October 2022

DEPARTMENT OF MICROBIOLOGY
SETH G.S.MEDICAL COLLEGE AND K.E.M HOSPITAL
SERVICES OFFERED

LABORATORY WORKING HOURS

The working hours, for the various divisions and specimen acceptance timings are provided in the tables below.

Routine working hours – All divisions	Weekdays	9.00 a.m. to 4.00 p.m.
	Saturdays & Bank Holidays	9.00 a.m. to 12.30 p.m.
Emergency laboratory Services	Weekdays	4.00 p.m. to next day 9.00 a.m.
	Saturdays / Bank Holidays	12.30 p.m. to Sunday / Next working day 9.00 a.m.
	Sundays / O.P.D Holidays	9.00 a.m. to Monday / Next working day 9.00 a.m.

SPECIMEN ACCEPTANCE TIMINGS:

	Division	Timing
OPD patients	All divisions	9.00 a.m. – 11.00 a.m.
Indoor patients	All divisions	9.00 a.m. – 11.00 a.m.
Body fluids / Aspirated pus/ Tissue / Ocular specimens / Stool for cholera	Clinical Bacteriology, Mycology and Mycobacteriology	During the entire working period
Urine, Stool and Sputum	Clinical Bacteriology	9.00 a.m. – 11.00 a.m.
Direct walk in clients	Virology and Immunology / ICTC	9.00 a.m to 4.00 p.m

TESTS / SERVICES OFFERED:

Division / Location	**Tests offered**	**Specimen type and number where applicable**	**Contact Person with intercom number**
Clinical Bacteriology 7th floor, MSB	- Microscopy& Culture for aerobic bacteria and anaerobic bacteria - Antimicrobial susceptibility test on clinically relevant aerobic bacteria - Environmental sampling and sterility assurance tests as required	All specimens collected aseptically in sterile containers	Dr. Lona Dash Dr. Pradnya Kale Dr. Roopal Nipurte 7527
	BACTEC Aerobic plus for adults (as per availability) (FX 200)	Blood	
	BACTEC Peds plus for children / neonates (as per availability)	Blood	
	MIC (as per availability Vitek 2 / E test strips)	On request	
Molecular Diagnosis - Virology	HIV viral load	Whole blood	Samples for HBV and HCV viral load will be referred to LTMGH
	HBV viral load (for patients refereed from GI OPD)	Whole blood	
	HCV viral load load (for patients refereed from GI OPD)	Whole blood	
Mycology 5th floor, MSB	Microscopy , Culture, Identification for fungi	All specimens collected aseptically in sterile containers	Dr. Vasant Baradkar Dr. Pallavi Surasee 7857 / 7824
Mycobacteriology 5th floor, MSB	Microscopy (LED fluorescent microscopy)	Sputum** – at least 2 specimens of which one is early morning and the other is spot.	Dr Swapna Kanade Dr. Swati Vijay 7827
		Gastric lavage – 3	

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Division / Location	**Tests offered**	**Specimen type and number where applicable**	**Contact Person with intercom number**
		specimens collected on 3 different days Other specimens – One or more	
	Xpert MTB/RIF ** assay # for simultaneous detection of MTB and Rif resistance as per programmatic recommendations	Sputum specimen x 2 / GL x 2-3 / Extra pulmonary in Falcon tube (procured from DOTS centre, 5th floor CVTS building)	Dr Swapna Kanade 7827
	Culture and DST for both first and second line anti-TB drugs as per programmatic identification		
Parasitology 5th floor, MSB	Stool – Routine and Microscopy Stool and other body fluids / tissues – for potential and opportunist parasites	- Stool -BAL -Other respiratory specimens -Hydatid fluid -Other body fluids	Dr. Alpana Wagh 7857 / 7832
	RDT - malaria antigen	Whole blood (finger prick) / serum	
Serology 5th floor, MSB	ASO Dengue – NS1 antigen (Rapid / ELISA) Dengue – IgG and IgM antibodies (Rapid / ELISA) Leptospirosis – IgM Antibodies RA Widal RPR / V.D.R.L Chikungunya IgM Antibody COVID 19 IgG antibody Referral of specimens to PCR laboratory at Kasturba Hospital for Leptospirosis, Dengue pdmH1N1/2009	Whole blood collected in clean, dry, plain test tube / red top evacuated tubes. PCR – 3-5 ml blood in purple cap (EDTA) evacuated tubes and transported in cold chain Collect sample (nasal/throat) using the nylon swab provided with VTM kit, place in VTM and transport in cold chain	Dr. Vijaya Torane 7984 / 7985
Virology and Immunology 5th floor, MSB –	ICTC @ HIV – antibody detection HCV – antibody detection HBsAg detection RPR CD4 count enumeration	Whole blood collected in clean, dry, plain test tube / Plain vacutainer EDTA vacutainer	Dr. Shashir Wanjare Dr. Vaishali Surase Dr. Ranjana Thate 7825 / 7039

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Division / Location	Tests offered	Specimen type and number where applicable	Contact Person with intercom number
Molecular Diagnosis including Virus Research and Diagnostic Laboratory (VRDL)	COVID 19 –RTPCR COVID-19 rapid antigen test Influenza PCR (as per availability)	Nasopharyngeal swab and throat swab Other specimens Nasal swab , Sputum in patients with LRT lesions Samples to be transported in cold chain . Specific requisition forms to be filled.	Dr. Priyanka Prasad Dr. Gita Nataraj Dr. Kashyap P.L 7552/7882
TEACHING AND INFECTION CONTROL	Co-ordinator Surveillance and Audits	As per time table	Dr. Shreeraj Talwadekar 7518

**, # Specimens should be accompanied by appropriately filled RNTCP laboratory forms
@ Specimens should be accompanied by appropriately filled written informed consent form (Marathi / English) for HIV antibody test

- All sample containers should be adequately labelled.
- All samples should be accompanied by adequately filled requisition form.

6. TEST INDICATIONS AND LIMITATIONS

Sr.no.	Specimen / test performed	Indications (major)	Limitations
CLINICAL BACTERIOLOGY DIVISION			
1	**Blood culture (conventional)** Aerobic culture & Antimicrobial susceptibility test	CRBSI, Enteric fever, Infection of prosthetic material (implants), Infective endocarditis (IE), Meningitis, Osteomyelitis Pneumonia, PUO, Septicemia	Usually positive only in acute phase. Multiple specimens required in IE. Lesser volumes (<10-20 ml) decrease yield. Blood culture contamination during collection can lead to pseudobacteremia.
2	**Blood culture (Automated method BACTEC** 9050) Rapid aerobic bacterial culture by automated system	Same as above If patient on antimicrobial, collect just before the next dose is due.	Pre-incubation of automated blood cultures reduces the yield of Pseudomonas, Streptococcus and Candida spp. In case of delay , store at room temperature (20-30°C)
3	**Normally sterile body fluids** – culture C.S.F, Pleural, Pericardial, Peritoneal (Ascitic), Joint, Smear, Culture and Antimicrobial susceptibility test	Infection at respective sites	Negative microscopy or culture does not rule out disease. Larger volumes improve sensitivity.
4	**Throat swab from suspected diphtheria** case Smear examination by microscopy for Diphtheria Culture on appropriate media	Suspected diphtheria	Microscopy – unreliable A positive culture followed by demonstration of exotoxin production is the gold standard
5	**Sputum -** Smear, Culture and Antimicrobial susceptibility test	Lower Respiratory tract infections, community / hospital acquired	Both sensitivity and specificity are considered </= 50% unless expectorated sputum is purulent.
6	**Respiratory samples culture** (mini BAL, BAL, endotracheal	Lower Respiratory tract infections, community / hospital acquired	Difficult to distinguish colonization from infection even

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	aspirate) Smear, Culture and Antimicrobial susceptibility test	Counts >/= 10^4 cfu/ml correlates better with disease though not always	with quantitative cultures. Clinical correlation essential.
7	**Miscellaneous** (Pharyngeal swabs, Skin scraping) Smear, Culture and Antimicrobial susceptibility test	Suspected streptococcal pharyngitis, Localised skin infections	Used to rule in disease. Collect samples in suspected GAS infection patients from posterior pharyngeal wall and tonsils. The isolate needs to be clinically correlated for its significance as a colonizer / pathogen. Swabs need to be transported to lab immediately. A dried swab is detrimental to growth and can give false negative results.
8	**Ocular specimens** (conjunctival swab, Corneal scrapings, corneal button, eye discharge, vitreous humor, cornea) Smear, Culture and Antimicrobial susceptibility test	Conjunctivitis, corneal transplant, corneal ulcer , other eye infections trachoma,	Negative microscopy or culture does not rule out disease. Bedside inoculation on appropriate media improves yield provided aseptic practices are followed.
9	**Pus** Smear, Culture and Antimicrobial susceptibility test	Localised skin or organ specific	Sensitivity – 70% Specificity - High
10	**Wound swab** Smear examination by microscopy	Bacterial cellulitis, gas gangrene	Microscopy and culture unreliable. Collect tissue material or purulent discharge whenever possible.
11	**Tissue** (other appropriate specimen) for gas gangrene Smear and Culture (anaerobic)	Gas gangrene, local infection, intra-operative	Gas gangrene is a clinical diagnosis. Microscopy cannot characterize the genus. A negative test does not rule out disease. Swabs collected without appropriate debridement will yield contamination / false negative result.
12	**Specimens from female genital tract** (Vaginal /cervical swab, Urethral discharge, product of conception) and urethral discharge Smear, Culture and Antimicrobial susceptibility test	Vaginitis, cervicitis, urethritis	Specimens from lower genital tract will be contaminated with normal flora and difficult to interpret.
13	**Stool** **Microscopy –** hanging drop	Diarrhoeas, purulent enterocolitis	A negative test for darting motility does not rule out cholera (sensitivity and specificity ~ 60%)
14	**Stool** **Culture & Antimicrobial susceptibility test**	Diarrhoeas, dysentery, purulent enterocolitis	Necessary to process specimens immediately to prevent overgrowth by normal flora.
15	**Urine** **Smear, culture & Antimicrobial susceptibility test**	Recurrent / Complicated UTI Known UTI with treatment failure PUO Asymptomatic bacteriuria in pregnant women	-False positives with clean catch urine specimens is high since the urine sample passes through the distal urethra and can become contaminated with commensal bacteria. -Culture of urine from urine collection bag gives false positive result. -Culture positive urine in a sick

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			patient does not exclude another site of serious infection. -Prior antibiotic therapy may lead to negative urine culture in patients with UTI. -Sterile pyuriamaybe due to causes other than non-fastidious aerobic bacteria.
SEROLOGY DIVISION			
16	**RA Test for rheumatoid factors**	In-vitro detection of Rheumatoid factor in patients serum by latex agglutination method.	-Does not provide definite diagnosis of rheumatoid arthritis and should always be correlated clinically -False positive results are seen in auto immune diseases, acute bacterial and viral diseases - Test can be negative in spme patients with RA.
17	**ASO test**	Detection of antibodies to streptolysin O produced by group A beta hemolytic streptococci by latex agglutination method.	-All positive results should always be correlated clinically -Nonspecific results are seen in lipemic, hemolysed, contaminated and high protein content serum -False positive results are seen with the use of plasma instead of serum
18	**RPR / VDRL Test**	For detection and quantification of reagin antibody in serum/plasma and spinal fluid in syphilitic patients.	-Nonspecific test for syphilis - All positive results should be correlated clinically -All positive samples should be confirmed by TPHA or FTA ABS - False Negative: early primary syphilis; in secondary syphilis because of prozone reaction; and in some cases of late syphilis. -Biological false positive occurs in conditions such as -infectious mononucleosis, viral pneumonia, malaria, lepromatous leprosy, pregnancy, collagen disease, other autoimmune diseases
19	**Widal Test**	Detection of typhoid fever or paratyphoid fever by agglutination method.	-Not a specific (65%) or sensitive test (65%) -All reactive titres should be correlated clinically - TAB vaccinated patients may show high titres
20	**LeptoIgM rapid**	Qualitative detection of IgM class of Leptospira specific antibodies in human serum/ plasma/whole blood by rapid immunochromatography method.	- Less specific than ELISA -All positive results should always be correlated clinically -Intensity of test line depends on the stage of the disease and titre of the antibody -Samples collected during early stage of disease (0-7days) may yield negative results Positive results of rapid tests to be confirmed by ELISA.
21	**Lepto IgM ELISA**	Qualitative detection of IgM class of antibodies against Leptospira by ELISA method.	Same as above

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22	**Dengue NS1 - Rapid**	Qualitative detection of non-structural protein 1 (NS1) of dengue virus in serum/plasma by rapid immunochromatography method	Samples collected during late stage of disease (after 7 - 9 days of fever) may yield negative results Positive results of rapid tests to be confirmed by ELISA.
23	**Dengue NS1 - ELISA**	Same as above	Same as above
24	**Dengue IgG/IgM Rapid**	Qualitative detection of IgG or IgM class of antibodies against dengue virus in human serum/ plasma by rapid immunochromatography method	- Not as specific or sensitive as ELISA -All positive results should always be correlated clinically -Intensity of test line depends on the stage of the disease and titre of the antibody -Samples collected during early stage of disease (0-7days) may yield negative results Positive results of rapid tests to be confirmed by ELISA.
25	**Dengue IgM ELISA**	Same as above	Same as above
26	**Chikungunya Antibody - ELISA**	Qualitative detection of IgM class of antibodies against Chikungunya virus by ELISA method.	All positive results should be correlated clinically
MYCOBACTERIOLOGY DIVISION			
27	**Microscopy**	Clinical suspicion of PTB / EPTB	Sensitivity low (10^5 orgs/ml)
28	**Culture**	All EPTB cases and suspected MDRPTB cases	Solid culture – 4 weeks for report
29	**XpertMTB/RIF assay**	MDRTB suspects, pediatric TB, all HIV positive TB suspects and extrapulmonary TB	Detects rifampicin resistance only. Cannot predict for other anti-TB drugs other than INH.
PARASITOLOGY DIVISION			
30	**Stool / other specimens - Microscopy**	Suspected parasitic infection in immunocompetent / immunocompromised patients	For detecting trophozoites, fresh stool specimen essential to be examined within the hour of collection. A negative result on a single stool specimen does not rule out parasitic presence.
31	**Blood – RDT malarial antigen**	Clinically suspected malaria cases	- Detection limit is usually 200 parasites / µl. May not detect low level parasitemia. -Use of RDT does not eliminate the need for malaria microscopy. -The currently approved RDT detects 2 different malaria antigens; one is specific for P. falciparum and the other is found in all 4 human species of malaria. Thus, microscopy is needed to determine the species of malaria other than P.falciparum.
MYCOLOGY DIVISION			
32	**Any specimen –**	Suspected superficial or deep	-The sensitivity of a KOH prep is

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	Microscopy(KOH)	fungal infection	relatively low (20-75%) -The test may require overnight incubation for complete disintegration of thicker specimens like hair, nail, or skin
33	**Microscopy – India ink**	Suspected cryptococcal infection	-The diagnosis of *C. neoformans* by India ink staining should be considered a presumptive result -Culture, biochemical and serological testing is recommended for final identification. Some strains of *C. neoformans*, as well as other cryptococci may not produce discernible capsule
33	**Culture**	Suspected superficial or deep fungal infection	-Longer time required for growth of different fungi -Contamination by saprophytic fungi
VIROLOGY AND IMMUNOLOGY DIVISION			
35	**HIV Antibody tests (Rapid)**	-Patients who present with symptoms suggestive of HIV infection. Examples pneumonia, TB or persistent diarrhoea. -Patients with conditions that could be associated with HIV such as STI/RTI. -Prevention of parent (mother) to child transmission - pregnant women who register at ANCs. These also include pregnant women who directly come in labour without any antenatal check-up	-False Negative result : in window period & terminal stage of HIV disease -False positive result: autoimmune disease, multiple blood transfusion, pregnancy etc.
36	**HBsAg ELISA**	• Signs/symptoms suggestive of hepatitis • H/o exposure	-False Negative : during incubation period -False positive: due to presence of other antigens or elevated levels of Rheumatoid factor
37	**Anti HCV ELISA**	• Signs/symptom suggestive of hepatitis • H/o exposure	-False Negative: in window period -False positive: elevated levels of Rheumatoid factor - Cannot differentiate recent from past infection
38	**RPR test**	• Direct walk in patients with high risk behavior • Patients referred by the STI counselor	-See page **21** above
39	**CD4 count**	• HIV positive patients referred from the ART centre	-Nonspecific marker which can be

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			affected by many other conditions
MOLECULAR DIAGNOSTICS			
40	**HIV viral load**	Monitoring response to treatment	The detection limit (sensitivity) varies between kits . The current test has a detection limit of 40 rna copies / ml/
41	**HBV viral load**	Initiate treatment and monitor response to therapy	Limit of detection 6 IU/ml
42	**HCV viral load**		Limit of detection 9 IU/ml
43	**COVID-19 RTPCR**	Clinically suspected symptomatic cases / contact of known cases	A negative test does not rule out infection. A negative test in highly suspected individuals should be repeated with a fresh sample collected 24 hours later.
44	**COVID-19 RAPID ANTIGEN TEST**	Clinically suspected symptomatic cases / contact of known cases	A negative test does not rule out infection. A negative test in symptomatic to be confirmed by RTPCR.
45	**PH1N1 RTPCR**	Clinically suspected cases who are admitted in ICUs	A negative test does not rule out infection. A negative test in symptomatic to be confirmed by RTPCR.
REFERRAL OF SPECIMENS			
43	**Lepto PCR**	Suspected leptospirosis, 1st week, antibody negative	A negative test does not rule out disease. A positive test to be correlated clinically and with other microbiological tests. Best results when specimens tested the same day of collection. Follow triple packaging while transporting. Transport in cold chain.
44	**Dengue PCR**	Suspected Dengue, 1st week, NS1 Ag and IgM Ab negative	Same as above. Does not speciate.
45	**Throat / nasal swab for pH1N1 influenza**	Category ‘C’ - Patients with Influenza like illness requiring admission / admitted	Positivity is very high early in the course of disease (upto 5 days). Not recommended as a test for monitoring disease. Processing the specimen within 24 hours of collection improves yield