| Section No.: PIB A | **TITLE PAGE** |
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# PATIENT-INFORMATION BOOK

## Quadra Medical Services Pvt. Ltd.

QMSPL4.3PIB/01

**53 & 41 QMS**

**Kolkata - 700 019**

**Telephone: 033- 2475 0130/0131/0132/0133/0135**

**Fax: 033-2475 0136**

**Website: www.quadradiagnostics.com**

**E-mail: services@quadradiagnostics.com**

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| PIB C | Company Profile |
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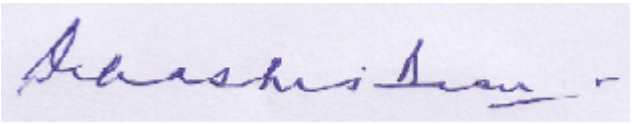
Quadra Medical Services Pvt. Ltd. is now one of the leading and fastest growing diagnostic centers in Kolkata, with environment friendly clinic equipped with the most advanced medical facilities available in the city.

Our continued effort to upgrade the centre by way of equipment facilities and services has already generated interest in the medical fraternity. We provide the facilities for medical investigation such as Pathology including Histopathology, Cytology, Serology, Microbiology, Molecular Biology, Biochemistry, Haematology, Clinical pathology, Immuno-pathology and Flowcytometry (OUTSOURCED ). Our imaging section is constituted by MRI, CT scanner, X-ray, USG, Mammography, Nuclear Medicine, Spect CT, PET CT, Gastroscopy and Colonoscopy. We are serving the cardiac and neurological patients by providing the facilities like ECG, Echocardiography with Colour Doppler, Holter Monitoring, TMT, Spirometry, EEG, EMG and NCV.
Quadra is now functioning from two premices, 41 and 53 Hazra Road Kolkata 700019. The organization remains open from 8 AM to 8 PM on weekdays, however the services close down after 4 PM on Sundays.

Quadra is intending to develop Quality Assurance in every department of its organization and ISO 9001:2015 certification is one of the major steps to implement it. Our Laboratory is a NABL Accredited laboratory.

We are catering our services not only to the patient to the Kolkata but from the whole West Bengal as well as Bangladesh and some parts or Bihar, Jharkhand and outskirts of Nepal. We are committed to provide quality health care services and assurance that is enclose by everybody.





**DEBASHIS BASU**
**( DIRECTOR )**

Section No.: PIB D | **TEST PARAMETERS**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| **BIOCHEMISTRY** | | | | | |
| 1. | Aldolase | 4 mL serum (Red top tube) | Spectrophotometry | Same day | It is used in the diagnosis and monitoring of many skeletal muscle disorders. Highest levels of Aldolase are found in Progressive (Duchenne) Muscular Dystrophy. Lesser elevations are found in Dermatomyositis, Polymyositis and Limb-girdle dystrophy. |
| 2. | Alkaline Phosphatase | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Majority of ALP activity is derived from the liver and bone. Concentrations are increased in patients with biliary obstructive disorders, tumors of liver and bone etc. |
| 3. | Amylase | 4 mL serum (Red top tube) | Spectrophotometry | Same day | It is a marker of pancreatic disease being elevated in Acute pancreatitis and acute exacerbation of Chronic pancreatitis. It may also be elevated in cases of drug induced Acute pancreatitis and obstruction of pancreatic duct by stone / carcinoma. |
| 4. | Anti Cardiolipin Antibody Igg | 4 mL serum (Red top tube) | Enzyme Linked Immunosorbent Assay (ELISA) | 10 Days | Cardiolipin antibodies are useful in identifying patients with an increased risk of thrombosis, recurrent spontaneous abortions and phospholipid antibody syndrome. Cardiolipin antibody IgG is the most sensitive but the least specific antibody. |
| 5. | Anti Cardiolipin Antibody Igm | 4 mL serum (Red top tube) | Enzyme Linked Immunosorbent Assay (ELISA) | 10 Days | Cardiolipin antibodies are useful in identifying patients with an increased risk of thrombosis, recurrent spontaneous abortions and phospholipid antibody syndrome. Cardiolipin antibody IgM is less sensitive but more specific than Cardiolipin Antibody IgG. |
| 6. | Anti Ccp Antibody (Anti Cyclic Citrullinated Peptide) | 4 mL serum (Red top tube) | Chemiluminescent Microparticle Immuno Assay (CMIA) | Same day | Anti CCP is useful in diagnosing Rheumatoid arthritis and entities that may potentially be confused with Rheumatoid arthritis that are rheumatoid factor positive. |
| 7. | Aso (Anti Streptolysin – O) | 4 mL serum (Red top tube) | Immunoturbidometry | Same day | Antistreptolysin O is useful in confirming exposure to Streptococcus pyogenes in the absence of other laboratory evidence. |
| 8. | Bicarbonate | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Bicarbonate levels suggests that the body is having trouble maintaining its acid-base balance or has upset the electrolyte balance, perhaps by losing or retaining fluid. |
| 9. | Bilirubin Total | 4 mL serum (Red top tube) | Spectrophotometry | Same day | It useful for the evaluation of Hyperbilirubinemia **and Jaundice** |
| 10. | Bun (Blood Urea Nitrogen) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Urea nitrogen is a renal function test that is often interpreted with creatinine. It is useful when measured before and after dialysis treatments. |
| 11. | C3 (Complement Component) | 4 mL serum (Red top tube) | Immunoterbidometry | Same Day | C3 is an acute phase reactant. Decreased levels are seen in patients with SLE, Endocarditis and DIC. Congenital deficiency of C3 increases the risk of recurrent bacteremia. This assay is useful for the diagnosis of C3 deficiency and for investigation of a patient with an undetectable Total complement (CH50) level. |
| 12. | C4(Complement Component) | 4 mL serum (Red top tube) | Immunoterbidometry | Same Day | C4 is critical to activation of classical pathway. Decreased levels are seen in patients with SLE, Immune Complex disease and Hereditary angioedema. Congenital deficiency of C4 increases the risk of recurrent bacteremia especially S.pneumoniae. This assay is useful in the diagnosis of C4 deficiency and for investigation of a patient with an undetectable Total complement (CH50) level. |
| 13. | Calcium | 4 mL serum (Red top tube) | Spectrophotometry | Same day | By knowing both total and ionized calcium concentrations, subsequent measurement of total calcium can be used as a proxy of the ionized |

| S.No | Test | Specimen | Method | Report | Function |
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| | | | | | calcium concentrations. |
| 14. | Ceruloplasmin | 4 mL serum (Red top tube) | Immunoterbidometry | Same Day | Ceruloplasmin is an acute phase protein and a transport protein for copper. It is decreased in Wilson's disease, an autosomal recessive disorder. Low levels may also occur in Menkes syndrome which is a genetic defect in copper absorption. |
| 15. | Chloride | 4 mL serum (Red top tube) | Ion Selective Electrode | Same day | Chloride is a chemical the human body needs for metabolism (the process of turning food into energy). It also helps keep the body's acid-base balance. The amount of chloride in the blood is carefully controlled by the kidneys. |
| 16. | Cholesterol | 4 mL serum (Red top tube) | Spectrophotometry | Same day | It is used for early detection of heart disease and stroke. |
| 17. | CPKMB | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Elevated levels of CPK-MB occur 4 to 6 hours after the onset of pain in myocardial infarction, peak at 18 to 24 hours and persist up to 72 hours. It may also be elevated in cases of Carbon monoxide poisoning, Pulmonary embolism, Hypothyroidism, Crush injuries and Muscular dystrophy. |
| 18. | CPK (Creatine Kinase) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | CPK is an enzyme found primarily in skeletal and cardiac muscle. Drugs, infections and other diseases may cause injury or inflammation of muscles releasing CPK into the circulation. |
| 19. | Creatinine | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Increased creatinine level in the blood indicates kidney disease. |
| 20. | Creatinine Clearence Test | 4 mL serum (Red top tube) + 24 Hrs Urine. | Spectrophotometry | Same day | Creatinine clearance reflects the glomerular filtration rate, the ability of kidneys to filter waste products. Moderate decrease in renal function is detected by creatinine clearance. It also monitors progression of renal disease. |
| 21. | Electrolytes(Na/K/Cl) | 4 mL serum (Red top tube) | Ion Selective Electrode | Same day | Electrolyte panel is useful in assessing acid base balance in a wide variety of medical conditions. |
| 22. | Ferritin | 4 mL serum (Red top tube) | Chemiluminescent Microparticle Immuno Assay (CMIA) | Next day | Ferritin levels reflect iron stores in normal individuals. A low serum ferritin level is an indicator of iron depletion. This assay is clinically useful in distinguishing between Iron deficiency anemia (low level) and anemia of chronic disease (normal or high level). It is also useful to assess iron overload conditions like Hemochromatosis. Ferritin is also an acute phase reactant. |
| 23. | Folic Acid | 4 mL serum (Red top tube) | Chemiluminescent Microparticle Immuno Assay (CMIA) | Next day | Folates function as coenzymes in many metabolic pathways. Testing is useful in detecting folate deficiency and to monitor folate therapy. Folate deficiency is a cause of Megaloblastic and Macrocytic anemias. |
| 24. | Free PSA | 4 mL serum (Red top tube) | Chemiluminescent Microparticle Immuno Assay (CMIA) | Next day | For early detection of prostrate cancer |
| 25. | Gamma Gt(Ggt) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | GGTP is a sensitive indicator of biliary tract disease. |
| 26. | Glucose Fasting | 2 mL Plasma (Grey top tube) | Spectrophotometry | Same day | Glucose determinations are useful in the detection and management of Diabetes mellitus. |
| 27. | Glucose Pp | 2 mL plasma Grey top tube, 2 hr after meal | Spectrophotometry | Same day | Glucose determinations are useful in the detection and management of Diabetes mellitus. |
| 28. | Glucose Random | 2 mL plasma Grey top tube | Spectrophotometry | Same day | Glucose determinations are useful in the detection and management of Diabetes mellitus. |
| 29. | Glucose Tolerance Test(Gtt) | 2 mL plasma Grey Top tube & corresponding urine specimen at fasting and PP. | Spectrophotometry, | Same day | Glucose determinations are useful in the detection and management of Diabetes mellitus. |
| 30. | Glycosylated Hb | 4 mL Whole | High Performance | Same day | This assay is useful for diagnosing diabetes and |

| S.No | Test | Specimen | Method | Report | Function |
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| | (Hba1c) | Blood Lavender Top (EDTA) tube | Liquid Chromatography | | evaluating long term control of blood glucose concentrations in diabetic patients. It reflects the mean glucose concentration over the previous period of 8 to 12 weeks and is a better indicator of long term glycemic control as compared with blood and urine glucose measurements. |
| 31. | HDl Cholesterol | 4 mL serum (Red top tube) | Spectrophotometry | Same day | HDL cholesterol is referred to as the "Good Cholesterol". This test is used to assess the risk of coronary artery disease (CAD) and diagnosis of various lipoproteinemias. It is inversely related to the risk of CAD. For every 1 mg/dL decrease in HDL risk of CAD increases by 2– 3%. |
| 32. | HS CRP (C-Reactive Protein) | 4 mL serum (Red top tube) | Immunoturbidometry | Same day | C Reactive Protein (CRP) is the most sensitive acute phase reactant for inflammation. Mild elevation of CRP has emerged as a valuable marker of cardiovascular risk including first & recurrent Coronary stroke, Myocardial infarction, Angina and Congestive heart failure. hsCRP is a sensitive predictor of increased cardiovascular risk in both men and women. This assay is used for assessment of risk of developing Myocardial infarction in patients presenting with Acute coronary syndrome. It also assesses risk of developing Cardiovascular disease or ischemic event in individuals who do not manifest disease at present |
| 33. | Immunoglobulin IgE | 4 mL serum (Red top tube) | Enzyme Linked Fluorescent Assay (ELFA) | Next day | Testing for IgE antibodies is useful to establish the diagnosis of an allergic disease and to define the allergens responsible for eliciting signs and symptoms. |
| 34. | Inorganic Phosphorus | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Phosphorus is a critical anion found mostly in bone and muscle. Multiple disorders specially affecting renal function can alter the phosphorus levels. |
| 35. | Iron | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Serum iron, TIBC & Percent saturation are widely used for the diagnosis of Iron deficiency. This assay is useful for screening Chronic iron overload diseases particulary Hemochromatosis. Percent saturation is usually normal or increased in Iron deficiency, Pregnancy & intake of oral contraceptives. Low TIBC is seen in Chronic inflammatory conditions, Hemochromatosis & Malignancies. Serum ferritin is a more sensitive & reliable indicator of Iron deficiency. |
| 36. | LDH Total (Lactic Dehydrogenase) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | LDH is found in highest concentrations in liver, heart, muscle, kidney, lung & erythrocytes. This assay is useful for investigating a variety of diseases involving these organs. It is also used to monitor changes in tumor burden after chemotherapy. |
| 37. | LDL Cholesterol | 4 mL serum (Red top tube) | Spectrophotometry | Same day | LDL cholesterol is referred to as the "Bad Cholesterol". Used to assess the risk of CAD and to decide the treatment. It's increase is directly related with the risk of CAD. |
| 38. | Lipase | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Lipase is an enzyme produced almost exclusively from pancreatic acinar cells. Pancreatic injury increases serum lipase levels. In Pancreatitis, it rises almost at the same time as amylase (4-8 hrs) but the elevation lasts much longer (7-10 days) as compared to amylase. |
| 39. | Lipid Profile | 4 mL serum, Red Top tube. Minimum 12 hours fasting is mandatory. | Spectrophotometry | Same day | The lipid profile components are useful in the detection, classification and monitoring of patients with hyperlipidemia. |
| 40. | Lipid Profile With Lpa | 4 mL serum, Red Top tube. | Spectrophotometry | Same day | For lipid metabolism |

| S.No | Test | Specimen | Method | Report | Function |
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| | | Minimum 12 hours fasting is mandatory | | | |
| 41. | Lipo Protein A | 4 mL serum (Red top tube) | Immunoturbidometry | Same day | This assay provides additional information on Coronary Heart Disease (CHD) risk in patients known or suspected to be at increased risk based on factors like family history of premature CHD or Stroke, Hypertension, Cigarette smoking, Obesity, Diabetes mellitus, increased levels of LDL and decreased levels of HDL. High levels of Lp(a) increase cardiovascular risk 2-3 fold. Lp(a) behaves like an acute phase protein and should not be measured during periods of active inflammation and for at least 1 month after Myocardial infarction or Stroke. |
| 42. | Liver Function Test | 4 mL serum (Red top tube) | Spectrophotometry | Same day | This test panel assesses the functional activity of the liver. |
| 43. | Magnesium | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Magnesium is a cofactor of many enzyme systems. Hypermagnesemia is seen in Acute & Chronic renal failure and magnesium overload. Magnesium levels are used to monitor Pre-eclampsia patients being treated with magnesium sulphate. It is also used to evaluate patients with symptoms of magnesium deficiency. |
| 44. | Potassium (K) | 4 mL serum (Red top tube) | Ion Selective Electrode | Same day | Potassium is an essential element involved in critical cell functions. Potassium levels are influenced by electrolyte intake, excretion and other means of elimination, exercise, hydration and medications. |
| 45. | Procalcitonin | 4 mL serum (Red top tube) | Enzyme Linked Fluorescent Assay (ELFA) | Next day | This assay is useful for diagnosis of bacteremia & septicemia in adults and children including neonates. It diagnoses renal involvement in UTI in children, bacterial infection in neutropenic patients & secondary infection post surgery. It helps in the differential diagnosis of bacterial versus viral meningitis and community acquired bacterial versus viral pneumonia. It is also used for monitoring therapeutic response to antibacterial therapy. |
| 46. | Protein Total | 4 mL serum (Red top tube) | Spectrophotometry | Same day | ------- |
| 47. | Rheumatoid Factor Quantitative | 4 mL serum (Red top tube) | Immunoturbidometry | Same day | Approximately 85% of patients with Rheumatoid arthritis have detectable RA. It may also be seen in other medical conditions like Sjogren' s syndrome and SLE. |
| 48. | SGOT(AST) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | This enzyme is found in many organs including the liver. Though nonspecific, it is used to detect and monitor liver disease and other medical conditions. This is a more sensitive test in alcoholic liver disease than SGPT. |
| 49. | SGPT(ALT) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | This is an enzyme found mainly in liver tissue and to a lesser extent in heart, kidney and skeletal muscle. It' s measurement is clinically useful in the diagnosis of liver and biliary disease. |
| 50. | Sodium(Na) | 4 mL serum (Red top tube) | Ion Selective Electrode | Same day | Sodium is critical in maintaining water and osmotic equilibrium in extracellular fluids. Disturbances in acid base and water balance are typically reflected in the sodium concentrations. |
| 51. | TIBC | 4 mL serum (Red top tube) | Spectrophotometry | Same day | TIBC is seen in Chronic inflammatory conditions, Hemochromatosis & Malignancies. |
| 52. | Triglyceride (Quantitive) | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Increased triglyceride levels are indicative of metabolic abnormality and along with elevated cholesterol are considered a risk factor for atherosclerotic disease. High levels may be seen in Biliary obstruction, Diabetes, Nephrotic syndrome, Renal failure, Metabolic endocrinopathies and may be medication |

| S.No | Test | Specimen | Method | Report | Function |
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| | | | | | induced. |
| 53. | Troponin - I | 4 mL serum (Red top tube) | Immuno-chromatography | Same day | Troponin I is a cardiac marker elevated only in patients suffering from acute Myocardial Infarction. Patients with renal disease or acute muscle injury show normal levels. |
| 54. | Urea | 4 mL serum (Red top tube) | Spectrophotometry | Same day | Urea is the end product of protein metabolism. It reflects on the functioning of the kidney in the body. |
| 55. | Urinary Calcium Random / 24 Hrs | 10 mL Urine, Collect urine with 25 mL 50% concentrated HCl to maintain pH below 3 in a urine container. | Spectrophotometry | Same day | In the presence of elevated calcium, the body attempts to excrete the excess calcium leading to hypercalciuria. Idiopathic hypercalciuria can occur in the absence of hypercalcemia. |
| 56. | Urinary Creatinine | 10 mL Urine, in a urine container. | Spectrophotometry | Same day | Urinary creatinine is useful as part oftifunctional the creatinine clearance and to assess completeness of 24 hour urinary collections. |
| 57. | Urinary Microalbumin Random / 24 Hrs | 10 mL Urine, No preservatives. In a urine container. | Immunoturbidometry | Same day | This assay is used to evaluate diabetic patients to assess the potential of early onset of nephropathy before overt proteinuria develops. It is recommended that all Type 1 diabetic patients >12 years and all Type 2 diabetic patients < 70 years should be tested for microalbuminuria annually. |
| 58. | Urinary Phosphorous Random / 24hrs | 10 mL Urine, No preservatives. In a urine container. | Spectrophotometry | Same day | Urinary phosphorus concentration is useful to assess calcium and phosphorus balance. Thyroid and kidneys are key organs whose function influences urinary excretion. Many medical conditions affect urinary phosphorus levels. |
| 59. | Urinary Potassium | 10 mL Urine, No preservatives. In a urine container. | Ion Selective Electrode | Same day | Urinary potassium is useful to evaluate serum electrolyte imbalances. Renal causes of imbalance can be differentiated from non-renal causes. |
| 60. | Urinary Protein | 20 mL Urine, No preservatives. In a urine container. | Spectrophotometry | Same day | Urinary total proteins are negligible in healthy individuals. Levels are increased in diseases that impair renal function like Diabetes, Hypertension, Nephrotic syndrome and Drug nephrotoxicity. |
| 61. | Urinary Sodium | 10 mL Urine, No preservatives. In a urine container. | Ion Selective Electrode | Same day | Sodium is critical in maintaining water and osmotic equilibrium in extracellular fluids. Body sodium generally reflects input and renal excretion. |
| 62. | Urinary Uric Acid / 24hrs | 10 mL Urine, No preservatives. In a urine container. | Spectrophotometry | Same day | This assay is useful for the assessment and management of patients with kidney stones, particularly uric acid stones. Urinary uric acid excretion is elevated in a significant proportion of patients with uric acid stones, due to uric acid overproduction as in Leukemia and Polycythemia and after intake of food rich in nucleoproteins. |

**CLINICAL PATHOLOGY**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 63. | Bile Salt/Bile Pigment | 20 ml Urine in a sterile screw capr urine container. | Chemical | Same day | Used to determine Bilirubin in Urine. |
| 64. | Semen Analysis | Submit Semen in a sterile screw capped container | Physical Examination, Microscopy Chemical | Same day | This assay helps in determining male fertility status. Male infertility can be due to decrease in the number of viable sperms, abnormal sperm morphology and abnormalities of the seminal fluid. |
| 65. | Specific Gravity | 10 mL. Collect urine in a sterile | Automated Strip Test | Same day | Increases in specific gravity may be associated |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | screw capped container. | | | with dehydration, diarrhea, emesis, excessive sweating, glucosuria, renal artery stenosis, hepatorenal syndrome, decreased blood flow to the kidney etc. Decreased specific gravity may be associated with renal failure, pyelonephritis, diabetes insipidus, acute tubular necrosis, interstitial nephritis, and excessive fluid intake. |
| 66. | Stool Routine | 5g stool in a leak-proof screw capped container. | Physical<br>Chemical<br>Light microscopy | Same day | A stool test involves the collection and analysis of fecal matter to diagnose the presence or absence of a medical condition. |
| 67. | Stool RE OBT | 5g stool in a leak-proof screw capped container. | Haemospot (Guaiac) | Same day | It is used to detect subtle blood loss in the gastrointestinal tract, Positive tests ("positive stool") may result from either upper gastrointestinal bleeding or lower gastrointestinal bleeding and warrant further investigation for peptic ulcers or a malignancy (such as colorectal cancer or gastric cancer). The test does not directly detect colon cancer but is often used in clinical screening for that disease, but it can also be used to look for active occult blood loss in anemia or when there are gastrointestinal symptoms. |
| 68. | Stool Reducing Substances | 5g stool in a leak-proof screw capped container. | Benedict' s Test | Same day | A positive reducing substance in stool indicates that certain sugars or carbohydrates are not digested by the intestine. |
| 69. | Stool For Fat Droplets | 5 gm Stool, in a sterile Leak proof container | Microscopy | Same day | For differential diagnosis of fat digestion |
| 70. | Urinary Sugar | 20 mL. Aliquot of first morning urine in a sterile screw capped container. | Automated strip test & Chemical | Same day | Urine glucose is used as a follow up test in diabetic patients. It is also used for screening diabetes in general population. |
| 71. | Urine Acetone Qualitative | 20 mL. Aliquot of first morning urine in a sterile screw capped container. | Automated strip test & Chemical | Same day | For differential diagnosis of ketoacidosis |
| 72. | Urine Bence Jones Proteins | 20 mL. Aliquot of first morning urine in a sterile screw capped container. | Physical & Chemical | Same day | Detection of Bence Jones protein may be suggestive of multiple myeloma or Waldenström's macroglobulinemia. |
| 73. | Urine Chyle | 20 mL of urine in a sterile screw capped container. | Physical & Chemical | Same day | This test is used in the diagnosis of injury or obstruction of lymphochylous system e.g. filariasis. It also produces milky urine due to the presence of chylomicrons which are recognised as fat globules by microscopy. |
| 74. | Urine Ketone Body | 20 mL of urine in a sterile screw capped container. | Physical & Chemical | Same day | For differential diagnosis of ketoacidosis |
| 75. | Urine Routine | 20 mL. Aliquot of first morning urine in a sterile screw capped container. | Automated Strip test, Chemical, Light microscopy<br>Physical | Same day | Urine analysis is one of the most useful laboratory tests as it identifies a wide range of medical conditions including renal damage, urinary tract infections, diabetes, hypertension and drug toxicity. |
| 76. | Urobilinogen | 20 mL. Aliquot of fresh urine | Dipstick | Same day | An increased urobilinogen concentration in urine is a sensitive index of liver dysfunction or |

| S.No | Test | Specimen | Method | Report | Function |
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| | | without preservative, in a dark coloured container. | | | hemolytic diseases. Urobilinogenuria is caused by e. g. virus hepatitis, chronic hepatitis, liver cirrhosis, infections, poisonings, congestion or carcinoma of liver, hemolytic, and pernicious anemina, polycythemia and pathological state of the intestinal tract with an increased resorbence. |
| 77. | Urine For Haemoglobin & Myoglobin | 20 ml Of Urine in a sterile Urine container (First morning urine) | Physical & Chemical | Same day | Urine myoglobin increases with muscle necrosis, but the clinical consequences are variable. Therefore, myoglobin can confirm a clinical diagnosis of myopathy, but an elevated urine excretion of myoglobin is not specific for a clinical disorder. |
| 78. | Urine For Haemosiderin | 20 ml Of Urine in a sterile Urine container (First morning urine) | Physical & Chemical | Same day | Hemosiderin is a pigment formed when hemoglobin breaks down. This test is used to evaluate and manage disorders involving the destruction of red blood cells. This test may also be used to evaluate for suspected chronic venous insufficiency. |
| 79. | Urine For Microfilaria | 20 ml Of Urine in a sterile Urine container (First morning urine) | Microscopy | Same day | For the detection of Filariasis. |
| 80. | Urine For Porphobilinogen | 20 ml Of Urine in a sterile Urine container (First morning urine) | Physical & Chemical | Same day | This test may be performed when porphyria or another disorder associated with an abnormal porphobilinogen (PBG) level is suspected. |
| 81. | Urine for Eosinophil Count | 20ml Aliquot of first morniing urine in a sterile screw capped container. | Light microscopy ( Physical ) | Same day | For differential diagnosis of Eosinophil count |



**CYTOPATHOLOGY**

| S.No | Test | Specimen | Method | Report | Function |
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| 82. | Bal Fluid Cytology | BAL Fluid | Staining & Microscopy | After 2 days | Cytomorphological Pathology |
| 83. | Brush Cytology | Bronchial Brush smear | Staining & Microscopy | After 2 days | Cytomorphological Pathology |
| 84. | Urine For Cytology | URINE | Staining & Microscopy | After 2 days | Cytomorphological Pathology |
| 85. | Cytology And Crystal Study | Joint Fluid | Staining & Polarized Microscopy | After 2 days | To detect Crystals and other pathological conditions. |
| 86. | Fluid Cell Type/Cell Count | Body Fluid | Cell type &cell count | Next day | Number of cells and type of cells. |
| 87. | FNAC Non Guided | Fine Needle Aspiration | Staining & Microscopy | After 2 days | Cyto morphological Pathology |
| 88. | FNAC US Guided | Fine Needle Aspiration | Staining & Microscopy | After 2 days | Cyto morphological Pathology |
| 89. | FNAC CT Guided | Fine Needle Aspiration | Staining & Microscopy | After 2 days | Cyto morphological Pathology |
| 90. | Malignant Cells(Sputum) | Sputum | Staining & Microscopy | Next day | Cyto morphological Pathology |
| 91. | PAP Smear (LBC) | Cervical Smear or Vaginal Smear | Staining & Microscopy | Next day | Cytomorphological Pathology |

**ELECTROPHORESIS**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 92. | Hb Electrophoresis(HPLC) | 4 mL whole blood. In Lavender Top (EDTA) tube. | High Performance Liquid Chromatography | 5 days | This assay is useful in the diagnosis of Beta Thalassemia. It quantitates the percent of fetal hemoglobin and assists in the diagnosis of disorders with elevated levels of HbF. |
| 93. | Protein Electrophoresis | 2 mL serum, in a Serum separating tubes. SST (Gel Tube) | Gel Electrophoresis | 7 days | Recommended as an initial baseline investigation for most cases of serum protein abnormalities. |

| S.No | Test | Specimen | Method | Report | Function |
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| **IMMUNOASSAY** | | | | | |
| **S.No** | **Test** | **Specimen** | **Method** | **Report** | **Function** |
| 94. | Anti Thyroglobulin Antibody TGO | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Anti Tg autoantibody measurements are recommended if Anti TPO autoantibody is negative, but clinical suspicion of Autoimmune thyroid disease is high. Detection of these antibodies in cases of Neonatal hypothyrodism suggests transplacental antibody transfer particularly if there is a maternal history of autoimmune thyroiditis. |
| 95. | Anti Thyroid Peroxidase Antibody TPO | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Determination of TPO antibody levels is the most sensitive test for detecting autoimmune thyroid disease like Hashimoto thyroiditis (90%), Idiopathic myxedema and Graves disease (60-80%). Presence of TPO antibodies in subclinical hypothyroidism is associated with an increased risk of developing overt hypothyroidism. This assay helps in the diagnosis of thyroid autoimmune disorders and serves as a diagnostic tool in deciding therapy for subclinical hypothyroidism. |
| 96. | Cortisol (Morning) | 4 mL serum, in a Serum separating tubes. Overnight fasting is preferred. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Total cortisol concentrations are decreased in Addison's disease and increased in Cushing's disease and in other conditions of glucocorticoid excess. |
| 97. | Cortisol (Evening) | 4 mL serum, in a Serum separating tubes. 4 hrs fasting is preferred. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Total cortisol concentrations are decreased in Addison's disease and increased in Cushing's disease and in other conditions of glucocorticoid excess. |
| 98. | DHEAS Dehydroepiandrosterone Sulphate | 4 mL serum, in a Serum separating tubes. Overnight fasting is preferred. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is useful in identification of androgen secreting adrenal tumors specially Adrenal carcinomas. It is an adjunct in the diagnosis of Congenital adrenal hyperplasia. It is also useful in the diagnosis of Premature adrenarche. |
| 99. | Free T3 | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Free T3 is a supplemental test to TSH and Free T4 for confirmation of thyroid status. This assay also helps to monitor thyroid hormone replacement therapy. Elevated levels are associated with Thyrotoxicosis or excess thyroid hormone replacement. |
| 100. | Free T4 | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Free T4 is the metabolically active fraction of thyroxine. FT4 alongwith TSH gives an accurate picture of thyroid status in patients with abnormal thyroid binding globulin (TBG) like in pregnancy and individuals on treatment with estrogens, androgens, phenytoin or salicylates. This assay is useful for diagnosing both Hypo / Hyper-thyroidism. |
| 101. | FSH Follicle Stimulating Hormone | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is useful as an adjunct in the evaluation of menstrual irregularities. It also evaluates patients with suspected hypogonadism, predicts ovulation, evaluates infertility and helps in diagnosing pituitary disorders. |
| 102. | IL- 6 | PLASMA | CLIA | NEXT DAY | Nteleukin--6 multifunctional protein that regulates immune response , acute phase reactions & hemotopoiesis. ILC -6 has a major role in the meditation of inflammatory & immune responses initiated by infection of injury. Elevated level ofIL-6 have been reported to be associated with a variety of diseases including arthritis, castleman' s disease , |

| S.No | Test | Specimen | Method | Report | Function |
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| | | | | | psoriasis,inflammatory bowel & certain malignant diseases. |
| 103. | Insulin(Fasting) | 4 mL serum, in a Serum separating tubes. Overnight fasting is must. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Insulin is produced by beta cells of the pancreas. It leads to Type 1 (IDDM) diabetes caused by Insulin deficiency & Type 2 (NIDDM) diabetes caused by insulin resistance. This assay is useful in the management of Diabetes. It is also used for diagnosing Insulinoma when used in conjunction with Proinsulin and C-peptide measurement. |
| 104. | Insulin(PP)<br>Post Prandial | 4 mL serum, in a Serum separating tubes. Collect sample exactly 2 hours post-meal. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Insulin is produced by beta cells of the pancreas. It leads to Type 1 (IDDM) diabetes caused by Insulin deficiency & Type 2 (NIDDM) diabetes caused by insulin resistance. This assay is useful in the management of Diabetes. It is also used for diagnosing Insulinoma when used in conjunction with Proinsulin and C-peptide measurement. |
| 105. | IPTH (Para Thyroid Hormone) | 4 mL serum, in a Serum separating tubes. Sample Transport under cold condition | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is useful for diagnosis and differential diagnosis of hypercalcemia. It also helps in the diagnosis of Primary / Secondary / Tertiary Hyperparathyroidism and Hypoparathyroidism. The assay may be useful in monitoring End stage renal failure patients for possible Renal osteodystrophy. |
| 106. | LH<br>Luteinising Hormone | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is used for evaluating patients with suspected Hypogonadism, predicting ovulation, evaluating Infertility and diagnosing Pituitary disorders. This assay is also an adjunct in the evaluation of menstrual irregularities. In both males & females Primary hypogonadism results in elevated levels of basal LH & FSH. LH is decreased in Primary ovarian hyperfunction in females & Primary hypergonadism in males. |
| 107. | Prolactin | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is a useful aid in the evaluation of Pituitary tumors, Amenorrhea, Galactorrhea, Infertility & Hypogonadism. It also helps in monitoring therapy in prolactin producing tumors. |
| 108. | SARCOV-2 IGG | SERUM | CMIA | NEXT DAY | The sars cov-2 IgG II Quant assay for quantitative determination of IgG antibodies to SARS-COV-2 in human serum & plasma. The assay is also to be used as an aid in evaluating immune status of individuals with quantitative measurement of IgG antibodies against the spike receptor binding domain(RBD )of SARS -COV-2. That allows clinicians to monitor trends in a patient' s antibody level by establishing a quantitative baseline& thus asses a relative change of an individual ' s immune response to the virus over time. This can also help us to monitor immune response post-vaccination |
| 109. | T3 | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is a useful test for Hyperthyroidism in patients with low TSH and normal T4 levels. It is also used for the diagnosis of T3 toxicosis. It is not a reliable marker for Hypothyroidism. This test is not recommended for general screening of the population without a clinical suspicion of hyperthyroidism. |
| 110. | T4 | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Total T4 levels offer a good index of thyroid function when TBG is normal and non-thyroidal illness is not present. This assay is useful for monitoring treatment with synthetic hormones (synthetic T3 will cause low total T4). It also helps to monitor treatment of Hyperthyroidism with Thiouracil or other anti-thyroid drugs. |
| 111. | Testosterone | 4 mL serum, in a Serum | (ECLIA) Electro Chemiluminescent | Next Day | This assay is useful for evaluation of men with signs and symptoms of possible Hypogonadism |

| S.No | Test | Specimen | Method | Report | Function |
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| | | separating tubes. | Immunoassay | | like loss of libido, erectile dysfunction, gynecomastia & infertility. It is also useful in evaluation of boys with delayed or precocious puberty. The assay can be used to monitor anti-androgen therapy as in prostate cancer, precocious puberty & male to female transgender disorders. It helps to evaluate infants with ambiguous genitalia or virilization. The assay can serve as an adjunct in the diagnosis of androgen secreting tumors. |
| 112. | Thyroid Profile(T3,T4,TSH) | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | Function of thyroid Gland |
| 113. | TSH Thyroid Stimulating Hormone | 4 mL serum, in a Serum separating tubes. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is used in the differential diagnosis of Hypothyroidism, as an aid in the diagnosis of Primary Hyperthyroidism, prediction of TRH stimulated TSH response and monitoring patients on thyroid replacement therapy. |
| 114. | Urinary Cortisol(24 Hrs) | 10 mL 24-hour urine. Collect urine with 10 g of boric acid in a urine container. | (ECLIA) Electro Chemiluminescent Immunoassay | Next Day | This assay is preferred as a screening test for Cushing syndrome. It also helps in the diagnosis of Pseudo-hyperaldosteronism due to excessive licorice consumption. The test has limited usefulness in the evaluation of Adrenal insufficiency. |
| 115. | Vitamin B12 (Cyanocobalamin) | 4 mL serum, in a Serum separating tubes. Overnight fasting is mandatory. | Chemiluminescent Microparticle Immuno Assay (CMIA) | Next day | Vitamin B12 is necessary for hematopoiesis and normal neuronal function. B12 deficiency may be due to lack of intrinsic factor secretion by gastric mucosa (gastrectomy, gastric atrophy) or intestinal malabsorption (ileal resection, small intestinal diseases) leading to Macrocytic anemia. This assay is useful for investigating Macrocytic anemia and as a workup of deficiencies seen in Megaloblastic anemia. |
| 116. | Vitamin D Total(25 O H) | 4 mL serum, in a Serum separating tubes. | Chemiluminescent Microparticle Immuno Assay (CMIA) | Next day | 25-Hydroxy vitamin D represents the main body reservoir and transport form. Mild to moderate deficiency is associated with Osteoporosis / Secondary Hyperparathyroidism while severe deficiency causes Rickets in children and Osteomalacia in adults. Prevalence of Vitamin D deficiency is approximately >50% especially in the elderly. This assay is useful for diagnosis of vitamin D deficiency and Hypervitaminosis D. It is also used for differential diagnosis of causes of Rickets & Osteomalacia and for monitoring Vitamin D replacement therapy. |

**TESTS ARE OUTSOURCED**

| S.No | Test | Specimen | Method | Report | Function |
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| 117. | Anti Dnase B; Antideoxyribonu Clease B | 2 mL (1 mL min.) serum from 1 SST. | Latex Enhanced Nephelometry | 7 days | DNase B antibody is useful in patients with Group A streptococcal infection. It may persist for as long as 3 months. Comparison of the titres of acute and convalescent specimens is useful for diagnosis of Group A streptococcal infection. |
| 118. | Anti Sperm Antibody, Serum | 2 mL (1 mL min.) serum from 1 SST. | Enzyme Immunoassay | 10 days | Sperm antibodies are associated with some cases of infertility. In couples with abnormal post coital tests, 24% males and 35% females exhibit sperm antibodies. These antibodies interfere with the binding of sperm head with zona pellucida of the egg. |
| 119. | BCRABL PCR, Qualitative | 5 mL (3 mL min.) Whole blood / Bone marrow in 1 Lavender | Real Time PCR | 10 days | BCRABL is a fusion gene formed by the rearrangement of breakpoint cluster region (BCR) on chromosome 22 with the ABL protooncogene on chromosome 9 leading to the formation of Philadelphia chromosome. |

| S.No | Test | Specimen | Method | Report | Function |
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| | | Top (EDTA) tube. | | | |
| 120. | BCRABL PCR, Quantitative | 5 mL (3 mL min.) Whole blood / Bone marrow in 1 Lavender Top (EDTA) tube. | Real Time PCR | 12 days | BCRABL is a fusion gene formed by the rearrangement of breakpoint cluster region (BCR) on chromosome 22 with the ABL protooncogene on chromosome 9 leading to the formation of Philadelphia chromosome. This rearrangement is seen in almost 95% patients with CML. The Quantitative assay helps in the management of the disease and monitors effect of therapy. |
| 121. | Chromosome Analysis For Hematologic Malignancy | 2– 3 mL (1.5 mL min.) heparinized Bone Marrow OR 3 mL (2 mL min.) whole blood in 1 Green Top (Sodium Heparin) tube. | Culture, Robotic Microscopy, Karyotype | 14 days | This assay detects the presence of an abnormal clone to indicate malignant neoplastic process. It assists in the diagnosis and classification of certain malignant hematological disorders, evaluation of prognosis, monitoring effects of therapy and remission. Bone marrow specimens are preferred over peripheral blood. |
| 122. | Chromosome Analysis (Karyotype), Blood | 5 mL (3 mL min.) whole blood in 2 Green Top (Sodium Heparin) tubes. | Culture, Robotic Microscopy, Karyotype | 30 days | Chromosome analysis helps in the diagnosis of a wide variety of congenital conditions. It helps in the identification of congenital chromosome abnormalities like Aneuploidy (Trisomy / Monosomy) & structural chromosome abnormalities. |
| 123. | Cryoglobulins Qualitative Test | 3 mL (2 mL min.) whole blood from 1 Lavender Top (EDTA) tube. | Precipitation method | 12 days | Cryoglobulins are proteins that precipitate spontaneously and reversibly at less than body temperature within 3 days. They are insoluble at 4°C and may aggregate upto 30°C. They have a tendency to fix complement and initiate inflammatory reaction. This assay is useful for evaluating patients with Vasculitis, Glomerulonephritis and Lymphoproliferativ e disease. It also helps to evaluate patients with Macroglobulinemia and Myeloma who are symptomatic on exposure to cold. |
| 124. | CALR Mutation Detection | 3 ml ( 2 ml min.) whole blood in 1 Lavender top (EDTA) tube. | PCR, Sequencing | 16 days | Somatic mutations in the calreticulin gene (CALR) are detected in peripheral blood in 6585% of Essential thrombocythemia (ET) and Primary myelofibrosis (PMF) patients that are JAK2 and MPL mutation negative. |
| 125. | Chromosome Analysis, Philadelphia | 2– 3 ml (1.5 mL min.) heparinized bone marrow in 1 Green Top (Sodium Heparin) tube. | Culture, Microscopy, Karyotype | 12 days | About 95% of CML patients show Ph1 chromosomal abnormality. It can also be seen in about 2– 10% cases of pediatric ALL and 20– 50% cases of adult ALL. |
| 126. | Erythropoietin; EPO | 2 mL (0.5 mL min.) serum from 1 SST. | Chemiluminescent Immunoassay | 10 days | EPO is a hormone produced in the kidneys that regulates red cell production. The levels vary inversely with hematocrit. This assay is useful as an aid in distinguishing between primary and secondary Polycythemia. It also differentiates between appropriate secondary Polycythemia (High altitude, pulmonary disease, tobacco use) and inappropriate secondary Polycythemia (tumors). The assay helps to identify candidates for EPO replacement therapy (Chronic renal failure). The assay evaluates Patients undergoing EPO replacement therapy |

| S.No | Test | Specimen | Method | Report | Function |
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| 127. | FLT3 Gene Mutation | 5 mL (3 mL min.) Whole blood / Bone marrow in 1 Lavender Top (EDTA) tube. | Real Time PCR, Fragment Analysis | 12 days | This assay is useful for the qualitative detection of FLT3TKD and FLT3ITD mutations associated with Acute Myeloid Leukemia. |
| 128. | Flow Cytometry, CD8 | 3 mL (2 mL min.) whole blood in 1 Lavender Top (EDTA) tube AND 3 mL (2 mL min.) whole blood in 1 Green Top (Sodium Heparin) tube OR 2 mL (1 mL min.) heparinized Bone marrow. | Flow Cytometry | 3 days | Suppressor T cell marker |
| 129. | FISH BCR / ABL or Philadelphia translocation | 5 mL (3 mL min.) whole blood OR 4 mL ( 2 mL min.) Bone Marrow from 2 Green Top (Sodium Heparin) tubes. | FISH | 15 days | The Ph chromosome causing the BCR/ABL fusion, is present in approximately 95% of CML and 2530% of ALL cases. |
| 130. | FISH MDS Panel Chromosomes 5q, 7q, 8q & 20q. | 5 mL (3 mL min.) whole blood OR 4 mL ( 2 mL min.) Bone Marrow from 2 Green Top (Sodium Heparin) tubes. | FISH | 15 days | Myelodysplastic syndrome (MDS) describes a group of clonal hematopoietic disorders resulting in ineffective production of one or more of the myeloid cell lineages which increases the risk for transformation to AML. |
| 131. | FISH Multiple Myeloma (5 Probes) | 5 mL (3 mL min.) whole blood OR 4 mL ( 2 mL min.) Bone Marrow from 2 Green Top (Sodium Heparin) tubes. | FISH | 20 days | Prognostic marker in patients with Multiple myeloma. |
| 132. | Haptoglobin | 2 mL (1 mL min.) serum from 1 SST. Overnight fasting is preferred. | Immunoturbidimetry | 7 days | Haptoglobin is a binding protein for hemoglobin. Low levels are seen in Chronic intravascular hemolysis, regular strenuous exercise and severe liver disease. Increase occurs as an acute phase reaction. This assay is useful for confirmation of Intravascular hemolysis. |
| 133. | Immunofixation | 2 mL (1 mL | Agarose Gel | 10 days | This assay is useful for diagnosing & monitoring |

| S.No | Test | Specimen | Method | Report | Function |
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| | Electrophoresis (IFE), Serum | min.) serum from 1 SST. Separate serum within 1 hour of collection. | Electrophoresis and Immunofixation | | patients with Monoclonal gammopathies. Protein electrophoresis alone is not considered an adequate screening test for Monoclonal gammopathies. |
| 134. | JAK 2 Mutation Detection, Qualitative PCR | 3 mL (2 mL min.) whole blood from 1 Lavender Top (EDTA) tube. | Real Time PCR | 15 days | The JAK2 mutation can be detected in 6597% of Polycythemia vera, 2555% of Essential thrombocythemia, and 3557% of Chronic idiopathic myelofibrosis. This test detects the V617F mutation for JAK2. This assay aids in the distinction between Reactive cytosis & Chronic myeloproliferative disorder. |
| 135. | Kappa / Lambda Light Chains, Free, Serum | 2 mL (1 mL min.) serum from 1 SST. | Nephelometry | 7 days | This assay in combination with serum protein electrophoresis and Immunofixation electrophoresis yields high sensitivity (99%) for the diagnosis of Plasma cell disorders (PCD). Baseline measurement is of major prognostic value and allows quantitative monitoring of patients with oligosecretory PCD. |
| 136. | Leukemia / Lymphoma Diagnostic Panel: Chronic Lymphoprolifera Tive Disorders, T & B Cell | 3 mL (2 mL min.) whole blood each in 1 Lavender Top (EDTA) tube AND 1 Green Top (Sodium Heparin) tube OR 2 mL (1 mL min.) | Flow Cytometry | 15 days | The Leukemia evaluation employs cell surface markers to aid in the diagnosis and characterisation of neoplasms of hematopoietic origin. Results are useful in the differential diagnosis, therapeutic monitoring and detection of relapses of these neoplasms. |
| 137. | Leukemia Diagnostic Panel: Acute Leukemia T, B Or Myeloid | 3 mL (2 mL min.) whole blood each in 1 Lavender Top (EDTA) tube AND 1 Green Top (Sodium Heparin) tube OR 2 mL (1 mL min.) heparinized Bone Marrow AND Aspirate Smear. | Flow Cytometry | 10 days | The Leukemia evaluation employs cell surface & cytoplasmic markers as a two step process to aid in the diagnosis and characterisation of neoplasms of hematopoietic origin. Results are useful in the differential diagnosis, therapeutic monitoring and detection of relapses of these neoplasms. |
| 138. | Leukemia Diagnostic Panel: Cll/Hcl/Sll (Basic) | 3 mL (2 mL min.) whole blood each in 1 Lavender Top (EDTA) tube AND 1 Green Top (Sodium Heparin) tube OR 2 mL (1 mL min.) heparinized Bone Marrow AND Aspirate Smear. | Flow Cytometry | 9 days | The Leukemia evaluation employs cell surface markers to aid in the diagnosis and characterisation of neoplasms of hematopoietic origin. Results are useful in the differential diagnosis, therapeutic monitoring and detection of relapses of these neoplasms. |
| 139. | MPL (Myeloprolifera Tive Leukemia), Gene Mutation | 3 ml (2 mL min.) whole blood from 1 | PCR, Fragment Analysis | 10 days | Mutations in exon 10 of MPL have been detected in approximately 5% of patients with Primary myelofibrosis (PMF) and Essential |

| S.No | Test | Specimen | Method | Report | Function |
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| | | Lavender Top (EDTA) tube. | | | thrombocythemia (ET). |

**FLUID ANALYSIS**

| S.No | Test | Specimen | Method | Report | Function |
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| 140. 1 | Fluid Ascitic / Pleural | 5 mL fluid in a sterile screw capped container. | Biochemistry and microscopy of Gram, Leishman, Ziehl Neelsen and Fluorescent stained smears | Next Day | For pathological Investigation. |
| 141. 2 | Fluid CSF(Cerebro Spinal Fluid) | 2 mL Cerebrospinal fluid in a sterile screw capped container. | Biochemistry and microscopy of Gram, Leishman, Ziehl Neelsen and Fluorescent stained smears | Same Day | For pathological Investigation. |

**HAEMATOLOGY**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 142. | Absolute Eosinophil Count | 3 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry | Same Day | To determine the absolute eosinophil count. |
| 143. | Absolute Neutrophil Count | 3 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry | Same Day | To determine the absolute neutrophil count. |
| 144. | APTT Partial Thromboplastin Time Activated | 3 mL whole blood in 1 Blue Top (Sodium Citrate) tube. | Electromechanical Clot Detection | Same Day | APTT measures intrinsic and common pathways of the coagulation cascade. Prolonged APTT may be caused by heparin and other anticoagulants, factor deficiencies or inhibitors such as lupus anticoagulants. |
| 145. | Bone Marrow Biopsy | Bone marrow specimen | Grossing, Processing (Automated Tissue Processor), Embedding (Automated), Sectioning, Staining and Microscopy | 9 days | Aspiration and biopsy of the bone marrow is used to diagnose, confirm, and/or stage hematologic disease, and is a diagnostic tool in non-hematologic disorders and malignancies |
| 146. | Blood Group RH Type | 4 mL whole blood in 1 Lavender Top (EDTA) tube. + 2ml clocloted blood in 1 Red top tube. | Forward & Reverse typing | Same Day | To determine the blood Group. |
| 147. | BT/CT | Direct Patient | Ivy' s method / Lee & White | Same Day | Bleeding Time<br>Clotting Time |
| 148. | Complete Haemogram | 3 mL whole blood in 1 Lavender Top (EDTA) tube. | Electrical Impedence, Flowcytometry Photometry | Same Day | This test provides information about red cells, white cells and platelets. Results are useful in the diagnosis of anemia, infections, leukemias, clotting disorders and many other medical conditions. ESR acts as an acute phase reactant. |
| 149. | COOMB Test (Indirect) | 2 mL serum, in a Serum separating tubes. | Latex Agglutination | Same Day | Indirect Coombs Test is used to identify red blood cell IgG antibodies that can cross the placenta and cause Hemolytic disease of the newborn. |
| 150. | COOMB Test(Direct) | 3 mL whole blood. In Lavender Top (EDTA) tube. | Latex Agglutination | Same Day | Direct Coombs test detects IgG and Complement bound to erythrocytes. The test is useful in diagnosing patients with Hemolytic disease of the newborn and Autoimmune Hemolytic Anemia. Drug induced antibodies may give false positive reactions. |
| 151. | DC (Differential Count) | 3 mL whole blood in 1 | Electrical Impedence, Flowcytometry & | Same Day | For pathological Investigations. |

| S.No | Test | Specimen | Method | Report | Function |
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| | | Lavender Top (EDTA) tube. | Microscopy | | |
| 152. | ESR | 3 mL whole blood in 1 Lavender Top (EDTA) tube. | Automated, Sedimentation | Same Day | ESR is an acute phase reactant which indicates presence and intensity of an inflammatory process. It is never diagnostic of a specific disease. It is used to monitor the course or response to treatment of certain diseases. Extremely high levels are found in cases of malignancy, hematologic diseases, collagen disorders and renal diseases. |
| 153. | Falciparum With P Vivax | 3 mL whole blood from 1 Lavender Top (EDTA) tube. | Immunochromatography | Same Day | Malaria is a protozoan parasitic infection, prevalent in subtropical and tropical parts of the world. This test is not to be used in lieu of conventional smear diagnosis. Occasionally, test may show negativity even in presence of smear positivity. |
| 154. | FDP Plasma Fibrinogen Degradation ProductS / D Dimer | 4 mL Platelet Poor Plasma (PPP) from 2 Blue Top (Sodium Citrate) tubes. | Latex Agglutination | Same Day | In DIC both thrombin and plasmin are generated. The breakdown products of fibrin clots and fibrinogen include D-Dimer and FDP. These analytes are also elevated when the coagulation and fibrinolytic systems are activated. |
| 155. | G6PD(Deficiency Test) | 4 ml of whole blood in 1 Lavender top EDTA tube | Spectrophotometry | Next day | G-6-PD deficiency is a sex linked disorder affecting males whereas females are the carriers. More than 300 variants of G6PD are known; hence deficiency can range from asymptomatic to acute hemolytic episodes. These episodes can be triggered by drugs, ingestion of fava beans, viral and bacterial infections. |
| 156. | Haemoglobin | 3 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry & Microscopy | Same Day | For pathological Investigations. |
| 157. | HB ESR PCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Automated, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 158. | HB PCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 159. | HB Platelets | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Electrical Impedence, Flowcytometry & Microscopy | Same Day | For pathological Investigations. |
| 160. | HB TC DC | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Flowcytometry & Microscopy | Same Day | For pathological Investigations. |
| 161. | HB TC DC BT/CT | 4 mL whole blood in 1 Lavender Top (EDTA) tube, Direct patient | Photometry, Flowcytometry & Microscopy | Same Day | For pathological Investigations. |
| 162. | HB TC DC ESR | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Flowcytometry, Automated ESR & Microscopy | Same Day | For pathological Investigations. |
| 163. | HB TC DC ESR MP | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Flowcytometry, Automated ESR & Microscopy | Same Day | For pathological Investigations. |
| 164. | HB TC DC ESR PCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Flowcytometry, Automated ESR, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |

| S.No | Test | Specimen | Method | Report | Function |
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| 165. | HB TC DC ESR Platelets | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Flowcytometry, Automated ESR, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 166. | HB TC DC MP | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 167. | HB TC DC PCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 168. | HB TC DC Platelets | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Photometry, Flowcytometry, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 169. | LE Cell Test | 10 mL whole blood in a glass container. | Romanowsky staining | Same Day | Evaluate autoimmune diseases, Systemic Lupus erythrematous and in the diagnosis of " lupoid" hepatitis (Chronic active hepatitis). |
| 170. | Lupus Anticoagulant | 4 mL Blue Top (Sodium Citrate) tubes. | DRVV Clotting Assay | 16 Days | This test is useful for determining the presence of Lupus Anticoagulant that is associated with increased risk of thrombosis. |
| 171. | Malaria Parasite(MP) | Submit two thin AND two thick peripheral blood smears. | Microscopic Examination | Same Day | Malaria is a protozoan parasitic infection, prevalent in subtropical and tropical parts of the world. This test helps in species identification. It also detects other hemoparasites if present. |
| 172. | MCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube | Calculated | Same Day | For pathological Investigations. |
| 173. | MP Platelets | Submit two thin AND two thick peripheral blood smears & 4 mL whole blood in 1 Lavender Top (EDTA) tube | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | Malaria is a protozoan parasitic infection, prevalent in subtropical and tropical parts of the world. This test helps in species identification. It also detects other hemoparasites if present. |
| 174. | Osmotic Fragility | 3ml whole blood in blue top (Sodium citrate) and 6ml hepatin blood | Colorimetric detection of lysis in hypotonic solution | Second day after sample collection | Diagnosis of conditions:<br>1. Hereditary spherocytosis<br>2. Hereditary elliiptocytosis<br>3. Hereditary stomatocytosis<br>4. Autoimmune hemolytic anaemia<br>5. Thalassaemias<br>6. Iron deficecny anaemia<br>7. Enzyme abnormalities |
| 175. | PCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Electrical Impedence | Same Day | For pathological Investigations. |
| 176. | Platelets | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence & Microscopy | Same Day | For pathological Investigations. |
| 177. | Platelet Count | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |
| 178. | Platelets BT/CT | 4 mL whole blood in 1 Lavender Top (EDTA) tube & direct patient. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | ---------- |
| 179. | Prothrombin Time(P Time) | 3 mL whole blood in 1 Blue Top (Sodium Citrate) tube. | Electromechanical Clot Detection | Same Day | Prothrombin Time assesses the extrinsic and common coagulation pathway from Factor VII through fibrin formation. Results are interpreted based on INR. A prolonged INR suggests a |

| S.No | Test | Specimen | Method | Report | Function |
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| | | | | | potential bleeding disorder or if on warfarin therapy, a potential for bleeding complications. |
| 180. | RBC Count | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |
| 181. | Reticulocyte Count | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Microscopy | Same Day | For pathological Investigations. |
| 182. | TC | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |
| 183. | TC DC | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |
| 184. | TC DC ESR | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination, Automated ESR | Same Day | For pathological Investigations. |
| 185. | TC DC MP | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |
| 186. | TC DC PCV | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |
| 187. | TC DC Platelets | 4 mL whole blood in 1 Lavender Top (EDTA) tube. | Flowcytometry, Electrical Impedence ,Microscopic Examination | Same Day | For pathological Investigations. |

**HISTOPATHOLOGY**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 188. | Congo Red Stain | Tissue | Special stain, Microscopy | 2 Days | STAINS AMYLOID TISSUES |
| 189. | DIF IgA | Kidney/Skin specimen in normal saline. | Cryoprocessing, Fluorescence Microscopy | 7 days reporting | Immunoflouroscence Findings |
| 190. | DIF IgG | Kidney/Skin specimen in normal saline. | Cryoprocessing, Fluorescence Microscopy | 7 days reporting | Immunoflouroscence Findings |
| 191. | DIF IgM | Kidney/Skin specimen in normal saline. | Cryoprocessing, Fluorescence Microscopy | 7 days reporting | Immunoflouroscence Findings |
| 192. | DIF(IgA/IgG/IgM/C3) | Skin specimen in normal saline. | Cryoprocessing, Fluorescence Microscopy | 7 days reporting | Immunoflouroscence Findings |
| 193. | DIF ( IgG, IgA, IgM, C3, C1q, Kappa, Lambda) | Kidney specimen in normal saline. | Cryoprocessing, Fluorescence Microscopy | 7 days reporting | Immunoflouroscence Findings |
| 194. | DIF C3C | Kidney/Skin specimen in normal saline. | Cryoprocessing, Fluorescence Microscopy | 7 days reporting | Immunoflouroscence Findings |
| 195. | Frozen Biopsy Histology | Fresh Tissue without preservatives | Cryoprocessing, Staining & Microscopy | 30 min | Histopathological Findings |
| 196. | Routine Biopsy specimen Small | Tissue with preservative (10% Formalin, Normal Saline) | Grossing, Processing (Automated Tissue Processor), Embedding (Automated), | 4 days | Histopathological Findings |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | | Sectioning, Staining and Microscopy | | |
| 197. | Routine Biopsy specimen Others | Tissue with preservative (10% Formalin, Normal Saline) | Grossing, Processing (Automated Tissue Processor), Embedding (Automated), Sectioning, Staining and Microscopy | 5 working days | Histopathological Findings |
| 198. | Absolute Lymphocyte Count | 3ml white blood 1 Lavender Top ( EDTA ) tube | Flowcytometry | Same day | To determine the absolute count |
| 199. | Absolute Monocyte Count | 3ml white blood 1 Lavender Top ( EDTA ) tube | Flowcytometry | Same day | To determine the absolute count |
| 200. | Absolute Basophil Count | 3ml white blood 1 Lavender Top ( EDTA ) tube | Flowcytometry | Same day | To determine the absolute count |
| 201. | Absolute Reticulocyte count | 3ml white blood 1 Lavender Top ( EDTA ) tube | Flowcytometry | Same day | To determine the absolute count |
| 202. | Blood for Microfilaria | 5-10 ml whole Blood in 1 Lavender Top ( EDTA ) tube | Light & High power Microscopy ( physical ) | same day | To determine the Microfilaria disease. |
| 203. | Sickling Test | 5-10 ml whole Blood in 1 Lavender Top ( EDTA ) tube | Light & High power Microscopy ( physical ) | same day | To determine the Sickle Cell disesse |
| 204. | Neutophil Lymphocyte Ratio | 3 ml whole Blood in 1 Lavender Top( EDTA ) tube | Flowcytometry | Same day | To determine the Neutrophil Lymphocyte Ratio |



**IMMUNO-PATHOLOGY**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 205. | AMA(Anti-Mitochondrial Antibody) | 4 mL serum, in a Serum separating tubes (SST Gel). | Indirect Immunfluorescence | 4– 6 days | Mitochondrial antibody is present in approximately > 90% patients with Primary Biliary Cirrhosis. This assay is not useful for indiciating the prognosis of the disease or monitoring the course of the disease |
| 206. | ANA Profile Anti Nuclear Antibody | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | ANA is useful in the diagnosis of patients with autoimmune diseases such as SLE, Mixed connective tissue disease, Rheumatoid arthritis, Sjogren's syndrome, Progressive systemic sclerosis and CREST syndrome. The incidence of low titre ANA positivity increases with age in normal individuals. many drugs like Hydralazine and Procainamide may induce ANA production. |
| 207. | ANA With Titre(1:160,320.640) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | Autoimmune disorder |
| 208. | ANA(Anti Nuclear Antibody) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | ANA is useful in the diagnosis of patients with autoimmune diseases such as SLE, Mixed connective tissue disease, Rheumatoid arthritis, Sjogren's syndrome, Progressive systemic sclerosis and CREST syndrome. The incidence of low titre ANA positivity increases with age in normal individuals. many drugs like Hydralazine and Procainamide may induce ANA production. |
| 209. | ANCA(C/P) Antineutrophil Cytoplasmic Antibodies | 4 mL serum, in a Serum separating tubes (SST Gel). | Indirect Immunfluorescence | 4– 6 days | This assay is useful for evaluating patients suspected of having Autoimmune vasculitis, both Wegener's granulomatosis and Microscopic Polyangiitis. Autoantibodies to PR3 ( c-ANCA) occur in patients with classical / limited end- |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | | | | organ involvement Wegener's granulomatosis . Antibodies to MPO (p-ANCA) occur predominantly in patients with Microscopic Poly-angiitis. |
| 210. | ANCA(P/C) And Anti GBM Antibody | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | Autoimmune disorder |
| 211. | ANF(Anti Nuclear Factor) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | ANA is useful in the diagnosis of patients with autoimmune diseases such as SLE, Mixed connective tissue disease, Rheumatoid arthritis, Sjogren's syndrome, Progressive systemic sclerosis and CREST syndrome. The incidence of low titre ANA positivity increases with age in normal individuals. Many drugs like Hydralazine and Procainamide may induce ANA production. |
| 212. | Anti DsDNA Antibody | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | ds-DNA Antibody is detected in patients with active SLE and approximately 20% of patients with Mixed connective tissue disease. |
| 213. | ANA And ANA Profile | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence + Immunoblot | 4– 6 days | Autoimmune disorder |
| 214. | Anti GBM Antibody Glomerular Basement Membrane | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | GBM antibody mediated Glomerulonephritis and Goodpastures syndrome occur with bimodal age distribution mainly in males. This assay is useful for evaluating patients with rapid onset renal failure or pulmonary hemorrhage. It also aids in the diagnosis of Goodpastures syndrome. |
| 215. | Anti Pancreas Antibody(APA) | 4 mL serum in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | Platelet antibodies may be allo or autoantibodies directed against antigenic targets on platelet cytoplasmic membrane. This assay is useful for evaluating cases of Immune platelet refractoriness, Post transfusion purpura or Neonatal alloimmune thrombocyto-penic purpura. |
| 216. | Auto Immune Liver Profile | 4 mL serum, in a Serum separating tubes. (SST Gel).. | Immunoblot | 4– 6 days | Liver disorder |
| 217. | ASMA (Smooth Muscle Antibody) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | This antibody is positive in titres in patients with Autoimmune chronic active hepatitis. It is also detected in some cases of liver and viral diseases. |
| 218. | CIBD Profile Chronic Inflamatory Bowel Disease | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | CIBD is a term that describes chronic inflammation disorder of the small and /or large intestine. It included ulcerative colitis and Crohn's disease. |
| 219. | DsDNA With Titre (1:20,40,80) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | Autoimmune disorder |
| 220. | Endomysium/Gliadin Anti Tissue Transglutaminase (TTG) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | TTG IgA antibody is useful in diagnosing gluten sensitive enteropathies like Coeliac Disease and Dermatitis herpetiformis. |
| 221. | Epstein Barr Virus(IIF) | 4 mL serum, in a Serum separating | Indirect Immunfluorescence | 4– 6 days | Infection with EBV can cause lymphoproliferative disorders including tumors. Antibodies to EBNA IgG generally appear |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | tubes. (SST Gel). | | | during the convalescent phase of EBV infection and persist throughout life. VCA-IgM positivity in the absence of EBNA suggests that the patient has a recent active infection. |
| 222. | PCA(Parietal Cell Antibody) | 4 mL serum, in a Serum separating tubes. (SST Gel). | Indirect Immunfluorescence | 4– 6 days | Parietal cell antibodies are found in 70– 90% patients with Pernicious anemia, 50% individuals with Gastric atrophy without pernicious anemia and upto 15% of unselected adult population. This assay is useful for evaluating patients suspected of having Pernicious anemia or Immune mediated deficiency of vitamin B12 with or without Megaloblastic anemia. |
| **IMMUNO HISTO CHEMISTRY (IHC)** | | | | | |
| **S.No** | **Test** | **Specimen** | **Method** | **Report** | **Function** |
| 223. | BCL 2 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | This antibody has found numerous applications in studies of apoptosis, e.g. in hematological malignancies and other malignant diseases as it function as suppressor of apoptosis. The antibody may be useful in differentiating follicular lymphoma from follicular hyperplasia, from differential diagnosis between follicular lymphoma and other low grade lymphoproliferative diseases, and for differential identification of diffuse large B-cell lymphoma versus Burkitt lymphoma/leukemia. |
| 224. | CYTOKERATIN | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Cytokeratins are excellent markers of epithelial cell differentiation and have been widely used as tools in determination of epithelial origin of a tumour. |
| 225. | CALRETININ | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Expressed by various types of mesothelial epithelial and stromal cells. It is abundantly expressed in central and peripheral neural tissues, particularly in the retina and in the neurons of the sensory pathways, and calretinin may play an important role in the survival of nerve cells during disturbances in calcium homeostasis. Calretinin is also expressed by both normal and neoplastic mesothelial cells, and it has been suggested as a useful marker for the identification of malignant mesotheliomas of the epithelial type except for desmoplastic variant and for the differentiation of these malignancies of lung adenocarcinoma. |
| 226. | CYTOKERATIN - 20 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Cytokeratin 20 is restricted to gastric and intestinal epithelium, urothelium, and Merkel cells. |
| 227. | CYTOKERATIN - 7 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Cytokeratin 7 recognizes the simple epithelium found in most glandular and transitional epithelia; but not that which is found in stratified squamous epithelia. Cytokeratin 7 is a basic cytokeratin, and is expressed in epithelial cells of ovary, lung, and breast, but not of colon or gastrointestinal tract. |
| 228. | DESMIN | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It is primarily used for identification of smooth muscle and skeletal muscle tumour. |
| 229. | DOG1 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | DOG1 is a cell surface protein of unknown function selectively expressed in gastrointestinal stromal tumors (GIST). DOG1 expression has been reported to be a very sensitive and specific marker for GIST in paraffin-embedded tissue. In KIT/CD117 negative and PDGFRA-mutant GIST cases, DOG1 increased the accuracy of GIST diagnosis). |
| 230. | EPITHELIAL MEMBRANE ANTIGEN (EMA) | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It is an excellent marker for most normal and neoplastic epithelia. |
| 231. | ER | Tissue | Immunohisto | 4 days | The absence of ER predicts early recurrence and |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | Specimen | Chemistry (IHC) | | poor survival of breast cancer patients. Also, the presence of ER in tumors predicts the potential for benefit from tamoxifen and other endocrine-related therapies. |
| 232. | HER 2 NU | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It is particularly useful for predicting response to Herceptin (trastuzumab) in breast carcinoma. |
| 233. | HMB 45 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It is observed in intracytoplasmic antigen in the majority of melanomas and other tumors demonstrating melanoma/melanocytic differentiation. |
| 234. | HEPATOCYTE (HEP1) | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Hepatocyte Specific Antigen (HSA) specific for normal and neoplastic hepatocytes. |
| 235. | IHC ACTIN (SMOOTH MUSCLE ACTIN) | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It represents an excellent marker for myogenic soft tissue tumors and smooth muscle differentiation. This antibody reacts with many types of smooth muscle cells, such as those present in vascular walls, intestinal muscularis mucosae and propria, myometrium, stroma of various tissues, and is also positive for myoepithelial cells of various glands, notably salivary and mammary gland. Myogenic soft tissues detected include leiomyosarcomas, leiomyomas, and certain stromal cells surrounding infiltrating ductal carcinoma of the breast. |
| 236. | IHC (S 100 PROTEIN) | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | The wide expression of this antigen has substantially demonstrated its diagnostic utility. Its main use is in the evaluation of peripheral nerve sheath and melanocytic tumour. |
| 237. | IHC TTF 1 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | This is a nuclear transcription factor for the development of thyroid & pulmonary time.It is expressed in thyroid carcinomas (except anaplastic type), in most cases of lung carcinoma and has become one of the most useful marker in the differential diagnosis between lung carcinoma and carcinoma of other sites in one side and mesotheliomas on the other. |
| 238. | IHC CHROMOGRANIN A | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Immunohistochemical studies have demonstrated chromogranin A in most granule-containing endocrine cells, central and peripheral nerves, as well as in most neuroendoctrine tumors. |
| 239. | IHC CYCLIN D1 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Cyclin D1 is one of the key cell cycle regulators, and functions in association with cdk4 and / or cdk6 by phosphorylating the Rb protein. It is a putative proto-oncogene overexpressed in a wide variety of human neoplasms including mantle cell lymphomas (MCL). |
| 240. | IHC CD 3 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | The CD3 complex is involved in signal transduction to the T cell interior following antigen recognition. This antibody recognizes T cells in thymus, bone marrow, peripheral lymphoid tissue and blood and detect both normal and neoplastic T cells. |
| 241. | IHC CD 5 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It is a useful marker for small lymphaytic Lymphoma and mantle cell lymphoma. |
| 242. | IHC CD 10 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | It is particularly useful for identification of endometrial stromal neoplasms. It is also positive in renal cell carcinomas, solid and pseudopapillary tumour of pancreas and myoepithelial cell tumours. |
| 243. | IHC CD 15 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | CD15 recognizes a human myelomonocytic antigen. The CD15 antigen is present on greater than 95% of mature peripheral blood eosinophils and neutrophils and is present at low density on circulating monocytes. In lymphoid tissue, CD15 reacts with Reed-Sternberg cells of Hodgkin's |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | | | | disease and with granulocytes. |
| 244. | IHC CD 20 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | This antibody can be used to identify B-cells in normal and neoplastic tissues. The CD20 antigen is expressed in most B-cells present in peripheral blood and lymphoid tissue. The antigen is also found in most non-Hodgkin' s lymphomas of B-cell lineage. |
| 245. | IHC CD 23 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | CD23 is particularly useful for differentiation between CD23-positive B-cell chronic lymphocytic leukemia/small lymphocytic lymphoma and CD23-negative mantle cell lymphoma. |
| 246. | IHC CD 30 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | CD30 expression is found on Hodgkin's and Reed-Sternberg cells, and on activted B and T lymphocytes. CD30 is also expressed by embryonal carcinoma cells and cells of anaplastic large cell lymphoma. |
| 247. | IHC CD 34 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | The antibody is useful for the identification of vascular and lymphatic tumors and for the subclassification of leukemias. This marker also stains a varity of soft tissue neoplasms, including DFSP, solitary fibrous tumour, gist and spingle cell component of a nuclear of adipose tissue neoplasms. |
| 248. | IHC CD 99 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Also expressed in other tumours like lymphoblastic lymphoma, ependymoma, solitary fibrous tumour, synovial sarcoma and ovarian gramlosa cell tumours. |
| 249. | IHC CD 45 (LCA) | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | This antibody can be used to identify lymphocytes in normal tissues. The CD45 (LCA) antigen is expressed in most lymphocytes present in peripheral blood and lymphoid tissue. This test is identified lymphoma. |
| 250. | IHC CD 117 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | This antibody can be used to identifiy Gastro instestinal stromal tumour. |
| 251. | IHC CD 138 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | CD138 excellent marker for identifying plasma cells. CD138 is also expressed in fibroblasts, keratinocytes and normal hepatocytes. |
| 252. | IHC P63 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | p63, has been identified in basal cells in the epithelial layers of a variety of tissues, including epidermis, cervix, urothelium, breast and prostate. p63 has also been shown to be a sensitive marker for lung squamous cell carcinomas (SqCC) |
| 253. | IHC C4d | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | C4d covalently binds to endothelium and basement membrane. Capillary deposition of complement C4d has been suggested to be a valuable marker for humoral rejection and endothelial C4d deposition in kidney allograft has been associated with inferior graft outcome. |
| 254. | KI – 67 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | This antibody can be used to identifiy tumour cell proliferation. |
| 255. | PSA | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | PSA is produced by the prostate epithelium. PSA is used to confirm prostatic acinar cell origin in primary and metastatic carcinomas and to rule out non-prostatic carcinoma mimics. |
| 256. | PAX8 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | PAX8 antibody is expressed in a high percentage of renal cell carcinomas and ovarian cancers. The expression of the mouse monoclonal PAX8 target antigens was found in normal kidney, thyroid and cervix, but was not identified in normal ovary. |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 257. | P40 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | p40 is selectively expressed in lung SCC, offering an opportunity for improved specificity resulting in diminished reactivity in lung ADC and increased specificity. Changes in expression of p40 have been implicated in other neoplastic tissues, including bladder, prostate, and head and neck cancers). |
| 258. | PR | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | The absence of PR predicts early recurrence and poor survival of breast cancer patients. Also, the presence of PR in tumors predicts the potential for benefit from tamoxifen and other endocrine-related therapies. |
| 259. | SYNAPTOPHYSIN | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | The antibody is useful for the identification of normal neuroendocrine cells and neoplasms of neuroendocrine and neuroectodermal origin. |
| 260. | VIMENTIN | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | Expresion of Vimentin is so ubiquitious, that it is often used as a mesospecific marker of tumours of mesenchymal origin. |
| 261. | WT1 | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | WT1 has been observed in kidney, spleen and gonadal ridge mesoderm. WT1 expression has also been observed in sertoli cells of testes and in granulosa cells of the ovary. In tumors, WT1 has been demonstrated in Wilms' tumors and in the majority of mesotheliomas (nuclear and paranuclear staining). |
| 262. | 34 ß E 12 (HMWCK) | Tissue Specimen | Immunohisto Chemistry (IHC) | 4 days | The antibody labels squamous, ductal and complex epithelia, and stains selectively the keratins of bucal cells. It is useful in the differentiation of benign prostate glands from prostatic adenocarcinoma and the classification of neoplastic tissue as carcinoma or epithelial origin. |
| 263. | NAPSIN A | TISSUE SPECIMEN | IHC (2HC ) | 4 DAYS | Napsin A is a markar resulting in granular cytoplasmic screening It is an aspartic proteinase : expressed in type II pneumocytes , in alveolar macrophages, & in the epithelium of PCT & DCT of the Kidney . This marker is particularly useful for diagnosis of pulmonary adenocarcinoma & distinguishing from other type of lung cancer NAPSIN A is slightly higher sensitivity for adenocarcinoma when compared to TTF -1. |



**MICROBIOLOGY**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 264. | AFB CULTURE(BACTEC) | Site Specific specimen & Tissues | Automated Fluorescent | 1week -6 weeks | For detection of Acid Fast Bacilli |
| 265. | AFB STAIN/SMEAR(Z N STAIN) | Site Specific specimen & Tissues | ZN Staining & conventional microscopic examination | Next Day | For detection of Acid Fast Bacilli |
| 266. | BACTEC CULTURE AEROBIC(Blood) | Blood 4 – 5 ml Adult<br>1 ml Infant (Bactec Culture Vial) | Automated Fluorescent | 3rd day & 7th days | Pathological Findings |
| 267. | BACTEC CULTURE AEROBIC(Fluids) | Sterile Body Fluids 4 – 5 ml Adult<br>1 ml Infant (Bactec Culture Vial) | Automated Fluorescent | 3rd day & 7th days | Pathological Findings<br>Detection of aerobic microorganisms |
| 268. | CULTURE CSF | In Sterile | Culture on respective | 3 days | Detection of growth of aerobic microorganisms |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | Vial/Culture container | media / Automated Colorimetric Technology (ID & AST) | | |
| 269. | CULTURE FLUID | In Sterile Vial/Culture container | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganisms |
| 270. | CULTURE FUNGAL | Miscellaneous specimens | Culture on respective media | 15 days | Pathological Findings<br>Detection of growth of fungal elements |
| 271. | CULTURE EYE SWAB | Eye Swab | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganisms |
| 272. | CULTURE OT SWAB | OT Swab | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganisms |
| 273. | CULTURE OTHER | Miscellaneous specimens | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganisms |
| 274. | CULTURE PROSTATIC MASSAGE | Post massage secrition | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganism |
| 275. | CULTURE PUS | Pus In Sterile Vial/Culture container | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganism |
| 276. | CULTURE SPUTUM | Sputum In Sterile Vial/Culture container | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganism |
| 277. | CULTURE STOOL | Stool In Sterile Vial/Culture container | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganism |
| 278. | CULTURE THROAT SWAB | Throat Swab | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Detection of growth of aerobic microorganism |
| 279. | CULTURE URINE | Urine (Urine Container) In Sterile Vial/Culture container | Culture on respective media / Automated Colorimetric Technology (ID & AST) | 3 days | Pathological Findings |
| 280. | FUNGAL STAIN | Miscellaneous specimens | KOH preparation, PAS, H & E Staining and microscopy | Next Day | Pathological Findings |
| 281. | GRAM STAIN | Miscellaneous specimens | Staining and microscopy | Next Day | Pathological Findings |
| 282. | GRAM STAIN | Miscellaneous specimens | Gram Stain & Microscopy | Next Day | Detection of gram positive/gram negative microorganisms |
| 283. | GRAM STAIN URETHRAL SMEAR | Urethral Specimen | Gram Stain & Microscopy | Next Day | Pathological Findings |
| 284. | HANSEN(AFB) | Skin Specimen | Modi ZN Stain | Next Day | Pathological Findings |
| 285. | INDIA INK | CSF In Sterile | India ink & | Next Day | Pathological Findings for (criptococcous) |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | PREPARATION | Vial/Culture container | Microscopy | | |
| 286. | Modifies ZN staining for (AF oocystes) | Stool In Sterile Vial/Culture container | Modified ZN Staining & Microscopy | Next Day | Pathological Findings for (Criptosporidium) |
| 287. | Modifies ZN staining for Lepra Bacilli (M. Lepra) | Slit Skin In Sterile Vial/Culture container | Modified ZN Staining & Microscopy | Next Day | Pathological Findings |
| 288. | MANTOUX TEST( MT) | Direct Patient | According to dose | 48-72 hrs | Pathological Findings (TB) |
| 289. | NAIL CLIPPING/SLIT SKIN NASAL/SLIT SKIN SMEAR | Same side | KOH preparation | Next Day | For fungal pathogen diagnosis |
| 290. | SCOLEX OF HYDATID | Cyst Fluid | Direct Microscopy | Next Day | Pathological Findings (Tape worm) |
| 291. | SMEAR FOR FUNGUS | Miscellaneous specimens | PAS | Next Day | Pathological Findings |

**SEROLOGY**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 292. | ALDEHYDE | 4 mL serum, in a Serum separating tubes. | Precipitation | Next | Kala Azar is caused by the organism Leishmania donovani. This test is recommended for patients from endemic areas who show appropriate clinical findings. |
| 293. | ANTI HCV IGG | 4 mL serum, in a Serum separating tubes | Elisa | Next Day | HCV is the most common cause of Post transfusion hepatitis. HCV antibodies usually appear in the late convalescent stage >6 months after onset of infection. This assay is the screening test for resolved or chronic HCV. |
| 294. | CHIKUNGUNYA IGM | 4 mL serum, in a Serum separating tubes | Immuno chromatography | Same Day | Detection of Chikungunya |
| 295. | DENGUE ELISA AG+AB (NS1 & IgM, IgG) | 4 mL serum, in a Serum separating tubes | ELISA | Next Day | Detection of Dengue virus |
| 296. | LEPTO SPIRA ANTIBODY IGM | 4 mL serum, in a Serum separating tubes | Immuno chromatography | Same Day | Detection of Leptospira |
| 297. | SALM TYPHI IGM | 4 mL serum, in a Serum separating tubes | Immuno chromatography | Same Day | Detection of Salmonella Typhi |
| 298. | URINE PREGNANCY TEST | 5 ml | Immuno chromatography | Same Day | Pregnency |
| 299. | VDRL | 4 mL serum / Plasma, in a Serum separating tubes | Slide Flocculation | Same Day | RPR is used as a screening test for Syphilis. It is also used for following the progression of disease and response to therapy. |
| 300. | WIDAL TEST(TUBE) | Serum Clot vial | WIDAL | Next Day | Pathological Findings (Salmonella) |



**TUMOUR MARKER**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 301. | ALPHA FETO PROTEIN | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | Tumour Marker |
| 302. | BETA HCG | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | Maternal serum free beta HCG assessment between 9-13 weeks, has significant utility in First Trimester Prenatal Screening for Down Syndrome and other chromosomal anomalies. This test also helps in the diagnosis and monitoring of Trophoblastic diseases and certain Testicular tumors where ratio of free beta HCG to Total HCG is high. Some tumors secrete only free beta HCG and virtually no Total HCG is detected. |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 303. | CA 125 | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | CA 125 is useful to monitor the response to therapy and if elevated suggests recurrence in women with ovarian cancer. Approximately 50% of women with metastatic ovarian cancer have elevated levels. |
| 304. | CA 15.3 | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | CA 15.3 is useful to monitor the response to treatment and if elevated suggests recurrence in women with Stage II or III Breast Cancer. |
| 305. | CA 19.9 | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | CA 19.9 is useful to monitor the response to treatment and if elevated suggests recurrence in patients with Pancreatic Cancer. Elevated concentrations are not specific. Use in patients with other medical conditions is not advised. |
| 306. | CEA Carcinoembryonic antigen | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | CEA is a tumor marker used to monitor patients with persistent, recurrent or metastatic colonic carcinoma. High levels of CEA are also seen in 30% of patients with Breast, Lung, Hepatocellular and Pancreatic carcinoma. |
| 307. | PSA (Prostate specific antigen) | 4 mL serum, in a Serum separating tubes | (ECLIA) Electro Chemiluminescence Immuno assay | Same day | It is used for the detection of prostate cancer in men, and to aid in the management of cancer patients. |

**VIRAL AND BACTERIAL MARKER**

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| 308. | CMV IGG CYTOMEGALO VIRUS | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 days | Avidity test helps in discriminating primary infection & reinfection. Avidity indices less than 30% is an indication of current infection. |
| 309. | CMV IGG/IGM CYTOMEGALO VIRUS | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 days | ---------- |
| 310. | CMV IGM CYTOMEGALO VIRUS | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 days | CMV is a significant cause of morbidity and mortality specially in organ transplant recipients and immunocompromised individuals. It is also responsible for congenital disease of the newborn. Positive IgM levels indicate a recent infection whether primary, recativation or reinfection. |
| 311. | HAV(IGG) | 4 mL serum, in a Serum separating tubes | ELISA | 10 days | HAV is a self limiting disease transmitted by the fecal-oral route. Anti HAV IgG levels rise quickly once the virus is cleared and may persist for many years. Presence of Anti HAV IgG indicates immunity against the virus. |
| 312. | HAV(IGG+IGM) | 4 mL serum, in a Serum separating tubes | ELISA | 10 days | HAV is a self limiting disease transmitted by the fecal-oral route. This test is useful to assess immunity and recent infection to HAV. |
| 313. | HAV(IGM) | 4 mL serum, in a Serum separating tubes | ELISA | 10 days | HAV is a self limiting disease transmitted by the fecal-oral route. Anti HAV IgM antibodies are detectable by the time symptoms appear, usually 15-45 days after exposure. They fall to undetectable levels by 6 months after HAV infection. |
| 314. | HBSAG HEPATITIS B SURFACE ANTIGEN | 4 mL serum, in a Serum separating tubes | ECLIA | Same Day | This assay is useful for the diagnosis of acute, recent and chronic HBV infection. It also determines the chronic Hepatitis B infection status. |
| 315. | HERPES IGG | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | Herpes Simplex Virus Type 1 (HSV-1) infections are acquired through direct person to person contact, most typically by a nongenital route. Recurrent infections are clinically apparent as fever blisters or cold sores. HSV 2 infections are usually acquired through sexual contact. 85% of genital herpes is caused by Type 2 virus and 15% caused by Type 1 virus. This assay helps in determining previous exposure to HSV Types 1 & 2. |
| 316. | HERPES IGG/IGM | 4 mL serum, in a Serum | Enzyme Immunoassay | 10 Day | Herpes Simplex Virus Type 1 & 2. |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | separating tubes | | | |
| 317. | HERPES IGM | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | Herpes Simplex Virus Type 1 (HSV-1) infections are acquired through direct person to person contact, most typically by a nongenital route. Recurrent infections are clinically apparent as fever blisters or cold sores. HSV 2 infections are usually acquired through sexual contact. 85% of genital herpes is caused by Type 2 virus and 15% caused by Type 1 virus. This assay helps in determining recent exposure to HSV Types 1 & 2. |
| 318. | HEV(IGG) | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | HEV causes an acute self limiting infection. Anti HEV IgG appears within a few days of infection and remains positive for several years. This assay is used for the diagnosis of past HEV infection. |
| 319. | HEV(IGM) | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | HEV causes an acute self limiting infection. Anti HEV IgM appears within a few days of infection and remains positive upto 6 months. This assay is used for the diagnosis of acute or recent HEV infection. |
| 320. | RUBELLA IGG | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | This assay determines Rubella immune status in individuals. A positive result indicates prior exposure to the virus or response to vaccination. Presence of IgG antibody does not exclude the possibility of ongoing infection. In these cases IgM antibody measurement is indicated. |
| 321. | RUBELLA IGG/IGM | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | This assay determines Rubella immune status in individuals. A positive result indicates prior exposure to the virus or response to vaccination. Presence of IgG antibody does not exclude the possibility of ongoing infection. In these cases IgM antibody measurement is indicated. |
| 322. | RUBELLA IGM | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | IgM antibody to Rubella is detectable 11-25 days after the onset of exanthem, 15-20 days after vaccination and in 90-97% infants with Congenital rubella between 2 weeks and 3 months after birth. |
| 323. | TORCH IGG | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | This panel tests for the common agents causing uterine infection leading to recurrent abortions and transmission from a pregnant woman to the fetus. This assay is useful as an indication of past or recent infection with Toxoplasma, Rubella, CMV & Herpes viruses in individuals > 6 months of age. |
| 324. | TORCH IGM | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | This panel tests for the common agents causing uterine infection leading to recurrent abortions and transmission from a pregnant woman to the fetus. This assay is useful as an indication of recent acquired / Congenital infection with Toxoplasma, Rubella, CMV & Herpes viruses. |
| 325. | TORCH PROFILE Toxoplasma, Rubella, Cytomegalovirus, Herpes Simplex 1+2 | 4 mL serum, in a Serum separating tubes | Enzyme Immunoassay | 10 Day | This panel tests for the common agents causing uterine infection leading to recurrent abortions and transmission from a pregnant woman to the fetus. High IgG & IgM antibody levels together, support infection within the previous 3 months. |
| 326. | TOXO PLASMA IGG | 4 mL serum, in a Serum separating tubes | Chemiluminescent Immunoassay, | 10 Day | Toxoplasmosis is caused by the parasite Toxoplasma gondii. About 23% of the population are healthy carriers. Transmission from a pregnant woman to the fetus can cause serious disease. This assay is useful for indicating past or recent infection with Toxoplasma gondii. |
| 327. | TOXO PLASMA IGG/IGM | 4 mL serum, in a Serum separating tubes | Chemiluminescent Immunoassay, | 10 Day | Toxo Plasma |
| 328. | TOXO PLASMA IGM | 4 mL serum, in a Serum | Chemiluminescent Immunoassay, | 10 Day | Toxoplasmosis is caused by the parasite Toxoplasma gondii. About 23% of the |

| S.No | Test | Specimen | Method | Report | Function |
|---|---|---|---|---|---|
| | | separating tubes | | | population are healthy carriers. Transmission from a pregnant woman to the fetus can cause serious disease. This assay aids in the diagnosis of Congenital / Acute acquired Toxoplasmosis. |
| **MOLECULAR BIOLOGY** | | | | | |
| 329. | DENGU PCR | 3ml serum (EDTA blood) | PCR | Same day if within 12 noon. | For detection of Dengue RNA in its initial phase. |
| 330. | HBV RT QUALITATIVE | Serum / plasma | Real time PCR | 7 days | For the qualitative detection of Hepatitis B Virus. |
| 331. | HBV RT QUANTITATIVE (VIRAL LOAD) | Serum / plasma | Real time PCR | 7 days | For the quantitative estimation of Hepatitis B Virus. |
| 332. | MTB RT PCR | Site Specific Samples & Tissues | Real time PCR | 4 days | For the detection of M tuberculosis complex. |
| 333. | X PERT TB | Various samples | Gene XPERT PCR | Next day | For detection of TB bacilli and its resistence to rifampicin |
| 334. | HCV QUALITATIVE PCR | 4 ml of EDTA Blood | Real Time PCR | 10 DAYS | For detection of presence of HCV Viruses |
| 335. | HCV QUANTITATIVE | 4 ml EDTA Blood | Gene xpert ( PCR / CBNAAT ) | Next day | For Quantitation of HCV Virus present in the sample. |
| 336. | HCV QUANTITATIVE ( VIRAL LOAD ) | 4ml EDTA Blood | Molbio ( TRUNAT SYSTEM ) | Next day | For Quantitation of HCV Virus present in the sample. |
| 336 | COVID-RT PCR | NASOPHARYNGEAL/ OROPHARYNGEAL SWAB IN VIRAL TRANSPORT MEDIA | REAL TIME PCR ( ABI ) | 48 HRS. | For the detection of COVID RNA in the sample |

| Section No.: PIB E | **CRITICAL ALERT VALUES** |
|---|---|

These results are to be immediately notified to the concerned Clinician or clinical personnel responsible for patient care.

**Record of the notification is to be maintained in the following headings:**

1. **Date**
2. **Name of the patient**
3. **Patient ID**
4. **Time of collection**
5. **Test**
6. **Time of Reporting**
7. **Informed by**
8. **Informed To**

## Biochemistry

| SL. NO. | PARAMETER | RESULT |
|---|---|---|
| 1. | Glucose | <50 >500 mg/dl |
| 2. | Urea | >200 mg/dl |
| 3. | Creatinine | >15 mg/dl |
| 4. | $Na^+$ | <110 >160 mEq/L |
| 5. | $K^+$ | <2.5 >6.5 mEq/L |
| 6. | $Cl^-$ | <85 mEq/L |
| 7. | $Mg^{+2}$ | <1.0 >4.0 mg/dl |
| 8. | $HCO_3^-$ | >40 meq/L |
| 9. | Albumin | >2.0 gm/dl |
| 10. | CPK | >225 U/L |
| 11. | MB | >25 U/L |
| 12. | T-Bil | >15.0 mg/dl |
| 13. | Calcium | <6.0 >13.0 mg/dl |
| 14. | Ammonia | >200 µg/dl |
| 15. | Carbamazapine | >15 µg/ml |
| 16. | Phenytoin | >20 µg/ml |
| 17. | Valproic Acid | >100 µg/ml |



## Haematology

| SL. NO. | PARAMETER | RESULT |
|---|---|---|
| 1. | Hemoglobin | < 5.0 or > 20.0 (Except for neonates) g/dl |
| 2. | WBC Count | < 3,000 / cmm |
| 3. | Absolute Neutrophil Count | < 1,000 / cmm |
| 4. | Platelet Count | < 4,00,000 / cmm >10,00,000 |
| 5. | Peripheral Smear | Suspected leukaemia |
| 6. | Malaria Parasite | P. falciparum / P. vivax present |
| 7. | Malaria Antigen | Positive |
| 8. | Prothrombim Time | I.N.R. > 3.5 |
| 9. | Partial Thromboplastin Time | > 3 times control value |
| 10. | Bone Marrow Aspiration | L.D. body / P. falciparum present |
| | | Leukaemia present |

## Microbiology

| SL. NO. | PARAMETER | RESULT |
|---|---|---|
| 1. | Blood Culture | Growth of pathogenic bacteria |
| 2. | CSF ( smear/ India Ink preparation/ culture ) | Positive or Negative finding |

| | | |
|---|---|---|
| 3. | Dengue Antigen and Antibody | Positive |
| 4. | Screening of Salmonella typhi | Reactive |
| 5. | Brucella (abortus / melitensis) | Positive |
| 6. | Chikungunya | Reactive |
| 7. | Leptospira | Reactive |
| 8. | AFB (Culture) | (If MDR present) |
| 9. | Stool (watery) | Presence of darting bacilli (suggestive of Vibrio) |
| 10. | Throat swab | Presence of diphtheria like bacilli (suspicious of C.diphtheriae) |
| 11. | Scrub typhus | Reactive |

## Cytopathology

| SL. NO. | PARAMETER | RESULT |
|---|---|---|
| 1. | CSF findings | All samples |
| 2. | Completely unexpected malignancy | Present |
| 3. | Malignancy at critical sites (SVC syndrome, risk of spinal injury) | Present |
| 4. | Pmeumocystis, fungi or viral cytopathic changes in BAL, wash or brush samples in immunocompromised patients | Present |
| 5. | Polyoa virus in urine specimens | Present |
| 6. | Mucor in FNA material | Present |
| 7. | Presence of HSV in cervical cytology sample from a pregnant woman | Present |



## Histopathology

| SL. NO. | PARAMETER | RESULT |
|---|---|---|
| 1. | Frozen section | Gross and microscopic findings |
| 2. | Disagreement between frozec section report and permanent section result | Point of disagreement |
| 3. | Unexpected malignancy | Present |
| 4. | Malignancy in superior vena cava syndrome | Present |
| 5. | Crescents in kidney biopsies | Present |
| 6. | Transplant rejection | Rejection of transplant |
| 7. | Necrotising / leukocytoclastic vasculitis | Present |

| Section No.: PIB F | SAMPLE COLLECTION |
|---|---|

**WRITTEN AND VERBAL REQUEST FOR TEST**

- Usually all specimens are collected according to a written request. However verbal requests are accepted. In both the cases blood/other samples are collected after raising a requisition / bill.
- Requests from patients for home collection are accepted over phone and also on personal request. The person on duty in customer care gathers information regarding outside patients and informs the phlebotomist on duty.
- If the sample is brought from outside laboratory it should be sent to the respective department for necessary verification of the quality and the quantity of the sample. After confirmation of the same bills are raised and departmental requisition are sent to the respective department.
- However in case of emergency situations a verbal order is accepted before raising a bill. In such cases a written order should follow within 2 hr of verbal communication.

**TIME OF PRIMARY SPECIMEN COLLECTION**

To minimize any alteration in the concentration of analyte due to ingestion of food or daytime variation, most blood specimen are best collected in the beginning of the day before patients take food please check the list below.

**GENERAL INSTRUCTIONS FOR PATIENTS**

Patients should refrain from:

- Strenuous Physical Activity
- Alcohol
- Medicines
- Changes In Diet

for 24 hrs prior to the procedure.



Patients should:

- Go to bed at the usual time
- Rise no later than one hour before anticipated specimen collection
- Come to the laboratory 10 minutes prior to specimen collection and take rest in sitting posture (in lying down posture if they want to give blood in that position only).
- Follow the instruction given for specific tests.

**PATIENT PREPARATION FACTORS**

- Therapeutic Drug Monitoring: different pharmacologic agents have patterns of administration, body distribution, metabolism, and elimination that affect the drug concentration as measured in the blood. Many drugs will have "peak" and "trough" levels that vary according to dosage levels and intervals. Check for timing instructions for drawing the appropriate samples.
- Effects of Exercise: Muscular activity has both transient and longer lasting effects. The creatine kinase (CK), aspartate aminotransferase (AST), lactate dehydrogenase (LDH), and platelet count may increase.
- Stress: May cause transient elevation in white blood cells (WBC's) and elevated adrenal hormone values (cortisol and catecholamines). Anxiety that results in hyperventilation may cause acid-base imbalances, and increased lactate.
- Diurnal Rhythms: Diurnal rhythms are body fluid and analyte fluctuations during the day. For example, serum cortisol levels are highest in early morning but are decreased in the afternoon. Serum iron levels tend to drop during the day. You must check the timing of these variations for the desired collection point.
- Posture: Postural changes (supine to sitting etc.) are known to vary lab results of some analytes. Certain larger molecules are not filterable into the tissue, therefore they are more concentrated in the blood. Enzymes, proteins, lipids, iron, and calcium are significantly increased with changes in position.

- Other Factors: Age, gender, and pregnancy have an influence on laboratory testing. Normal reference ranges are often noted according to age.

**PATIENT IDENTIFICATION**

Patients should be identified before any sample collection. Identification should be done by

- VID No.
- Patient name

Technicians / Phlebotomist should use these identifiers during clarification of any test results through verbal communication.

**OUTSIDE COLLECTION**

- Requests from patients for home collection are accepted over phone and also in person.
- The person on duty in patient care shall gather information regarding outside patients and informs the Phlebotomist on duty.
- The phlebotomist on duty makes note of the following in a register:
- Name, Address
- Tests required
- Time of collection, and
- Phone no. if available
- The phlebotomist shall go to the patient’ s house with a bill book and specimen collection kit.
- He must inscribe the name of the patient, VID number, and the date on the label of the container.
- Then he shall collect blood in appropriate containers after verifying the patient’ s condition as related to state of fasting and time of last meal depending on the requirement.
- Before leaving the patient’ s house, the phlebotomist shall ensure that the patient is comfortable and that the bleeding has stopped.
- He shall make a manual bill in duplicate and note down the time of collection and put his signature on the bill. He / she then shall handover the original copy to the patient. He shall collect the charge for the tests and later on make a computer copy of the bill.
- During transportation, he shall take proper care so that neither samples spill over nor the vials break.

**IN-HOUSE COLLECTION**

- Patients shall contact the reception.
- The staff of the reception shall read the prescription and inform the patient if any of the required tests is not done at our laboratory.
- Staff of the reception shall raise the bill along with departmental requisition at the reception counter, and send the patients to the phlebotomy room, along with departmental requisition, to give their samples.
- The patient is requested to take rest in sitting posture, unless otherwise preferred / advised, to avoid pre-analytical error for postural effects.
- The phlebotomist shall corroborate the bill with the prescription and if there is a discrepancy, inform the reception staff for necessary correction. In no case the patient should be allowed to toggle between reception and phlebotomy room.
- The phlebotomist shall follow general instructions.
- He shall collect blood with the patient in sitting condition unless the patient requests for collection in lying down position (in that case the patient should be requested to take rest for five minutes in lying down position prior to blood collection to avoid pre-analytical error and the posture should be noted in the test requisition).
- The patient is requested to take rest for at least five minutes before leaving the premises.
- The phlebotomist shall also prepare blood smears where necessary,

- Reception supply appropriate (routine / culture) urine and / or stool container, after proper labeling, to the patient and give required instructions for collecting specimens or if the patient has already brought these samples, shall receive the same after checking the label and adequacy of the sample.
- The collector shall also collect swab samples for microbiological tests when necessary.
- Gynecological cytology specimens shall be taken by Clinicians / Sisters.
- Pathologist shall collect superficial FNAC samples and also perform bone marrow aspiration and bone marrow biopsy after taking proper consent.
- All collected specimens along with the bills are sent to the respective sections of the laboratory within 1 hour of collection of specimens in case of in house collection and 2 hours in case of outside collection.

**SAMPLE TRANSPORTATION**

Primary samples shall be transported in closed double box system with cool pack. Absorbent material shall be placed in between inner and outer boxes to soak any material if leaked. A label of " BIO HAZARD MATERIAL" will be affixed on the outer surface of the box to the laboratory testing area to avoid any breakage, spillage and contamination.

Temperature shall be monitored and a record shall be kept in the lab during reception of the samples. The laboratory shall monitor the transportation of samples to the laboratory such that they are transported:

a) Within a time frame appropriate to the nature of the requested examinations and the laboratory discipline concerned.
b) Within a temperature interval specified in the primary sample collection manual and with the designated preservatives to ensure the integrity of the sample.
c) In a manner that ensures safety for the carrier, the general public and the receiving laboratory.
d) Pneumatic shot machine has been launched at 53, Quadra Medical Services for the transportation of the blood/urine & other samples for the transportation of in-house collection samples to the lab. Whereas samples transport from the collection area to the lab at 41, Quadra Medical Services through the house keeping.



**CONSENT**

Patient's consent is needed for any invasive procedures listed below.

- Non guided or guided FNACs
- Bone marrow aspiration and bone marrow biopsy.

Consent is also taken if patient's data is used for any research works. In that case patient's identity will never be disclosed.

| Section No.: PIB G | INSTRUCTIONS FOR SAMPLE COLLECTION |
|---|---|

## HEMATOLOGY SPECIMENS

### General Instructions

- Venous blood samples should be obtained, even from neonate.
- Venous samples should be collected without a pressure cuff, allowing the blood to enter the syringe or vacutainer by continuous free flow. If light pressure by a tourniquet is required, it should not be applied for more than 1 minute. The venepuncture must be clean.
- Blood samples from an indwelling line or catheter should not be used for tests for coagulation studies because they are prone to dilution or heparin contamination.
- If an evacuated tube is used for collecting samples for different tests, the coagulation sample should be the second or third tube obtained. If only coagulation studies are being drawn, draw 1-2 ml in another vacuum container, discard, and draw specimen into citrate vial to avoid contamination with tissue thromboplastin.
- Blood: Citrate ratio should be perfectly 9:1. To achieve this, blood should be drawn up to the mark inscribed on the vial.
- For coagulation sample, it is important that the samples are delivered as quickly as possible. The test must be completed within 4 hours.

### Microfilaria

- Preferable time of collection of blood is between 10 P.M and 4 A.M (or refer to point 3)
- For Loa loa draw blood sample around noon.
- Collect blood 30-45 minutes after hetrazan administration.



### LE Cell Demonstration

- Collect blood and defibrinate there itself, and then sent immediately to the lab.

### Bone Marrow Aspiration/Biopsy

- Done by Pathologist / Hematologist assisted by designated laboratory technician.

### Osmotic Fragility

- Draw sample by 19 G needle, collect in heparin vial and send immediately to lab.

## CLINICAL PATHOLOGY SPECIMENS

### Routine Urine

- For routine examination collect midstream sample of first morning urine in the container provided by the lab.
- Sample must be transferred to laboratory within 2 hrs. after collection.
- For outside container, instruct patient for proper washing using hot water and detergent followed by proper drying. Urine collected in medicine bottles is not acceptable.

### Urine For Porphobilinogen

- Random fresh sample is required.
- Collect urine in brown bottle or wrap the container with black paper
- Transport the specimen immediately to prevent degradation of porphobilinogen.

### Stool For Obt (Occult Blood Test)

- Some drugs, such as analgesics, reserpine, and corticosteroids should be temporarily stopped with the consent of the physician for 7 days prior to the testing.

- Vitamin C, rectal medication and iron containing medication should not be used 2 days prior to test.
- For at least 2 days before all raw meat, red meat, raw broccoli, cauliflower should be avoided.

**Semen Analysis**

- Semen sample should be collected in the laboratory by masturbation after 3 days of sexual abstinence or (as per clinician' s advice).
- Sample collected in condom is not acceptable.
- Sample collected outside lab is accepted if transported within 30 min.

**MICROBIOLOGY SPECIMENS**

**Urine**

Female (Midstream):

- Thoroughly cleanse the urethral area with soap and water.
- Rinse area with wet gauge pad.
- While holding the labia apart, being voiding.
- After several millilitres has passed, collect a midstream portion in a sterile, wide mouth container without stopping the flow of urine.

Male (Midstream):

- Cleanse the glans with soap and water.
- Rinse with wet gauze pads.
- While holding the fore skin retracted begin voiding.
- After several millilitres has passed, collect a midstream portion without stopping the flow of urine in a sterile wide mouth container supplied by the Microbiology Department.



**Pus, Ulcer Material, Skin Specimen**

- Using a sterile technique, aspirate or collect from a drainage tube up to 5 ml of pus. Transfer to a leak proof sterile container when pus is being discharged.
- When pus is not discharged, use a sterile cotton swab to collect the sample from the infected site.
- When tissue is deeply ulcerated and necrotic:
- Aspirate a sample of infected material from the side wall of the ulcer using a sterile needle and syringe. Transfer to a sterile container.

**Sputum**

- Collect sputum in a clean, sterile, dry, screw capped, wide mouth, and leak proof container supplied by the Microbiology Laboratory. Have patient rinse / gargle with water to remove superficial flora. Cough deeply to produce a sputum specimen [Specimen must be sputum not saliva. Sputum is best collected in the morning, before any mouth wash is used].
- Label the container and complete the request form.

**Throat and mouth swab**

- Ask the patient to open the mouth wide open; examine the inside of the mouth under sufficient light.
- Swab the affected area of the mouth using a sterile swab. For throat swab collection swab the anterior and posterior pillars of the tonsil and press the swab on the tonsils. Taking care not to contaminate the swab with saliva, return it to its sterile container.
- Within two hours of collection, deliver the swab with a complete request form to the laboratory.
- Important: For 8 hours before swabbing, the patient must not be treated with antibiotics/ antiseptic mouth washes.

**Nasal swab**

- Insert a swab, remoistened with sterile saline about 2 cm into the nares.
- Rotate the swab against the nasal mucosa.
- Within two hours of collection, deliver the swab with a complete request form to the laboratory.

**Fluid from pustules, buboes and blisters**

- Aspirate a specimen using a sterile needle and syringe. Transfer to a sterile container.
- Effusions:
- After aspiration of the fluid (synovial, pleural, pericardial, peritoneal or hydrocele), aseptically dispense 2-3 ml fluid into a dry, sterile, screw capped tube / container or Bactec culture bottle (as per the request).

**Catheter (I.V., Central Venous Line)**

- Cleanse the skin around the catheter site with alcohol.
- Aseptically remove catheter and clip 5 cm of the distal tip of the catheter directly into a sterile tube.
- Transport directly to microbiology laboratory to prevent drying.

**Faeces**

- Transfer a portion of the stool (about a spoon full) into a sterile, wide mouth, dry leak proof container.
- Label the specimen and send it with a request form to reach the laboratory within one hour.

**Male Urogenital Specimen**

**a. Urethral Discharge From Male Patients:**

- Clean around the urethral opening using a swab moistened with sterile physiological saline.
- Collect a sample of discharge with a swab. Make a smear of the discharge on a microscope slide.
- Very few pus cells may be present if the patient has recently passed urine. Allow 2-4 hours after urination before collecting a specimen.
- When culture is indicated collect a sample of pus on a sterile cotton swab.
- Label the specimens and deliver them to the laboratory as soon as possible.

**b. Prostate**

- Cleanse the glans with soap and water. Massage prostate through rectum. Collect fluid in a sterile swab or sterile container.

**Female Urogenital Specimen**

**a. Cervix**

- Specimen collected from the endocervical canal is recommended.
- For isolation of microorganism by culture use a sterile vaginal speculum to examine the cervix and collect the specimen.
- Moisten the speculum with sterile warm water, and insert it into the vagina.
- Clean the cervix using a swab moistened with sterile physiological saline.
- Pass a sterile cotton swab 20-30 mm into the endocervical wall to obtain a specimen.
- Insert the swab in Stuart' s transport media and deliver to the laboratory as soon as possible.

**b. Urethra**

- Collect 1 hour after patient has urinated.
- Remove exudates from urethral orifice.
- Collect discharge material on a swab by massaging the urethra against pubic symphysis through the vagina.

**c. Vagina**

- High vaginal swab is used for diagnosis of vaginitis, vaginosis or uterine sepsis. Wipe away excessive amount of secretion or discharge. Then insert the swab into upper part of vagina & rotated before withdrawing it.
- Endocervical swab: Use vaginal speculum with no lubricant. Wipe the cervix clean of vaginal secretions & mucus with a swab. Discard the swab. Use another swab & insert it into endocervix & rotate for 15-30seconds. Avoid touching lateral walls with the swab.
- All Swabs are transported in Stuart' s transport medium. Specimens in a transport media are stable for 48 hrs. at refrigerated temperature 2-8OC.
- Endometrial biopsies & tissues are transported in sterile saline at refrigerated temperature. Do not use formalin. Specimens are stable for 24 hrs. at refrigerated temperature 2-8OC.

**C.S.F**

- The fluid is collected from the subarachnoid space. A sterile wide bore needle (25g) is inserted between the fourth and fifth lumbar space.
- C.S.F is allowed to drip into a dry, sterile screw capped container.
- Immediately deliver the samples with request form to the laboratory.

**Blood Culture**

The vein from which the blood is to be drawn must be chosen before the skin is disinfected. If the patient has an existing IV line; blood drawn above the line will be diluted with fluid being infused. It is less desirable to draw blood through a vascular shunt or catheter, because these prosthetic devices are difficult to decontaminate completely.

**Method**

- Choose the vein to be drawn by touching the skin before it has been disinfected.
- Using 70% alcohol, cleanse the skin over the vein puncture site in a circle approximately 5 cm in diameter, rubbing vigorously. Allow to air dry.
- Starting in the centre of the circle, apply tincture Iodine in ever widening circles until the entire circle has been saturated with iodine. Allow the iodine to dry on the skin for at least one minute.
- If the site must be touched by the phlebotomist after preparation, the phlebotomist must disinfect the gloved fingers used for preparation in identical fashion.
- Label the culture bottle with patient information. The bottle must be at room temperature.
- Remove plastic flip – top from culture bottle and disinfect with an alcohol pad or equivalent.
- Insert the needle into the vein and withdraw blood (5-10 ml for adult patients and 1-5 ml for pediatric patients) and transfer it into the respective culture bottles. Do not change needles before injecting the blood into the culture bottle.
- (BACT/ ALERT – FA – Adult patients) – aerobic culture
- (BACT/ ALERT – PF – Pediatrics patients) – aerobic culture
- (BACT/ ALERT – AN – Adult patients) – anaerobic culture
- Transport the inoculated bottles to the laboratory.
- After blood has been drawn from the patient the site should be cleansed with 70% alcohol again , because many patients are sensitive to iodine

**Tissue Culture**

- Submit in a sterile container containing normal saline.
- For small samples, add several drops of sterile saline to keep moist.
- Do not allow tissue to dry out.

**Nail / skin dermatophysis:**

- Wipe nail / affected skin area with 70% alcohol using gauze (not cotton)
- Clip away a generous portion of the affected area and collect material / debris from under the nail.

- In case of skin scrapping sample is taken from the margins of the lesion after rubbing with the blunt end of the scalpel blade.
- Place material in a clean container.

**MOLECULAR BIOLOGY SPECIMENS**

**Infection Prevention And Control Practices**

Infection prevention control (IPC) is a critical and integral part of clinical management of patients and should be initiated at the point of entry of the patient to hospital (typically the Emergency Department). Standard precautions should always be routinely applied in all areas of health care facilities. Standard precautions include hand hygiene; use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also include prevention of needle- stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.

**Routine Molecular Sample Collection**

**Urine**

**Female**

- Thoroughly cleanse the urethral area with soap and water.
- Rinse area with wet gauge pad.
- While holding the labia apart, being voiding.
- After several millilitres has passed, collect a midstream portion in a sterile, wide mouth container without stopping the flow of urine.

**Male**



- Cleanse the glans with soap and water.
- Rinse with wet gauze pads.
- While holding the fore skin retracted begin voiding.
- After several millilitres has passed, collect a midstream portion without stopping the flow of urine in a sterile wide mouth container supplied by the Microbiology Department.

**Pus, Ulcer Material, Skin Specimen**

- Using a sterile technique, aspirate or collect from a drainage tube up to 5 ml of pus. Transfer to a leak proof sterile container when pus is being discharged.
- When pus is not discharged, use a sterile cotton swab to collect the sample from the infected site.
- When tissue is deeply ulcerated and necrotic - Aspirate a sample of infected material from the side wall of the ulcer using a sterile needle and syringe. Transfer to a sterile container.

**Sputum**

- Collect sputum in a clean, sterile, dry, screw capped, wide mouth, and leak proof container supplied by the Microbiology Laboratory. Have patient rinse / gargle with water to remove superficial flora. Cough deeply to produce a sputum specimen [Specimen must be sputum not saliva. Sputum is best collected in the morning, before any mouth wash is used].
- Label the container and complete the request form.

**Throat And Mouth Swab**

- Using a spatula / tongue depressor, depress the tongue; examine the inside of the mouth under sufficient light.
- Swab the affected area of the mouth using a sterile swab. For throat swab collection swab the anterior and posterior pillars of the tonsil and press the swab on the tonsils. Taking care not to contaminate the swab with saliva, return it to its sterile container.
- Within two hours of collection, deliver the swab with a complete request form to the laboratory.

- Important: For 8 hours before swabbing, the patient must not be treated with antibiotics/ antiseptic mouth washes.

**Nasal Swab**

- Insert a swab, remoistened with sterile saline about 2 cm into the nares.
- Rotate the swab against the nasal mucosa.
- Within two hours of collection, deliver the swab with a complete request form to the laboratory.

**Fluid from pustules, buboes and blisters**

- Aspirate a specimen using a sterile needle and syringe. Transfer to a sterile container.

**Effusions**

- After aspiration of the fluid (synovial, pleural, pericardial, peritoneal or hydrocele), aseptically dispense 2-3 ml fluid into a dry, sterile, screw capped tube / container or Bactec culture bottle (as per the request).

**Male Urogenital Specimen**

**Urethral Discharge From Male Patients**

- Clean around the urethral opening using a swab moistened with sterile physiological saline.
- Collect a sample of discharge with a swab. Make a smear of the discharge on a microscope slide.
- Very few pus cells may be present if the patient has recently passed urine. Allow 2-4 hours after urination before collecting a specimen.
- When culture is indicated collect a sample of pus on a sterile cotton swab.
- Label the specimens and deliver them to the laboratory as soon as possible.



**Prostate**

- Cleanse the glans with soap and water. Massage prostate through rectum. Collect fluid in a sterile swab or sterile container.

**Female Urogenital Specimen**

**Cervix**

A specimen collected from the endocervical canal is recommended.

- For isolation of microorganism by culture use a sterile vaginal speculum to examine the cervix and collect the specimen.
- Moisten the speculum with sterile warm water, and insert it into the vagina.
- Clean the cervix using a swab moistened with sterile physiological saline.
- Pass a sterile cotton swab 20-30 mm into the endocervical wall to obtain a specimen.
- Insert the swab in Stuart’ s transport media and deliver to the laboratory as soon as possible.

**Urethra**

- Collect 1 hour after patient has urinated.
- Remove exudates from urethral orifice.
- Collect discharge material on a swab by massaging the urethra against pubic symphysis through the vagina.

**Vagina**

- High vaginal swab is used for diagnosis of vaginitis, vaginosis or uterine sepsis. Wipe away excessive amount of secretion or discharge. Then insert the swab into upper part of vagina & rotated before withdrawing it.

- Endocervical swab: Use vaginal speculum with no lubricant. Wipe the cervix clean of vaginal secretions & mucus with a swab. Discard the swab. Use another swab & insert it into endocervix & rotate for 15-30seconds. Avoid touching lateral walls with the swab.
- All Swabs are transported in Stuart' s transport medium. Specimens in a transport media are stable for 48 hrs. at refrigerated temperature 2-8OC.
- Endometrial biopsies & tissues are transported in sterile saline at refrigerated temperature. Do not use formalin. Specimens are stable for 24 hrs. at refrigerated temperature 2-8OC.

**C.S.F :-**

- The fluid is collected from the subarachnoid space. A sterile wide bore needle (25g) is inserted between the fourth and fifth lumbar space.
- C.S.F is allowed to drip into a dry, sterile screw capped container.
- Immediately deliver the samples with request form to the laboratory.

**Tissue :-**

- Submit in a sterile container.
- For small samples, add several drops of sterile saline to keep moist.
- Do not allow tissue to dry out.

**Blood :-**

The vein from which the blood is to be drawn must be chosen before the skin is disinfected.

**Method :-**

- Choose the vein to be drawn by touching the skin before it has been disinfected.
- Using 70% alcohol (doctor spirit), cleanse the skin over the vein puncture site in a circle approximately 5 cm in diameter, rubbing vigorously. Allow to air dry.
- If the site must be touched by the phlebotomist after preparation, the phlebotomist must disinfect the gloved fingers used for preparation in identical fashion.
- Label the blood vials with patient information. The vials must be at room temperature.
- Draw whole blood into vacutainer tube(s) containing K2EDTA anticoagulant (Purple Top).
- Draw whole blood into vacutainer tube(s) containing no anticoagulant (Red Top).
- Transport the blood vials to the laboratory.

**Serum/Plasma separation:**

- Centrifuge for 15 min at 2500-3000 RPM.
- Inspect serum for turbidity. Turbid samples should be centrifuged again to remove remaining insoluble matter.

**COVID Sample Collection & Transport To Lab**

**Sample Collection**

- Preferred sample: Throat and nasal swab in viral transport media (VTM) and transported in cold chain.
- Alternately nasopharyngeal swab, BAL or endotracheal aspirate which has to be mixed with the viral transport medium and transported in cold chain.

**General Guidelines**

- Use appropriate PPE for specimen collection (droplet and contact precautions for URT specimens; airborne precautions for LRT specimens). Maintain proper infection control when collecting specimens
- Restricted entry to visitors or attendants during sample collection
- Complete the requisition form for each specimen submitted
- Proper disposal of all waste generated

**Respiratory Specimen Collection Methods**
**Lower Respiratory Tract**

- Bronchoalveolar lavage, tracheal aspirate, sputum
- Collect 2-3 mL into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container.

**Upper Respiratory Tract**
**Nasopharyngeal Swab And Oropharyngeal Swab**
Oropharyngeal swab (e.g. throat swab): Tilt patient's head back 70 degrees. Rub swab over both tonsillar pillars and posterior oropharynx and avoid touching the tongue, teeth, and gums. Use only synthetic fiber swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden shafts. Place swabs immediately into sterile tubes containing 2-3 ml of viral transport media.

Combined nasal & throat swab: Tilt patient's head back 70 degrees. While gently rotating the swab, insert swab less than one inch into nostril (until resistance is met at turbinates). Rotate the swab several times against nasal wall and repeat in other nostril using the same swab. Place tip of the swab into sterile viral transport media tube and cut off the applicator stick. For throat swab, take a second dry polyester swab, insert into mouth, and swab the posterior pharynx and tonsillar areas (avoid the tongue). Place tip of swab into the same tube and cut off the applicator tip.

Nasopharyngeal swab: Tilt patient's head back 70 degrees. Insert flexible swab through the nares parallel to the palate (not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient. Gently, rub and roll the swab. Leave the swab in place for several seconds to absorb secretions before removing.
Clinicians may also collect lower respiratory tract samples when these are readily available (for example, in mechanically ventilated patients). In hospitalized patients in Dedicated Covid Hospitals (severe cases with confirmed COVID - 19 infection, repeat upper respiratory tract samples should be collected to demonstrate viral clearance.

**Billing Site:-**
All samples should only be taken if accompanied by:-

1. Doctor's prescription.
2. ICMR sample referral from
3. Patients Govt. ID (Aadhar) & done number.

Outside collected sample should be checked for the presence of the same.

**Sample Collection:-**

- The sample collection should be done using recommended PPE.
- The site of sample collection should be disinfected regularly (say 4 hrs. interval) and log should be maintained.
- All recommended bio safety & biosecurity precautions to be taken.
- Preferably suspected COVID-19 patients coming for lab testing should have a separate entry & exit points from that normal patients.
- Sample transport should be done maintaining cold chain conditions with triple layered packing.
- Home collection of COVID -19 samples is preference as per ICMR guidelines taking full precautions.
- Separate donning & doffing sites with disposal baskets containing double layered red plastic with 5% Hypochlorite plastic should be present at the collection site.

**Sample Receiving:**
The sample will be received in the lab after checking that it has fulfilled all the criteria as mentioned in sample rejection protocol (e.g: No leaking / inadequate / inappropriate sample will be

accepted).Proper lab identification nos. will be provided for the sample and then it will be sent to the testing area.

**Sample processing:**
Sample processing will be done according to test asked for. Proper PPE kits will be worn by Technician while performing sample processing.
Reporting will be done by the consultants after testing process is over.Some part of the sample will be stored in the sample collection refrigerator. For positive samples, storage will be done for at least 1 month. All positive samples will be sent to ICMR if asked for in an appropriate manner. No data or sample shall be shared with any other government / private establishment.
Reporting will be done on a real time basis in the ICMR portal.

**Sample Disposal:**
Sample for disposal will be collected in double layered red plastic containing 1% hypochlorite and will be tied with plastic tags. All these plastic bags so generated will be marked as COVID-19 and sent for autoclaving. Only after autoclaving will these bags be transferred to waste disposalauthorities (e.gMedicare).

**BIOCHEMISTRY SPECIMENS**

**Glucose(F)** Do not eat or drink anything other than water for at least 8 hours before the blood sample is taken.
If you have diabetes, your doctor may ask you to wait until you have had your blood collected before taking your morning dose of insulin or diabetes medicine.

**Glucose Tolerance Test**-(Non-Pregnant) Patient should be fasting for 8 hours (no food or drink, except for water). A fasting blood specimen will be drawn and tested. You will then be given a glass of glucose drink. Your blood will be drawn once each hour or each half hour after you finish the drink. The number of hours may vary from 2 to 4.

**Prenatal-Glucose Tolerance.Tests**
For our pregnant patients your physician may order glucose tolerance testing during your pregnancy.
50 Gram 1 Hour Glucose Tolerance Test (Gestational Diabetes-Screen)

- No special patient preparation is required.
- This test is done without regard to the time of day or time of last meal. You donot need to fast before this test is given.
- You will be given a glucose drink and your blood will be drawn one hourafter you finish the drink.
- Please allow at least 1 ½ hours for this test to be completed.

**100 Gram 3 Hour Glucose Tolerance Test (Gestational Diabetes)**

- This test should be performed in the morning after an overnight fast of at least
- 8 hours and after at least 3 days of unrestricted diet and activity.
- A blood specimen will be drawn and tested.
- You will then be given a glucose drink.
- Your blood will be drawn once each hour after you finish the drink for three-hours.
- This test will be completed in 4 hours. Hence be prepared to spend this time at the lab
- Severe stress can cause a temporary increase in blood glucose. This stress is usually due to surgery, trauma, stroke, or heart attack. Certain medications can also affect blood glucose levels.

**Post Prandial Glucose (PP):** A blood specimen is collected exactly 2 hours after the patient starts eating breakfast / meal.

**Random Blood Sugar (RBS):** No special preparation is required before having a random blood sugar test

**Urea/BUN:** None

**Creatinine**: Fast overnight or refrain from eating cooked meat

**Uric Acid:** No test preparation may be needed

**Lipid Profile:** For optimal results, the patient should be on a stable diet for 2-3 weeks prior to testing. Patient should fast for 12 to 14 hours before blood collection. Fasting should be no food or drink except for water Previous day' s meal should be normal in fat content.

**Total Protein:** Prolonged application of a tourniquet during blood collection can result in a blood sample with a falsely elevated total protein (higher than the actual concentration in the circulation

**Albumin:** No special preparation is required

**Total Bilirubin:** Factors which can cause increased levels

- Prolonged fasting

Factors which can cause decreased levels

- Exposure of sample to sunlight or bright artificial light at room temperature, high fat meal, air bubble and shaking of sample

**Direct Bilirubin:** Factors which can cause increased levels

- Prolonged fasting

Factors which can cause decreased levels

- Exposure of sample to sunlight or bright artificial light at room temperature, high fat meal, air bubble and shaking of sample



**SGOT:** Fasting is not required for this test.

**SGPT:** Fasting is not required for this test.

**Alkaline Phosphatase:** An alkaline phosphatase test is often done at the same time as a routine blood test. You do not need to do anything before having a routine blood test. If you are a follow-up ALP patient, you may be asked to not eat or drink for 10 hours before the test. The ALP level generally goes up after eating, especially after eating fatty foods.Many medicines may change the results of this test.

**GGT:** GGT levels fall after meals. The patient may be instructed to fast (have nothing to eat or drink except water) for at least 8 hours prior to the test. Alcohol and certain prescription medications can affect GGT levels, so it is advised to abstain from them prior to the test as well.

**Calcium:** Not require fasting. The patient may be instructed to stop taking certain medications, such as lithium, antacids, diuretics, and vitamin D supplements, among others, to ensure the most accurate test results. The tourniquet should be applied approximately three to four inches above the venipuncture site. The tourniquet should be on the arm no longer than one minute

**Phosphorous:** Preparation is not always necessary for a serum phosphorus blood test. Certain drugs (Antacids, Excess vitamin D supplements ,Laxative that contain sodium phosphate ) , should be avoided before having this test done so that the results are not affected.

**Amylase:** Do not drink alcohol for 24 hours before the test.

- For a blood test for amylase, do not eat or drink anything except water for at least 2 hours before having the test.
- For a 24-hour urine test for amylase, be sure to drink enough fluids during the test to prevent dehydration.

**Lipase:** To prepare for an Lipase test, it is advised not eat or drink anything except water for 8 to 12 hours

**Magnesium:** No special preparation is needed.

**CPK:** Activity - If you are being evaluated for skeletal-muscle disorders, avoid exercising for 24 hours before the test.

- Diet - Do not drink any alcohol for 24 hours before the test
- Disrobing - None required. Roll up sleeve only.
- If tourniquet is applied on the arm too long (over 1 minute), it may cause an inaccurate test result. Request another sample to be collected to ensure accuracy

**CK-MB:** No fasting or special preparation on the part of the patient is required.

**LDH**: No fasting or special preparation on the part of the patient is required.

**Iron:** Fasting for 12 hours before sample collection may be required. In this case, only water is permitted.

**UIBC:** Fasting for 12 hours before sample collection may be required. In this case, only water is permitted.



**RF:** Most of the time you do not need to take special steps before this test.

**CRP:** Most of the time you do not need to take special steps before this test.

**ASO:** It is advised not to eat or drink anything for six hours before the test.

**Na, K Cl:** No Special Preparation is required.

**Microalbumin:** The microalbumin test is a simple urine test. You can eat and drink normally before the test

**Micro Total Protein:** No Prior patient preparation is needed

**Creatinine Clearance**

- Patient should not perform any exercise on the day of testing.
- Instruct the patient to collect 24 hour’ s urine as described below along with blood sample.
- Measure the height and weight of the patient and keep a record.
- Instruct the patient to discard the 1st specimen and to note the time.
- All subsequent specimens should be collected in the container till next morning at the same time when the 1st specimen was discarded. For example, an 8 a.m. to 8 a.m. collection, 1st morning specimen should be discarded at 8 a.m. and the last specimen should be collected next morning at 8 a.m.
- It is advisable not to add anything but urine to the container and do not pour out any liquid or powder that may already be in the collection container.

**C3:** No fasting or other preparation is usually needed.

**C4:** There is no special preparation needed.

**Ceruloplasmin:** No fasting or other preparation is usually needed.

**VLDL Cholesterol:** Calculated parameter

**Globulin:** Calculated parameter

**GTT:** It is recommended that the patient eat a normal, balanced meal at least 3 days prior to the test.

- Fast 8 hours prior to the beginning of the test.
- Patient is encouraged to drink water.
- Patient should not drink unsweetened tea, coffee, or any other beverage during fasting or during the procedure.
- Patient should not smoke, chew tobacco, or chew gum (including sugarless gum) during the fasting time or during the procedure. (Note: If patient is chewing gum prior or during the procedure, note this on the requisition form since gum may interfere in the test results.)

**Test Dose (Load) for GTT**
The chart below indicates the correct glucose (load) dose for all test and patient types.
Patient Glucose Tolerance Test (Standard test is 2 hours. 3, 4, 5 or 6 hours tolerance test can be done if requested).

- Adult (non-pregnant) 75 grams of glucose (anhydrous)
- Child (up to 43 KG) 1.75 grams glucose per KG of body weight. If the child is greater than 43 KG, use 75 gram dose.
- 50 g of anhydrous glucose is equivalent to 55 g of glucose monohydrate/ Glucon D
- 75 g of anhydrous glucose is equivalent to 82.5 g of glucose monohydrate/ Glucon D
- 100 g of anhydrous glucose is equivalent to 110 g of glucose monohydrate/ Glucon D

**Glucose should be used in anhydrous form.



**Procedure For Glucose Tolerance Testing**
Verify that the patient has been fasting for 8 hours prior to the test.
Collect fasting blood specimen
Administer test dose. The patient should drink the test dose within 5 minutes.
Timing for blood collections should begin at the COMPLETION of ingestion of glucose.
Levels applicable except during pregnancy. Sample drawn 2 hours after a 75-gram glucose drink.

**Glucose Level Indication**

- Less than 140 mg/dL (7.8 mmol/L) Normal glucose tolerance
- From 140 to 199 mg/dL (7.8 to 11.1 mmol/L) Pre-diabetes (impaired glucose tolerance)
- Equal to or greater than 200 mg/dL (11.1 mmol/L) on more than one testing occasion Diabetes

**Gestational Diabetes One-Step Approach (as one option recommended by the ADA)**
Samples drawn fasting and then 1 hour and 2 hours after a 75-gram glucose drink. Diagnosis of GDM is made when any of the values exceed the limit

| **Time Of Sample Collection** | **Glucose Level** |
|---|---|
| Fasting | Equal to or greater than 92 mg/dL (5.1 mmol/L) |
| 1 hour | Equal to or greater than 180 mg/dL (10.0 mmol/L) |
| 2 hour | Equal to or greater than 153 mg/dL (8.5 mmol/L) |

**Gestational Diabetes Two-Step Approach (As Currently Recommended By ACOG And As One Option from the ADA):**
Step One: Glucose Challenge Screen. Sample drawn 1 hour after a 50-gram glucose drink.

| Glucose Level | Indication |
|---|---|
| Less than 140* mg/dL (7.8 mmol/L) | Normal screen |
| 140* mg/dL (7.8 mmol/L) and over | Abnormal, needs OGTT (see Step two below) |

*Some experts recommend a cutoff of 130 mg/dL (7.2 mmol/L) because that identifies 90% of women with gestational diabetes, compared to 80% identified using the threshold of 140 mg/dL (7.8 mmol/L). ACOG recommends a lower threshold of 135 mg/dL (7.5 mmol/L) in high-risk ethnic groups with higher prevalence of gestational diabetes.

**Gestational Diabetes Twostep Approach (As Currently Recommended By ACOG And As One Option From The ADA):**
Step Two: Diagnostic OGTT. Samples drawn at fasting and then 1, 2 and 3 hours after a 100-gram glucose drink. If two or more values meet or exceed the target level, gestational diabetes is diagnosed. One of two sets of criteria may be used to establish a diagnosis.

| Time Of Sample Collection | Target Levels |
|---|---|
| Fasting (prior to glucose load) | 95 mg/dL (5.3 mmol/L) |
| 1 hour after glucose load | 180 mg/dL (10.0 mmol/L) |
| 2 hours after glucose load | 155 mg/dL (8.6 mmol/L) |
| 3 hours after glucose load | 140 mg/dL (7.8 mmol/L) |

For pregnant women follow the instruction given by the clinicians.

- Label containers appropriately taking care to mention appropriate time of collection.
- Send all of the patient’ s specimens to the lab at the same time.
- Procedural Notes:
- Fasting specimen must be collected prior to ingestion of glucose tolerance beverage.
- Water intake is encouraged throughout the procedure.
- Discontinue collection of specimens if patient vomits.

Medications known to affect the GTT (oral contraceptives, salicylates, nicotinic acid, diuretics, caffeine, hypoglycemic agents) should be discontinued if possible.

**Standard 2-Hour Glucose Tolerance Test(Times For Specimen Collection)**
Fasting
½ hour after ingestion
1 hour after ingestion
1½ hour after ingestion
2 hours after ingestion
Note:3, 4, 5, and 6-hour specimens will be collected if the physician has requested a longer glucose tolerance.
Also collect corresponding urine specimens.

**FT3,FT4, T3 T4, &TSH:** None needed; however, certain medications can interfere with the TSH test, so it is advisable to inform of any drugs that one is taking. If one takes thyroid hormone as treatment for thyroid disease, it is recommended that the blood sample be drawn before you take your dose for that day. Avoid collecting blood after the X – ray test that have used a special contrast dye. History of pregnancy is needed for thyroid ( T3, T4, TSH, FT3 and FT4) tests.

**FSH& LH:** None, but the timing of a woman's sample will be correlated with her menstrual cycle.

**PRL:** None; however, the sample should be collected 3 to 4 hours after waking

**PSA & FPSA:** Avoid ejaculation for 24 hours before sample collection as it has been associated with elevated PSA levels; the sample should also be collected prior to your doctor performing a digital rectal exam (DRE) and prior to (or several weeks after) a prostate biopsy.

**DHEAS:** None, although women should talk to their health practitioner about the timing of the test; the healthcare provider may want to have the sample collected a week before or after your menstrual period.

**Insulin:** You may be asked to fast for 8 hours before the blood sample is collected, but occasionally a health practitioner may do the test with, for example, a glucose tolerance test. In some cases, a health practitioner may request that you fast longer.

**Testosterone:** None, Collect blood at 6-8 a.m.

**CA19.9:** None

**CA15.3:** None

**CA125:** None

**Ferritin:** One may be instructed to fast for 12 hours before the test; in this case, only water is permitted

**VIT B12:** Fasting for 6-8 hours before sample collection may be required. Certain medicines may affect the test results; the healthcare provider will advise on which ones to stop taking

**VIT D:** None

**Folate:** Fasting for 6-8 hours before sample collection may be required. Certain medicines may affect the test results; the healthcare provider will advise one on which ones to stop taking.



**PTH:** Avoid haemolysis & keep in ice bucket.PTH levels peak during sleep hours and are lowest during mid-morning to late afternoon hours, the period when most samples are drawn. There may be seasonal fluctuations in PTH due to its inverse relationship with vitamin D.

**CEA:** None

**AFP:** None

**HCG( Tumour Marker):** None

**HCG ( For Pregnancy):** Do not drink large amounts of fluid before collecting a urine sample for a pregnancy test because overly diluted urine may result in a false negative; no preparation is needed for a blood sample

**Anti TPO:** No special patient preparation is required

**Anti CCP:** No special patient preparation is required

**Cortisol:** Cortisol may be tested in blood or urine. If blood cortisol levels are requested by ther physician, one may be asked to have one’ s blood drawn once (random cortisol) or multiple times.. Cortisol blood tests may be drawn at about 8 am, when cortisol should be at its peak, and again at about 4pm, when the level should have dropped. The patient may be asked to avoid strenuous physical activity the day before a cortisol test. He/she may also be asked to lie down and relax for 30 minutes before the blood test.
Many medicines may change the results of this test. Some medicines, such as steroids, can affect cortisol levels for some time even after the stop taking the medicine. Be sure to get all clinical information of the patient about all the nonprescription and prescription medicines He/she is taking.

**Urine Cortisol:** If the physician requests a urine cortisol, the patient will be asked to collect either a 24-hour urine or a single first morning specimen. The physician will inform the patient of the type of urine collection He/she will need.

**Urine Collection Procedure**
**Creatinine Clearance**

- Patient should not perform any exercise on the day of testing.
- Instruct the patient to collect 24 hour' s urine as described below along with blood sample.
- Measure the height and weight of the patient and keep a record.

**24 Hour Urine Collection**

- Provide a screw-capped clean 5 liter plastic container with appropriate preservative (see Attached Table).
- Instruct the patient not to add anything but urine to the container and do not pour out any liquid or powder that may already be in the collection container. These substances may cause burns if touched.
- The collection container should be kept cool throughout the collection period. It may be placed in a refrigerator or in a pan with ice during collection.
- Upon arising in the morning, urinate into the toilet, emptying your bladder completely. Do not collect this sample. Note the exact time and print it on the container label.
- Collect all urine voided for 24 hours after this time in the container provided. All urine passed during the 24-hour time period (day and night) must be saved. Urine passed during bowel movements must also be collected. Be careful not to contaminate urine specimen with feces.
- Refrigerate the collected urine between all voidings or keep in a cool place.
- At exactly the same time the following morning, void completely again (first time after awakening) and add this sample to the collection container. This completes your 24-hour collection.
- Be sure to label specimen with patient' s name, date and time the collection began and ended.
- Take the 24-hour specimen to the patient service area as soon as possible.
  **Sterile containers and 24 hr urine containers may be picked up at front office between the hours of 8am to 8pm.

**24-Hour Urine – Total Protein Collection**

- Obtain a collection container from front office.
- Follow instructions for 24-hour urine collection.
- Keep the collection container refrigerated or on ice.
- Please label the container with patient' s name, date and time the collection began and ended.
- Return patient collection container to front office or laboratory.

**Urine Collection For Microalbuminuria**

- American Diabetes Association and National Kidney Foundation have recommended measurement of albumin – to-creatinine ratio(ACR) using a first morning sample because of the potentially higher correlation with 24 h albumin secretion but a random sample is considered acceptable if a first morning specimen is not available.

**ADDITIONAL TEST REQUEST**

- Additional test request on the sample, which has already been received in the lab, shall be accepted.
- Technicians shall check the time lag between time of sample collection and additional test request.
- If the time lag does not conflict with the integrity of the sample (within the reportable time of the test) for doing the test, technicians shall perform the test. Technicians should record the time and additional tests in the done copy.

- Additional test request will not be accepted if the time lag crosses the reportable time for the test.

**CRITERIA FOR ACCEPTANCE OR REJECTION OF PRIMARY SAMPLE**

- Any sample that does not carry the name / I.D. No. of the patient on the sticker will not be accepted for testing.
- Grossly lipaemic samples can be accepted with adequate precautionary measures. The final report shall indicate the physical nature of the sample and that caution is required when interpreting the result.
- Grossly hemolysed samples are better to be rejected and a fresh sample is asked for. However when drawing another sample is difficult e.g. pediatric case, the sample can be accepted. Appropriate precautionary measures shall be taken in doing the tests. The final report shall mention the nature of the problem and that caution is required when interpreting the result.
- Grossly icteric samples are acceptable with adequate precautionary measures. The final report shall indicate the physical nature of the sample and that caution is required when interpreting the result.
- Inadequate samples are not acceptable. However the sample can be accepted on a fresh contract for which the sample is adequate.
- Samples, which are kept at ambient temperature for prolonged period that causes deterioration of the sample, are not acceptable. This time period varies according to the test to be done. The decision of accepting / rejecting the sample is at the discretion of the Sectional In-charge or a responsible person in the laboratory.
- Leaking samples are not accepted and a fresh sample is asked for.
- Samples collected in wrong container and / or with wrong additive are not acceptable. A fresh sample with proper additive is needed.
- Where appropriate, the correct transport media should be used to send the sample to the lab. If not, the sample is not accepted and a fresh sample is requested.
- Samples inappropriate for request (e.g., anaerobic cultures requested on BAL or urine specimens) are rejected, and clients are advised regarding reasons for rejection.
- For coagulation parameters (PT, APTT, TT etc.) proper ratio of blood to anti-coagulant should be maintained. Sample will be rejected if this ratio falls short or above the ratio as indicated on the vial.
- Samples in histopathology are accepted only if they are sent in the correct fixative. They may be accepted otherwise, only at the discretion of the Sectional In-charge. A note is made in the final report that the sample was not received in the correct fixative.

**POLICY OF CONFIDENTIALITY OF PATIENT INFORMATION**

Any staff of Quadra shall not disclose patient information to any individual other than patient, unless the patient concerned has consented or the individual is a health professional involved in the care of the patient.

| Section No.: PIB H | LABORATORY' S COMPLAINT PROCEDURE |
|---|---|

## LABORATORY' S COMPLAINT PROCEDURE

This procedure deals with all complaints received by QMS from any source including information from Patients / Patient party / Consultants / Doctors/ In-house Staffs against the quality of the services provided or personnel involved.
This procedure covers complaints received vide any of the means like letters, e-mails, faxes, telephones (to be followed by written complaints), even relevant references appearing in print media.
All complaints are treated as confidential unless desired otherwise by the Government or by law.

- Complaint forms are available (in English and regional language) with all the Reception Counters (Both Unit I & Unit II) and this information is displayed on the notice board of the respective reception counter.
- A complaint drop box labeled as " Complaint / Suggestion Box" is placed at the Ground Floor Reception Counter (Both Unit I & Unit II) for disposal of complaints / suggestions by the patients or their parties. In case the patient / the party needs help to fill up the form, they are assisted by the executives present at the Front Office Counters.
- The box is cleared every day in the evening in presence of the General Manager Front Office / Deputy Manager Front Office and numbering is done on chronological order in the following format (Year/Month (in alpha)/Date/Complaint no starting from 1 (every year).
- Then the matter of the complaint is investigated with the concerned personnel and discussed with the respective HOD.
- After further investigations, a meeting with the concerned personnel or the departmental head is held to understand the root cause of the complaint.
- After noting down the observations, the same is sent to the Director and CEO of the Company for his opinion and resolution of the same with proper corrective actions.
- In case of detection of error or mistake noted, immediately the corrective measures are being chalked out and implemented to prevent such mistakes to occur in future.
- The course of actions taken by the Company in respect to the complaint is being communicated to the complainant and the complaint is closed with respective remarks on it.
- The complaint is then forwarded for filling with the General Manager Front Office for future reference.

All complaints shall undergo initial scrutiny by the General Manager Front Office to determine whether they fall within the purview of QMS, activities and whether they are valid, based on which any of the following action shall be taken.

- If a complaint is outside the purview of QMS activities, the complainant shall be informed accordingly and the complaint shall be treated as closed.

- If information provided in the complaint is inadequate for any meaningful follow-up and the complainant is not able to provide minimum required information such complaints shall also be treated as closed and the complainant shall be informed accordingly.

- If the complaint clearly falls within the purview of QMS activities and appears to be valid, the initial information provided is sufficient for initial investigation the same shall be taken up for further action.

- If the complaint is against QMS, the same shall be registered however, further investigations and proceedings shall be done by the designated personnel identified by the management.

All complaints received in QMS shall be channeled to the General Manager Front Office, who maintains record pertaining to all complaints including important dates like date of receipt, date of acknowledgement, date of closure in Complaint record.

On receipt, the complaint shall be acknowledged with the assurance that QMS will investigate the complaint and inform the complainant of the outcome at the earliest (3 days).

Anonymous complaints shall also be registered if prima-facie they appear to be valid and having some substance with supporting evidence.

| Section No.: PIB I | ETHICAL CONDUCT FOLLOWED BY QMS |
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**ETHICAL CONDUCT FOLLOWED B QUADRA MEDICAL SERVICES**

**General Principles**

- Patient's welfare and interest shall always be the first consideration and take precedence.
- The laboratory shall treat all patients fairly and without discrimination.
- Professionals shall follow ethical codes of medical profession as prescribed by Indian Medical Association.
- Laboratory shall not be engaged in any practice, which is restricted by law.

**Collection Of Information**

- Laboratory shall collect information for the proper identification of the patient as required for test and medically significant, and discourages unnecessary personal information. The patient shall be made aware about the information collected and the purpose for which is collected.
- Information shall be collected when safety of staff and other patients are legitimate- concerns and communicable diseases are possible.

**Collection Of Primary Samples:**

- All procedures carried out on a patient shall require the informed consent of the patient. For most routine laboratory procedures, consent can be inferred when the patient presents himself or herself at a laboratory with a request form and willingly submits to the usual collecting procedure, e.g., venipuncture. Patients in a hospital bed should normally be given the opportunity to refuse.
- Special procedures, including the more invasive procedures, shall require a more detailed explanation and, in some cases (FNAC and Bone Marrow), written consent. This is desirable when there is a likelihood of complications following the procedure.
- Serological test, which requires special counseling (e.g. HIV), shall be conducted by a clinical staff or the requesting physician. The laboratory should endeavor to see that results with serious implications are not communicated directly to the patient without the opportunity for adequate counseling.
- Adequate privacy shall be provided during reception and sampling as appropriate to the type of sample.
- If a primary sample arrives at the laboratory in a condition that is unsuitable for the requested examination, it should normally be discarded (except when the sample is critical e.g. CSF, Biopsy etc) and the referring physician notified.

**Performance Of Examination**

- All laboratory examinations shall be carried out according to appropriate standard examination procedure and with the level of skill and competence expected of the profession.
- Fabrication of results shall be completely discouraged.

**Reporting Of Results**

- Results of laboratory that can be attributed to a specific patient shall be kept confidential unless disclosure is authorized or results of laboratory examinations are used for special purposes such as epidemiology, demography.
- Decisions concerning implied consent for the reporting of results to other parties (e.g. consultant practitioners to whom the patient has been referred) shall be made cautiously, taking local customs into account.
- It shall be the responsibility of the laboratory that examinations are correctly interpreted and applied in the patient's best interest. Specialist's advice with regard to the selection and interpretation of examination shall be taken as required.

**Storage And Retention Of Medical Records**

- All test data / test records of patient shall be safeguarded against loss, unauthorized access or tampering and other misuse.
- The retention of medical records shall be followed as per the requirement of Accreditation authority as prescribed in NABL 112.
- In certain cases such as histology examinations records shall be kept for longer period and as prescribed in NABL 112.
- Laboratory shall retain the records as per the laboratory policy and NABL 112 criteria which is documented in master list of records.

**Access To Medical Laboratory Records**

- Access to medical laboratory records are given to any of the following:
  - The person requesting the examination
  - Clinician who is requesting for examination
  - Authorized person or representative of patient
  - Laboratory maintains a protocol addressing the handling of different requests.

**Use Of Samples For Examination Purposes Other Than Those Requested**

- The use of samples for purposes other than those requested, without prior consent, should occur only if the residual samples are rendered anonymous or have been pooled.

**Financial Aggrements**

- Laboratory should not enter into financial arrangements with referring practitioners or funding agencies where those arrangements act as an inducement for the referral of examinations or patients, or interfere with the physician's independent assessment of what is best for the patient.
- Rooms used for primary sample collection should be completely independent and separate from referring practitioners' rooms
- Laboratory should try to avoid situations that give rise to a conflict of interest. Where this is not possible, the interests should be declared and steps taken to minimize the impact.