gastroenteritis</b><br><b>S. enterica subsp. enterica</b><br>IP 12 – 48 hrs.<br>fever, chills, watery diarrhea and abd pain<br>8% bacteremia<br>In sickle cell, HIV(10-100X) hemolytic disorder and ulcerative colitis<br>Graft, elderly or very young<br>Treatment not indicated unless above | <b>Typhoid Fever</b><br><b>Salmonella typhi and S. paratyphi A,B and C</b><br>IP : 9 – 14 days.<br>Prolong fever, bacteremia and dissemination.<br>1 <sup>st</sup> wk Constipation,<br>Mesenteric lymph node → blood other organs ie liver (monocytes)<br>-faint salmon-colored maculopapular skin lesions<br>2-3 wks prolonged fever, payer's patches and gallbladder → Diarrhea   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| S.sonnei (US)<br>S.flexneri (second)<br>S. dysenteriae T 1 and S. boydii  |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| IP 1-3 days   |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| High fever, chill, abdominal cramp and pain accompanied by tenesmus of bloody stool with mucus & WBC  |   |   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Complication</b>   | Necrotizing cholecystitis<br>Bowel hemorrhage and perforation<br>Pneumonia and thrombophlebitis<br>Meningitis, osteomyelitis, endocarditis and abscesses<br>Chronic carrier 4-5wks child (0.4%) 50% up to 6 mos (G) .<br>3mons carrier and 4% chronic (TF)  | Can lead to rectal prolapsed in children<br>Complication ileus, obstruction dilatation and toxic mega colon<br>Bacteremia in 4 % of severely ill patient<br>Seizures, HUS   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |
| <b>Diagnosis</b>  | Culture on selective selenite enrichment broth media MAC, SS and XLD,HEA BS Serogrouping<br>Sensitivity<br>Blood culture  | Culture on selective media sam as salmonella<br>Serotyping<br>Sensitivity   |   |   |  |                      |  |                            |                      |   |                           |                     |   |                         |

|                   |   |   |
|-------------------|---|---|
| <b>Treatment</b>  | Ampicillin, Trimethoprim – Sulfamethoxazole<br>Ceftriaxone, Ciprofloxacin or Azithromycin | Ampicillin, Trimethoprim –<br>Sulfamethoxazole, Ceftriaxone,<br>Ciprofloxacin |
| <b>Prevention</b> | For S.typhi killed and live attenuated, 1 wk before<br>travel to endemic area             | Improve food process and water<br>treatment and sanitation                    |