

## Checklist for assessing diagnostics available at hospital laboratories

### 1. Basic information

Name of the Hospital	
Address	
District	
Quadrant	

Notes
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### 2. Hours of service provided by Hospital?

- 24x7
- Others (specify)

### 3. Number of sub-centers covered by the Hospital:

### 4. Location of the Hospital:

### 5. Approximate population covered by the Hospital:

### 6. Which is the nearest reference laboratory: Name:

Approx distance:            kms / Miles



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7. Laboratory attached to hospital;

- Yes
- No

7a. If yes, timings of laboratory: Open from ..... until ..... hours

7b. If yes, are all tests done in the same place, if not where else in the hospital are tests done?.....

.....

7c. If no, are specimens sent to another public facility for testing? (If yes, please specify)

.....

**8. Facility description**

8a. Describe the exterior of the laboratory building (size, design, paintwork, signage, any porch/ veranda)

8b. What materials is the laboratory building made from and what condition are they in?

8c. Where is the facility located (e.g. on main road/ side street/ next to church, mosque / on residential street etc.) and what other buildings or facilities are nearby?

8d. Describe the inside of the laboratory (layout, number and size of rooms, furnishings, windows, heat, smells, lighting)

8e. Any relevant background/context to hospital laboratory (e.g. When it was opened, which donor support the laboratory, was the laboratory functioning during Ebola times? Any changes in services during Ebola times? Recent closures or changes in staffing, any recent events for national/state programmes? Recent renovations? Anything else that marks it out as distinct from other laboratories)

**9. Diagnostic Availability and Quality: Tests available at the current hospital laboratories.**

Purpose of the checklist is to **observe and verify** if the tests is available, hence it requires the lab technician to show the test to the observer. Please ask to make a picture of each test, consumable, reagent, so that you can note down the name of manufacturing company.

Name of the test	Yes/No	Not verified (tick if test was not verified)	If yes, method used (rapid test, specify strip or cassette)	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	WHO pre-qualified (Yes/No)	SOP available? (IQA) (Yes/no)	EQA (yes/no)
<b>HAEMATOLOGY</b>								
Full Blood Count								
Haematology (Hb)								
Haematocrit or Packed Cell Volume (PCV)								
White Blood Cell Count (WBC)								
White Blood Cell and differential								
Count (diff count) (Complete blood count?)								
Erythrocytes Sedimentation Rate (ESR)								
Red Blood Cells Count (RBC)								
Platelet								
Reticulocytes (RETICS)								
Blood Films								

Name of the test	Yes/No	Not verified	If yes, method used (rapid test, specify strip or cassette)	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	WHO pre-qualified (Yes/No)	SOP available? (IQA) (Yes/no)	EQA (yes/no)
Prothrombin time (PT)								
Bleeding time								
Clotting time								
Malaria Parasite (MP)								
Malaria RDT								
Sickle cell disease (sickling)								
Rheumatic Factor								
Hemoglobin Electrophoresis								
Blood Group typing								
Rhesus antibodies (COOMBS)								
<b>CHEMISTRY</b>								
C-Reactive Protein test								
Bone chemistry								

Name of the test	Yes/No	Not verified	If yes, method used (rapid test, specify strip or cassette)	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	WHO pre-qualified (Yes/No)	SOP available? (IQA) (Yes/no)	EQA (yes/no)
<b><i>Blood glucose Level (Diabetes Monitoring)</i></b>								
Random Blood Sugar (FROM POCT TO LAB BASED)								
Glucose Tolerance tests								
Glycylated Haemoglobin (HbA1c)								
Urine glucose level								
<b><i>Kidney Function Test (Kft)</i></b>								
Urea								
Creatinine								
Uric Acid								
Creatinine Clearance Tests								
<b><i>Electrolytes</i></b>								
Sodium								
Potassium								
Calcium								
Phosphorous								
Chloride								
Magnesium								

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<b><i>Liver Function Test (Lft)</i></b>								
Liver Function Tests								
Total Protein, Albumin, Globulin								
Total Bilirubin								
Direct Bilirubin								
SGOT								
SGPT								
Alkaline Phosphatase								
Gamma Glutamyl Transferase								
<b><i>Lipids (lipid profile)</i></b>								
Cholesterol								
Triglycerides								
LDL Cholesterol								
HDL Cholesterol								
<b><i>Cardiac Enzymes Tests</i></b>								
CK-NAC								
CKMB								



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Lactate Dehydrogenase (LDH)								
C-Reactive Protein test								
<b><i>Pancreatic And Gastrointestinal Function</i></b>								
Serum or plasma amylase								
<b><i>MICROBIOLOGY</i></b>								
Biological specimen routine analysis (?)								
Multi stick for urinalysis								
Urine Culture and Sensitivity								
Stool microscopy (OCP), Culture and sensitivity								
NTD Bacterial detection								
TB Sputum Routine for AAFB								
Skin snip ( Oncho)								

Name of the test	Yes/No	Not verified	If yes, method used (rapid test, specify strip or cassette)	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	WHO pre-qualified (Yes/No)	SOP available? (IQA) (Yes/no)	EQA (yes/no)
Skin scraping (Fungi)								
Leishmania diagnosis								
Blood microscopy (Tryp, Filaria)								
Yeast and mould identification								
Yeast/mould MIC susceptibility testing								
Pregnancy RDT test								
Faecal Occult Blood Kit								
H Pyloric Ab Dip strip								
Hepatitis A Ag Dipstrip								
HBsAg Dipstrip (hep B)								

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HBsAg Combo IgG/IgM								
HCV Dipstrip								
HBV profile								
Syphilis Rapid Test								
Determine,SD Bioline.&Unigold (?)								
Haemoglobin Glycated								
Total Thyroxine ( T4)								
Triiodothyronine (T3)								
Thyroid Stimulating Hormone								
Lutenizing Hormone (LH)								
Follicle Stimulating Hormone								
Prolactin								

Name of the test	Yes/No	Not verified	If yes, method used (rapid test, specify strip or cassette)	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	WHO pre-qualified (Yes/No)	SOP available? (IQA) (Yes/no)	EQA (yes/no)
Progesterone								
Prostate Specific Antigen								
C- Reactic Protein Latex								
Rota Kit								
Crypto Kit								
Leishmania Kit								
Giardia Kit								
VIRAL Hepatitis Profile (HBV) (Rapid and ELISA PCR)								
Hepatitis C Virus (HCV) (Rapid and ELISA PCR)								
Widal test (semi-quantitative titre)								
CSF analyais (Cerobrospinal fluid (CSE)								
HIV I and II (Recombigen)								
CD4 Count (POCT)								

Name of the test	Yes/No	Not verified	If yes, method used (rapid test, specify strip or ...)	Government supplied + name of manufacturer	Private supplied + name of manufacturing company + ...	WHO pre-qualified (Yes/No)	SOP available? (IQA) (Yes/no)	EQA (yes/no)
<b>CANCER MARKERS</b>								
Prostate Monitoring ACP/PACP and PSA								
ACCRDIATION (SLMTA/SLIPTA)								
<b>Other (Disease Specific)</b>								
Cholera (during an outbreak) RDT & Culture								
Ebola (RDT, RT-PCR, Elisa)								
Lassa (RDT, RT-PCR, ELISA)								
<i>Other not listed in basic package of essential health services</i>								
<b>CYTO/HISTOPATHOLOGY</b>								
Cells and Tissues sampling								
Sample Processing								
Slide Preparation and staining								
Microscopic examination								

Reagents	Yes/No	If no, when last used	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	Notes
Field stain A&B,					
Normal saline					
HCG					
Sabouraud Agar					
leishman stain					
Cysticercosis Ab					
Amoebiasis Ab					
Leishmania Ab					
Giardiasis Ab					
Cryptosporidium Ag					
Rota Virus Ag					
Immersion oil					
Gram Staining Kit					
Crystal violet Stain					
Mueller Hinton Agar					
MacConkey Agar					
Nutrient Agar					
Columbia Agar					
Chocolate Agar					
Blood Agar					
Ammonium Oxalate solution					
Sodium					

Principal Investigator: Dr. Alice Street, University of Edinburgh

Survey adapted from tool developed by Dr. Madhukar Pai: Adjunct Professor, ICMR & Director, McGill Global Health Programs

This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 715450.



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Reagents	Yes/No	If no, when last used	Government supplied + name of manufacturing company	Private supplied + name of manufacturing company + supplier	Notes
EDTA Anticoagulant					
Tulks					
Ammonia Solution					
Giemsa Stain					
Retic View Stain Kit					
May Grunwald Stain					
Lugols iodine stain					
Rexoguard Antseptic					
Menthylene Blue					
TB Ziehl-Neelsen Kit					

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<b>Consumables</b>	<b>Yes/No</b>	<b>If no, when last used</b>	<b>Government supplied + name of manufacturing company</b>	<b>Private supplied + name of manufacturing company + supplier</b>	<b>Notes</b>
Petri dish					
Slide racks					
Tube racks					
Pasteur pipette					
Glass slides					
Coverslips					
Cryovial tubes					
Blood collection tubes (Plain, EDTA, Heparin, Gel, Citrate, Fluoride)					
Westergren tube and stand					
Wintrobes					
Needles and syringes					
Autoclave bags					
Biohazard bags (small medium and large)					
Butterfly needles					
Shipping boxes					
Tourniquet					



<b>Consumables</b>	<b>Yes/No</b>	<b>If no, when last used</b>	<b>Government supplied + name of manufacturing company</b>	<b>Private supplied + name of manufacturing company + supplier</b>	<b>Notes</b>
Capillary tubes					
Centrifuge Tube (Conical)					
Sterile loops/forceps					
Microwell plate					
Pipette Tips					
Filtered pipettes tips					
Glass dryer					
Plastic cuvettes					
Glass cuvettes					
Blood Lancet					

Accessories	Yes/No	In working condition (yes/no?)	Government supplied (yes/no)	If private supplied, name of supplier	Notes
Haematocrit Tubes					
Hand Sanitizer					
disinfectant					
protective eye goggles					
Face shields					
Laboratory coats					
laboratory tissues (absorbent)					
Nitrile disposable gloves					
powdered-disposable gloves					
laboratory shower					
Fire blankets					
Beds					
Sharps container					
Dustbin					
Cotton wool					
Hair dryer					
laboratory stools, chairs, tables,					
Laboratory head gear					
laboratory nose mask					
Apron					

**Notes/ Comments/ Observations on diagnostics, reagents, consumables and accessories in laboratory. (e.g. any additional information on internal or external quality assurance, where was survey information sourced, where SOPs were found etc):**

**Notes: E.G: Source of survey information, were SOPs found on site**

**Comments:**

**Observations:**

## 10. Equipment

Equipment	Yes/No	If Yes, quantity	Energy source (if relevant e.g. battery; mains; generator; solar; gas)	Equipment in working condition (Yes or No)	Last calibrated when? (month/year)	Notes
<b>Essential equipment</b>						
Multifocal light microscope						
Fluorescence microscope						
Automated Biochemistry analyzer						
Automated Hematology analyzer						
Coagulation machine						
Embedding machine						
Tissue weighing scale						
Automated erythrocytes sedimentation rate						
Water distillation unit / deioniser						
Spectrophometer						
Microtome						
Refrigerator (4 – 9 degrees)						
Solar refrigerator						
Deep freezer (-20°C)						

Equipment continued	Yes/No	If Yes, quantity	Energy source (if relevant e.g. battery; mains; generator; solar; gas)	Equipment in working condition (Yes or No)	Last calibrated when? (month/year)	Notes
Deep freezer (-80°C)						
Table top Centrifuge						
Manual Centrifuge						
Micro centrifuge						
Incubator						
Cooling Incubator						
Anaerobic culture jar glass						
Autoclave						
Sterilizer						
Biosafety cabinet Class II						
Quantitative PCR machine						
Conventional PCR machine						
GeneXpert machines						
Automated Hormone profile analyzer						
Water bath						
Electrophoresis apparatus						

Equipment continued	Yes/No	If Yes, quantity	Energy source (if relevant e.g. battery; mains; generator; solar; gas)	Equipment in working condition (Yes or No)	Last calibrated when? (month/year)	Notes
Gel electrophoresis apparatus						
Thermometer						
Shaker						
Hot/Magnetic stirrer plate						
Balance						
Microbalance						
Bunsen Burner						
Stopwatch						
Vortex						
pH tester						
Hot air oven sterilizer						
UV Torch						
Transilluminator						
Spirit lamp						
Uninterrupted power supply (UPS)						
Air conditioners						
Incinerators						
Air extractors						

Equipment continued	Yes/No	If Yes, quantity	Energy source (if relevant e.g. battery; mains; generator; solar; gas)	Equipment in working condition (Yes or No)	Last calibrated when? (month/year)	Notes
Pipette stands						
Serological pipette sets						
Micropipette sets						
Automated pipette pump						
Manual pipette pump						
Pipette (p 20 micro litres )						
Pipette (p 200 micro litres )						
Pipette (p 1000 micro litres )						
Test tube washer						
Wire loops						
Fire extinguisher						
First aid kit						
Computers and accessories						
Bleeding Couchers and Bleeding Chairs						
7.5 KVA Standby Generator						
Electronic balance (scale)						

Equipment continued	Yes/No	If Yes, quantity	Energy source (if relevant e.g. battery; mains; generator; solar; gas)	Equipment in working condition (Yes or No)	Last calibrated when? (month/year)	Notes
Sem-automatival Bro-chem analyser						
Ph/Blood gas analyser						
ROCKER Platform (mixer)						
Scientific TB Centrifuge (digital)						
Haemocue + Lancet						
Haemocue burrettes						
Aspirator						
Spectrometer						
Rckit stair master						
Electrical balance scale						
Electrolyte analyzer						
Haematocritic machine and						
Table top cross matching with						



## 11. Maintenance of equipment in the laboratory

a. Is there a biomedical engineer that service your laboratory equipment?

- Yes  No

b. Do you service your laboratory equipment?

- Yes  No

c. If yes, how often?

- Once every one year  Every two years  Never been serviced  
 Any time a biomedical engineer is available

d. if yes, list the type of equipment that gets serviced.....

.....

e. Is there a maintenance schedule for the equipment, other than daily cleaning?

- Yes  No  Do not know

f. Is there a maintenance record?  Yes  No

g. In case of a breakdown, how are repairs handled?

- a. Send for repair  
b. Dedicated service engineer will come onsite  
c. Repair will be done locally by non-specialized engineer  
d. A written complaint is sent to the district health management team and then it is worked upon  
e. Other:.....

h. Are the records of refrigerator/freezer temperatures maintained?  Yes  No



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i. Is there a service and maintenance contract for major equipment?  Yes  No

Details: .....

j. Do you know if each piece of (or all) equipment has a service agreement with a maintenance/service agent?

.....

k. How long on average does it take before repair is handled? .....

l. Are used and non-functional equipment removed from the lab, or sent to a central place for destruction, or repair?.....

**12. Coverage: Test utilization at the Hospital**

<b><u>Tuberculosis</u></b>		
<b>Name of the test</b>	<b>Number of tests done in last 3 months</b>	<b>Number of suspected TB patients or contacts of confirmed TB patients visited the facility in last 3 months</b>
Sputum AFB		
HIV rapid test		
<b><u>HIV</u></b>		
<b>Name of the test</b>	<b>Number of tests done in last 3 months</b>	<b>Number of suspected HIV patients or contacts of confirmed HIV patients visited the facility in last 3 months</b>
HIV rapid test		
<b><u>Malaria</u></b>		
<b>Name of the test</b>	<b>Number of tests done in last 3 months</b>	<b>Number of patients with acute febrile illness visited the facility in last 3 months</b>
Malaria microscopy		
Malaria RDT		

Notes e.g. Where survey information sourced/ any missing data/ anomalies.



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<b><u>Hepatitis B</u></b>		
<b>Name of the test</b>	<b>Number of tests done in last 3 months</b>	<b>Number of suspected Hep B patients visited the facility in last 3 months</b>
Hepatitis B antigen		
<b><u>Typhoid</u></b>		
<b>Name of the test</b>	<b>Number of tests done in last 3 months</b>	<b>Number of suspected typhoid cases visited the facility in last 3 months</b>
Widal test		

Notes e.g. Where survey information sourced/ any missing data/ anomalies.

**13. Human Resource available at the Hospital Laboratory:**

<b>Staff designation</b>	<b>Available at the hospital yes/no</b>	<b>Number of post (formal/on paper)</b>	<b>Number in post actually filled (pincode (P); on volunteer V)</b>
Laboratory superintendant			
Laboratory scientist			
Laboratory technician			
Laboratory assistant			
Porter/Cleaner			
Receptionist			
Volunteers			

**Notes e.g. Any recent changes to staffing:**

## 14. Electricity

- a. Is there electricity in all parts of the Laboratory  In all parts  
 In some parts  
 None
- b. Regular Power Supply  Continuous Power Supply  
 Occasional power failure  
 Power cuts in summer only  
 Regular power cuts  
 No power supply
- c. Stand by facility (generator/UPS) available in working condition today (e.g. is there fuel)?  Yes  No
- d. Are there renewable energy technologies at the facility (e.g. solar)  
 Yes  No
- Please specify \_\_\_\_\_
- e. Is air-conditioner (AC) available at the laboratory?  Yes  No
- f. Is the AC supported by stand by electricity facility?  Yes  No

Notes

g. Who provides electricity? (circle all relevant answers)

- 1. MOHS
- 2. WHO
- 3. Global Fund
- 4. CDC
- 5. CHC fund
- 6. Other:.....

h. How long do you use the fuel provided?

- 1. 24 hours
- 2. 12 hours
- 3. 9am to 1pm
- 4. 3 Hours
- 5. When there are samples in the laboratory

i. What source is the electricity provided?

- 1. Generator
- 2. Power plant
- 3. National grid
- 4. Solar
- 5. Others:.....

## 15. Water

- a. Is there a water supply at the Laboratory  Yes  No
- b. Is there a sink in the laboratory?  Yes  No
- c. Are there water purification chemicals or filter?  Yes  No
- d. Does the facility have a running tap?  Yes  No
- e. Does the facility have a bore hole water?  Yes  No
- f. Does the facility have a storage tank?  Yes  No

Notes

## 16. Laboratory waste management at the hospital laboratory

Availability of waste management/disposal unit	Yes/No	Notes
Waste management SOP		
Incinerator		
burial pit		
Septic tanks		
Drainage system		
Sharps containers in laboratory		
Sharps containers in wards/consultation		
Placenta pit		
Sanitation facilities for patients		
Sanitation facilities for staff		

Any **observable** anomalies in the segregation of waste?  
E.g. waste in the wrong coloured bin.

Describe the condition of the burning pit/incinerator (location, is it fenced, brick enclosure on the ground, waste residues/ashes buried, any leftover glassware or other things that didn't burn, animals around?)

Describe the condition of the waste bins in wards/lab, are they overflowing, is there waste next to the bin?





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16a. Is there an incinerator in your laboratory facility?  Yes  No

16b. Is there an autoclave available in your laboratory facility  Yes  No

16c. If yes, which materials do you incinerate/autoclave.....  
.....

16d. If no, how do you disinfect your pathogenic wastes?  By burning  In a Pit  In an open dumping ground

16e. Does the community contribute in the Laboratory waste management?  Yes  No

**17. Condition of waste receptacles in the laboratory**

**To observe: Segregation of waste at point of collection:**

A1. Are there separate bins for medical waste and general waste in laboratory?  Yes  No

A2 Have bags been placed at the inner side of the waste bins?  Yes  No

A3. Do laboratory staff double waste bags in a bin?  Yes  No

A4. Is waste bin with red bag (highly infectious waste) available in the lab?  Yes  No

A5. Is waste bin with yellow bag (infectious waste) available in the lab?  Yes  No

A6. Is waste bin with black bag (general waste) available in the lab?  Yes  No

A7. Segregation of waste at point of final disposal: is medical waste disposed separately from general waste?  Yes  No

A8. Are the biohazard symbols imprinted over the waste bins?  Yes  No

A9. Are posters to guide users displayed near waste bins?  Yes  No

### **B. Mutilation of recyclable waste:**

B1. Are used hypodermic needles destroyed?  Yes  No

B2. Is nozzle of syringes destroyed?  Yes  No

B3. Are used hypodermic needles found re-capped?  Yes  No

B4. Are used hypodermic needles found bent?  Yes  No

B5. Are sharp bins provided at this facility?  Yes  No

B6 How are dipsticks disposed? (circle which is relevant based on observation in laboratory)

1. Dipstick placed in chlorine solution and placed in a yellow disposable bag
2. Dipstick placed in a black disposable bag
3. Dipstick placed in the bin
4. Dipstick placed in a plain plastic bag

B7. How are HIV dipstick disposed? (circle which is relevant based on observation in HIV laboratory)

1. Dipstick place in chlorine solution and placed in a yellow or red disposable bag
2. Dipstick placed in a black disposable bag
3. Dipstick placed in the bin
4. Dipstick placed in a plain plastic bag

**Questions to ask lab worker present in the lab:**

- C1. Who is responsible for disposing of waste? .....
- C2. How often is waste disposed in incinerator/pit?  Everyday  weekly  monthly
- C3. Who provides waste disposal bags/bin liners to the lab/ward?
- C4. Is there infectious waste treatment procedure carried out for such waste before disposal?
- C5. Is there a (assigned) person/staff responsible to ensure waste is segregated and/or treated before disposed (waste and disposal system)?
- C6. Is there regular training provided to waste handlers and assigned person/staff responsible for waste disposal system?  
How often is this training?
- C7. Is there some form of supervision on waste disposal system from Ministry? From NGO?



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**Any further comments on availability and quality of diagnostic equipment.**

Data collected by:

Date:

Principal Investigator: Dr. Alice Street, University of Edinburgh

Survey adapted from tool developed by Dr. Madhukar Pai: Adjunct Professor, ICMR & Director, McGill Global Health Programs

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