THE PATHCARE NEWS

GASTRO-INTESTINAL PATHOGEN STATISTICS

In this report we present laboratory-based data for all GIT molecular panels requested for patients at PathCare laboratories for the last quarter (October to December 2024).

Graphs and data will be presented to highight the leading bacterial, viral and parasitic causes of diarrhoea during this period.

In this report we will also discuss the broad indications for molecular testing and antibiotic use in patients who present with gastroenteritis. Molecular testing now provides a platform to provide directed therapy timeously. Judicious use of antibiotics in the clinical setting has proven to be a critical antimicrobial stewardship tool.

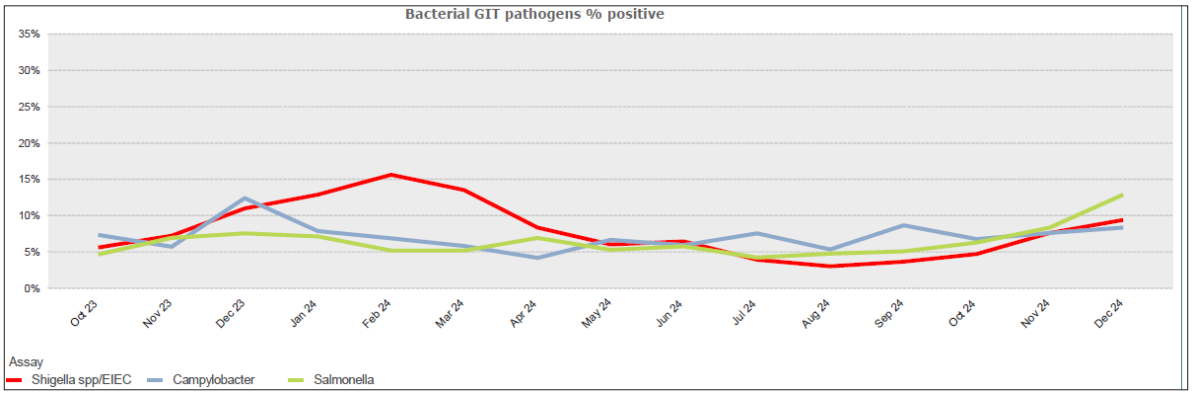
Bacteria

The detection of *Salmonella* species as well as *Shigella*/EIEC increased gradually during the last quarter with peak detection rates of 13% and 9% in December respectively.

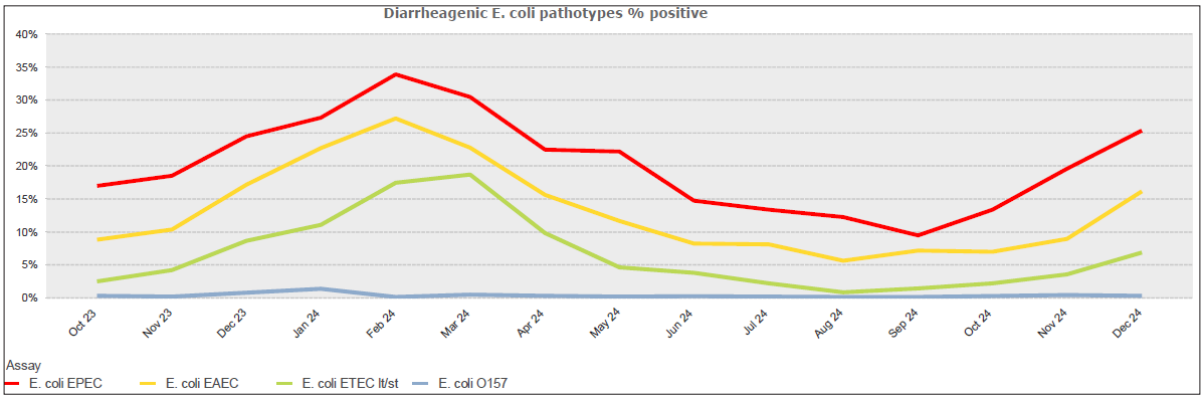
Shigella/EIEC rates are currently significantly lower than that reported last summer. However, this report does not include all the data from the summer months.

Campylobacter is detected throughout the year and detection rates have been consistent over the last quarter, averaging at around 7% .

Current molecular panels are unable to differentiate between non-typhoidal and typhoidal *Salmonella*, as well as between *Shigella* species and Enteroinvasive *E.coli* (EIEC). *Salmonella typhi* is rarely detected in stool samples, particularly in the first week. Patients who present with symptoms of typhoid need to have routine blood cultures performed, as blood cultures remain the gold standard for the diagnosis of typhoid. Urine cultures may also be helpful and in rare cases bone marrow cultures may be required. Specific laboratory tests performed on the cultured isolate can differentiate between typhoidal and non-typhoidal *Salmonella*.



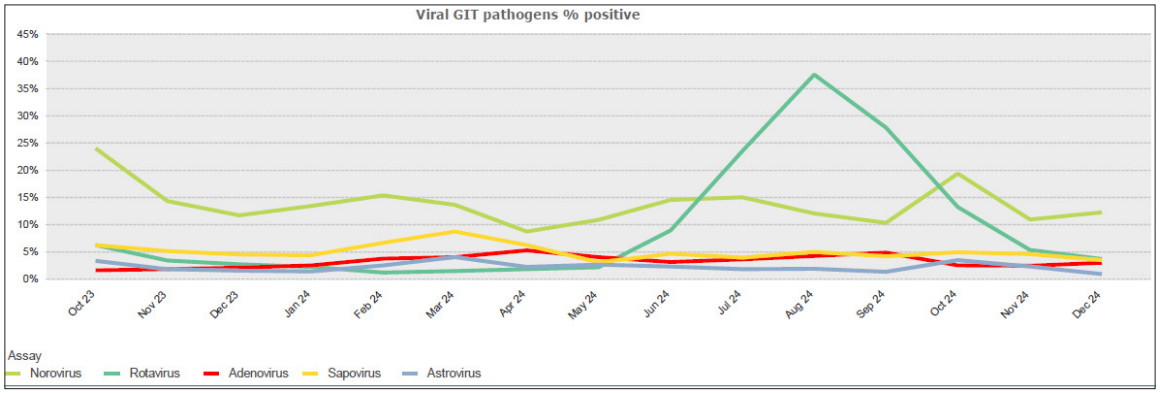
In keeping with previous trends, there was a significant increase in some *E. coli* pathotypes with the onset of summer. Detection rates of Enteropathogenic *E. coli* (EPEC) peaked at +/-25% , followed by Enteroaggregative *E. coli* (EAEC) which peaked at a detection rate of 16% of samples submitted in December. This upward trend is likely to continue in early 2025.



Viruses

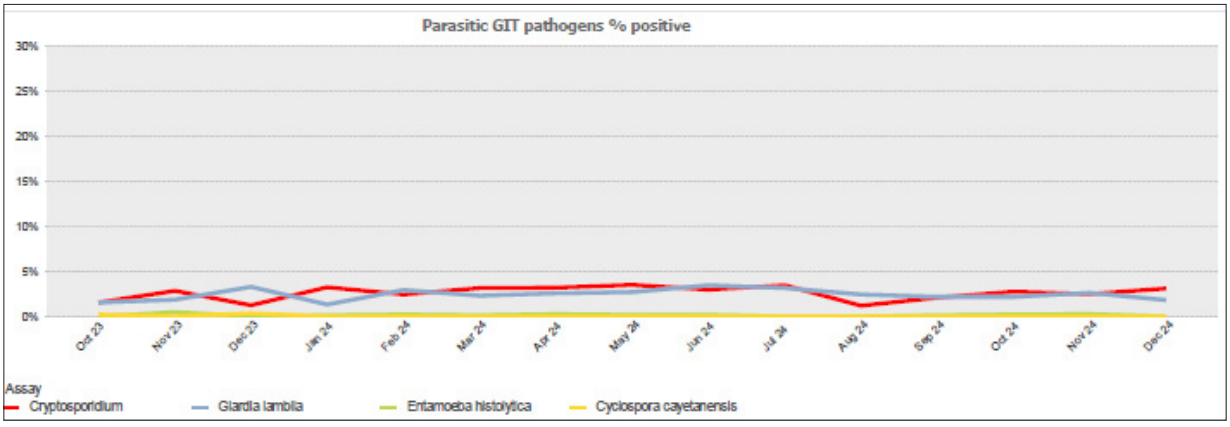
There was a notable increase in the detection rate of Norovirus cases from baseline in the last quarter, peaking at 20% of samples submitted.

As expected rotavirus cases declined significantly in the warmer months, reaching baseline rates towards the end of the last quarter.



Parasites

Cryptosporidium species followed by *Giardia lamblia* are the two most common parasites detected by molecular GIT panels throughout the year, detected in approximately 2.5% of cases in the last quarter.



Gastroenteritis: When to test and treat?

Diarrhoeal disease is common, and cases can range from very mild to life-threatening. Most acute presentations, in otherwise healthy adults and children, are self-limiting. Chronic diarrhoeal disease is more problematic and while stool culture and testing for parasites is a good starting point, referral for a more comprehensive work-up is often indicated.

Testing is indicated in patients who require hospital admission, as well as, in high-risk patients e.g. infants, the elderly, pregnant women or those with immune compromise and severe co-morbidity. Routine stool testing can identify the most common bacterial enteric pathogens, as well as certain viruses.

Patients with persistent fever, dysentery, severe abdominal pain and dehydration or a history of inflammatory bowel disease should be considered for testing. A high white cell count does not exclude viral disease but may indicate severity and low platelets could precede the haemolytic-uremic syndrome (HUS). Blood cultures should also be obtained in patients who are systemically ill with high fever.

PathCare offers multiplex PCR testing, in addition to routine culture and susceptibility testing for acute gastroenteritis (AGE). It is important to remember the limitations of such molecular (DNA) tests. These tests often detect minute quantities of DNA which are not always associated with infection. Susceptibility to antibiotics are not determined by these tests currently. GIT molecular tests are currently considered the gold standard globally, to enable identification of a causative pathogen rapidly and offer directed therapy to improve patient outcomes.

Antibiotic therapy

Antibiotic therapy does have the potential to reduce symptoms in patients who present with severe illness including significant pyrexia, dehydration, dysentery, high stool frequency and those who are immune compromised. However, the associated risks of toxicity, resistance and *Clostridioides difficile* infection do not outweigh the potential benefit in most cases as indicated by various studies. Suspected cases of inflammatory diarrhoea (dysentery, small volume mucous stool with fever) may also benefit from antibiotics.

Empiric antibiotic choices that can be used in our setting to cover the commonly isolated GIT bacterial pathogens include ceftriaxone, azithromycin, ciprofloxacin or levofloxacin.

A special note on the risk of developing HUS in AGE

Enteropathogenic *E. coli* that produce Shiga toxins (STEC) can cause HUS. This mainly includes *E. coli* O157:H7 but other serotypes too, can produce these toxins. Administration of antibiotics for AGE caused by STEC increases the risk of developing HUS. In addition, antibiotics do not improve the clinical outcome of STEC cases. STEC should strongly be considered in diarrhoeal outbreak settings with dysentery and the absence of fever. The gastrointestinal multiplex PCR panel offered by PathCare detects Shiga toxins. If Shiga toxins are not detected with this test, the risk of developing antibiotic associated HUS in cases of AGE treated with antibiotics are negligible.

Limitations

Like all routine laboratory surveillance, this data is dependent on sample submission by clinicians, and results may therefore not be representative of the general population.

There is no correlation of laboratory data with clinical findings.

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