

Guide to Hepatitis Serology & PCR

HEPATITIS B

TEST	EXPLANATION
Hepatitis B surface antigen	Presence indicates current Hepatitis B infection. Note: Usually the earliest detectable serum marker for acute Hepatitis B infection.
Hepatitis B surface antibodies	Presence indicates immunity to Hepatitis B infection. Note: Absolute levels may wane over time, particularly after immunisation, but this does not necessarily mean loss of immunity. (See Australian Immunisation Handbook 10th Edition 2013). Level of ≥ 10 mIU/ml=IMMUNE.
Hepatitis B core antibodies	Presence indicates current or past Hepatitis B infection. Note: <ol style="list-style-type: none"> Usually remains positive life-long. May get isolated positive result (in the absence of other HBV markers): <ol style="list-style-type: none"> This usually means past infection with waning of Hepatitis B surface antibodies. Occasionally this may be due to a non-specific (false positive) reaction. Rarely this may be due to undetectable Hepatitis B surface antigen levels during low-grade HBV infection. If liver function tests are abnormal, consider HBV DNA testing.
Hepatitis B core IgM antibodies	Presence usually indicates recent acute Hepatitis B infection. Note: <ol style="list-style-type: none"> Usually remains detectable for up to 6 months after acute Hepatitis B. Occasionally seen in acute exacerbations of chronic Hepatitis B.
Hepatitis B e antigen	Presence may indicate highly infective stage of Hepatitis B. Should be tested only if a patient is HBsAg positive. Note: May be negative in "pre-core mutant" form of Hepatitis B which is still highly infective – further tests, such as HBV DNA, may need to be performed to show high level of infectivity. May be used for monitoring treatment.
Hepatitis B e antibody	Limited use clinically but may be used for monitoring treatment. Note: <ol style="list-style-type: none"> Level may become undetectable over time. May be positive in "pre-core mutant" form (see above, Hep B e ag).
Hepatitis B Viral Load PCR	Quantitative measurement of Hepatitis B DNA level for patients who are Hep B antigen positive. Note: <ol style="list-style-type: none"> In order to obtain Medicare rebate, clinical notes must include the information that patient is Hep B surface antigen positive and treatment status. <ol style="list-style-type: none"> If ON treatment, patient allowed 4 tests/12 months to be Medicare billed. If NOT ON treatment, patient allowed only 1 test/12 months to be Medicare billed.

GUIDE TO REQUESTING

REASON FOR TESTING	HBsAg	HBsAb	HBcAb	HBcAb-IgM	HBeAg	HBV PCR
Pre-immunisation	✓	✓	✓			
Post-immunisation		✓				
Acute infection*	✓		✓	✓	✓	
Chronic infection	✓		✓	+/-	✓	✓
Query past infection	✓	✓	✓			

*In all cases where Hepatitis B surface antigen is positive: Hep B core IgM, Hep B core total antibody will be performed. If given history such as: "possible hepatitis, jaundice, hepatomegaly or abnormal LFTs", Hepatitis A IgM antibody, Hepatitis B surface antigen, Hepatitis C antibody will be performed.

INTERPRETATION OF HEPATITIS B SEROLOGICAL MARKERS

PATTERN	HBsAg	HBeAg	HBcAb	HBcIgM	HBeAb	HBsAb	Infective
Early Acute	+	+					++
Acute	+	+	+	+			++
Past			+		+/-	+	-
Chronic	+	+/-	+	+/-	+/-	_*	++
Post Immunisation						+**	-

*HBsAb is usually absent in this situation, but occasionally may be ≥ 10 mIU/ml. **HBsAb is usually present in this situation, but occasionally < 10 mIU/ml. HBsAb positivity is classified at ≥ 10 mIU/ml.

HEPATITIS A

TEST	EXPLANATION
Hepatitis A total antibody	<p>Detects the presence of both IgM & IgG to Hepatitis A. Presence indicates either:</p> <ol style="list-style-type: none"> 1. Previous exposure to Hepatitis A. 2. Previous immunisation to Hepatitis A. 3. Recent/acute Hepatitis A (in the presence of positive Hepatitis A IgM antibodies).
Hepatitis A IgM antibodies	<p>Presence indicates acute Hepatitis A.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Occasional false positives due to cross reactions from other infections may appear. 2. May not always be detectable at onset of illness – may need to repeat test 7 days after initial negative result if still highly suspicious of acute Hepatitis A. 3. Usually remains detectable for 2–4 months (up to 6) after acute infection.

HEPATITIS C

TEST	EXPLANATION
Hepatitis C antibodies	<p>Presence indicates current or past Hepatitis C infection.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Does not differentiate between acute, chronic or resolved infection. 2. May not be detectable for up to 3 months after acute exposure (incubation period) – repeat testing is recommended (or Hep C Qual PCR) if highly suspicious for Hepatitis C infection despite initial negative Hep C antibody result. 3. False positive reactions are common and require supplementary tests to resolve. 4. Positive reactions require a second Hepatitis C antibody test to confirm the findings of an initial positive test (this is a different test method to the initial screening test).
Hepatitis C PCR (Qualitative)	<p>Presence indicates actively replicating Hepatitis C virus (RNA) and thus current infection.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Levels may vary with time, giving discrepant results in the absence of Hep C therapy. 2. Absence in a single test does NOT necessarily indicate resolution of infection. 3. Patients can receive a Medicare rebate for one test per year if the clinical notes on the request include one of the following: <ol style="list-style-type: none"> a. HCV seropositive. b. HCV serological status uncertain. c. Patient is immunocompromised or immunosuppressed and HCV status is required. d. Acute HCV prior to seroconversion and considered necessary for the clinical management of the patient. 4. If on therapy, patient allowed 4 tests/12 months to be Medicare billed.
Hepatitis C Viral Load PCR	<p>Quantitative measurement of Hep C viral load (RNA) to monitor therapy.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. To receive Medicare rebate the following criteria must be met: <ol style="list-style-type: none"> a. Clinical notes must say chronic HCV on therapy. b. Patient is allowed a maximum of 2 tests/12 months.
Hepatitis C Genotype	<p>Clinically useful to help determine duration of treatment. The genotype does not change during the course of the infection.</p> <p>Note:</p> <p>Only one Medicare rebate payable per 12 months.</p>

For more information please contact our **Infectious Diseases Pathologists** on **03 9244 0339**