THE PATHCARE NEWS

GASTRO-INTESTINAL PATHOGEN STATISTICS

Laboratory-based data for all GIT molecular panels requested for patients at PathCare laboratories nationally for January to April 2025, are presented in this report.

The major pathogens detected from stool samples of patients investigated for diarrhoeal disease are represented graphically. These include viral, bacterial and parasitic agents.

We have also included a summary on one of the commonly isolated infections in the warmer months – Shigellosis.

Bacteria

It is important to note that the current diagnostic multiplex panels cannot distinguish *Shigella* species from Enteroinvasive *E. coli* (EIEC) or typhoidal *Salmonella* from non-typhoidal *Salmonella*.

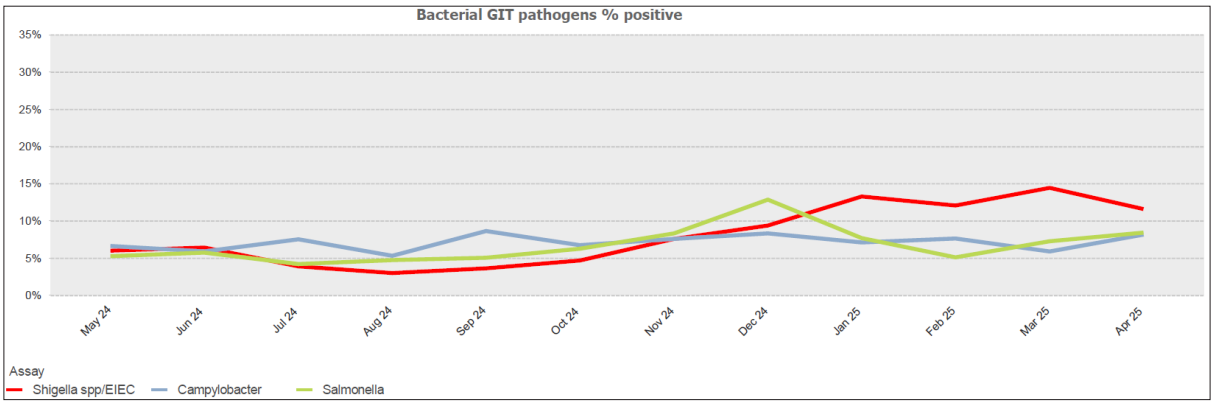
Salmonella enterica serovar Typhi (Salmonella Typhi) causes a systemic disease called typhoid fever and may go undetected in stool samples, especially as diarrhea is not a hallmark of the disease. Blood culture remain the gold standard for the diagnostic detection of Salmonella Typhi and the *Salmonella* species detected by the stool panels can be assumed to be non-typhoidal serovars.

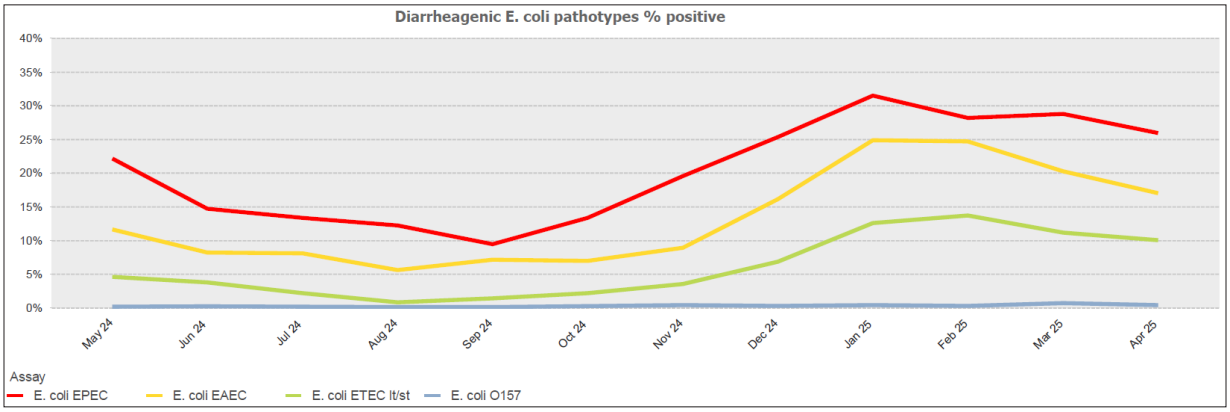
The increased detection of *Salmonella* species as well as *Shigella*/EIEC that was noted to begin during the early summer of 2025 was sustained throughout most of that season. However, *Shigella*/EIEC detection rates overtook that of Salmonella and peaked at a level of 14% in March when the Salmonella detection rate was 7%.

Consistent with previous months, *Campylobacter* species detection rates remained steady at between 5 and 10% with no seasonal peak noted.

As anticipated in our previous report, the upward trend in detection of other *E. coli* pathotypes continued into the summer months with maximum detection rates for these pathogens occuring in January and February. Enteropathogenic *E. coli* (EPEC) remained the most prevalent pathotype detected with a maximum rate of 28% followed by Enteroaggregative *E. coli* (EAEC) at 25% and Enterotoxigenic *E. coli* (ETEC) at 14%.

E. coli O157, the agent most commonly known for causing haemolytic uraemic syndrome (HUS) was only detected sporadically (single digits/per month). The value of detecting this pathogen is in avoiding antibiotic use, as empiric treatment of diarrhoeal disease caused by *E. coli* O157 with antibiotics is known to precipitate or worsen HUS.

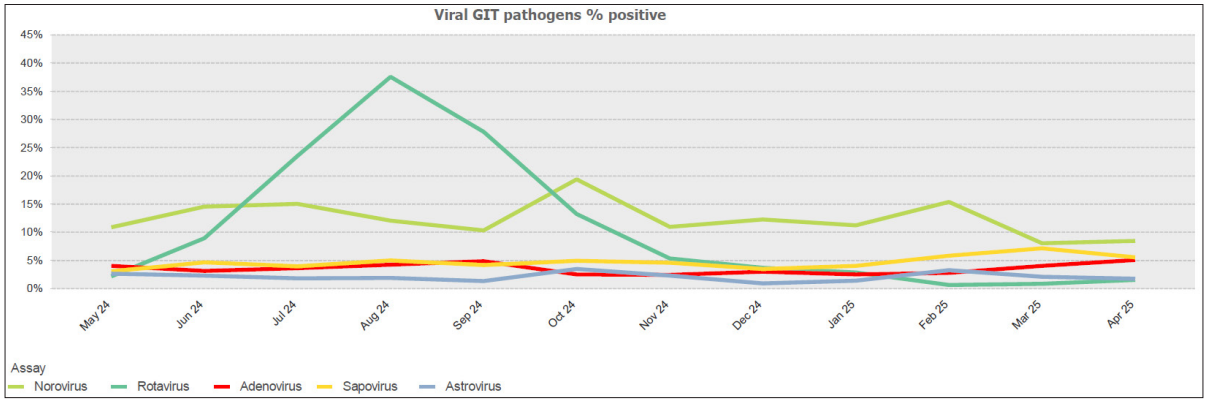




Viruses

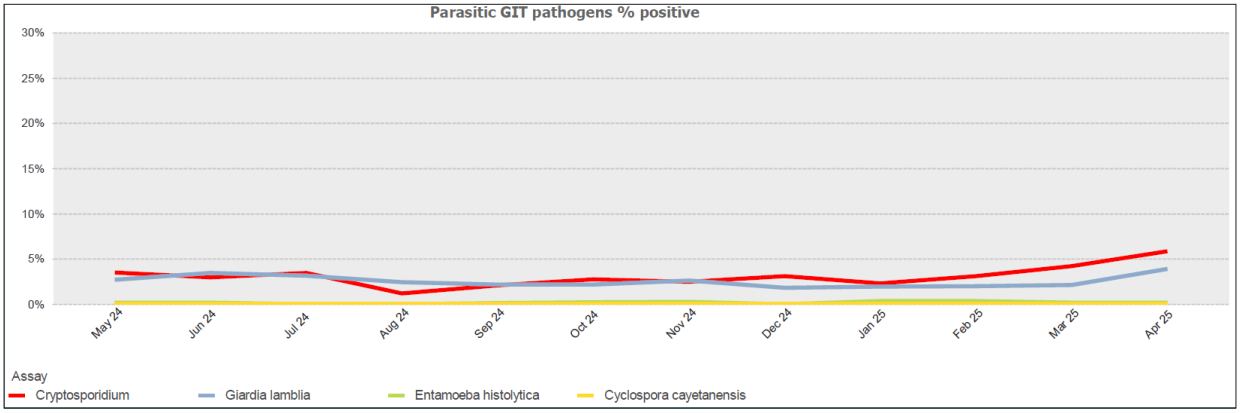
Rotavirus detection throughout the summer remained low (below 5%) but is expected to increase with the onset of the colder winter months. It should be noted that a recently vaccinated infant may shed the virus for a number of weeks after vaccination and this shedding could cause a positive PCR in the absence of infection.

Norovirus did show a similar detection peak compared to the previous quarter, although not as significant with a maximum detection of 16% in February compared to 20% in October last year.



Parasites

Parasitic detection rates showed a modest increase compared to the last quarter of 2024 although overall detection rates remained low. *Cryptosporidium* species continues to be the most commonly detected parasite followed by *Giardia lamblia*, which showed a moderate increase in maximum detection rate from 3,1% in the last term of 2024 to 5,8% in April this year.



Shigellosis

Shigellae are a group of Gram-negative bacteria that cause a highly contagious diarrhoeal disease called Shigellosis. *Shigella* bacteria are extremely acid-tolerant with ingestion of as little as 10 -100 organisms being able to cause disease.

There are four species of Shigella: *Shigella sonnei, Shigella flexneri, Shigella boydii* and *Shigella dysenteriae. S. sonnei* and *S. flexneri* are the main species detected in South Africa currently. *S. dysenteriae* is considered the most virulent as it can produce a potent cytotoxin known as Shiga toxin.

Shigella species are the leading cause of diarrhoea in children in resource limited countries worldwide, predominantly in children under 5 years. Travellers to areas with poor sanitation, immune-compromised individuals (malignancy & HIV) as well as men who have sex with men, are also at high risk of Shigellosis.

Transmission of *Shigella* species occurs via the faecal-oral route due to contamination of food and water. Flies in the vicinity of improperly disposed sewerage can also be part of the transmission cycle. Humans are the only natural reservoir for Shigella.

After ingestion, the bacteria progress from the stomach to the small intestine, where they multiply. Large numbers of bacteria then advance to the colon and enter the colonic epithelium.

The incubation period for shigellosis is 1 to 7 days. Most individuals develop symptoms within 48-72 hours.

Infection may be mild or asymptomatic. Illness can range from mild watery diarrhoea to severe inflammatory bacillary dysentery. Symptoms include watery or bloody diarrhoea (may contain mucus), severe abdominal cramps, tenesmus, fever, nausea and vomiting.

The majority of Shigellosis cases, in otherwise healthy individuals, are mild and self-limiting.

Complications occur occasionally and include:

- Seizures, especially in young children. It is not known if the convulsions are a result of the fever or the *Shigella* infection
- Reiter's syndrome, which is:
  - associated with *S. flexneri*
  - also known as reactive arthritis or post-infectious arthritis
  - characterized by the classic triad of conjunctivitis, urethritis and arthritis
- Bacteraemia which is most common among immune-compromised patients
- Haemolytic-uremic syndrome (HUS), which has been linked to Shiga toxin production
- Toxic megacolon

Most patients recover within 5-7 days without specific treatment. Supportive therapy includes correction of fluid and electrolyte losses. Intestinal antimotility agents (e.g. loperamide) should not be administered, as it will prolong the duration of fever, diarrhoea and excretion of the organism.

Antibiotic therapy in patients with moderate to severe illness will improve symptoms and shorten the duration of the illness. This also results in decreased shedding and transmission of the highly infectious bacteria.

Antibiotic resistance to *Shigella* species is increasing globally. Treatment is determined by local susceptibility data.

In a previous GIT report - susceptibility data for a 12-month period (Feb 2023 – Feb 2024) were analysed. The majority of *Shigella* species cultured at PathCare for this period were susceptible to both ciprofloxacin and ceftriaxone. While 10% of *Shigella flexneri* were resistant to azithromycin, all other *Shigella* species were susceptible to azithromycin.

Limitations

In keeping with other routine laboratory surveillance, this data is dependent on sample submission by clinicians. Results may therefore not be representative of the general population. There is no correlation of laboratory data and clinical findings.

Compiled by Dr Magendhree Moodley and Dr Hannes Slabbert **June 2025**