

National Training of Trainers for COVID-19

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Samples to be collected for COVID-19 testing

- Essential samples:

- Throat swab (oropharyngeal swab).
- Nasal swab (Nasopharyngeal swab)

- Other preferred samples:

- Bronchoalveolar lavage
- Tracheal aspirate
- Sputum

} Wide mouth sterile plastic containers

- In lab confirmed patients:

- Blood
- Stool and urine

- Wide mouth sterile plastic containers

Personal protective equipment

Table 1. Recommended type of personal protective equipment (PPE) to be used in the context of COVID-19 disease, according to the setting, personnel and type of activity^a

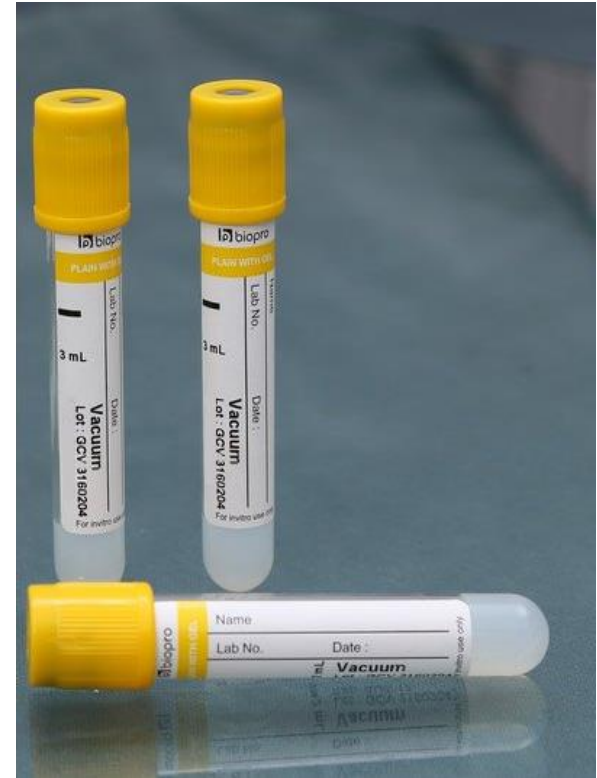
Setting	Target personnel or patients	Activity	Type of PPE or procedure
Healthcare facilities			
Inpatient facilities			
Patient room	Healthcare workers	Providing direct care to COVID-19 patients.	Medical mask Gown Gloves Eye protection (goggles or face shield).
		Aerosol-generating procedures performed on COVID-19 patients.	Respirator N95 or FFP2 standard, or equivalent. Gown Gloves Eye protection Apron
	Cleaners	Entering the room of COVID-19 patients.	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
	Visitors ^b	Entering the room of a COVID-19 patient	Medical mask Gown Gloves
Other areas of patient transit (e.g., wards, corridors).	All staff, including healthcare workers.	Any activity that does not involve contact with COVID-19 patients.	No PPE required

Collection of OP and NP swabs

- Optimal timing:
 - Within 3 days of symptom onset and no later than 7 days.
 - Preferably prior to initiation of antimicrobial chemoprophylaxis or therapy.

Blood collection from positive cases

- Blood sample collection from all positive cases
- Plasma sample collection in EDTA vials
- Resin separator tubes for serum sample collection



Guidance for specimen Collection

- A BSL2 containment level is required to handle suspected samples.
- Consider all specimens as POTENTIALLY HAZARDOUS / INFECTIOUS.
- Handle all specimens with gloves in a secure manner.
- Place each specimen into a separate container labeled with the patient's name and identification number, the collection site, the date of collection and the time of the collection.
- Do not contaminate the outside of the specimen container.
- Do not handle laboratory requisition forms with gloves.

Storage of Specimen

- Keep refrigerated (2-8 °C) if it is to be processed (or sent to a reference laboratory) within 48 hours.
- Keep frozen (-10 to -20 °C) if it is to be processed after the first 48 hours or within 7 days.
- Keep frozen (-70 °C) if it is to be processed after a week. The sample can be preserved for extended periods.

Guidelines followed for sample packaging & transport

- **WHO Guidelines for Transport of Infectious Substances:**
 - **Guidance on regulations for the Transport of Infectious Substances 2009–2010.**

https://www.who.int/csr/resources/publications/biosafety/WHO_HSE_EPR_2008_10.pdf

- **IATA guidelines**

Classification of Infectious Substances

- **Category A:** *An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals.*
 - **UN 2814** for Infectious substances which cause disease in humans or both in humans and animals.
 - **UN 2900** for Infectious substances which cause disease only in animals

Classification of Infectious Substances

- **Category B:** *An infectious substance which does not meet the criteria for inclusion in Category A.*
 - Infectious substances in Category B shall be assigned to **UN 3373**

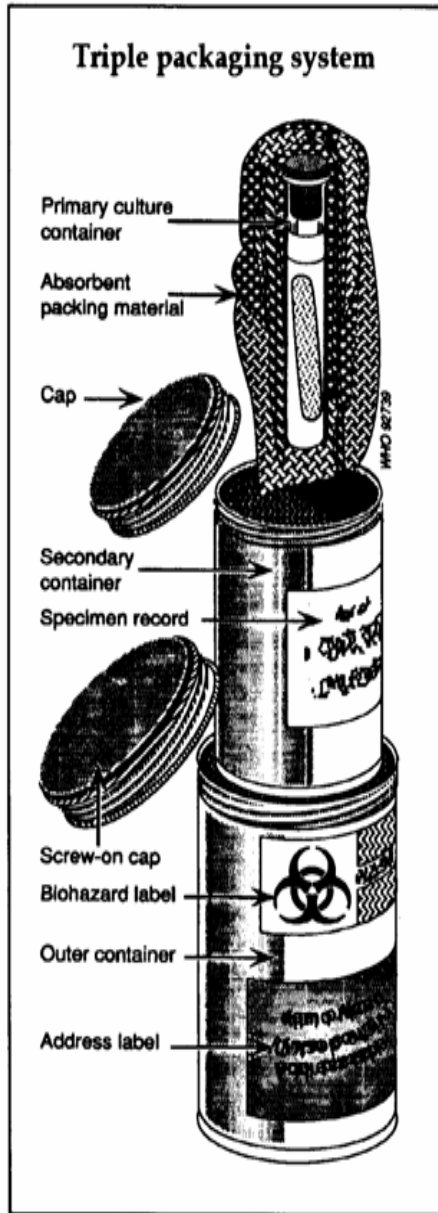
SARS-CoV-2 virus infectious/potentially infectious material falls under category B

Packaging System

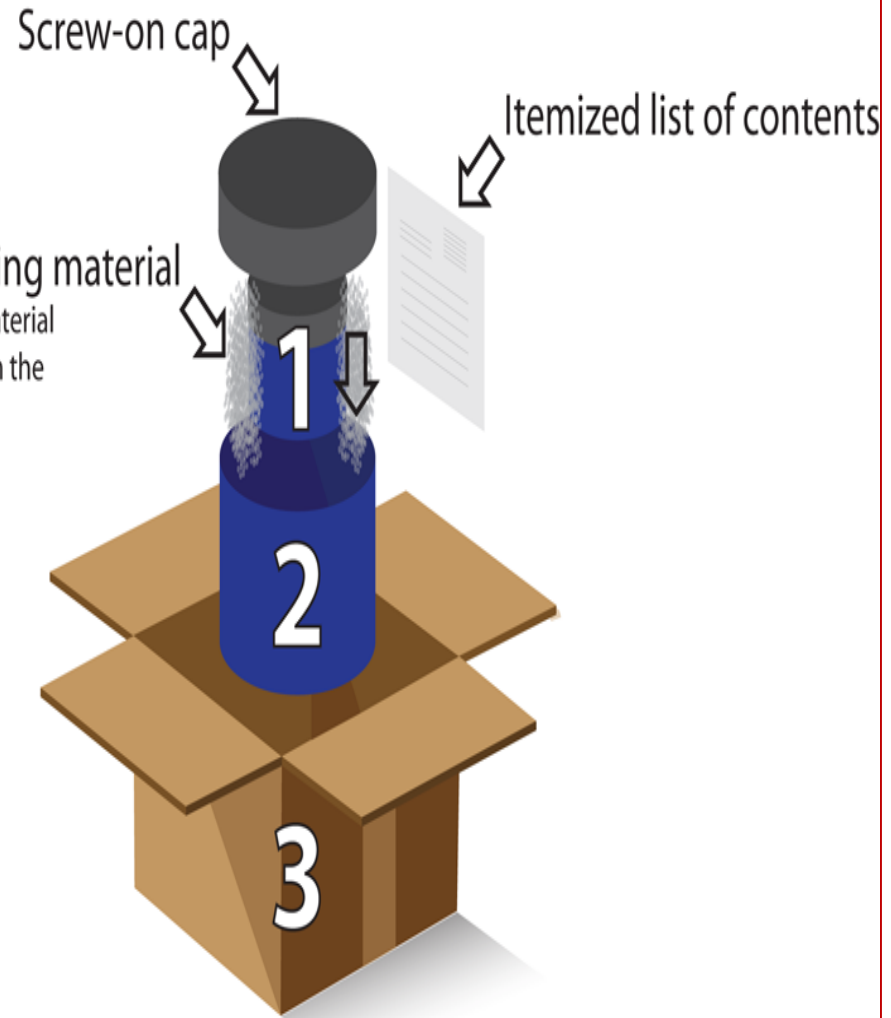
- The original samples should be packed, labeled and marked, and documented as Category B.
- Standard triple packing for Category B to be followed.
- Samples to be sent on dry ice (if possible). However using cold packs is acceptable.
- Sender should provide prior intimation about shipment of samples to the nearest certified laboratory.

Triple packaging system

Primary Container	Secondary Container	Outer Container/ Packaging Box
<ul style="list-style-type: none">• Watertight and leak proof• Cap correctly and securely closed.• Keep in upright position during transport	<ul style="list-style-type: none">• Watertight• Several clinical specimens may be placed into one secondary container• Containers have to be cleansed and disinfected if they are to be re-used <p>E.g.: Disposable, zip-lock plastic bags; Large centrifuge tubes (50 ml) with screw caps</p>	<ul style="list-style-type: none">• Made of strong material that can be cleansed and disinfected• Should have the Biohazard warning label• A content list in a sealed plastic bag inside the transport box may also be included



Absorbant packing material
 (Sufficient absorbant material must be placed between the primary and secondary receptacles)



1. Primary receptacle (leakproof, 95kPa)
2. Secondary receptacle (leakproof)
3. Outer container (w/list of itemized contents)

Transport Precautions

- Adequate cushioning materials inside the box to absorb shocks during transport
- Adequate absorbing material to absorb any spillage should it occur
- Do not stick the request form on the specimen
- Specimen request forms should be put into a separate plastic bag
- The outer container, secondary containers and specimen racks for transport should be thoroughly cleansed and disinfected periodically (i.e. at least daily) and when contaminated.

Labeling of Package

- Sender's, name, address and telephone number
- Whom to contact in case of emergency with telephone number
- Receiver's name, address and telephone number
- Proper shipping name (e.g. "BIOLOGICAL SUBSTANCE, CATEGORY B")
- UN number e.g. 3373
- Temperature storage requirements
- Quantity of dry ice inside the container
- Arrow mark to indicate upright direction



Responsibility of Sender

- Make advance arrangements with the carrier
 - that the shipment will be accepted for appropriate transport
 - that the shipment (direct transport if possible) is undertaken by the most direct routing
- Prepare necessary documentation, including permits, dispatch and shipping documents
- Notify the receiver in advance of transportation arrangements and expected date of delivery of shipment

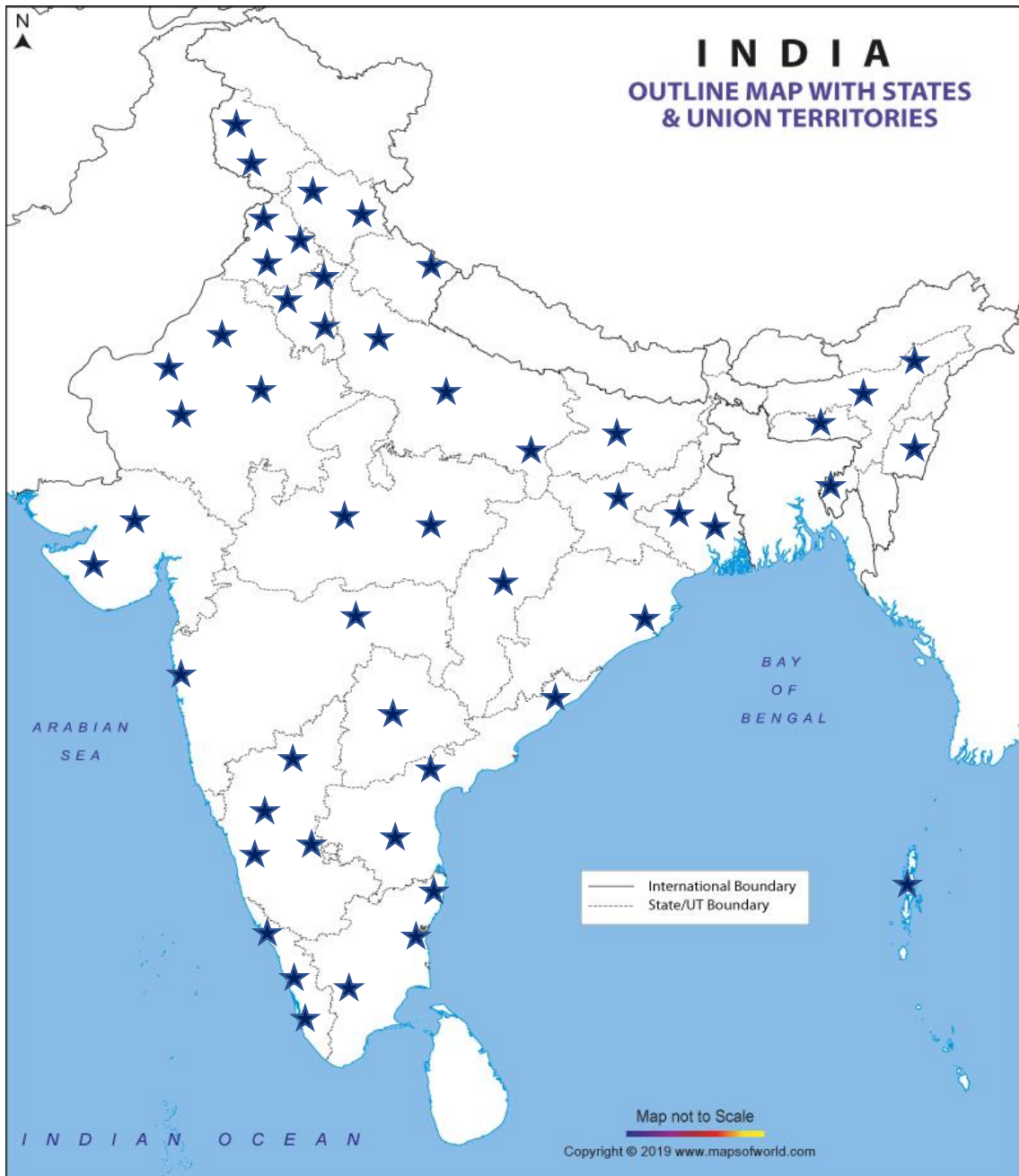
Responsibility of Receiver

- Acknowledge receipt of specimen
- Verify the integrity of packaging
- Box to be opened by personnel wearing adequate PPE.
- Open within Biosafety cabinet
- Check the specimens with the data sent
- Apply acceptance and rejection criteria

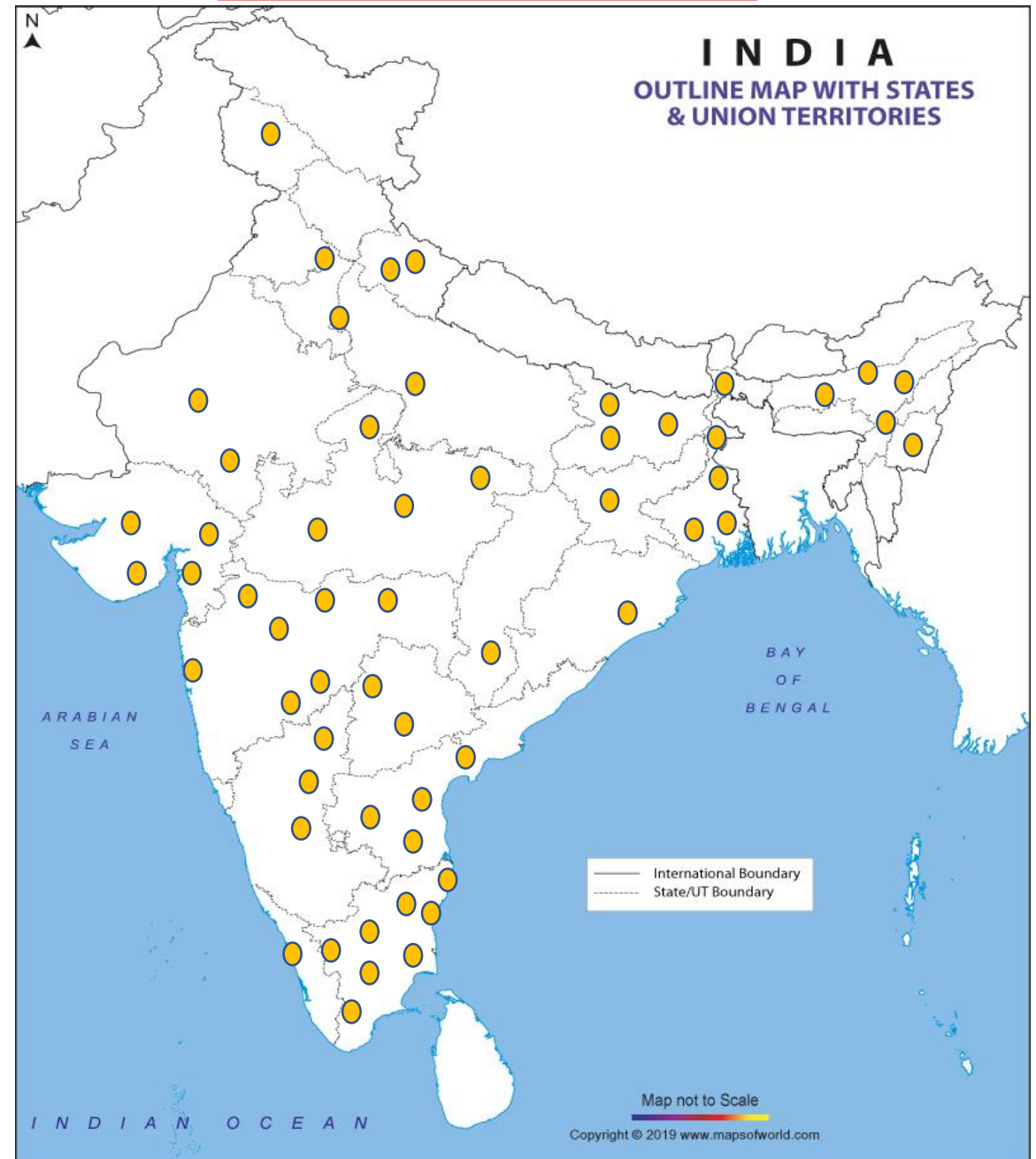
Types of Tests

- No validated serological tests
- Only molecular diagnosis
 - PCR based test aims at detection of the virus.
- Real time PCR platform is required.

51 VRDLs doing SARS-CoV-2 testing



56 VRDLs as collection sites



Tests for SARS-CoV-2

- No validated serological tests are available.
- Only molecular tests available.
- Laboratory protocols designed on the basis of WHO guidance and sequences available in GISAID.
 - First line screening assay: E gene.
 - Confirmatory assays: RdRp and ORF 1b.
- SoPs and testing protocol shared with all testing laboratories.



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COVID-19

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[52 testing sites for COVID -19 in India](#)

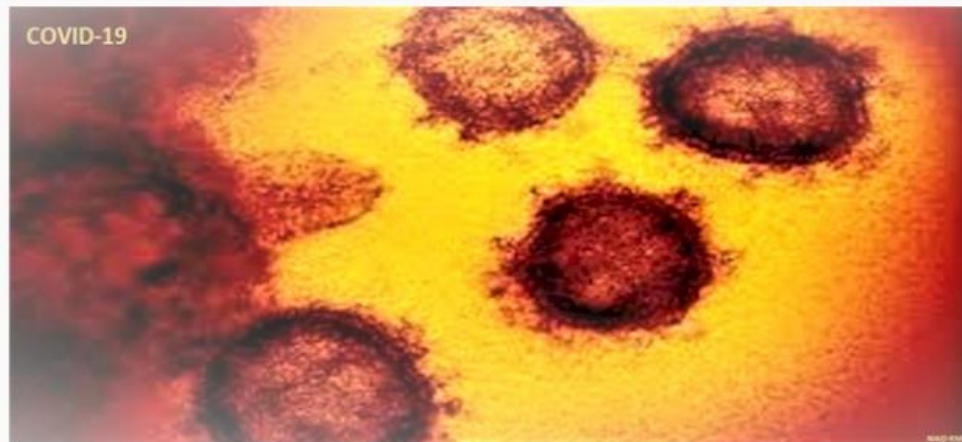
[Guidance document for State Nodal VRDLs and Testing VRDLs for COVID-19](#)

[57 Laboratories for helping in sample collection for COVID-19](#)

[VRDL Network across the country and their contact details.](#)

[Update:COVID-19 \(27/02/2020\)](#)

[Note on COVID-19 Laboratory Preparedness in India](#)



<https://icmr.nic.in/node/39071>



National Laboratories Testing for COVID-19



When to test: Cases with respiratory symptoms along with pertinent travel history; close contacts of laboratory confirmed cases

What samples to collect: Oral swab and/or nasal swab

How to test: Real-time Polymerase Chain Reaction



51 Testing Labs*

1. Sri Venkateswara Institute of Medical Sciences, Tirupati
2. Andhra Medical College, Visakhapatnam, Andhra Pradesh
3. GMC, Anantapur, AP
4. Regional Medical Research Centre, Port Blair, Andaman and Nicobar
5. Gushati Medical College, Gushati
6. Regional Medical Research Center, Dibrugarh
7. **Rajendra Memorial Research Institute of Medical Sciences, Patna**
8. Post Graduate Institute of Medical Education & Research, Chandigarh
9. All India Institute Medical Sciences, Rajpur
10. All India Institute Medical Sciences, Delhi
11. BJ Medical College, Ahmedabad
12. M.P.Shah Government Medical College, Jamnagar
13. Pt. B.D. Sharma Post Graduate Inst. of Med. Sciences, Rohtak, Haryana
14. **BPS Govt Medical College, Sonapat**
15. Indira Gandhi Medical College, Shimla, Himachal Pradesh
16. Dr.Rajendra Prasad Govt. Med. College, Kanya, Tandi, HP
17. Sher-e- Kashmir Institute of Medical Sciences, Srinagar
18. Government Medical College, Jammu
19. MGM Medical College, Jammu
20. Bangalore Medical College & Research Institute, Bangalore
21. **National Institute of Virology Field Unit Bangalore**
22. Mysore Medical College & Research Institute, Mysore
23. Hassan Inst. of Med. Sciences, Hassan, Karnataka
24. Shivmoga Inst. of Med. Sciences, Shivmoga, Karnataka
25. National Institute of Virology Field Unit, Kerala
26. Govt. Medical College, Thiruvananthapuram, Kerala
27. Govt. Medical College, Kozhikode, Kerala
28. **All India Institute Medical Sciences, Bhopal**
29. National Institute of Research in Tribal Health (NIRTH), Jabalpur
30. NIGRI of Health and Medical Sciences, Shillong, Meghalaya
31. Indira Gandhi Government Medical College, Nagpur
32. Kasturba Hospital for Infectious Diseases, Mumbai
33. J N Inst. of Med. Sciences Hospital, Imphal-East, Manipur
34. Regional Medical Research Center, Bhubaneswar
35. **Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry**
36. Government Medical College, Patiala, Punjab
37. Government Medical College, Amritsar
38. Sewai Man Singh, Jaipur
39. Dr. S.N Medical College, Jodhpur
40. Jhalawar Medical College, Jhalawar, Rajasthan
41. SP Med. College, Bikaner, Rajasthan
42. **King's Institute of Preventive Medicine & Research, Chennai**
43. Government Medical College, Thiruvananthapuram
44. Government Medical College, Agartala
45. Gandhi Medical College, Secunderabad
46. King's George Medical University, Lucknow
47. Institute of Medical Sciences, Banaras Hindu University, Varanasi
48. Jawaharlal Nehru Medical College, Aligarh
49. **Government Medical College, Haldwani**
50. National Institute of Cholera and Enteric Diseases, Kolkata
51. IPGME, Kolkata



Additional 56 Collection Labs**

1. Siddhartha Medical College, Vijayawada
2. Rajawar Gandhi Institute of Medical Sciences, Kadapa
3. Rangaraya Medical College, Kakinada
4. Guntur Medical College, Guntur
5. Silchar Medical College, Silchar
6. Jorhat Medical College, Jorhat
7. Tezpur Medical College, Tezpur
8. Fakrudin Medical College, Bargarh
9. Patna Medical College, Patna
10. Darbhanga Medical College, Darbhanga
11. S K Medical College, Muzaffarpur
12. Government Medical College & Hospital, Chandigarh
13. Late Sri BalramKashyap Memorial Govt. Medical College, Jagdalpur
14. **Lady Hardinge Medical College, New Delhi**
15. Government Medical College, Surat
16. GMC, Bhanuagar
17. PDU GMC, Rajkot
18. Government Medical College & SSG Hospital, Vadodra
19. Government Medical College, Srinagar
20. Rajendra Institute of Medical Sciences, Ranchi
21. **Vijayanagar Institute of Medical Science, Bellary**
22. Gulbarga Institute Of Medical Sciences, Gulbarga
23. Government Medical College, Thrissur
24. Dundelkhand Medical College, Sagar
25. MGM Medical College, Indore
26. Gajra Raja Medical College, Gwalior
27. S.S Medical College, Rewa
28. Government Medical College, Miraj, Sangli
29. Seth GS Medical College & KEM Hospital, Mumbai
30. Government Medical College, Nagpur
31. Government Medical College, Aurangabad
32. V. M. Government Medical College, Solapur
33. Shri Bhausaheb Hira Government Medical College, Dhule
34. Government Medical College and Hospital & Superspeciality Hospital, Akola
35. **Regional Institute of Medical Sciences, Imphal**
36. ICMR Medical College, Cuttack
37. Indira Gandhi Medical College & Research Institute, Puducherry
38. RNT Medical College, Udaipur
39. AIIMS, Jodhpur
40. Madurai Medical College, Madurai
41. Government Mohan Kumaramangalam Medical College, Salem
42. Government Medical College, Thiruvananthapuram
43. Government Medical College, Villupuram
44. Tirunelveli Medical College, Tirunelveli
45. Coimbatore Medical College, Coimbatore
46. Madras Medical College, Chennai, Tamil Nadu
47. Osmania Medical College, Hyderabad
48. Kakatiya Medical College, Nizampura, Warangal
49. **UJIMS (Formerly UPRIMS) Salfal**
50. AIIMS, Rishikesh
51. Doon Government Medical College, Dehradun
52. Murshidabad Medical College & Hospital, Murshidabad, Berhampur, West Bengal
53. Midnapore Medical College & Hospital, Midnapore
54. North Bengal Medical College, Darjeeling
55. Malda Medical College, Malda
56. **RS Kar Medical College, Kolkata**

* These labs accept samples for testing through government health authorities.

** These labs facilitate collection of samples through government health authorities by providing sample collection kits and transporting collected samples to testing labs



Thank You