

Departmental Information- MICROBIOLOGY

The Microbiology department is managed by a team of qualified & dedicated faculty and laboratory technicians. The department is fully committed to provide high end teaching, training and diagnostic services, create conducive environment for research and training of paramedical staff as per vision and mission of the Institutes management.

NABL accredited diagnostic sections of microbiology laboratories maintain high quality standards and provide testing in accordance with ISO15189-2012.

➤ **SERVICES PROVIDED:**

- Bacteriology Laboratory: Species level identification and antibiotic susceptibility testing is done for both aerobic and anaerobic organisms. Equipped with biosafety laminar flow, Vitek-2 & BacT ALERT.
- The Serology, Immunology, Mycology and Parasitology laboratories are well equipped for routine diagnosis and research work.
- Mycobacteriology: Facility for rapid diagnosis and detection of MDR thru Gene Xpert
- Virology laboratory equipped with Class IIB biosafety cabinet and cold centrifuge and has facilities for sero-diagnosis of viral infections using rapid methods as also by MiniVidas and ELISA. Facility for diagnosis of swine flu thru Gene Xpert also exist.
- Department regularly monitors the Hospital Acquired Infections and plays an important role in infection control and bio medical waste management.
- EQAS program in Bacteriology, Serology, Parasitology and Mycology is in place.
- Department looks after ICTC & DMC activities.

➤ **TEACHING and TRAINING:**

- DMLT, BMLT, MBBS and MD Microbiology courses exist.
- The department is recognized for MD course.
- The department museum is exemplary and has over 300 exhibits
- The Central library has over 540 books while the department 105.
- The library subscribes to 16 National & International journals .

➤ **RESEARCH:**

- Publications (2011-2015): National: 19 International: 11
- Research Projects: Completed : 3 Ongoing: 9

● Department Library cum Seminar room	Size: 37.25 sqm No of Books: 105
● Demonstration rooms	<ul style="list-style-type: none"> ➤ Number : 2 ➤ Size : 88.80 + 91.20 sq mt. ➤ Capacity: 75 students each ➤ Facility: OHP, Computer, TV, Screen, Green Board
● Laboratories	<ul style="list-style-type: none"> ➤ UG Practical laboratory: Size: 231.55 sq m , capacity: 90 students ➤ PG Lab. 27.59 Sq.m ➤ Bacteriology (47.22 sq m), Serology(22.94+22.94 sq m), Virology (29.05 sq m), Parasitology (sq m), Mycology (21.94sq m), Tuberculosis (21.95+21.95 sq m), Immunology (23.63+22.59 s Media preparation (21.95 sq.m), autoclaving (12 sq.m), Washing (22.4 sq.m)

<ul style="list-style-type: none"> • Equipment 	<p>➤ Incubators, electrical (Large)37 Degree Celsius (7), Autoclave (4), Hot air sterilizer (5), Arnolds sterilizer (1), Serum inspissators (3), Balance, Chemical (2), Uniocular Microscope(80), Dark ground microscope (1), Refrigerators (11), Micrometer eye pieces & Stage (2), Centrifuge, electrical high power (5), Refrigerated centrifuge (1), Distilled water plant (2), Distilled water plant all glass (1), Anaerobic apparatus (4), Electrophoresis apparatus (1), B.O.D. incubator (2), Biosafety cabinets (4), VDRL Shaker (3), Computer unit (5), Water bath (Serological) (37 °C -3/ 56° C-2)(5), Deep freeze (-20 degree Celsius)(1), Elisa Reader, dispenser and washer (1 e), Binocular microscope (Olympus)(15), Digital Thermohyrometer (5), Digital weigh machine (2), Tissue Homogentzer (1), BaCT/Alert (1), Mini Vidas (1), Vitek 2C (1), Digital Temperature indicator (7), PH determination apparatus (2), Television (2), DVD player (2), Overhead projector (2), Candle filters (1), Microwave Oven – 30Lit (1), Seitz filter (1), Colony counter (1), Loop sterilizer (1), Needle destroyer (2), Digital colorimeter (1), Magnetic stirrer with hot plate (1), Candlingchambe r (1), Printer (4), Scanner (1), LCD projector (1), Gene Xpert (1), Lap Top (1), Invertor (1), Vortex mixer (1), Micropipettes (10).</p>
<ul style="list-style-type: none"> • Research Laboratory 	<ul style="list-style-type: none"> • Size:59.89 sqm. • Equipment:Tissue homogenizer(1), Microwave(1), BOD incubator(1), Centrifuge(1), Digital pH meter with electrode(1), Chemical balance(1), Electrophoresis unit (1), Hot air oven(1), Incubator(1), Colorimeter(1), VDRL Shaker(1), Inspissator(1), Micropipette(1), Steam sterilizer(1), Digital weighingmachine(1).
<ul style="list-style-type: none"> • Microbiology journals 	<ul style="list-style-type: none"> • NATIONAL : Indian Journal of Medical Microbiology, Indian Journal of Pathology And Microbiology , Indian Journal of Comparative Micro,Immuno And Infectious Diseases, Indian Journal of Virology • INTERNATIONAL: Journal of Clinical Microbiology, Annual Review of Microbiology • ALLIED MICROBIOLOGY JOURNALS: JAPI , Indian Journal of Dermatology Indian Journal of Leprosy, Indian Journal of Sexually transmitted diseases, Indian Journal of Tuberculosis, International Journal of Epidemiology, The New England Journal of Medicine, Medical Clinics of North America, British Medical Journal (BMJ)
<ul style="list-style-type: none"> • Computer System & Internet 	<ul style="list-style-type: none"> • The department has five computers, three printers and one scanner. Internet facility is available on these computers and all have an access to it.
<ul style="list-style-type: none"> • Teaching & Training 	<ul style="list-style-type: none"> • UG teaching & training is conducted thru didactic lectures, Demonstrations, Practical's, tutorials , round of department , round of CSSD and integrated teaching. Students maintain a log book which is evaluated by concerned faculty. • PG teaching & training includes lectures, Journal Clubs, Seminars, Short exercises, rotatory lab postings, daily discussion on samples , tests & isolates of respective sections, slide seminars, examination related exercises etc. PG maintains a log book of all activities undertaken and attended.
<ul style="list-style-type: none"> • Examination & Evaluation 	<ul style="list-style-type: none"> • UG: During the term of 1.5 years student faces three internal examinations (2 terms & 1 Pre-University) & 1 final examination conducted by the university. Each examination includes theory & practicals. In theory papers students are asked to write LAQ's , BAQ's,

	<p>& MCQ's. Practicals include spotting,3 table exercises & 2 viva's. Between the term examinations the students are also evaluated through tutorials & MCQ's.</p> <ul style="list-style-type: none"> PG: At the end of each rotatory posting, the student is evaluated through small practical exercises & short theory papers. In addition the student has to appear in the regular examination at the end of each term. University examination is conducted after completion of three years training through theory & practical's
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- Department Museum:Summary museum exhibits = 353**

	Equipment	Disinfectants	Miscellaneous	Culture media	Culture media with growth	Clinical Photographs	Mounted models (Fibre)	Mounted Specimens	Test Kits	Charts	Portraits	Total
General Microbiology	26	10	12	-	-	-	-	-	-	8	-	53
Bacteriology	-	-	2	25	37	1	-	-	-	28	-	93
Mycobacteriology	-	-	-	2	1	-	-	-	1	1	-	5
Entamology	-	-	-	-	-	-	-	3	-	-	-	3
Virology	-	-	1	3	-	3	11	-	8	8	-	32
Serology	-	-	-	-	-	-	-	-	12	-	-	12
Immunology	-	-	-	-	-	-	-	-	3	9	-	12
Mycology	-	-	3	3	12	2	-	-	-	-	-	20
Parasitology	-	-	1	-	-	1	8	8	-	22	-	40
Miscellaneous	-	-	-	-	-	-	-	-	-	41	-	41
Grand total	26	10	19	33	50	7	19	11	24	117	37	353

- Research Projects undertaken in the department**

Sno	Project Name	Year	Funded by
1	Comparative evaluation of serological markers of dengue infection in association with platelet counts with special reference to NS1 antigen.	2012-14	CMCH, Bhopal
2	Clinical and Antimicrobial profile of Acinetobacter species at Tertiary care Hospital in Central India	2012-14	CMCH, Bhopal
3	Seropositivity of Hepatitis B Surface Antigen in Tertiary Care Hospital, Central India	2012-14	CMCH, Bhopal

4	Study of prevalence of metallo-beta-lactamase producing <i>P. aeruginosa</i> at a tertiary care hospital in central india using phenotypic and molecular method.	2015-17	CMCH, Bhopal
5	Prevalence of metallo- -lactamases in clinical isolates of <i>Acinetobacter baumannii</i> from a tertiary care hospital in central India by polymerase chain reaction.	2015-17	CMCH, Bhopal
6	LAMPbased assays fordetection ofCarbapenem resistantGramnegativeinfections	2015-17	Vitaslaboratories, Hyderabad
7	Characterisation of <i>Candida</i> isolated from vagina of women in reproductive age with vulvovaginitis.	2015-17	CMCH, Bhopal
8	Development and validation of an Electronic Surveillance System for Surgical Site Infections developing during hospital stay and after discharge: A Multi-Centric Study	2016-19	ICMR, New Delhi
9	Evaluation of Rapid Test and peripheral blood smear for the diagnosis of Malaria in a tertiary care hospital.	2016-18	CMCH, Bhopal
10	Study of in vitro susceptibility of five -lactam/ -lactamase nhibitor combinations in ESBL / MBL positive Gram negative bacilli isolated from patients attending a tertiary care hospital in Central India	2016-18	CMCH, Bhopal
11	Study of bacteriological profile of blood culture isolates in intensive care units at a tertiary care hospital using automated	2016-18	CMCH, Bhopal

- **Diagnostic services provided:**

Lab wise tests done	
Bacteriology	Mycology
Aerobic culture & sensitivity (Manual)	Fungal profile (KOH +Fungal culture)(Manual)
Aerobic culture & sensitivity for blood/ Sterile body fluids (Automation)	India Ink preparation
Aerobic culture & sensitivity for others- Urine/Pus/ET secretions etc (Manual + Automation)	Galactomanan Antigen for invasive aspergillosis (ELISA)

Air Sampling (Surveillance)	Fungal culture (Automation)
Albert's Staining	Serology
Anaerobic bacterial culture (Automation)	ASLO (Qualitative)
Anaerobic bacterial culture (Manual)	CRP (Qualitative)
Dark ground Microscopy for spirochaetes	Rheumatoid factor (Qualitative)
Gram-staining	Widal test (Tube method)
Hanging Drop for Darting Motility	Rapid Salmonella Typhi IgM
Modified ZN staining for acid fast bacteria	Rapid PUO Screening (Typhoid, Brucella & Scrub typhus)
MRSA Screening (Manual)	Rapid Leptospira IgM
MRSA Screening (Manual +Automation)	Rapid RPR for syphilis
OT Swab for Aerobic culture	Rapid Toxoplasma antibody test
OT Swab for Anaerobic culture	Rapid Urine Pregnancy test
Sterility control testing (ETO)	Virology
Sterility control testing (Autoclave)	Rapid Anti HCV
Water culture for coliforms (MPN)	Rapid Dengue profile (NS1 Ag + IgG & IgM)
Parasitology	Rapid HBsAg
Microscopy-Amoebic Trophozoite (Liver pus)	Rapid Infectious mononucleosis antibody test
Deleted	Rapid Rota / Adeno virus in stool
Deleted	Flu A/ Flu B/ 2009 H1N1 PCR (By GeneXpert)
Peripheral blood smear for LD bodies	Immunology
Peripheral blood smear for Microfilaria	Mantoux test
Peripheral blood smear for Malaria parasite	Rapid Malaria Antigen (P.vivax & P.falciparum)
Stool profile(Microscopy + Occult blood + Modified ZN)	
Mycobacteriology	
Modified ZN staining for Lepra bacilli	
ZN staining for AFB	
MTB/RIF:PCR (MTB & Rifampicin resistance detection by GeneXpert)	

- Photographs



Bact Alert & Vitek 2 C



Gene Xpert



Biosafety cabinet & other instruments for processing samples for M.tuberculosis



Museum



Museum