

DEPARTMENT OF PATHOLOGY

The **Department of Pathology & Laboratory Medicine** of this hospital has well equipped laboratories, which cater to the need of all the patients, indoor as well as outdoor. Separate laboratory units exist for Molecular diagnosis, Clinical Pathology, Haematology, Microbiology, Biochemistry, Histopathology, Cytology and Immunology under single roof. Computerized data management and reporting are available in Biochemistry, Haematology, Histopathology, Cytology, Immunology and Microbiology Laboratories. All the data recording, storage and reporting is computerized.

The Hematology Laboratory, Biochemistry Laboratory and Immunology Laboratory is accredited by **RIQAS (Randox International Quality Assurance Scheme)** of UK for External Quality Assurance.

MANPOWER

- **IRMS Doctors:**

- **Dr. I. Bhattacharya**, ACHD [MD (Pathology)]
- **Dr. Yoganand Patil**, Sr.DMO [MD (Pathology), DPB, FCPS, DHM]
- **Dr.Mrunal Kesari** ADMO [MD (Pathology), DNB (Pathology)]

- **Visiting Doctors:**

- Hematopathologists Dr.Shrutika Munot
- Histopathologist: Dr. Vikas Kavishwar
- Microbiologist: Dr. Shilpa Bhide
- Biochemist Dr.Megha Bangar

- **Resident Doctors: 03**

- **Laboratory Technicians: 15**

SERVICES PROVIDED

- Collection of Ward & OPD Samples: From 8 AM to 10.30 AM.
- Emergency Ward & ICCU Investigations: Samples received at all times & all investigations done on urgent basis. Laboratory is open round the clock 24/7. throughout the year.

Nature of investigations done in different Labs:

1. Clinical and Haematology Unit:

In addition to routine Urine, Stool, Hb, CBC, ESR, MP, RBC morphology. Special tests such as Reticulocyte count, PT, APTT, INR, G6PD, D-Dimer, FDP, Fibrinogen, Osmotic Fragility, Sickling, Strip tests for malarial antigen detection, Bone Marrow aspiration reporting, Semen analysis under Phase Contrast microscope, Urine for leptospira in Dark Field Microscopy done regularly.

2. Clinical Chemistry (Biochemistry) Unit:

Biochemical examination of Serum, Fluids, CSF and Urine are done, apart from routine tests, Lipid profile, Renal profile, Liver function tests, Cardiac enzymes, Glycosylated Hb, Electrolytes, Blood Gas Estimation, Iron studies, serum Magnesium done regularly.

3. Immunology Unit:

Hepatitis B Markers such as HbsAg, Anti HbsAg, HbeAg and Anti Hbe, Anti HBc and Australia antigen. Spot test for HBsAg.

Hepatitis C Markers – IgM Anti HCV, Hepatitis A marker - Anti HAV IgM Hepatitis E marker - Anti HEV IgM, Tests for HIV - Spot, ECLIA, ELFA.

Cancer Markers - CEA, AFP, and PSA, ANA - by Indirect Fluorescent Assay.

CRP, RAF, Blood grouping, Rh typing, Du test, Coombs Test - Direct and Indirect.

Leptospira Antibody spot test, VDRL test.

Dengue IgG & IgM Card test & Dengu NS1 Antigen test.

4. Microbiology Unit:

Routine Culture and Sensitivity of Urine, pus, sputum, throat swab, CSF. Widal, Blood culture for pyogenic and Salmonella by Bactec 9050. Fungal stain & culture. AFB culture of Sputum, pus, and tissue biopsies, CSF examination for Cryptococci. Split skin smear for Leprabacilli, Gram stain, ZN stain for AFB, Fluorescent stain for AFB, Albert stain. Detection of Mycobacteria and resistance to drugs based on genetic amplification using cartridge based technology in Gene expert. Automated system for identification of organisms and its sensitivity to antibiotics with Minimum Inhibitory Concentration.

5. Histopathology Unit:

Surgical and Gynaec specimens and Gastroenterology endoscopic biopsies are grossed, processed and reported here. Routine H&E staining and special stains like Fite, Fluorescent AFB, PAS, AB-PAS, Reticulin, Masson Trichrome and Pearls done regularly. Cryostat is available for doing Frozen Section for intraoperative reporting.

6. Cytology Unit:

FNAC, USG guided FNAC, PAP smears for cervix, and cytology of fluids are reported regularly. FNAC of breast, lymph node, thyroid, soft tissue swellings, parotid lumps, USG guided liver aspiration, brush cytology of CBD, etc are done routinely. Liquid based cytology.

7.Molecular lab: Detection of virus ,bacteria and organisms based on target genes, genetic disorders, cancer detection based on genetic sequences. Target gene can be detected as well as Quantified.Examplke Viral load of HBV. Covid testing can be done by using RTPCR. This technology is based on nuclic acid amplification and detecting the amplicons simultaneously using fluroscent probes.Biosafety level 3 laboratory standards are maintained.

MAJOR EQUIPMENTS AVAILABLE:

1. Histopathology & Cytology Lab:

Cryostat for frozen section. Cyto-centrifuge, Liquid based Cytology, Automatic tissue processor with vacuum, Semiautomatic Microtome with water bath, Automated Tissues Embedding Station. Digital Microscope with bright-field, fluorescent, phase contrast with photo micrographic attachment.

Trinocular microscopes with CCD attachment, Precision balance.

2. Biochemistry Lab:

Fully Automated Clinical Chemistry Analyser – Hitachi Modular P – 800i with Data Management System. Blood Gas Analyzers, ISE Electrolyte Analyzer, Semi-autoanalyser, Binocular microscope, Nyco-card Reader.

3. Haematology Lab:

Five part differential Automated Blood Cell Counter – Sysmax - XT 2000i with data management system.

Semiautomated 4 – channel coagulometer (CA – 50).

Fully automated coagulation analyzer

4. Microbiology Lab:

BACTEC 9050 automated blood & body fluid culture system, Binocular Microscope, Bio-safety cabinet for routine culture, Bio-safety cabinet with Laminar Flow for AFB culture. Data Management System.

Automated Digital Autoclaves for Sterilization and discarding specimens. Incubators and Hot Air Ovens.

5. Immunology Lab:

Fully Automated Electro Immunoassay System (Cobas e 411) with Data Management System, VIDAS ELFA Immunoassay System, Binocular Microscope, ELISA Reader with Washer, VDRL shaker. Semiautomated blood group machine.

Total Work Done in Various Units of the Dept. of Pathology

Type of Tests	2018	2019	2020 (COVID)	2021	2022 (31/3/22)
Biochemistry	436859	593396	91140		
Clinical & Haematology	185065	209614	322224		
Microbiology	12086	13842	2975		
Immunology	49000	69719	30816		
Histopathology	1219	1359	532		
Cytology	1197	1135	387		
Total	685426	889065	448074		

ACHEIVEMENTS AND ACTIVITIES

- State ofart **Molecular lab with Biosafety level -3** started with RT-PCR facility. It is first of its kind in Indian Railways. This technology is based on nuclic acid amplification and detecting the amplicons simultaneously using fluroscent probes.Biosafety level 3 laboratory standards are maintained.Any pathogen like Corona virus can be detected in JRH Lab.
- **Gene expert** machine also installed. It is used for Tuberculosis detection and resistance to rifampicin.
- Inaugaration done by **General Manager** ,WR on 27 January2021
- **ICMR** accreditation for Covid testing by RTPCR
- **NABL** accreditation for Pathology
- Provided Covid antigen testing, antibody testing and swab testing for railway beneficiaries.
- Plasma therapy by apheresis in Blood Basnk approved by ICMR. Plasma given to covid patients.
- Participated in External Quality Programme in Hematology,**AIIMS**
- **DNB Pathology** has sanctioned one primary and one secondary postgraduate seats in Pathology.
- Laboratory software installed .Patients and doctors are receiving reports on mobile with the mobile app. Turnaround time has reduced. Digitalisation saves papers so ecofriendly.
- Approved centre for conduction of practical examinations of DNB postgraduate students.
- Successfully conducted final practical examination in December 2020.
- Cytology Laboratory has been accredited by The *Indian Academy of Cytologists (IAC)*

- Cytology Unit of Dept. of Pathology is part of “*External Quality Assurance Programme*” with PGI, Chandigarh
- Organized All India Conference for Medical Laboratory Technologists for Indian Railway and Non Railway Technologists in association with AIMLTA (All India Medical Laboratory Technologists Association)
- Pathology Department has been recognized by SNDT University Mumbai for Internship training of the DMLT students.

Teaching Facility

- **DNB (Diplomate of National Board)** has sanctioned one primary and one secondary postgraduate seats in Pathology.
- **Practical training for DMLT** is imparted to students of Maharashtra Institute & SNDT Women’s University, Mumbai. Five students from each college are posted for a four months period by rotation.
- **MCI recognized House post** - 1 /per term

Articles and Research works Published in National & International Journals:

- Poster: Mucinous cystic tumor mimicking hydatid cyst (MPAICON2020)
- A Rare Case of Sinonasal Ameloblastoma with Immunohistochemistry (International Journal of Contemporary Medical Research (Vol. 6, Issue 10, October 2019)
- Ochronotic Arthritis (Bombay Hospital Journal, Vol. 53, No.2, April 2011)
- Choroidal melanoma metastasizing to the biliary system: A diagnostic dilemma. (Indian J Med Oncol, Oct-Dec 2009, Vol 30, Issue 4)
- Disseminated Histoplasmosis mimicking Laryngeal carcinoma from Central India – Case Report. [Indian Journal of Pathology & Microbiology, (2006), Vol 49, No.3, 452-4.]
- Non- alcoholic steatohepatitis in type 2 diabetes mellitus. [Journal of Gastroenterology and Hepatology (2004), 19, 854 – 8.]
- Helicobacter pylori in peptic ulcer disease and non ulcer dyspepsia. [JAPI 1994.]
- Changing sensitivity pattern & incidence of typhoid fever cases. [JAPI 1991]
- Hyperurecaemia in Tuberculosis patients. [Indian Medical Gazette, Nov.1997]

VISION for Jagjivanram Hospital Laboratory

- To start Fellowship course in Blood Banking, Clinical Chemistry.
- To start PGDMLT (Post Graduate Diploma course in Medical Lab Technology) for technicians in Jagjivanram Hospital Laboratory.
- To develop Histopathology Department by starting specialized investigations like Immunohistochemistry on patient tissue samples.