



Gastro & Gastroenterologist

Special Offering tests for Gastric & Pancreatic Disease
India's Leading Laboratory Network

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Hepatitis:

- Hepatitis means inflammation of the liver, this condition can be self-limiting or can progress to fibrosis (scarring), or leads to liver cancer.
- Hepatitis shows either as an acute or as a chronic disease depending on the time period & severity of infection

Types of Hepatitis Virus Infection:

Hepatitis A, B, C, D, E, G.

Major infection types in India: Hepatitis B & C are the most common which results in 1.1 million deaths and 3 million new infection per year

Causes of Hepatitis:

Can be divided into following categories:



Metabolic

alcohol consumption, drugs



Ischemic

Caused due to injury to liver cells because of insufficient blood or oxygen



Infectious agents

viruses, bacteria, and parasites



Genetic



Autoimmune



Different Test types:

Qualitative Test –

This test detects the presence or absence of infection. It is reported as either detected (positive) or not detected (negative). The qualitative test is useful to confirm an active infection.

Quantitative Test –

The test measures the actual number of copies of hepatitis in the blood. Commonly referred to as the viral load, a quantitative test is typically used to monitor how a person is responding to the treatment.

Genotyping –

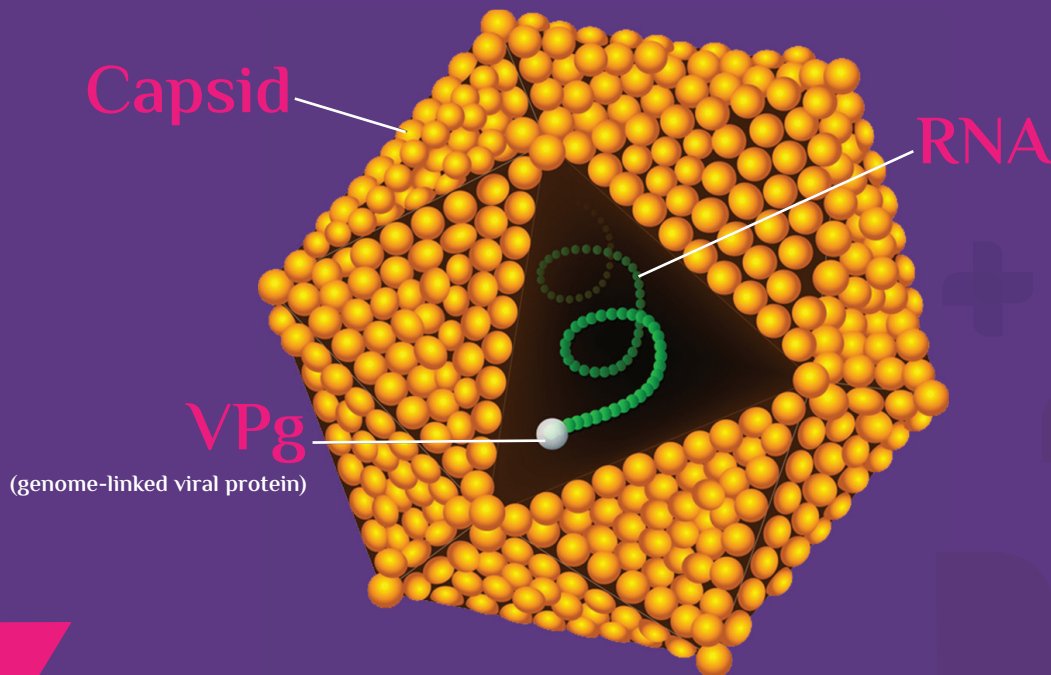
The test measures the actual number of copies of hepatitis in the blood. Commonly referred to as the viral load, a quantitative test is typically used to monitor how a person is responding to the treatment.

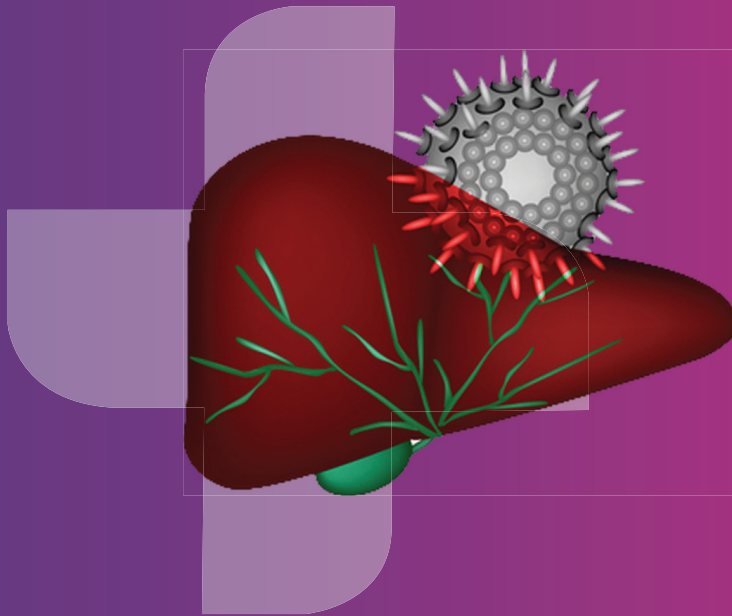
Hepatitis A Virus

Hepatitis A is a highly contagious liver infection caused by the hepatitis A virus. The virus is one of several types of hepatitis viruses that cause inflammation and affect your liver's ability to function. You're most likely to get hepatitis A from contaminated food or water or from close contact with a person or object that's infected. Most people who are infected recover completely with no permanent liver damage

Hepatitis A virus (HAV), classified as hepatovirus, is a **small, unenveloped symmetrical RNA virus** which shares many of the characteristics of the picornavirus family, and is the cause of infectious or epidemic hepatitis transmitted by the fecal-oral route

HEPATITIS A CAUSED BY A PICORNAVIRUS



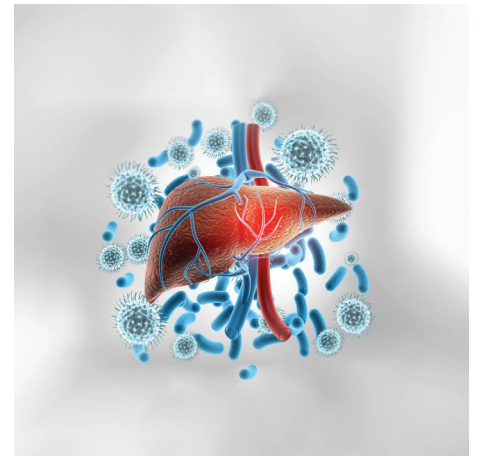


SYMPTOMS OF HEPATITIS A

- Pain in in the right side of the abdomen
- Fever
- Jaundice
- Digestion disorders
- Dark urine
- Feeling weak
- Vomiting
- Nausea

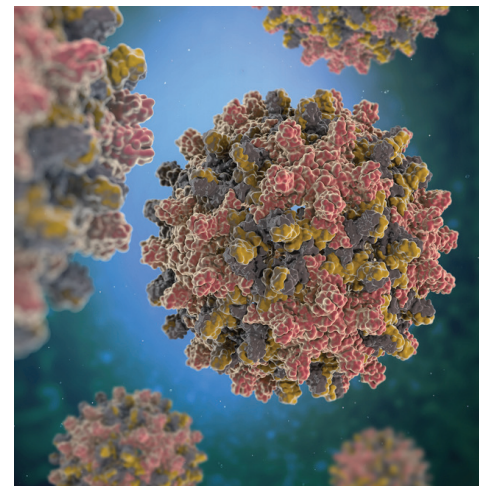
Hepatitis A Virus (HAV) IgM and HAV IgG:

- The Hepatitis A Total test looks for 2 types of antibodies. IgM antibodies develop soon after exposure and fade away after a couple of months. IgG antibodies develop later and remain present in the body. The presence of IgM antibodies indicates a recent exposure to the virus and the possibility of an acute infection.
- These antibodies typically develop 2 to 3 weeks after first being infected (and are detectable before the onset of symptoms) and persist for about 3 to 6 months. Hepatitis A IgG antibodies are produced within 1 to 2 weeks of the IgM antibodies and usually persist for life.



Hepatitis A Virus (HAV) RNA Detection:

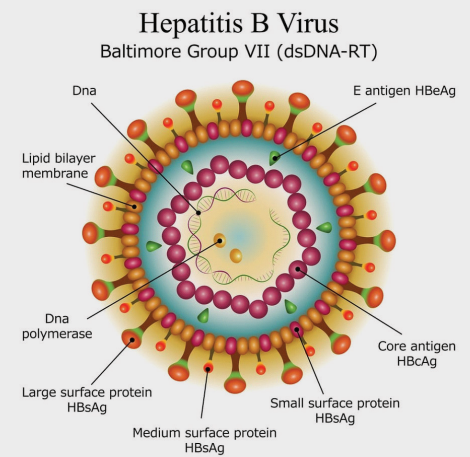
- Hepatitis A virus is an enteric picornavirus. Its genome is a single stranded RNA molecule of positive-strand polarity of 7478 bases. It can be measured viral load by real-time RT-PCR.
- Molecular methods provide tools for studying HAV infection; the amplification of HAV RNA by reverse transcription, followed by PCR of the cDNA, is the most sensitive technique for screening clinical specimens. Studies using reverse transcription PCR (RT-PCR) have demonstrated that HAV RNA can be detected in blood earlier than antibodies and that the viremia may be present for a much longer period during the convalescent phase of hepatitis A than was previously thought. The efficiency of extraction methods for HAV RNA in clinical samples is very important for molecular diagnosis.



Test Name	Technology	Specimen	TAT	MRP
Hepatitis A Virus (HAV) RNA Detection	Real Time PCR	2 mL (1 EDTA (Lavender Top) tube	12 Days	7000

Hepatitis B Virus (HBV)

- Hepatitis B Virus (HBV) is a DNA virus that enters the body in the bloodstream and targets hepatocytes (cells that make up 70-85% of the liver mass and involved in protein synthesis).
- This type of infection is transmitted through exposure to infective blood, semen, and other body fluids.
- It is a viral infection that attacks the liver and can cause both acute and chronic disease.
- Laboratory diagnosis of Hepatitis B infection focuses on the detection of the Hepatitis B Surface Antigen (HBsAg)
- Chronic hepatitis B can develop into a serious disease resulting in long-term health problems, including liver damage, liver failure, liver cancer, and even death. There were 1,649 deaths related to hepatitis B virus reported to CDC in 2018



Hepatitis B Core (Hbc) Antibody IgM (HBcAb – IgM)

- This test looks for antibodies called IgM in your blood. The test is used to find out whether you are actively infected with the hepatitis B virus (HBV). HBV has a central core and a surrounding envelope. Your immune system makes IgM antibodies for the core of HBV during the active stage of infection.

Hepatitis B Core (Hbc) Total Antibody (Anti-Hbc Total)

- Negative hepatitis B core (Hbc) total antibody (Ab) test results indicate the absence of exposure to hepatitis B virus and no evidence of recent, past/resolved, or chronic hepatitis B. A positive result indicates acute, chronic, or past or resolved hepatitis B.

Hepatitis B Envelope Antibody (HBeAb) (ANTI - HBe)

- A positive test for the hepatitis Be-antigen (HBeAG) means that there is an active infection with the hepatitis B virus, likely in someone with chronic hepatitis B. The virus is actively multiplying.

Hepatitis B Envelope Antigen (Hbeag)

Hepatitis B e antibody is a soluble viral protein. It is found early in the Course of acute hepatitis B and disappears soon after ALT peaks. Persistence of HBeAg beyond 3 months after the onset of illness is unusual & may suggest progression to chronic infection.

In patients with **chronic hepatitis B**, the presence of positive HBeAg usually indicates a high level of viral replication and thus infectivity. HBeAg is positive in the immune tolerant phase and in the early immune clearance phase. HBeAg **seroconversion** is the disappearance of HBeAg and appearance of hepatitis B e antibody (anti-HBe).

Hepatitis B Surface Antibody (HbsAb)

Anti-HBs or HBsAb (Hepatitis B surface antibody) - A "positive" or "reactive" anti-HBs (or HBsAb) test result indicates that a person is protected against the hepatitis B virus. This protection can be the result of receiving the hepatitis B vaccine or successfully recovering from a past hepatitis B infection. A level less than 5 mIU is considered negative, while a level more than 12 mIU is considered protective.



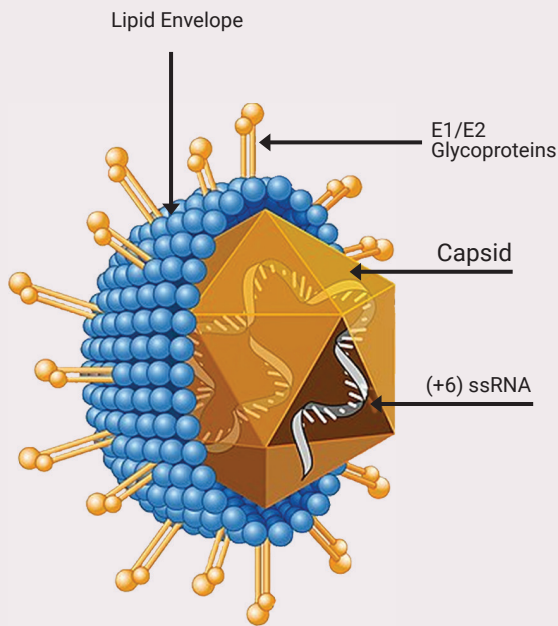
Hepatitis B Surface Antigen (HbsAg)

A "positive" or "reactive" HBsAg test result means that the person is infected with hepatitis B. This test can detect the actual presence of the hepatitis B virus (called the "surface antigen") in your blood. The dynamic range of HBsAg levels was 0.05-250 IU/mL

HBV DNA Quantitative (Viral Load)

- Used for the management of HBV infected patients.
- Not intended for use in the initial diagnosis or confirmation of HBV infection.
- Checks the viral response to the treatment provided to the patient which is measured by the changes in the plasma HBV DNA levels.
- A quantitative result expressed in IU/mL indicates the degree of active HBV viral replication in the patient.
- Technique: Real Time PCR

Test Name	Technology	Specimen	TAT	MRP
HBV DNA Qualitative	Real Time PCR	2 mL (1 mL min. serum from 1 SST)/ 2 mL (1 mL min.) plasma from 1 EDTA (Lavender Top) tube.	3 Days	3000
HBV DNA Quantitative (Viral Load)	Real Time PCR	2 mL (1 mL min. serum from 1 SST) or 2 mL (1 mL min.) plasma from 1 EDTA (Lavender Top) tube.	3 Days	4000



Hepatitis C Virus (HCV):

HCV is a small enveloped RNA virus belonging to the family Flaviviridae and genus hepacivirus. HCV genomic RNA was single-stranded with positive polarity, which was packaged by core protein and enveloped by a lipid bilayer containing two viral glycoproteins (E1 and E2) to form the virion.

Hepatitis C Virus (Anti HCV) IgG and IgM,

The HCV Ab test is used for initial screening for hepatitis C. The test is performed by Serology and CLIA, which detect the presence of hepatitis C antibodies in serum. The result of the test is reported as positive or negative.

A negative antibody test result usually means that the person has not been infected with hepatitis C (unless they were infected very recently or have a weakened immune system). The body needs at least two months (and sometimes up to nine months) to make antibodies.

HCV RNA Viral Load:

- HCV RNA test detects the presence of Hepatitis C Virus (HCV) circulating in the blood and is among the most sensitive tests available.
- This test is intended for use as an aid in management of HCV infected patients.
- It is used to confirm HCV diagnosis when viral loads are potentially very low.
- This test can be used to monitor response to therapy.

Technique: Real time PCR





HCV RNA Genotype:

- This test detects genotypes 1, 2, 3, 4, 5, 6 of Hepatitis C Virus.
- HCV genotyping is useful in predicting the prognosis in patients with Chronic Hepatitis C infection and to monitor response to therapy.
- Type 3 in India accounts for nearly 60% of HCV infections and is associated with better prognosis.
- HCV genotype 1 is more difficult to treat than Genotypes 2 & 3 and causes more severe liver disease.
- This test is useful in predicting the prognosis in patients with chronic Hepatitis C infection and to determine the course of therapy.
- Technique: Real Time PCR

Test Name	Technology	Specimen	TAT	MRP
HCV RNA, Qualitative	Real Time PCR	2 mL (1 mL min. serum from 1 SST) or 2 mL (1 mL min.) plasma from 1 EDTA (Lavender Top) tube.	3 Days	3000
HBV DNA Quantitative (Viral Load)	Real Time PCR	2 mL (1 mL min. serum from 1 SST) or 2 mL (1 mL min.) plasma from 1 EDTA (Lavender Top) tube.	3 Days	4000
HCV RNA Genotyping	Real Time PCR	2 mL (1 mL min. serum from 1 SST) or 2 mL (1 mL min.) plasma from 1 EDTA (Lavender Top) tube.	3 Days	5000

Technical Specifications:

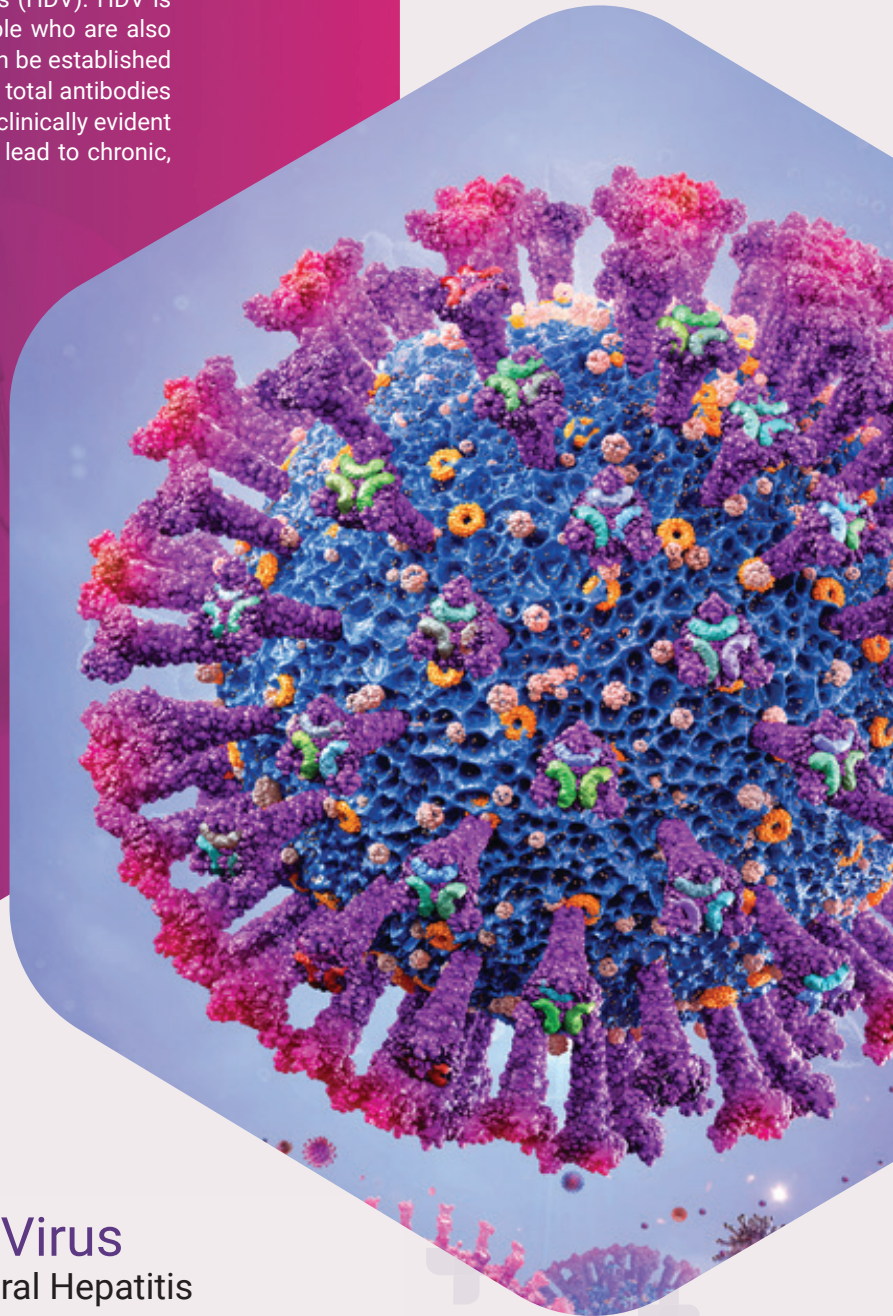
- Kits used for testing are In Vitro Diagnostics (IVD) and European Conformity (CE) approved.
- They have been validated on the Rotor Gene Q instrument
- Kit for Hepatitis C Virus Genotyping: artus HCV RT-PCR Kits, Qiagen
- Kit for Hepatitis B Virus Genotyping: artus RG RT-PCR kit, Qiagen

Kits have high sensitivity and specificity

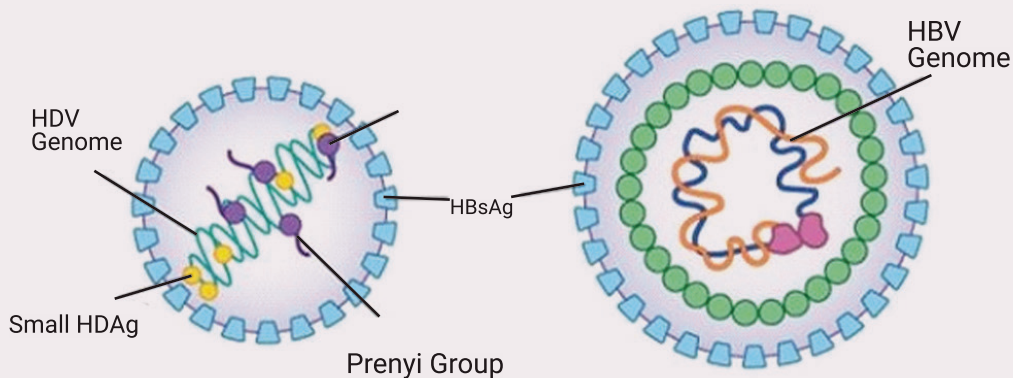


Hepatitis Delta Virus (HDV) Total

Hepatitis D is a liver disease caused by the hepatitis D virus (HDV). HDV is known as a "satellite virus," because it can only infect people who are also infected by the hepatitis B virus (HBV). Diagnosis of HDV can be established by detecting HDV antigen, HDV-specific IgM, or HDV-specific total antibodies (combined IgM and IgG) in the sera of infected patients with clinically evident acute or chronic hepatitis B. HDV infection can be acute or lead to chronic, long-term illness.



Hepatitis Delta Virus The Most Server Form of Viral Hepatitis





Hepatitis Delta Virus (HDV) RNA Detection

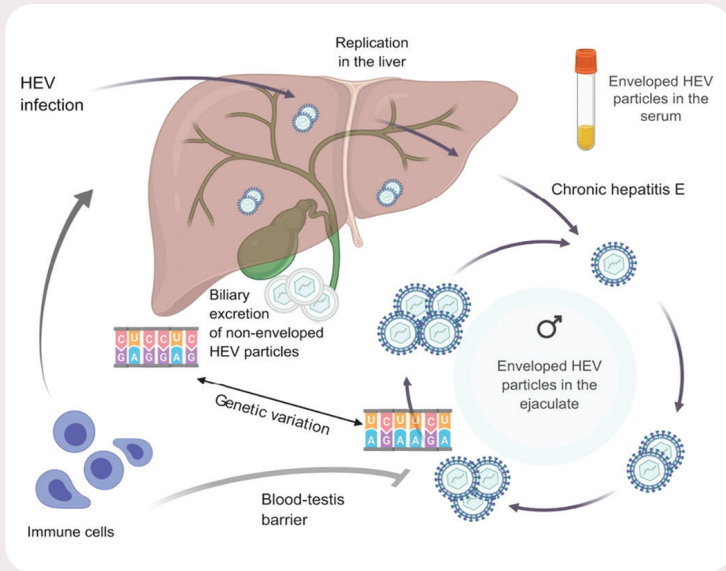
The HDV Real-time RT-PCR assay **detects HDV RNA in serum or plasma.** Procedure. Extraction of nucleic acid from specimen, followed by reverse transcription of viral RNA, then amplification and detection of cDNA using real-time, quantitative PCR.

The incubation period for Hepatitis D super infection is approximately two to eight weeks. When HBV and HDV viruses infect simultaneously, the incubation period is similar to that of HBV, **45-160 days with an average of 90 days**

Hepatitis E Virus (HEV)

Hepatitis E is a virus that infects your liver. It can cause your liver to swell up. Most people with hepatitis E get better within a few months. Usually it doesn't lead to long-term illness or liver damage like some other forms of hepatitis do. But hepatitis E can be dangerous for pregnant women or anyone with weak immune systems, including the elderly or people who are ill.

Test Name	Technology	Specimen	TAT	MRP
Hepatitis Delta Virus (HDV) RNA Detection	Real Time PCR	2 mL (1 EDTA (Lavender Top) tube	15 Days	9000



Hepatitis E Virus (HEV) IgG & IgM Antibody

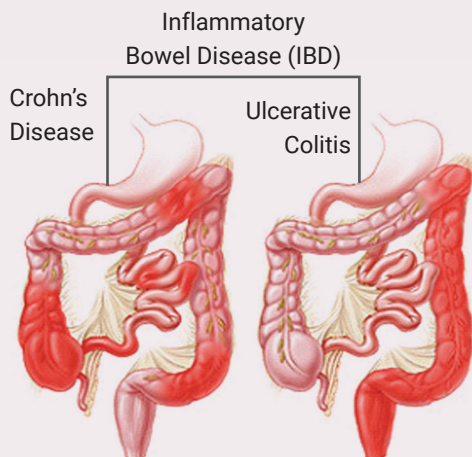
The immune response to HEV infection, characterized by a transient appearance of immunoglobulin M (IgM) HEV antibodies followed by long-lasting IgG antibodies, appears late during the period of viremia and virus shedding in stool. The HEV capsid protein is immunogenic and induces protective immunity.

Most people with hepatitis E recover completely. During hepatitis E outbreaks, the overall case-fatality rate is about 1%. However for pregnant women, hepatitis E can be a serious illness, with mortality reaching 10%–30% among pregnant women in their third trimester

Hepatitis E Virus (HEV) RNA detection:

Hepatitis E Virus (HEV) Detection and Quantification by a Real-Time Reverse Transcription-PCR Assay Calibrated to the World Health Organization Standard for HEV RNA. The quantification range of this assay is 500 to 5,000,000 IU/mL (2.70 log to 6.70 log IU/mL), with a limit of detection (based on a 95% detection rate) of 58 IU/mL (1.76 log IU/mL). An "Undetected" result indicates that hepatitis E virus (HEV) RNA is not detected in the serum specimen

Test Name	Technology	Specimen	TAT	MRP
Hepatitis E Virus (HEV) RNA detection	Real Time PCR	2 mL (1 EDTA (Lavender Top) tube	10 Days	000

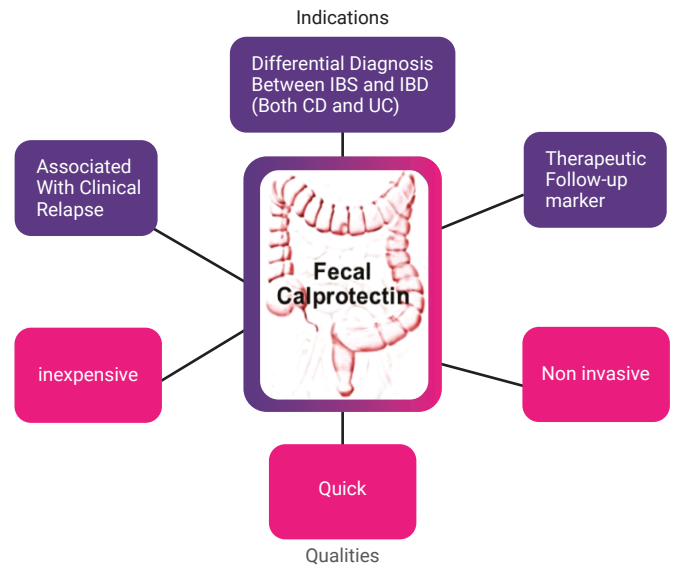
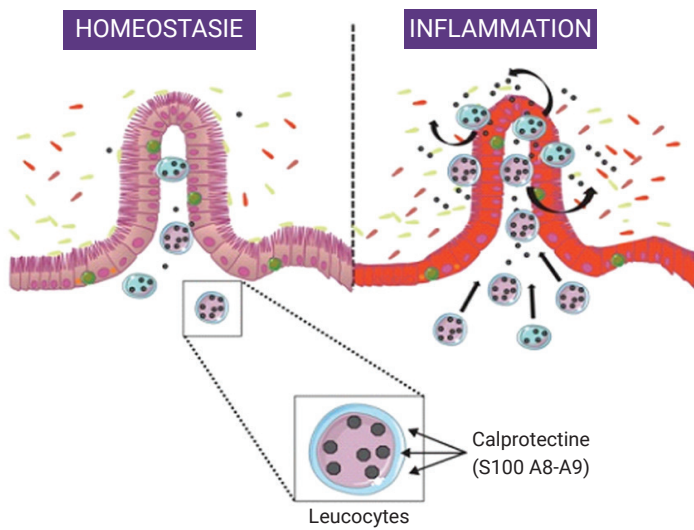


Inflammatory Bowel Disease (IBD)

- Group of bowel disease that cause inflammation in the digestive tract.
- Causes ulcers in the tissues of digestive tract that may occur almost anywhere from mouth to anus.

Fecal Calprotectin

- Calcium binding proteins.
- Expressed mostly in neutrophils which influx into bowel during inflammation.
- Found as a biomarker for inflammatory status of gut in stool.
- Helps in differentiating between IBD and IBS.



Test Name	Technology	Specimen	TAT	MRP
Fecal Elastase	Enzyme Immunoassay	Submit 5g (2g min.) Stool in Sterile Leak Proof Container	5 Days	6000

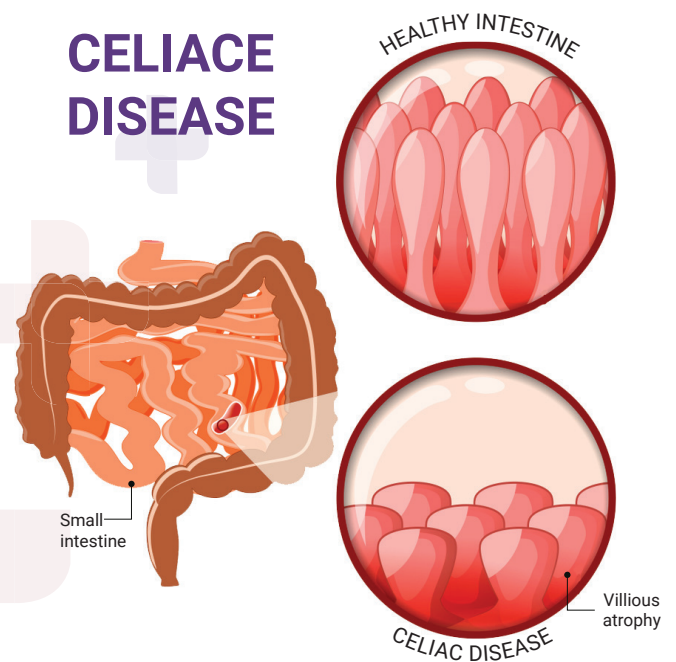
Celiac Disease

- Celiac disease is an autoimmune disease of the digestive system
- In this body's natural defense system reacts to gluten (Protein found in Wheat, Rye and Barley)
- This leads to the damage to the lining of the small intestine and villi
- Damaged villi is less capable to absorb nutrition properly

tTG-DGP Screen

- Autoantibodies screening test
- Sensitive and specific screening test for Celiac Disease.
- Helps to evaluate the effectiveness of gluten-free diet
- Two different kinds of antibodies are involved in Celiac Disease IgA and IgG and testing should be done against them recommends American College of Gastroenterology
- If you have IgA deficiency, then DGP IgG testing (along with anti- tTG IgG) is recommended by the American College of Gastroenterology.

CELIAC DISEASE



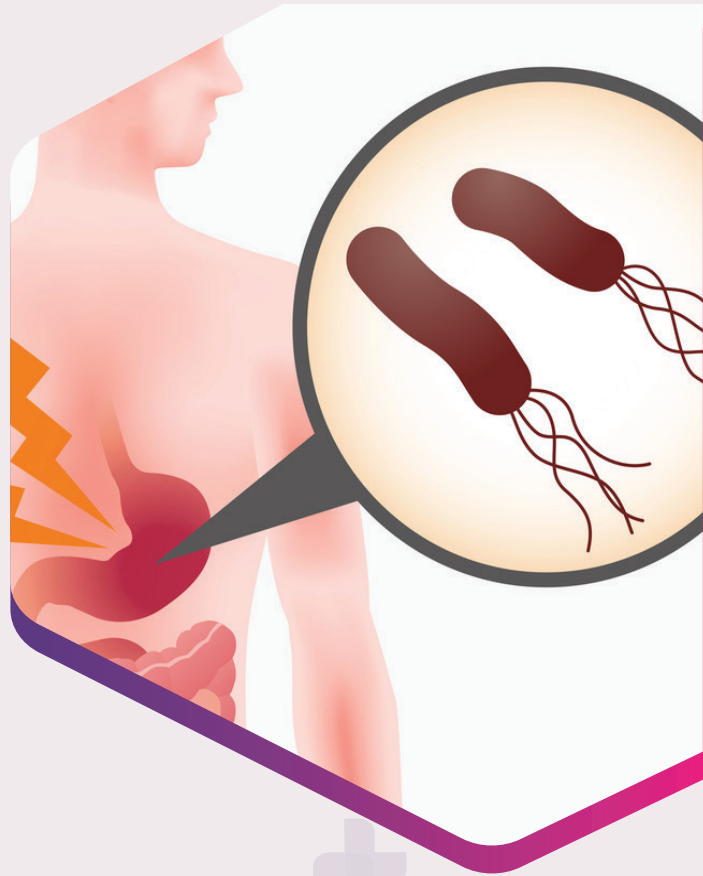
Test Name	Technology	Specimen	TAT	MRP
Transglutaminase (tTG) Antibody, IgA	Enzyme Immunoassay	2 mL (1 mL min.) serum from 1 SST.	Next Day	1000
TTG DGP Screen	Enzyme Immunoassay	2 mL (1 mL min.) serum from 1 SST.	4 Days	2500

Helicobacter Pylori:

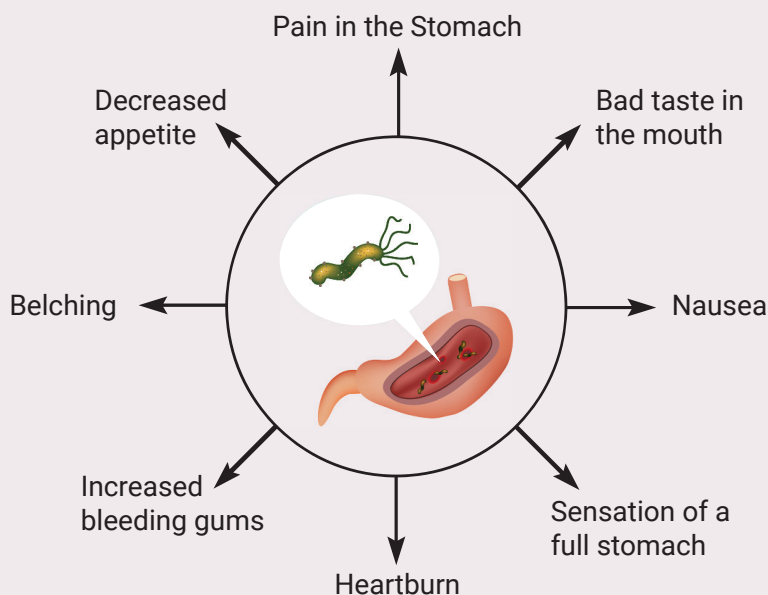
Helicobacter pylori (H. pylori) is a type of bacteria. These germs can enter your body and live in your digestive tract. After many years, they can cause sores, called ulcers, in the lining of your stomach or the upper part of your small intestine. For some people, an infection can lead to stomach cancer

Helicobacter Pylori Antibody:

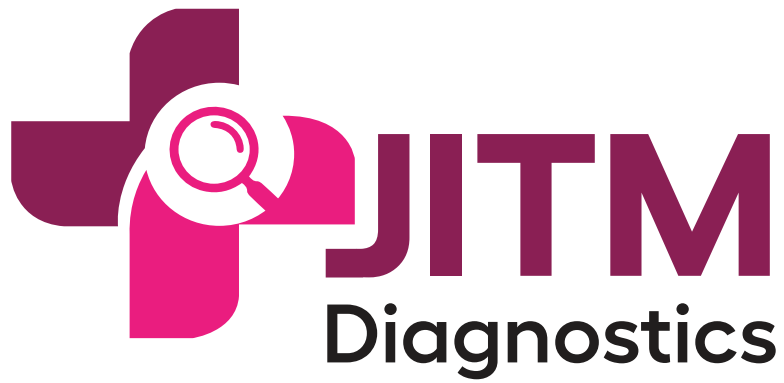
This test measures the levels of Helicobacter pylori (H. pylori) antibodies in your blood. H. pylori are bacteria that can invade your gut. H. pylori infection is one of the major causes of peptic ulcer disease. This happens when inflammation caused by the bacteria affects the mucus coating of your stomach or duodenum, the first section of your small intestine. This leads to sores on the lining and is called peptic ulcer disease.



SYMPTOMS OF INFECTION OF HELICOBRATER PYLORI



Panel Name	Specimen	TAT	MRP
Hepatitis B Panel	Hepatitis B envelope Antibody (Anti-HBe), HBe Antigen (HBeAg), Hepatitis B surface Antibody (HBsAb), Hepatitis B surface antigen (HBsAg), Hepatitis B Core Antibody IgM (Anti-HBc - IgM), HBc Antibody Total (HBcAb- Total)	3 Days	3000
Hepatitis Be; HBeAg & HBeAb	(HBeAg and HBeAb) diagnosis and monitoring of HBV infectivity. It also determines infection status in chronically HBV infected patients")	2 Days	1600
Hepatitis Health Screening Profile	CBC, LFT, HBsAg, HAV IgM, Anti HCV, HEV IgM	3 Days	4000
Hepatitis Screening Profile (A, B, C, E)	Hepatitis A virus - IgM (HAV- IgM), Hepatitis A virus - Total (HAV IgG), Hepatitis B envelope Antibody, (AntiHBe), Hepatitis B Envelope Antigen (HBeAg), Hepatitis B surface Antibody Total (Anti HBs), Hepatitis B Surface antigen (HBsAg), Hepatitis C Virus Hepatitis Core Antibody IgM (Anti HBc - IgM), Hepatitis Core Antibody Total (HBcAb- Total), Hepatitis E virus - IgM (HEV IgM)	3 Days	8000
Viral Marker Quantitative	HBsAg, HIV 1 & 2, Anti HCV	Same Day	1800



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