PRIMARY SPECIMEN COLLECTION MANUAL

KLES DR. PRABHAKAR KORE HOSPITAL & MRC

HI-TECH LABORATORY

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Amendment Record sheet

S No.	Section no & page no	Date of amendment	Details of the amendment	Reasons	Signature of the Quality Manager	Signature of Laboratory Director

LIST OF ABBREVIATIONS USED IN THE MANUAL

CBC	-	Complete Blood Count
CSF	-	Cerebrospinal fluid
ALT	-	Alanine Amino transferase
AST	-	Aspartate Amino transferase
WBC	-	White blood cell
HDL	-	High Density lipoprotein
LDL	-	Low density lipoprotein
VIT	-	Vitamin
EDTA	-	Ethylene Diamine Tetra acetic acid
K3	-	Tri potassium
ESR	-	Erythrocyte Sedimentation rate
FNAC	-	Fine needle aspiration & Cytology
RBC	-	Red blood cell
HCl	-	Hydrochloric Acid
HIV	-	Human acron deficiency virus
HbsAg	-	Hepatitis B surface antigen
HCV	-	Hepatitis C virus
FBS	-	Fasting blood sugar
PPBS	-	Post prandial blood sugar
GTT	-	Glucose tolerance test
TSH	-	Thyroid stimulating hormone
FSH	-	Follicular stimulating hormone
LH	-	Luteinizing hormone

QNS	-	Quantity not sufficient
QM	-	Quality Manager
ID	-	Identification
IV	-	Intravenous
K2	-	Di potassium
IFCC	-	International Federation Clinical Chemistry
CLIA	-	Chemiluminescence Immunoassay
BCP	-	Bromocresol purple
ALP	-	Alkaline phosphatase
SGOT	-	Serum Glutamyl Oxalo transaminase
SGPT	-	Serum Glutamyl Pyruvate transaminase
TPO	-	Thyroid peroxidase
Sr.	-	Serum
HCG	-	Human Chorionic Gonadotropin
BUN	-	Blood urea nitrogen
ISE	-	Ion selective electrode
CKMB	-	Creatine kinase muscle brain
ml	-	milliliter
LDH	-	Lactate Dehydrogenase
HSCRP	-	High sensitive c-reactive protein
CPK	-	Creatinine phosphokinase
CEA	-	Chorionic Embryonic antigen

DHEAS	-	Dehydroepiandrosterone sulfate
HPLC	-	High performance liquid chromatography
ELISA	-	Enzyme linked immunosorbent assay
GGT	-	Gamma Glutamyl transferase
T3	-	Triiodo thyronine
T4	-	Tetraiodo thyronine
TSH	-	Thyroid stimulating hormone
TIBC	-	Total iron binding capacity
OCPC	-	o-cresolphthalein complexone
PTH	-	Parathyroid hormone
PSA	-	Prostrate specific antigen
VMA	-	Vanillyl mandelic acid
Hb	-	Hemoglobin
ACTH	-	Andreno Corticotropic hormone
UE3	-	Unconjugated estradiol
DIC	-	Disseminated intravascular coagulation
MCV	-	Mean Corpuscular Volume
MCH	-	Mean Corpuscular Hemoglobin
MCHC	-	Mean Corpuscular Hemoglobin concentration
PCV	-	Packed cell volume
INR	-	International Normalized. Ratio
H & E	-	Hematoxylin-eosin stain
PAP	-	Papanicolaou

MGG	-	May-Grünwald (MGG) Stain
AFB	-	Acid-fast bacillus
KOH	-	Potassium hydroxide
VDRL	-	Venereal Disease Research Laboratory
ASLO	-	Antistreptolysin O titre
RA	-	Rheumatoid arthritis
ANA	-	Antinuclear antibody
CMV	-	Cytomegalovirus
TPHA	-	Treponema pallidum hemagglutination assay
HCV	-	Hepatitis C Virus
HAV	-	Hepatitis A Virus
HEV	-	Hepatitis E Virus
Ig	-	Immunoglobulin
PCR	-	Polymerase chain reaction

A= Ambient

R= Refrigerated (2 – 4 ^{0}C)

F= Frozen

CONTROL OF THE PRIMARY SAMPLE COLLECTION MANUAL

a) The holder of the copy of this manual is responsible for maintaining it in good and safe condition and in a readily identifiable and retrievable.

b) The holder of the copy of this Manual shall maintain it in current status by inserting latest amendments as and when the amended versions are received.

c) Quality Manager is responsible for issuing the amended copies to the copy holders, the copy holder should acknowledge the same and he /she should return the obsolete copies to the QM.

d) The amendment sheet, to be updated (as and when amendments received) and referred for details of amendments issued.

e) The manual is reviewed once a year and is updated as relevant to the laboratory's policies and procedures. Review and amendment can happen also as corrective actions to the non conformities raised during the internal audits or assessment / surveillance audits by NABL.

List of Laboratory Examinations Offered:

The list of the laboratory examinations offered is available in the Directory of Services. The list is exhaustive and includes those examinations not under the scope of accreditation also.

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
29. Clinical Biochemistry						
1	Aspirated fluid sugar,protein(c.s.f & e.t.c)	Hexokinase colorimetry enzymatic	A/ fluid	Daily	3 hrs	
3	Albumin	BCP	A/ serum (2ml)	Daily	3 hrs	
9	Alk. Phosphatase (ALP)	kinetic	A/ serum (2ml)	Daily	3 hrs	
10	ALT. (SGPT)	IFCC	A/ serum (2ml)	Daily	3 hrs	
11	Alpha 1 antitrypsin	Turbidometry	A/ serum (2ml)	Daily	3 hrs	
16	Anti TPO	CLIA	A/ serum (2ml)	Daily	3 hrs	
17	Amylase	Kinetic	A/ serum (2ml)	Daily	3 hrs	
18	Ammonia	Enzymatic	A / EDTA plasma	Daily	3 hrs	Sample to reach lab within 1hr.
19	AST (SGOT)	IFCC	A/ serum (2ml)	Daily	3 hrs	
20	Alpha feto protein (AFP)	CLIA	A/ serum (2ml)	Daily	3 hrs	
21	Adenosine deaminase activity (sr.)	Colorimetry	A/serum (2ml)	Daily	3 hrs	
22	Adenosine deaminase activity (CSF)	Colorimetry	A/CSF	Daily	3 hrs	
23	Adenosine deaminase activity (fluid)	Colorimetry	A/fluid	Daily	3 hrs	
25	Beta HCG (urine)	CLIA	A / Urine	Daily	5 hrs	
26	Beta HCG (sr.)	CLIA	A / Serum (2ml)	Daily	5 hrs	
27	Bicarbonate	Enzymatic	A / Serum (2ml)	Daily	8 hrs	
28	Total bilirubin	End point colorimetry	A / Serum (2ml)	Daily	4 hrs	
29	Bilirubin (total) / (direct)	End point colorimetry	A / Serum (2ml)	Daily	4 hrs	
30	Beta 2 microglobulin	CLIA	A / Serum (2ml)	Daily	5 hrs	
31	Blood gas analysis	ISE	Heparinised arterial whole blood	Daily	< 10 mins	
32	BUN	Calculated	A / Serum (2ml)	Daily	3 hrs	
34	Calcium	OCPC	A / Serum (2ml)	Daily	3 hrs	
37	Chloride	ISE	A / Serum (2ml)	Daily	3 hrs	
38	Cholesterol	End point colorimetry	A / Serum (2ml)	Daily	3 hrs	12 hr fasting
39	Cholinesterase	Kinetic	A / Serum (2ml)	Daily	3 hrs	
40	CK – MB	Kinetic	A / Serum (2ml)	Daily	45 mins	
41	Complement C3	Immunoturbidometry	A / Serum (2ml)	Daily	3 hrs	
42	Complement C4	Immunoturbidometry	A / Serum (2ml)	Daily	3 hrs	
43	Complete renal profile	Colorimetry, ISE, Kinetic,enzymatic	A / Serum (2ml)	Daily	3 hrs	
54	A.G.ratio	Calculated	A / Serum (2ml)	Daily	3 hrs	

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
62	Cardiac enzymes (AST,LDH,CKMB,CK)	Kinetic. Turbidometry	A / Serum (2ml)	Daily	45 mins	
67	Cardiac panel (Cholesterol,HDL Cholesterol, Triglycerides, Glucose)	Kinetic. Turbidometry	A / Serum (2ml)	Daily	3 hrs	
73	LDL cholesterol	Calculated	A / Serum (2ml)	Daily	3 hrs	
76	Copper	Colorimetry	A / Serum (2ml) /urine(2ml)	Daily	3 hrs	
77	Carbamazepin	CLIA	A / Serum (2ml)	Daily	5 hrs	
78	hsC-reactive protein	Turbidometry	A / Serum (2ml)	Daily	3 hrs	
79	CPK	IFCC	A / Serum (2ml)	Daily	45 mins	
80	Creatinine	Jaffe's kinetic	A / Serum (2ml)	Daily	3 hrs	
81	C.E.A.	CLIA	A / Serum (2ml)	Daily	5 hrs	
82	Cortisol random	CLIA	A / Serum (2ml)	Daily	5 hrs	
83	Cortisol 8 a.m	CLIA	A / Serum (2ml)	Daily	5 hrs	
84	Cortisol 4 p.m	CLIA	A / Serum (2ml)	Daily	5 hrs	
85	C – peptide	CLIA	A / Serum (2ml)	Daily	5 hrs	
86	Ca – 125	CLIA	A / Serum (2ml)	Daily	5 hrs	
88	Creatinine clearance test (24 hrs)	Jaffe's kinetic	A / Serum (2ml) /Urine(2ml)	Daily	3 hrs	24 hrs Volume of urine
89	C.S.F proteins	Colorimetry	A / CSF	Daily	3 hrs	
90	C.S.F glucose	hexokinase	A / CSF	Daily	3 hrs	
91	C.S.F .chlorides	ISE	A / CSF	Daily	3 hrs	
92	C.S.F LDH(adult)	IFCC	A / CSF	Daily	3 hrs	
93	C.S.F LDH (neonates)	IFCC	A / CSF	Daily	3 hrs	
94	Ceruloplasmin	Turbidometry	A / serum (2ml)	Daily	3 hrs	
95	DHEA-S	CLIA	A / serum (2ml)	Daily	5 hrs	
96	Digoxin	CLIA	A / serum (2ml)	Daily	5 hrs	
97	Estradiol	CLIA	A / serum (2ml)	Daily	5 hrs	
98	Fluid LDH	IFCC	A / Fluid (2ml)	Daily	3 hrs	
99	Fluid proteins	Biuret	A / Fluid (2ml)	Daily	3 hrs	
100	Fetal haemoglobin (quantitative)	HPLC	A / EDTA whole blood (2ml)	Daily	8 hrs	
101	Fluid glucose	Hexokinase	A / Fluid	Daily	3 hrs	
102	Fluid amylase	kinetic	A / Fluid	Daily	3 hrs	
103	Free t3	CLIA	A / serum (2ml)	Daily	5 hrs	
104	Fibrinogen	Turbidometry	A/citrate plasma	Daily	3 hrs	
105	Free t4	CLIA	A / serum (2ml)	Daily	5 hrs	
106	Ferritin	CLIA	A / serum (2ml)	Daily	5 hrs	
107	F.S.H	CLIA	A / serum (2ml)	Daily	5 hrs	
108	Free testosterone	ELISA	A/ serum (2ml)	Daily	5 hrs	
109	Gamma G T	kinetic	A/ serum (2ml)	Daily	3 hrs	
110	Glucose-6 phospate dehydrogenase	Colorimetry	A/EDTA whole blood	Daily	3 hrs	
111	Glucose (Fasting)/PP/R	Hexo kinase	A/ serum (2ml)	Daily	3 hrs	

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
114	Glucose tolerance test(gtt 100gm)4 samples	Hexo kinase	A/ serum (2ml)	Daily	3 hrs	
115	Glucose – tolerance test (75gm) 3 samples	Hexo kinase	A/ serum (2ml)	Daily	3 hrs	
116	Homocysteine	CLIA	A / serum (2ml) /EDTA plasma (2ml)	Daily	5 hrs	
118	HbA1c	HPLC	A/EDTA whole blood	Daily	3 hrs	
119	HDL cholesterol	Colorimetry	A/ serum (2ml)	Daily	3 hrs	
120	Human growth harmone	CLIA	A / serum (2ml)	Daily	5 hrs	
121	Phosphorus	Colorimetry	A/ serum (2ml)	Daily	3 hrs	
122	Insulin	CLIA	A / serum (2ml)	Daily	5 hrs	
123	Iron & TIBC	Colorimetry	A/ serum (2ml)	Daily	3 hrs	
125	LDH	IFCC	A/ serum (2ml)	Daily	3 hrs	
126	Lipase	Kinetic	A/ serum (2ml)	Daily	3 hrs	
127	Lithium	ISE	A/ serum (2ml)	Daily	3 hrs	
129	Lipid profile (Cholesterol,HDL Cholesterol, Triglycerides)	Colorimetry	A/ serum (2ml)	Daily	3 hrs	12 hr fasting
134	Lactate	Colorimetry	A/plasma	Daily	3 hrs	
135	L.H	CLIA	A / serum (2ml)	Daily	5 hrs	
136	Liver function test	Colorimetry , kinetic ,biuret ,BCP	A / serum (2ml)	Daily	3 hrs	
141	Urine potassium (spot)	ISE	A/urine (2ml)	Daily	3 hrs	
142	Urine sodium (spot)	ISE	A/urine (2ml)	Daily	3 hrs	
143	T3	CLIA	A / serum (2ml)	Daily	3 hrs	
144	T4	CLIA	A / serum (2ml)	Daily	3 hrs	
145	Magnesium	Colorimetry	A/ serum (2ml)	Daily	3 hrs	
147	Microalbuminuria (spot)	Turbidometry	A/urine	Daily	3 hrs	
148	Mini renal profile	Hexokinase, kinetic, Jaffe's kinetic,ISE, Enzymatic	A/ serum (2ml)	Daily	3 hrs	
150	Calcium (urine)	OCPC	A / urine (2ml)	Daily	3 hrs	
152	Urine creatinine (24hrs)	Jaffe's kinetic	A / urine (2ml)	Daily	3 hrs	
155	Urine phosphourus (spot)	Colorimetry	A/ urine (2ml)	Daily	3 hrs	
157	P.I.H profile (Urea,Creatinine,Uric acid)	Jaffe's kinetic, Colorimetry	A/ serum (2ml)	Daily	3 hrs	
158	Osmolality	Hexokinase, Kinetic,ISE	A/ serum (2ml)	Daily	3 hrs	
159	Potassium	ISE	A/ serum (2ml)	Daily	3 hrs	
160	Phenytoin	CLIA	A / serum (2ml)	Daily	5 hrs	
161	PTH	CLIA	A / serum (2ml)	Daily	5 hrs	
162	P.S.A	CLIA	A / serum (2ml)	Daily	5 hrs	
163	Prolactin	CLIA	A / serum (2ml)	Daily	5 hrs	
164	Progesterone	CLIA	A / serum (2ml)	Daily	5 hrs	
170	Sodium	ISE	A / serum (2ml)	Daily	3 hrs	

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
174	Stone analysis	Chemical	A/ specimen	Daily	3 hrs	
177	Total protein/albumin	Biuret , BCP	A / serum (2ml)	Daily	3 hrs	
180	Triglycerides	Colorimetry	A / serum (2ml)	Daily	3 hrs	
182	T.S.H	CLIA	A / serum (2ml)	Daily	3 hrs	
183	Testosterone (sr.)	CLIA	A / serum (2ml)	Daily	5 hrs	
184	Urea	Kinetic	A / serum (2ml)	Daily	3 hrs	
185	Uric acid	Colorimetry	A / serum (2ml)	Daily	3 hrs	
186	Urine aminoacidogram & metabolite screening		A/urine (2ml)	Daily	8 hrs	
189	Urinary protein creatinine ratio	Colorimetry , Jaffe's kinetic	A/urine (2ml)	Daily	3 hrs	
190	Urinary chloride (24 hrs)	I.S.E	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
191	Urinary calcium (24hrs)	OCPC	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
192	Urinary phosphorus (24hrs)	Colorimetry	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
193	Urinary potassium (24hrs)	I.S.E	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
194	Urinary sodium (24hrs)	I.S.E	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
195	Urinary uric acid (24hrs)	Colorimetry	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
196	V.M.A (24 hrs. Urine)	Chromatography	A/urine (2ml)	Daily	8 hrs	24 hrs Volume of urine
197	Copper 24hrs urine	Colorimetry	A/urine (2ml)	Daily	8 hrs	24 hrs Volume of urine
198	Cortisol 24 hrs. Urine	CLIA	A/urine (2ml)	Daily	5 hrs	24 hrs Volume of urine
199	Troponin – I	CLIA	A / serum (2ml)	Daily	45 mins	
200	Electrophoresis	Chemical	A / serum (2ml)	Daily	8 hrs	
201	Hb electrophoresis	HPLC	A/EDTA whole blood	Daily	8 hrs	
205	Protein (total)	Biuret	A / serum (2ml)	Daily	8 hrs	
220	Urine uric acid (spot)	Colorimetry	A/urine (2ml)	Daily	3 hrs	
221	Aspirated fluid chloride	ISE	A/ fluid (2ml)	Daily	3 hrs	
254	Thyroid profile (T3,T4,TSH)	CLIA	A/ serum (2ml)	Daily	3 hrs	
256	Electrolytes (Sodium,Potassium, Chloride)	ISE	A/ serum (2ml)	Daily	3 hrs	
258	Microalbuminuria 24hr urine	Turbidometry	A/urine (2ml)	Daily	3 hrs	24 hrs Volume of urine
259	Vitamin B 12	CLIA	A / serum (2ml)	Daily	5 hrs	
264	Urine osmolality	Hexokinase, Kinetic,ISE	A/urine (2ml)	Daily	3 hrs	
270	Fluid lipase	Kinetic	A/ fluid (2ml)	Daily	3 hrs	
271	Fluid Albumin	BCP	A/ fluid (2ml)	Daily	3 hrs	

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
326	Urinary chloride (spot)	ISE	A / urine (2ml)	Daily	3 hrs	
327	Urinary calcium (spot)	OCPC	A/urine (2ml)	Daily	3 hrs	
333	Urine sodium	ISE	A / urine (2ml)	Daily	3 hrs	
335	Folic acid (folate)	CLIA	A / serum (2ml)	Daily	5 hrs	
336	Fluid chyle analysis (triglycerides)	Colorimetry	A / Fluid (2ml)	Daily	3 hrs	
341	Anti-mullerian hormone (A.M.H)	ELISA	A / serum (2ml)	Daily	8 hrs	
351	Direct bilirubin	End point colorimetry	A / Serum (2ml)	Daily	3 hrs	
353	ACTH	CLIA	A / serum (2ml)	Daily	5 hrs	
356	Vitamin D	CLIA	A / serum (2ml)	Daily	5 hrs	
357	Dual marker (Free bHCG,PAPPA)	CLIA	A / serum (2ml)	Daily	8 hrs	
358	Triple test (Total bHCG,AFP.UE3)	CLIA	A / serum (2ml)	Daily	8 hrs	
366	Urinary calcium creatinine ratio-spot	OCPC, Jaffe's kinetic	A / urine (2ml)	Daily	3 hrs	
57-Hematology and Clinical Pathology						
Code	**Service**	**Method**	**TEMP./ Specimen**	**Freq.**	**TAT**	***Remarks***
1	Haemogram	Cell counter /microscopy	A/EDTA	Daily	5 hrs	
2	Complete blood count(CBC)	Cell counter /microscopy	A/EDTA	Daily	3 hrs	
3	Anemia profile	Cell counter /microscopy	A/EDTA	Daily	12hrs	
4	Hemolytic profile	Cell counter /microscopy	A/EDTA	Daily	48hrs	
5	Coagulation profile	Clot based	A/EDTA/CITRATE	Daily	3 hrs	
6	DIC profile	Clot based	A/EDTA/CITRATE	Daily	5 hrs	
7	Coagulation profile with mixing studies	Clot based	A/EDTA/CITRATE	Daily	24hrs	
8	Haemoglobin	Cell counter	A/EDTA	Daily	5 hrs	
9	WBC total count(TC)	Cell counter	A/EDTA	Daily	3 hrs	
10	WBC count differential(DC)	Cell counter	A/EDTA	Daily	3 hrs	
11	ESR	Sedimentation	A/ CITRATE	Daily	3 hrs	
12	R.B.C Count	Cell counter	A/EDTA	Daily	3 hrs	
13	Red cell indices(MCV,MCH, MCHC,RDW)	Cell counter	A/EDTA	Daily	3 hrs	

16	PCV	Cell counter	A/EDTA	Daily	5hrs	
17	Platelet count	Cell counter	A/EDTA	Daily	5hrs	
18	Absolute eosinophil count	Cell counter	A/EDTA	Daily	5hrs	
19	Reticulocyte count	Supravital staining	A/EDTA	Daily	12hrs	
20	Bleeding time/ Clotting time(BT/CT)	On patient	On Patient	Daily	NA	
21	Peripheral smear	Microscopy	A/EDTA	Daily	12hrs	
22	Clot retraction test	Clot based	collect tube from lab (5ml)	Daily	12hrs	
24	Sickling phenomenon	Sodium metabisulfate	A/EDTA	Daily	12hrs	
25	Malarial parasites in smear	Microscopy	A/EDTA	Daily	12hrs	
26	Microfilaria in smear	Microscopy	Night sample EDTA	Daily	12hrs	
27	Prothrombin Time/INR	Clot based	citrated 2.7ml	Daily	6hrs	
28	Activated Partial Thromboplastin(APTT)	Clot based	citrated 2.7ml	Daily	6hrs	
29	Osmotic Fragility	Spectophotometry	A/EDTA	Daily	24hrs	
31	Bone marrow Trephine Biopsy(Procedure)	On patient	by appointment	Daily	NA	
	Mean platelet volume(MPV)	Cell counter	A/EDTA	Daily	8hrs	
294	Bone marrow Aspiration (Procedure&Reporting)	Manual/Microscopy	by appointment	Daily	Next day	
33	D-dimer(citrate 2.7ml)	Clot based	A/ CITRATE	Daily	6hrs	
34	Absolute neutrophil count (ANC)	Cell counter	A/EDTA	Daily	5 hrs	
37	Urine analysis	Reflection Photometry	A /Fresh early morning Mid stream	Daily	3 hrs	
39	Urine sugar	Reflection Photometry	A /Fresh early morning Mid stream	Daily	3 hrs	
40	Urine albumin	Reflection Photometry	A /Fresh early morning Mid stream	Daily	3 hrs	
41	Urine microscopy	Microscopy	A /Fresh early morning Mid stream	Daily	3 hrs	
42	Urine ketone bodies	Reflection Photometry	A /Fresh early morning Mid stream	Daily	3 hrs	
43	Urine bile salt& bile pigment	Reflection Photometry	A /Fresh early morning Mid stream	Daily	8hrs	
44	Urine bence jones protein	Manual	(>100ml)	Daily	8hrs	
45	Urine urobilinogen	Reflection Photometry	(>100ml)	Daily	8hrs	

46	Urine porphobilinogen	Chemical	A /Fresh early morning Mid stream	Daily	3 hrs	
47	Urine specific gravity	Reflection Photometry	A /Fresh early morning Mid stream	Daily	3 hrs	
48	Urine pH	Reflection Photometry	A /Fresh early morning Mid stream	Daily	3 hrs	
49	Urine 24 hours total protein(24hrs collection)	Reflection Photometry	24 hours urine sample	Daily	3 hrs	
50	Urine pregnancy test	chemical	A /Fresh early morning Mid stream	Daily	3 hrs	
51	Urinary haemoglobin	Chemical	A /Fresh early morning Mid stream	Daily	3 hrs	
52	Urinary myoglobin	Chemical	A /Fresh early morning Mid stream	Daily	3 hrs	
53	Urine eosinophils	Microscopy	A /Fresh early morning Mid stream	Daily	3 hrs	
54	Fluid Ascitic(cell count/type)	Microscopy	A/10ml clean bottle	Daily	5 hrs	

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
66	Thalassemia profile	Cellcounter/Microscopy/CLIA	EDTA	Daily	Next day	
69	Toxic granules/band forms	Microscopy	EDTA	Daily	12hrs	
79	Fluid pleural(cell count/type)	Microscopy	A/>5ml in clean bottle	Daily	12hrs	
80	Fluid pericardial(cell count/type)	Microscopy	A/>5ml in clean bottle	Daily	12hrs	
81	Fluid synovial(cell count /type)	Microscopy	A/>5ml in clean bottle	Daily	12hrs	
83	Bone marrow slides for second opinion	Microscopy	BM slides	Daily	Next day	
84	GTT urine sugar (4 readings)	Reflection Photometry	Fasting,30,60,90 min	Daily	8hrs	
250	CSF (cell count /type)	Microscopy	2ml in a clean container	Daily	6hrs	
292	Absolute lymphocyte count	Cell counter	EDTA	Daily	8hrs	
293	Red Cell Distribution width(RDW)	Cell counter	EDTA	Daily	Next day	
295	Factor VIII assay	Clot based	A/citrate	once a week	Day of run	
296	Factor IX assay	Clot based	A/citrate	once a week	Day of run	
297	Factors viii & ix assay	Clot based	A/citrate	once a week	Day of run	
298	Ivy's Bleeding time (by appointment)	On patient	On patient	Daily	NA	
299	Fluids, others(cell count /type)	Microscopy	2ml in a clean container	Daily	12hrs	
	39-Histopathology and Cytology					
Code	**Service**	**Method**	**TEMP./ Specimen**	**Freq.**	**TAT**	***Remarks***
1	Biopsy (acro)	H & E	A	Daily	4 days	Delay in difficult cases & special stains & fixation
2	Biopsy more than 1 container of the same patient	H & E	A	Daily	4 days	
3	Biopsy large	H & E	A	Daily	6 days	
4	Paraffin block (each block)	H & E	A	Daily	2 days	
5	Vaginal / cervical smear (pap)	PAP	A	Daily	2 days	
6	Fluid for malignant cells	PAP / MGG	$2 – 8^{0}$ C	Daily	2 days	
7	Buccal smear	PAP / MGG	A	Monthly	2 days	
8	Tzanck smear	MGG	A	Weekly	2 days	
12	Second opinion	H & E	A	Twice a month	2 days	
13	Cytology	PAP	$2 – 8^{0}$ C	Daily	2 days	

14	Rapid H& E (by appointment)	H & E	A			
15	Special stain for histopath slide	VG / Reticulin / PAS / MTS / Congored	--	Whenever required		
16	Bal or brush cytology	PAP	2 – 8 ^{0} C	Weekly	2 days	
17	FNAC	PAP	A	Daily	2 days	
18	FNAC – usg guided	PAP	A	Weekly	2 days	
19	Toxo IgM	ELISA	A/SERUM	Weakly twice	Day of run	
20	Rubella IgM	ELISA	A/SERUM	Weakly twice	Day of run	
21	CMV IgM	ELISA	A/SERUM	Weakly twice	Day of run	
22	HSVI/II	ELISA	A/SERUM	Weakly twice	Day of run	
23	TPHA	HAEMAGGLUTINATION	A/SERUM	Weakly twice	Day of run	
24	Western blot	BLOT	A/SERUM	Weakly twice	Day of run	
25	HCV spot	CARD	A/SERUM	Weakly twice	Day of run	
26	ds DNA	ELISA	A/SERUM	Weakly twice	Day of run	
27	Leptospira spot	CARD	A/SERUM	Weakly twice	Day of run	
28	Cardiolipin IgM	ELISA	A/SERUM	Weakly twice	Day of run	
31	Culture & sensitivity fungal		A	Daily	1-4weeks	
32	Hbe Ag	ELISA	A/SERUM	Weakly twice	Day of run	
33	HBC IgM	ELISA	A/SERUM	Weakly twice	Day of run	
34	HEV	ELISA	A/SERUM	Weakly twice	Day of run	
35	HAV	ELISA	A/SERUM	Weakly twice	Day of run	
37	IgE	ELISA	A/SERUM	Weakly twice	Day of run	
39	Malerial card test	CARD	A/EDTA Blood	Daily	24-Hours	
40	AFB CULTURE	CULTURE	A	Daily	1-8 weeks	
41	Gram stain	MICROSCOPY	A	Daily	24-Hours	
42	Stool occult blood	CHEMICAL	A	Daily	24-Hours	
43	India ink preparation	MICROSCOPY	A	Daily	24-Hours	

Code	Service	Method	TEMP./ Specimen	Freq.	TAT	*Remarks*
46	Stool hanging drop	MICROSCOPY	A	Daily	24-Hours	
47	TORCH full panel	ELISA	A/SERUM	Weakly twice	Day of run	
48	AlbeA stain	MICROSCOPY	A	Daily	24-Hours	
54	Chikun gunya antibody test	CARD METHOD	A/SERUM	Daily	24-Hours	
62	Weil Felix test	AGGLUTINATION	A/SERUM	Daily	24-Hours	
64	HIV ELISA	ELISA	A/SERUM	Daily	Day of run	
65	Hbs Ag ELISA	ELISA	A/SERUM	Daily	Day of run	
66	HCV ELISA	ELISA	A/SERUM	Daily	Day of run	
67	Stool routine	MICROSCOPY	A	Daily	24hrs	
68	CSF	CULTURE	A	Daily	3-7 Days	
69	Stool for reducing substance	CHEMICAL	A/Chemical	Daily	24-Hours	
70	Cardiolipin IgG	ELISA	A/SERUM	Weakly twice	Day of run	
71	Phospholipid IgG	ELISA	A/SERUM	Weakly twice	Day of run	
72	Phospholipid IgM	ELISA	A/SERUM	Weakly twice	Day of run	
114	Dengue IgG-IgM	ELISA	A/SERUM		Day of run	
115	Leptospirosis	ELISA	A/SERUM		Day of run	
116	PCR-HLA-B27	PCR	A/Whole Blood	Weakly twice	Day of run	
117	TB-PCR	PCR	A/Whole Blood	Weakly twice	Day of run	
119	Anti HBSAg titre	ELISA	A/SERUM	Weakly twice	Day of run	
120	Stool oportinistic infection	STAIN/MICROSCOPY	A/STOOL	Daily	24-Hours	
123	Cryptococcus latex agglutination	AGGLUTINATION	A/CSF	Daily	24-Hours	
124	Blood culture bottle	Bactec	A	Daily	7 Days	
131	RF with titres	AGGLUTINATION		Daily	24hrs	
132	ANA profile	BLOT	A/SERUM	Weakly Twice	Day of run	
136	Anti cyclic citrillunated peptide (AntiCCP)	ELISA	A/SERUM	Weakly Twice	Day of run	

A= Ambient;s R= Refrigerated (2 – 4 ^{0}C) , F= Frozen

Volume of specimen:

Whole Blood (EDTA Lavender top): Draw a sufficient amount of blood with the required anticoagulant tube. To achieve an optimum ratio of blood to anticoagulant, the volume of blood should fill the tube to the line indicated on the vacutainer label.

Plasma (Grey top Fluoride tube): Draw a sufficient amount of blood with the required anticoagulant to yield the plasma volume (1.5 – 2.0 ml) required by the test

Serum (Golden yellow /Red cap tubes): Draw a sufficient amount of blood to yield the serum volume (1.5 – 2.0 ml) required by the test.

Colour code of vacutainer tubes:

Golden Yellow / Red cap tubes = Serum sample
Light blue top (Sodium citrate) = Coagulation sample
Lavender top (EDTA tube) = Whole blood
Grey top (Fluoride tube) = Plasma for Glucose test

Job responsibilities of the Phlebotomist are as follows:

Patient Interface:

The Phlebotomist represents the laboratory and should uphold the quality standards of K.L.E.S.Dr.Prabhakar Kore Hospital & M.R.C., Belagavi. He/She should always bear in mind that his conduct and actions on duty towards the patient and doctor directly reflects the quality assurance standards given by the company. Principal responsibility includes patient preparation, good phlebotomy and other specimen collection, specimen processing, specimen storage, specimen dispatch. Proper test ordering procedure must be followed, billing, report receipt and report delivery are other associated tasks. Additionally an efficient, swift and courteous handling of queries, clear communication about specimen requirements, test schedule, report delivery time must be done in proper steps to minimize confusion and delay of these services. Proactive measures to improve services to the patient/doctor must be taken.

Handling Doctor's Requisition:

The tests requested on the prescription should be verified before proceeding with the collection. In case of any doubt, the referring doctor may be contacted on telephone for further clarification.

The phlebotomist should look up the price list and check for the following:

- Test name
- Test code
- Specimen requirement and quantity, special collection instructions e.g. special preservatives, sterile specimens etc. Price of the test should be communicated to the patient before specimen collection.

Test requisition form should be filled with the following information: Patient Details

- Specimen Details
- Referring Doctor Details
- Clinical History where relevant

Vacutainers and other containers should be labeled with:

- Patient details
- Specimen details
- Whether collection is done under fasting, post–prandial condition or any other specification.

Collect appropriate specimen and quantity so as to avoid redraws and inconvenience to patients.

Checking of Testing Charges Collection done by the receptionist:

After receiving the requisition form, the price-list should be consulted for the price of each test. The corresponding prices should be added up and the total amount should be collected before proceeding for sample collection.

Instructions to Phlebotomist about

PATIENT PREPARATION FOR VARIOUS TESTS

1. Fasting Serum / Plasma Glucose:

Fasting period of 10-12 hrs required.
Collect first voided mid-stream morning urine.

2. Post Prandial Serum/Plasma Glucose:

Blood and urine specimens collected 2 hrs after meals.

3. Lipid Profile

10-12 hours of fasting required.

4. Glucose Tolerance tests

Specimen:

Blood specimen must be collected in the vacutainer to a full draw and fasting urine specimen must be collected in urine container.

A. Glucose Challenge Test:

- It should be performed between the 24th and 28th week of gestation or as prescribed by the Physician.
- Give 50 gm anhydrous glucose/55 gm of glucose monohydrate and draw sample after 1 hour.

B. Three Hour Oral Glucose Tolerance Test (done for pregnant woman)

Allow three days of usual diet and usual physical activity. This is followed by an 8- to 14-hour fast, defined as no consumption of food or beverage other than water. A single fasting sample is drawn. Administer a 100-gram oral glucose load (100g anhydrous glucose/110 gms of Glucose monohydrate dissolved in 300 ml of water taken over 15 minutes).

Additional samples are drawn at 2 and 3 hours post-dose. The patient should remain seated and should not smoke throughout the test.

C. Two Hour Oral Glucose Tolerance Test :

Allow three days of unrestricted diet and unlimited physical activity. This is followed by an 8- to 14-hour fast, defined as no consumption of food or beverage other than water. A single fasting sample is drawn. Administer a 75-gram oral glucose load (75g **a**nhydrous glucose/82.5gm glucose monohydrate dissolved in 300 ml of water taken over 15 minutes). Additional sample is collected at **2 hours post-dose.**

Timed collections:

For some hormonal studies specimens are collected at specific timings e.g. Cortisol tests. The blood specimens are collected at 8.00 am and 4.00pm. The timing of blood collection has clinical significance and hence must be clearly specified on the vacutainer and subsequently on the transfer vial. The serum/plasma must be separated at the earliest, stored and dispatched as specified. For fertility test hormones the day of the cycle is to be mentioned in the requisition.

Single specimens

Here are some instances in which timed single specimens may be required:

- Fasting plasma glucose alone or in conjunction with a random glucose determination. Fasting here is defined as no caloric intake for at least 8 hours.
- Postprandial glucose may be performed 2 hours after a meal for a timed test is helpful in diabetes detection.
- Blood glucose determinations may be ordered at a specific time to check the effect of insulin treatment.
- Blood cultures may be ordered for a specific time if a bloodstream bacterial infection is suspected.
- Therapeutic monitoring of patients on medication.

- For screening of Gestational diabetes serum is to collected for glucose estimation 1 hrs after ingestion of 50 gm anhydrous glucose /55 gm of glucose monohydrate of glucose orally.

Urine Collection – 24 hours (Biochemistry & Clinical pathology):

- Instruct patient about the preservative and restrict him from discarding the same.
- To start collection: Ask the patient to discard the first urine passed in the morning. Note down the exact time (e.g.,7.00 am)
- From this time onwards collect all subsequent urine samples in the container provided.

Collection should be continued till same time the next day (for e.g., 7.00 am) This is the 24 hours urine sample.

- The patients should return the 24 hours urine sample container within 1 hr. to the laboratory.

Instruction for 24 hour urine sample collection

General instructions:

1. Empty bladder into toilet in the morning and note the time

2. Time_____ Date: _____

3. From then on collect all urine you pass during the day and night into the collection container. The container for 24 hour VMA, 17-Ketosteroids, 5 HIAA and metanephrines contains concentrated acid as preservative. Please do not throw away the solution, and please handle this with care.
4. The next morning empty bladder into the collection container at the same hour as above. For example, if you emptied your bladder at 8 a.m. yesterday you are required to pass urine at exactly 8 a.m. today and this will be your final collection.

5. The container must be stored in a cool place during the collection and returned to laboratory as soon as possible on completion of collection. Refrigerate specimen if not returning shortly (within 2 hours) after collection is completed.

Special Instructions:

For the following tests, certain foods / drugs can cause false increase/decrease of levels and should not be consumed for at least 2-3 days prior to collection of sample as these may hamper accuracy of the test.

A. 24 hour urine for VMA

Coffee, Tea, Chocolate, Vanilla, bananas, methyl Dopa, MAO inhibitors, aspirin, chlorpromazine, mephenesin, Nalidixic acid, Oxytetracycline, Penicillin, Sulfa drugs, Reserpine,

B. 24 hour urine for 17 Ketosteroids

Ampicillin, Cephalosporines, Chloromyectin, Chlorpromazine, Cloxacillin, Dexamethasone, Erythromycin, Nalidixic acid, Penicillin, Phenothiazines, Spironolactone, Estrogens, Probenecid, Reserpine.

C. 24 hour urine for 5 HIAA

Banana, Coffee, tea, tomato, walnut, pineapples, avocados, kiwi, fruits, red plums; and drugs like Acetaminophen, Caffeine, Heparin, L- Dopa, Reserpine, Aspirin, INH, MAO inhibitors, M-DOPA, Phenothiazines.

D. 25 hours urine for Metanephrines

Chlorpromazine, Imipramine, Mao inhibitors, L-DOPA, Propranolol.

Date: _____ from _____hrs to _____hrs

Total volume _____ml

Urine Collection for Urine Routine:

- **Specimen:** Urine specimen must be first voided midstream morning urine to be collected in the sterile plastic container.
- **Instruction given to the patient:** patient must be instructed to void directly into the container. During the collection the initial portion of the urine stream is allowed to escape while the midstream portion is collected.
- **Preservation:** In case of delay in testing, urine must be stored at 2-8 C (lower Cooling compartment of the refrigerator)

Instructions given are:

- In case of females, separate the labia (vaginal lips) with the fingers of one hand (hold in this position until specimen is obtained). Pass some urine into the toilet. Once the stream is well established, pass a urine specimen into the container until it is about ½ to ¾ full. Continue to empty your bladder into the toilet.

- If you are menstruating, use a fresh pad before voiding, If need be, you may collect at home but bring the sample within by 2 hours of collection.

- In case of males, if uncircumcised, retract the foreskin over the head of the penis (hold in this position until specimen is obtained).Pass some urine into the toilet. Once the stream is well established, pass a urine specimen into the container until it is about ½ to ¾ full. Continue to empty your bladder into the toilet.

  Do not touch the inside of the container.

Note: For Creatinine Clearance Test, also specify Height, Weight and Age of the patient on the Requisition Form.

24 HOURS URINE COLLECTION

(Preservative to be added as per the test requirement)

TEST	PRESERVATIVE	QUANTITY
Urinary Urea	Boric Acid	10 gm
Urinary Phosphorus	Boric Acid	10 gm
Urinary Uric Acid	Sodium Carbonate	5 gm
Urinary Calcium	6 N HCL	10 mL
Urinary Magnesium	6 N HCL	24 mL
17 OH Corticosteroid	6 N HCL	25 mL
17 Ketosteroids	6 N HCL	25 mL
Catecholamines	6 N HCL	25 mL
Metanephrines	6 N HCL	25 mL
Urinary Protein	Boric Acid	5 gms
Urinary Cortisol	6 N HCL	25 mL
5 Hydroxyind-Oleaceticacid	6 N HCL	25 mL
Vanillylmandelic Acid	50 % Acetic Acid	25 mL

Interfering substances for above tests

- Urine Free Catecholamine:

  Catecholamine – containing drugs, Alpha-methyldopa, Isoproterenol, Isoetharine, Methanamine mandelate and Labetalol.

- Urine Metanephrines: Catecholamine – containing drugs, Apha-methyldopa, Phenylephrine, Terbutaline, Metaproterrenol, Phenothiazine, Methylglucamine Urine
- Vanillylmandelic Acid (VMA): Catecholamine-containing drugs, Levadopa and Nalidixic acid.

  For all the above assays, it is best to avoid Fenfluramine (Large doses), Rapid Clonidine withdrawal and Alcohol (1 week).

No preservative to be added for the following tests:

- Urinary Sodium
- Urinary Potassium
- Urinary Chloride
- Urinary Creatinine
- Urinary glucose

Multiple specimens: Here are some instances in which timed multi-specimen tests may be ordered.

- To test the effect of a certain medication, a physician may order the same tests to be obtained on consecutive days, before, during, and after the patient has received a medication.
- Collection of an acute and convalescent serum to aid in the diagnosis of a viral infection when culturing is not feasible.
- Other examples include such tests as occult blood, ova and parasites, and blood cultures.

Sequential sampling

- Diagnosis of many endocrine diseases requires sequential sampling of blood and/or urine. All sequential specimens are from the same patient and are sent to the laboratory at the same time.
- The specimens are clearly labeled with their chronological sequence (1 of 6, 2 of 6, or time drawn) and with the patients name and date of collection.
- Only one test request form accompanies the serial samples, and it is completed with all patient information, including any medications administrated and the number of samples sent.
- The test request form and all specimens are sent in one container (box or plastic specimen Transport bag).

Serial monitoring

Monitoring a patient over time for a specific condition is a variation of sequential sampling. Many tumor markers (tests used to follow the patient's response to treatment for cancer) are monitored over the course of several years.

SAMPLE COLLECTION FOR MICROBIOLOGY:

A properly collected specimen is the single most important in the diagnosis of an infection, because the results of diagnosis tests for infectious diseases depend upon the selection, timing, and method of collection of specimens. Bacteria and fungi are susceptible to many chemicals and can be found at different anatomic sites and in different body fluids and tissues during the course of infectious diseases. Because isolation of the agent is so important in the formulation of diagnosis, the specimen must be obtained from the site most likely to yield the agent at the particular stage of illness and must be handled in such a way as to favor the agent's survival and growth.

What precaution should be taken while collection specimen of Laboratory diagnosis?

- Specimen should be obtained before starting antibiotic therapy
- They should be collected from appropriate site
- Specimen should be collected under aseptic precautions
- Sufficient quantity of specimen should be collected so as to allow complex examination
- It must be collected in a sterile container- culture tube or plain sterile bulb
- It should be accurately labeled and accompanied by requisition from with patient's name, registration no. ward age and type specimen investigation required clinical diagnosis and clinical details.
- The containers should be labeled properly with patients name registration no. ward etc.
- The specimen likely to contain highly infectious organisms should be labeled as High Risk along with warning symbol.

A few general rules apply to all specimens:

- The quantity of material must be adequate
- The sample should be representative of the infectious process (e.g., sputum, not saliva; pus from the underlying lesion not from its sinus tract; a swab from the depth of the wound not from its surface.
- Contamination of the specimen must be avoided by using only sterile equipments an aseptic precaution.
- The specimen must be taken to the laboratory and examined promptly. Special transport media may be helpful.
- Meaningful specimens or diagnose bacterial and fungal infections must be secures before antimicrobial drugs are administered. If antimicrobial drugs are given before specimen is taken for microbiological study, drug therapy may have to be stopped and specimen obtained several day later.
- Collecting the specimen without causing harm to the patient for example while performing a lumber puncture (‘spinal tap to collect cerebrospinal fluid or while catheterizing the urinary tract to collect urine.
- Ensure that the swab or container used to collect the specimen is sterile and that it can be closed by mean therapy of screw cap a plug of sterile cotton wool.
- Collect an adequate quantity of specimen from the site where organisms are most likely to be found at a stage of the disease process when the maximum number of organisms can be recovered.
- Collect the specimen aseptically (without contamination) and transport to the laboratory (if required in the same way
- In the past cotton swab used to collect specimen. Currently calcium alginate swab are preferred. In some situations, charcoal coated swab (e.g. when for Neisseria gonorrhea) may be used.
- When using swabs to collect a specimen from the skin, moisten the swab in sterile saline or nutrient broth medium and then tube firmly over the affected part.

PRINCIPLES GOVERNING COLLECTION OF SPECIMENS

Details about specific procedures to be adopted for collecting different specimens are provided below

1. Once the specimen is collected the container should be labeled ensuring that the information respects. It should be sent as quickly as possible to the laboratory, for inclusion in that day’s laboratory investigations

2. The laboratory should be consulted if necessary on low the specimen should be sent if a delay is anticipated check whether the sample can be refrigerated (samples of blood and cerebrospinal fluid [CSF] for culture should not refrigerated), one whether it needs to b transported or preserved in a special culture medium.

3. The requesting form for laboratory investigations should accompany the specimen, and be signed by the doctor requesting the investigation. This from should be completed in all respects. Providing a brief description of the patient’s clinical history and clinical finding and the treatment the may have already received or is receiving.

4. When urgent reports are required the specimen should be sent by a messenger.

Specimen(Swab) Collection Guidelines for Upper Respiratory Tract Specimens

General guidelines

a. Optimal timing. Specimens should be collected within 3 days of symptom onset and no later than 7 days from all patients meeting the case definition identified during the outbreak, ideally prior to the initiation of antimicrobial chemoprophylaxis or therapy.

b. Swab types. Use only sterile acron or rayon swabs with plastic shafts or if available, flocked swabs. DO NOT use calcium alginate swabs or swabs with wooden sticks, as they may contain substances that inactivate some viruses and inhibit some molecular assays.

Nasopharyngeal Swab Collection Procedure
Insert the swab into either nostril, passing it into the posterior nasopharynx parallel to the palate (not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient indicating contact with the nasopharnyx. Rotate swab by firmly brushing against the nasopharynx several times. Remove and place the swab into the tube containing 3 ml of viral transport medium. Break swab at the indicated break line and cap the specimen collection tube tightly.

Nasal Swab Collection Procedure
Insert a nasal swab 1 to 1.5 cm into a nostril. Rotate the swab against the inside of the nostril for 3 seconds while applying pressure with a finger to the outside of the nostril. Repeat on the other nostril with the same swab, using external pressure on the outside of the other nostril. To avoid specimen contamination, do not touch the swab tip to anything other than the inside of the nostril. Remove and place the swab into the tube containing 3 ml of viral transport medium. Break swab at the indicated break line and cap the specimen collection tube tightly.

Oropharyngeal Swab Collection Procedure
Insert swab into the posterior pharynx and tonsillar areas. Rub swab over both tonsillar pillars and posterior oropharynx and avoid touching the tongue, teeth, and gums. Remove and place the swab into the tube containing 3 ml of viral transport medium. Break swab at the indicated break line and cap the specimen collection tube tightly.

Transport of Samples
Label the vial with the patient's name, ID number, specimen type, and date collected. If specimens will be examined within 48 hours after collection, keep specimen at 4ºC and ship on wet ice or refrigerant gel-packs, otherwise store frozen at ≤-70ºC and ship on dry ice. Avoid freezing and thawing specimens. Viability of some pathogens from specimens that were frozen and then thawed is greatly diminished and may result in false negative test results.

Collection of urine:
Give the patient sterile dry leak proof container with instruction to collect midstream urine sample after cleaning local parts

- The normal flora of anterior urethra is flushed out by passing first portion of urine before collection of urine for culture.
- Subsequent midstream urine is collected in sterile container
- For acid- fast bacteria three early morning sample on three successive days are collected
- Specimen of urine can also be obtained by catheterization or supra pubic aspiration
- Urine should reach the laboratory within 1 hour of collection; if not possible, it should be refrigerated at 4^0C

- If delay of more than 1 hour is expected then 0.1 g of boric acid powder per 10 ml of urine is Added

- To determine whether upper urinary tract infection is limited to one kidney specimen are collected directly from each ureter by means of a fine catheter.

Vulva is carefully cleaned twice with soap and water and the prepuce or labial folds are then retracted. The urethra is flushed by voiding the first portion of the urine which is discarded. The subsequent midstream urine collected direct in a sterile container is used for collected and colony counting.

Collection of Genital Tract Specimen

1. Urethral Discharge

It may be expressed at anterior urethra and collected with swab or it can be collected directly with loop

2. Cervical Swab

A sterile speculum-moistened with warm water is used sterile swab is inserted in to endo-cervical canal, moved gently and left in place for 20-30 seconds.

3. Vaginal Swab

It is collected from posterior vault or vaginal orifice.

In suspected infection due to Neisseria gonorrhea

- In women; the best specimen is a cervical (not a high vaginal) swab. A sterile bivalve specimen is moistened with warm (not with antiseptic lubricants) and inserted in the vagina. The cervical mucus plug is removed with a cotton boll and forceps; the external surface of the cervix is then cleaned with a large cotton swab. Endocervical exudates may be specimen blades; an alternative is to insert a sterile alginate or cotton tipped applicator into the Endocervical canal and to use a rotating movement to force exudates from the Endocervical glands.
- Since gonococcal infection of the anal canal is also common in women specimen should also be collected from the anus especially when cervical culture is negative. An alginate or cotton- tipped applicator approximately 11 inches long is carefully inserted into the material anal canal and moved from side to side to obtain material from the crypts. If possible, material should be obtained under direct viewing at anoscopy. **Discard the swab if fecal material is present.**
- In special situations, where a cervical specimen is not indicated (for example, in children or hysterctomised patient's) swab may be collected from the urethra or vagina.
- In men: If the patients has a purulent urethral exudates, culture is not necessary a Grams tined direct smear suffices for clinical diagnosis of gonorrhea if intracellular Gram negative diplococcic are seen (the smear is made by gently spreading the material on the slide to preserve cell morphology.
- If the patient is asymptomatic, culture must be performed A 2 cm log thin calcium alginate urethrogenital swab (moistened with sterile water is inserted in the urethra gently rotated removed from the urethra and them immediately inoculated onto plates.
- In men uncentrifuged first-voided urine (10-12ml) may be cultured for N gonorrhea; the results compare favorably with those from urethral swab cultures.

If material from other sites (throat swabs freshly voided urine, joint fluid, eye swab) is sent for gonococcal culture, inoculate the swab or sediments from centrifuged fluids onto the appropriate media.

In suspected infection due to Treponema palladium:

Since T palladium cannot be is isolated in culture material is collected from the lesion for direct microscopic examination, or else serological diagnosis is relied on.

Collection of Cerebrospinal fluid (CSF)

By taking all aseptic precautions lumbar puncture is done and CSF is collected in a sterile container. If delay is expected then CSF is collected into glucose broth and incubated at 37^0C. CSF should never be refrigerator because to avoid death of some organisms at freezing temperature.

FROM THE CENTRAL NERVOUS SYSTEM

1. In infections suspected to due to bacteria fungi or protozoa: The specimen of choice is cerebrospinal fluid (CSF) which is usually collected by lumbar puncture. The Dural sheath is precede by a needle and (CSF) is allowed t o drip from it into a sterile container. It is essential to avoid introducing contaminant organisms either into the subdural space or into the specimen. Therefore, the procedure should be viewed as a minor surgical operation. The technique should be rigorously aseptic and the skin must be properly disinfected, with povidone iodine in 70% alcohol.

2. In a suspected viral infection: CSF and nose and throat swabs (and also feces if an enterovirus is suspected) are collected and used for viral culture.

Collection of Stool

- Give the patients dry leak proof container with instruction to collect stool sample and portion of it containing mucus pus or blood is transferred to suitable transport medium
- If stool sample is not available, a rectal swab can be collected by inserting cotton swab into rectum for about 10 seconds
- Swab from ulcer is collected by sigmoid scopic examination Transported immediately
- If a delay of more than 2-4 hours is expected then it should be collected in a suitable transport medium such as

  -Gram- negative broth
  -Clarry- Blair transport medium
  -Buffered glycerol saline

FROM THE GASTORINESTINAL TRACT

1. In suspected bacterial or fungal infection: Feces are collected, preferably supplied with a small spoon to transfer material in any other container. If the feces are semisolid (formed)a, small quantity is sufficient; if liquid is should fill a third of the specimen jar

2. In young children and other patients from whom it may be difficult to collect a fecal specimen:

- Fresh feces may be collected by gently inserting a short catheter (a sterile glass rod 10-15 cm in length and 6.8 mm in diameter) into the rectum
- A rectal swab may be collected as an alternative this is gently inserted into the rectum and turned clockwise and counterclockwise, ensuring that the rectal mucosa is firmly rubbed.
- In suspected parasitic infection:
- Segments of tapeworm may be easily seen in feces specimen facilitating identification of the tapeworm involved. To ensure complete elimination of the infection tapeworm, however, the head should be dislodged. This should be checked for in every specimen collected after treatment
- Ova of many intestinal worm can be seen only microscopically; a fresh specimen of feces should be should be sent to the laboratory in a suitable container for this purpose.
- Threadworms (Enterobius vermicularis) lay their ova on the perianal skin; swabs or cello tape mounts
- material are pressed firmly on the perianal area the material is transferred to microscope slides and looked at under the microscope to establish the diagnosis.
- In suspected infections due to amoebae fecal specimen are sent to the laboratory as soon at they are passed and examined immediately; this is to ensure that the free-living motile forms of Entamoeba histolytic (which causes amebic dysentery) are detected.

Collection of sputum

- Give the patient dry leak proof wide- mouth container with instruction to collected sample by deep coughing.
- Sample must be sputum and not saliva
- A morning sample of sputum is ideal
- If tuberculosis is suspected morning specimen should be collected on two successive days.
- Sputum for should reach laboratory within 2 hours of collection
- It can refrigerated up to 24 hours or cetyl pyridium chloride sodium chloride (CPC-NaCl) is added in equal volume if more delay is expected
- CPC-NaCl digests sputum and maintains viability of mycobacterium for 8 days and slows down the growth of commensals.

FROM THE UPPER RESPIRATORY TRACT

1. Oral cavity: swab are rubbed firmly over ulcerated or patch-like lesions

2. Anterior nares:

- If pus present, collect this in swabs
- If no pus is present, moisten swab and then swab the anterior nares.

3. Throat: The mouth is held wide open and the tongue depressed. Swabs are firmly rubbed over the tonsils and pharyngeal mucosa; an attempt should be made to collect any purulent material that is present.

4. Nasopharynx: Ape nasal swab is used this is made from fine and fairy flexible wire which is bent at one end (the wire is covered with sterile cotton at this end) The swab is carefully passed through the nasal cavity till it impinges on the Nasopharynx and then firmly rubbed over this area. This type of swab is especially useful for isolating .*Bordetella pertussis*

5. The glottis and epiglottis: Swabs are firmly rubbed over inflamed and uncelebrated area. Before collecting the swab precautions should be take (especially in case of children) to maintain the airway in case a laryngeal spasm suddenly occurs. Ideally the swabs should be collected by an ENT surgeon.

6. Para nasal sinuses: If pus is present in these sinuses if it collected

FROM THE LOWER RESPIRATORY TRACT

1. Commonly only sputum is collected. This should be coughed up from far down the bronchial tree and expectorated immediately and should not be mixed with saliva or oropharyngal secretion: deliver to the laboratory as soon as possible. Culture of sputum will yield relevant results only if the sputum has been collected from the infected site and not been contaminated with other bacteria.
2. An even better specimen is material that is aspirated directly from the bronchi or trachea. This is collected by using a flexible fibreoptic bronchoscope. An alternative is to collect bronchial washings. These procedures are not suitable for routine use since they need to be performed by an experienced pulmonologist or cardiothoracic surgeon.
3. In children who are too young to expectorate sputum the causative organisms of broncho pulmonary infection can sometimes be recovered in swabs or aspirates from the Nasopharynx. Alternatively a laryngeal swab or gastric juice sample can be collected from children on patients who are unable to cough up a suitable sputum sample.

Collection of Serous Fluid

- Synovial fluid collected by aspiration
- Ascitic and pleural fluid are collected by tapping
- Fluids must be collected in a sterile container with citrate to prevent clotting
- Collect these samples by taking all aseptic precautions

Collection of pus

- Pus can be collected by aspiration from abscess or it can be collected with the help of sterile cotton swab from infected tissue, if it is scanty.

Collection of Blood

- By taking all aseptic precautions, 5-10ml of blood is collected by veni puncture
- 5 ml is added to 50 ml of transport medium to dilute it 10 fold to inhibit bactericidal effect of blood
- In infants and children 1-2 ml of blood is sufficient
- Blood can be collected into medium with sodium polyanethol sulfonate which helps in preventing clotting of blood and also neutralize natural bactericidal substances and some antibiotics in blood
- It is collected and transported in glucose broth bile broth thioglycollate broth or brain heart infusion broth.

FROM THE BLOOD STREAM

- Blood is collected by a strict aseptic technique and care should be taken to avoid introducing organisms into the bloodstream as well as to prevent contamination of the specimen.
- The vein from which the blood is not to be taken should first be clearly seen and they distended by means of a tourniquet. The skin overlying the vein is then vein is then vigorously wiped with soap and water, starting from the centre and proceeding outwards. After this, the area is cleaned with 70% alcohol and finally painted with povidone- iodine in alcohol. Once the area is dry. The specimen is collected using a perfectly dry. Sterile syringe and needle (preferably disposable). The needle is then withdrawn and removed from the syringe prior to inoculation of the sample into the syringe prior to inoculation of the sample into the bottle (the mouth of the bottle should be 'flamed' Before Introduction of the specimen). The specimen is preferably collected at the onset of fever, at which time the organisms are likely to be present in the bloodstream. Where fever is intermittent, blood samples should be drawn for culture on more than one occasion.

FLUID FROM PLEURAL AND PERITONEAL CAVITIES

These cavities and joints are normally sterile. Hence specimens have to be collected from these sites as carefully as are CSF and blood specimens. These sites may be involved in acute (pyogenic) or in chronic (tuberculosis) disease processes.

FROM ABSCESSES, WOUNDS AND SINUSES

1. Pus if present in a large amount should preferably be collected in a bottle
2. Pus sent on swab tends to dry up quickly ;pus swabs bacteria and tubercle bacilli
3. A small piece of the wall of an abscess or a sinus is also a good specimen.
4. The skin over the abscess should be cleaned with soap and water and not with an antiseptic. One should carefully avoid introducing commensals from the area into the pus specimen as these may be mistaken for pathogens.

FROM THE CONJUNCTIVA LID MARGINS CORNEA AND INTEROCULAR STRUCTURES

1. Material from the lid margin is collected by firmly rubbing a per-moistened swab from the medical canthus to the lateral canthus (inferior lid margin and then lateral to medical (superior lid margin the swab is at once inoculated onto appropriate culture media.
2. Any visible purulent conjunctival discharge is collected on a swab and inoculated at once. If pus discharge is not present, smear can be made and culture media in collated with material taken directly from the conjunctival surface by a sterile bacteriological loop (made of platinum, not of nichrome wire, because the latter is liable to abrade the conjunctiva) Material for Chlamydia culture should be sent in an appropriate transport medium Conjunctival swabs for virology should be sent in a virus transports medium, to gather with a throat swab is adenovirus infection is suspected.
3. If the patients is suffering from a corneal ulcer material is obtained from the base and edges of the ulcer by using a sterile blade or spatulas; this material is at once in collated onto appropriate bacterial and fungi culture media .Smears are made for staining by various methods.
4. If the patients is suffering from endopthalitis or other intraocular lesion material is aspirated from the vitreous or aqueous humour by a sterile syringe and needle, and processed as appropriate.

FROM THE EAR

1. A swab can be used to collected material from the external ear for example from the otitis external from the otits media that is discharging through a perforated eardrum.
2. In the absence of perforation. Fluid can be aspirated from an infection middle ear by passing a needle through the drum; however, this is rarely justified, as treatment can be based on probabilities.
3. Despite the communication between the healthy middle ear and the Nasopharynx via the Eustachian tube swabbing of the Nasopharynx does not help in determining the probable pathogens in otitis media.

FROM THE SKIN

1. The area of the skin from which the specimen be collected is first cleaned with soap and water Avoid antiseptics or topical antibiotics as these may suppress growth of pathogens, thereby defeating the very purpose for which the specimen in being collected.
2. Swabs are firmly rubbed over the affected part of the skin and sent at once to the laboratory for processing. Only swabs which have been moistened in sterile nutrient broth or saline should be used dry swab should never be used.
3. Crusts or scabs, if present are collected aseptically in sterile bottle, if a viral infection is suspected; crusts scabs and vesicle fluid are collected in capillary tubes. (if a fungal lesion is suspected, infected hairs and nails as well as scraping from the affected part of the skin should be collected

Which negative effect would delay transport have on specimen collected for laboratory diagnosis? How can this be avoided? Cite examples.

- Delay in transportation to laboratory may cause
  -Death of delicate organisms
  -Overgrowth of other organisms (commensals and environmental)
- Specimens should be transported immediately
- If delay is inevitable, specimen should be collected in suitable transport media or in a special container to avoid death during transport.
- Specimen should be transported in leak proof containers as per the safety guidelines

Swab

It is expected, the swab should be collected in a suitable transport medium such as Start's medium or Amies transport medium.

What types of specimen are suited diagnosing viral infections

- Specimen should be collected during the acute phase of the disease
- Appropriate specimen should be collected depending on the site of infection, e.g. sputum in respiratory infections.
- The specimens collected include.

  -In respiratory tract infection-throat swab nasal swab nasal washing Nasopharyngeal aspirates sputum etc.

  -In gastrointestinal tract infection- stool and rectal swab Stool is also collected in enterovirus infection of respiratory tract

  -In central nervous system infection-faeces, blood CSF brain biopsy throat swab rectal swab saliva etc

  -In skin infection-macular/popular scrapings vesicular/pustule fluid ulcer scraping crust faeces etc

  -In ophthalmic infection-conjunctival scarping or swabs

  -In urinary infection- urine

  -In HIV hepatitis B, C and D virus infection- blood is collected

What measures should be taken to ensure safe transport of specimens to a laboratory for diagnosis?

- Specimen should be transported immediately to laboratory to avoid

  -Death of delicate virus (many virus are labile) and

  -Overgrowth of bacteria and fungi

  If delay is expected, specimen should be transported in Stuart's viral transport media
- Blood for viral culture is collected and transported in sterile vial containing anticoagulant Blood can be stored at 40^0C until processed and can be stored for months at -20^0C or below

Collection of sample for fungal diseases

Laboratory diagnosis disease:

Specimen

Appropriate specimen is collected depending on site of infections.

- **In superficial mycoses-** Skin scrapping infected hairs and nails mucosal scrapings or swabs
- **In** subcutaneous mycoses- pus, biopsy, discharge, crusts and swab from lesions.
- In systemic mycoses- sputum, urine, pus faeces, CSF, blood, etc,

Collection and Transport

- Proper collection and transport of specimen is an important step in isolation and identification of medically important fungi

Skin scrapings

- The affected is cleaned with 70% alcohol
- Scrapings from the active edge of the lesion are collected in a fold of black paper with the help of scalpel blade held at right angles to skin and transported in paper fold
- Cellophane tape can also be used to collect specimen
- Specimen from scalp is collected by blunt edge of scalpel

Nail as specimen

- Discolored and brittle part of nail is cleaned with 70%alcohol and nail pieces are collected with the help of a flame-sterilized scalpel or scissors or nail cutter
- Sample is taken from free edge and should be of full thickness
- Transported in an envelope or fold of lack paper

Infected hair

- Infected hair are plucked with forceps
- Transported in an envelope or fold of black paper

Corneal scrapings

It is collected from the margin of corneal ulcer with the help of needle after giving local anesthesia, e.g. xylocane. The specimen is directly collected on microscopic slide and examined,

Sputum

- Early morning sputum sample is preferred
- Collected in a sterile, clean, wide-mouth, screw-capped container
- N-acetyl- L-cystiene is used as mucolytic agent and sample is treated with antibiotics
- Bronchial secretions, bronchi alveolar secretion or tracheal secretions may also be collected
- Transported and processed immediately to avoid growth of commensals and to increase chances of isolation of causative agent
- Material obtained by bronchial brushing or biopsy is more suitable for diagnosis

Pus discharge crusts

- Aspirated with the help of syringe and needle
- Collected with the help of swab
- Crusts removed from the surface of lesion in a sterile container
- Transported immediately for further processing

Urine

- Collected by catheterization or bladder aspiration- reliable but less frequently used
- Commonly used method, is “clean- catch mid-stream urine sample
- Collected in a sterile container and transported immediately to avoid delay in processing
- If delay is unavoidable, can be refrigerated at 4^0C up to 12 hours
- Urine is centrifuged and sediment is used for further processing

Cerebrospinal fluid (CSF)

- Collected in a sterile container by lumbar puncture
- 3ml to 5ml of CSF is collected
- Transported and processed immediately
- If delay is expected, CSF should be kept at room temperature of in an incubator

Blood

Approximately 8 ml of blood is collected aseptically by vein puncture in a brain-heart infusion broth and transported to microbiology laboratory for further processing .

Tissue biopsies

Collected by appropriate procedure in a formalin jar and transported, and processed after mincing or grinding.

Bone marrow

Collected aseptically with the help of bone marrow aspiration needle and transported like a specimen of blood, and processed.

Disease	**Specimen**
Cellulites of skin	Punch biopsy
Impetigo	Swab
Skin ulcer	Punch biopsy deep tissue aspirate or biopsy
Meningitis	CSF
Brain abscess	Pus
Peritoneal abscess	Pus
Pharyngitis	Swab
Whooping cough	
Epiglottis	Swab
Pneumonia	Sputum
Chest emphyma	Pus
Liver abscess	Pus
Cholecystitis	Bile
Abdominal	Pus
Enteric fever typhoid	Blood, feces ,urine
Enteritis enterocolitis, bacterial diarrhea “gastroenteritis”	Feces
Hemorrhagic colitis and hemolytic uremic syndrome	Feces
Urinary tract infection	Urine (clean catch midstream specimen or one obtained by bladder catheterization or supra pubic aspiration)
Urethritis/ cervicitis	Swab
Genital ulcers Swab	Swab
Pelvic inflammatory disease	Cervical Swab
Arthritis	Joint aspirate blood
Osteomyelitis	Pus or bone specimen obtained by aspiration or surgery

Instruction for Sample Collection for Stool – Occult Blood

Following of strict dietary instructions is great importance in this test as certain medicines and food substances can give false positive results.

The following food items / medicines should be avoided for at least 48 hours prior to collection of sample
A. Beetroot
B. Apple
C. Green leafy vegetables
D. Meat
E. Iron tablets / syrups containing iron.
Collect the sample in a clean plastic container (provided by the lab)

BLOOD COLLECTION:

The Phlebotomist are well trained in blood collection. He/she is informed and shown that the vacutainer system, which consists of vacutainer needle, a needle holder and a glass tube instead of the syringe barrel and plunger. The function of vacutainer system is explained i.e. once the vein is punctured, the requisite quantity of blood flows automatically into the vacutainer tube so that the need to pull the plunger is obviated. Appropriate anticoagulants are pre-added in appropriate quantities in vacutainer so that is required is a clean venipuncture and collection of blood to a full draw. Vacutainer are simpler to use and safer. The vacutainer system is a cleaner system, as blood does not come in contact with the atmosphere as it flows straight from the vein through the sterile needle into the sterile tube. Contamination from spilled blood is entirely removed. The incidence of hemolysis is significantly reduced because the major cause of it the transfer of blood from the syringe to container is eliminated. Furthermore, all vacutainer tubes are sterile; hence the biological integrity of the specimen is maintained. This has particular significance in ESR determinations and coagulation studies, which can be seriously distorted by microbial growth in citrate solutions.

a)Basic steps for drawing a blood specimen

i) Patient identification:

- Check and confirm with the patient the details given on the Test Requisition Form.
- Ascertain whether the patient is fasting and record the same on the Test Requisition Form.

ii) Reassuring the patient:

The phlebotomist must gain the patients confidence and assure him that, although the venipuncture is slightly painful, it would be of a short duration. Panic or anxiety of the patient will lead to difficulty in collecting the specimen.

iii) Positioning the patient:

- The patient should be made to sit comfortably in a chair and should position his arm on a slanting armrest, extending the arm straight from the shoulder without bending at the elbow.
- Unless contra-indicated if the patient wants to lie down, let the patient lie comfortably on the back. The patient should extend the arm straight from the shoulder. For support, a pillow may be placed under the arm.
- Check the prescription, test requisition form, vacutainer type and their labels to ensure that the details are matching and are appropriate for the tests ordered, before proceeding for collection.

b) Selection and Preparation of Vein Site for Blood Collection

Selecting vein site: For most venipuncture procedures on adults, veins located on the arm are used. The median cubital vein is most commonly used for the patient. If the venipuncture of this vein is unsuccessful, one of the cephalic or basileic veins may be used.

The following conditions should be avoided while selecting a vein:

- Vein from area having extensive scarring.
- Phlebotomy must not be performed on hematoma of any size.
- Specimens should not be collected from the arms with intravenous saline drip.

c) Procedure for vein selection:

Locating veins: To locate veins it is necessary to palpate and trace the path of the veins several times with index finger.

Alternate site:

Site such as dorsal wrist or hand and ankles or lower extremities may be required for patients with difficult veins.

Disinfection of the venipuncture site:

The puncture site must be cleansed to prevent Microbiological contamination of the specimen and infection at the venipuncture site.

Cleaning should be done with gloved hands. Spirit or 70 % ethanol is used for disinfection. A cotton ball should be soaked in the spirit excess, should be squeezed out. The cleaning should start from the vein and move out in a circular motion towards the outer surface. Allow the area to air dry to give enough contact time for the alcohol to bring out the disinfection of venipuncture site and prevent the patient from experiencing a burning sensation when the venipuncture is performed. Once disinfected this site should not be touched with bare hands.

Applying the tourniquet:

A tourniquet is used to increase venous filling. This makes the vein more prominent and easier to locate.

Precautions when using a tourniquet:

The tourniquet should be released after no more than one minute. Local stasis can occur with haemoconcentration and the possible formation of a hematoma due to infiltration of blood into tissue.

Applying Tourniquet:

Apply the tourniquet around the arm 3 to 4 inch above the venipuncture site.
The tourniquet should never be left on the arm for more than 1 minutes because it prevents blood from flowing freely.

d) Blood collection by using vacutainer:

- Screw the vacutainer needle into the vacutainer holder. Puncture the selected vein at an angle of 30 ^{0} C to 40 ^{0} C Insert the selected vacutainer tube into the holder by pushing through the rubber sleeve of the rear of the cannula of the needle. After the vacuum in the tube draws the blood up to the mark on the vacutainer, withdraw the vacutainer and proceed in a similar fashion if more vacutainer tubes are indicated. After blood has been drawn, the patient should release the fist and the tourniquet is also released and then the needle is withdrawn from the vein with simultaneous application of cotton at the venipuncture site.
- The blood in the anticoagulated tubes is mixed by gently inverting the vacutainer 7 to 8 times and blood collected in the plain (red top) tubes is kept at room temperature for the clotting and serum separation.

Syringe transfer technique in venipuncture:

A syringe is usually used with patients who are difficult to collect by routine venipuncture procedure. With the syringe technique venipuncture is accomplished without direct connection to the collection tube. To ensure the specimen integrity, follow these steps

1. Use disposable plastic syringes and needles.
2. Dispose of the used needle and fill the vacuum tube to correct volume.
3. Do not force blood into the tube pushing the plunger; this can cause haemolysis and disrupt the ratio of specimen to anticoagulant
4. After transfer of blood into tube do not recap the needle to the syringe

Preventing hematoma during venipuncture:

- Puncture only the uppermost wall of the vein.
- Remove the tourniquet before removing the needle.
- Use the major veins. Do not make partial penetration with needle.
- Apply a small amount of pressure to the area with cotton after blood collection.

Collection of blood from Pediatric / Difficult collections:

Pediatric collections should be done with the help of scalp vein needle (butterfly needle) and the vacutainer needle (leur adapter). The end of the butterfly needle rubber tubing has to be fixed on to the needle that is fitted on to the holder and used with the required vacutainer tubes.

Blood sampling from central venous access devices (CVADs)

General guidance when obtaining blood samples from CVADs

When obtaining blood samples from CVADs, care should be taken to ensure that blood loss is minimal, the potential for infection is minimized and an accurate sample is obtained.

Minimizing blood loss

Frequent blood sampling can lead to a risk of nosocomial blood loss. Neonatal and paediatric patients are particularly at risk of volume depletion. For neonatal/paediatric patients the amount of blood taken for blood samples should be documented. Only the volume of blood needed for accurate testing should be obtained.

The child's general state of health must be considered prior to any blood sampling especially where multiple blood samples are required. In children where their illness or treatment can deplete blood volume, haemoglobin or hinder their replenishment, extra caution must be used.

The volume of blood obtained for each test should where appropriate be the minimal volume required for each test. The volume of required blood is commonly listed on the blood forms. Any queries in relation to the volume required can be directed to the laboratory or the team requesting the test.

Blood sampling should be coordinated and the number of entries to the CVAD minimized to conserve blood loss.

Obtaining an accurate sample

Coagulation and drug levels obtained from CVADs may be inaccurate.

Coagulation

Published literature, national and international guidelines do not support the practice of obtaining blood samples for coagulation studies from Heparinized CVADs.

Drug levels

Drug levels obtained from CVAD's may be inaccurate.

Blood samples for antibiotic assay must not be taken through the same catheter that has been used to administer the antibiotic.

The Heparinized saline or saline present in the device should be removed prior to obtaining a blood sample to avoid erroneous results.
If the patient has an infusion in progress, this should be stopped before obtaining blood samples.
Blood samples must be drawn and put into blood bottles in the correct order.

Methods of obtaining blood samples from CVADs
Several different methods are described to obtain blood samples via CVADs. There is no current consensus as to which is the most appropriate/effective/safe method.
The three main methods are:

- discard
- push-pull
- re-infusion

The discard method is the most commonly used technique. The reinfusion method is not widely used in practice. A recent study by Aldard supports the use of the push-pull technique for blood sampling from CVADs.

A comparison of the different methods of blood sampling

Table comparing different methods of blood sampling

Method	Description	Advantages	Potential
Discard	Remove a specified amount of blood from CVAD via a syringe or vacutainer. Use a new syringe for the sample. Flush the CVAD with sodium chloride 0.9%.	Removes potential contaminate from the CVAD. No blood is returned to the child that might introduce pathogens.	Potential nosocomial blood loss with frequent blood samples. Potential to confuse a discard syringe with blood sample syringe.
Push – Pull	Use a 10 ml syringe. Flush the CVAD with sodium chloride 0.9%. Without removing the syringe, aspirate 6ml of blood, then push it back into the CVAD. Repeat this process x 3. Remove the empty syringe and attach a new syringe to obtain blood sample. Flush CVAD with sodium chloride 0.9%.	Requires mixing the blood back and forth in a syringe several times to eliminate contaminates from the CVAD. Limits blood loss as no blood is discarded and potential exposure to pathogens.	May be difficult to obtain enough blood for three to four push-pull sequences particularly with malfunctioning catheters. Risk of haemolysis with the agitation of blood.
Re-infusion	Involves returning the discard specimen after obtaining the samples. Minimizes blood loss.	Aspirate 6ml of blood into a syringe and attach a sterile cap. Obtain blood sample via a syringe or vacutainer. Re-infuse the discard from the first syringe.	Potential to re-infuse clots. Potential for contamination of the blood being rein fused. Potential for error including the possibility of confusing the discard syringe with the blood sample.

Discard volume

The discard volumes above are for withdrawing blood directly from the catheter hub or needle-free connector. If the sample is withdrawn through add-on devices e.g. stopcocks, ramping systems, extension sets the dead space of the add-on should be added to the discard volume.

Other considerations

CVADs should be flushed with sufficient sodium chloride 0.9% to clear the CVAD of all residual blood after blood sampling.

Small syringes exert less negative pressure when withdrawing blood samples from CVADs. If difficulty is experienced withdrawing blood from a CVAD, switching to a 5ml syringe or smaller may help.

Blood sampling from PICCs smaller than 4 Fr is not recommended by some authors and manufacturers of these devices due to a risk of catheter occlusion from blood remaining in the catheter. However a study by Knue et al showed that blood sampling was feasible and effective through 3 Fr PICCs in children. This practice was not associated with a significant increase in occlusion, infection or mechanical complication rates. Within Infection, Cancer and Immunity at GOSH we have not found blood sampling from PICCs less than 4 Fr to be problematic.

The largest lumen of a multi lumen CVAD should be used for blood withdrawal.
The patient and the blood sample should be positively identified at the time a blood sample is obtained.
Samples should be labeled before leaving the patient.
Blood bottles should **not** be pre-labeled.

Blood sampling procedure

The following procedure must only be undertaken and followed by IV competent staff.

General principles

Inform the child and family why the blood samples are required, what the procedure will entail and how long the procedure will take.

Use distraction and play if required.

Confirm patient identity before taking blood samples.
Use an aseptic non-touch technique. Wash hands using appropriate cleansing solution and dry thoroughly.

Use personal protective equipment (gloves and plastic apron).

Dispose of sharps safely and correctly.

Equipment required

- blood bottles and blood forms
- adaptors for using Monovette® system
- 3-4x10ml syringes (one for discard, one for sample, one for sodium chloride 0.9% and one for heparin if required)
- 0.9% sodium chloride
- heparin to flush the CVAD
- 21g green needle
- 23g blue needle (to withdraw heparin if required). A small gauge needle will reduce the risk of aspirating glass particles from glass ampoules.
- 2% chlorhexidine in 70% isopropyl alcohol wipe

- clean plastic tray
- non-sterile gloves
- plastic apron

Procedure

a) Prepare all equipment using ANTT.
b) Clean the catheter hub/needle-free connector with a 2% chlorhexidine in 70% isopropyl alcohol
c) wipe for 30 seconds using friction and allow to dry.
d) Connect empty 10ml syringe.
e) Withdraw discard volume . This can be used for blood cultures if required.
f) Connect empty syringe or Monovette® adaptors/blood sampling bottle.
g) Withdraw amount of blood required for blood samples.
h) When using the Monovette® system remember the correct order of draw to prevent contamination.
i) Connect the syringe containing the 0.9% Sodium chloride and flush the CVAD using a push-pause/pulsatile technique to clear the CVAD of blood.
j) Flush CVAD with heparin (if required). Use the appropriate flushing technique recommended in the Central venous access devices – long term guideline.
k) Fill blood bottles in correct order if syringe used to obtain samples .
l) Label blood samples.
m) Dispose of all equipment safely.

Arterial Blood Collection:

Preparation of Patient:
1. Identify the patient by name & age.
2. Explain the procedure to the patient.
3. Determine the ABG puncture site – palpate the radial artery. The femoral artery or brachial artery may be used as alternative sites.

If radial artery sampling is not feasible, femoral artery puncture is a possible alternative. When femoral artery puncture is being considered, the potential risk of infection at the entry site and the artery's proximity to the femoral vein and nerve must be taken into account. The deeper the vascular structure, the higher the risk of damage to adjacent structures.

The brachial artery runs deeper in the arm than the radial artery does. Consequently, its structures are typically harder to identify, and achieving hemostasis when necessary is more difficult. Furthermore, the brachial artery is a relatively small-caliber vessel and does not have extensive collateral circulation. For these reasons, the brachial artery is the least preferred site for puncture.

NOTE:
If puncturing the radial artery perform the Allen test, which is a simple method for assessing collateral circulation in the hand. If the Allen test fails to demonstrate adequate collateral flow, do not use that radial artery.
Allen Test:
a. Obliterate the radial and ulnar pulses simultaneously by pressing on both blood vessels at the wrist.
b. Ask the patient to clench and unclench the fist until blanching of the skin occurs.
c. Release pressure on ulnar artery while compressing radial artery. Watch for return of skin color within 15 seconds.

PROCEDURE

A. Anesthetize the Site

1. Assemble the 3cc syringe with 4% Lidocaine.
2. Put on gloves. Prepare the skin using the alcohol preparation.
3. Anesthetize site with Lidocaine.

B. Obtain the Sample for Analysis

1. All drawing of blood will be done with protective gloves and face shield. All material possibly in contact with blood will be regarded as contaminated.
2. Peel the blister pouch with the NEEDLE-PRO needle protection device open half way. (Do not touch needle protector). Remove cap from syringe and discard. Grasp sheath using the plastic peel pouch. To prevent contamination, be careful not to touch NEEDLE-PRO's luer connector. With an easy twisting motion, attach syringe to the luer connection of the Needle-Pro.
3. Twist a needle into the male luer lock fitting on the base of the NEEDLE-PRO.
4. Expel any residual heparin out through the needle. (The needle must be coated with heparin to prevent the formation of micro-clots).
5. Feel along the course of the radial artery and palpate for maximum pulsation with the middle and index finger. Prepare the skin with an alcohol prep.
6. Remove the sheath from the needle. Hold the needle at a 45-60 degree angle to the skin surface and advance in to the artery. Once the artery is punctured, arterial pressure will push up the hub of the syringe and a pulsating flow of blood will fill the syringe.
7. Once blood is obtained, withdraw the needle firmly and apply pressure over the site with a dry sponge.
8. Press the needle into the sheath by gently pressing the sheath against a hard surface such as a bedside table. As the sheath is pressed, the needle is firmly snapped into the sheath.
9. Twist off NEEDLE-PRO and discard into a sharps container. Place the FILTER-PRO air bubble removal device on the syringe. Push the plunger up to expel any air bubbles.
10. The syringe must then be labeled placed in a labeled bag of ice for transport to the laboratory.
11. Continue to maintain pressure of puncture site for up to 10 minutes. (If patient is on anticoagulant medication apply pressure for 15 minutes).
12. Give the proper paperwork and the sample to the unit secretary. Samples will not be accepted by the lab unless the syringe is labeled, the bag of ice is labeled, and the requisition is complete. To be considered complete, the requisition must contain the patient's name, admission number, date of birth or age, ordering physician, time drawn, $F10_2$ and patient temperature. If there are labeling discrepancies you will be asked to come to the lab, identify the specimen, and complete an identification of Specimen Form.

Procedure to be followed post blood collection:

A cotton ball is held firmly over the venipuncture site as soon as the needle is removed see that spirit/alcohol from swab should not be aspirated in the syringe. It will cause haemolysis. After checking that there is no blood flow, a stickplast is applied at the site of venipuncture and the patient is given a cotton ball to be held at the site of venipuncture that has to be removed after 5-10 minutes.

In case of continued bleeding:

Apply pressure to the site with a gauze pad until the bleeding stops.

Hold cotton firmly for sometime on the site and then put a bandage.

Tell patient to keep it for 15 minutes.

Dispose of Puncturing Unit:

Dispose of needles promptly in a puncture resistant container with 4 % sodium Hypochlorite.

Procedure for Identification of Primary Samples:

- Every primary sample is identified with a unique Identification number, Patient ID and Sample number which is a serial number generated in laboratory on sample collection. In case the patient's sample is collected prior to billing for any reason, the sample is labeled with the patient name and details maintained in the collection register along with date of collection. Later when the ID is generated, this serial no is replaced by the same.
- All tubes and containers are Barcode labeled.

Specimen Processing And Sample Transport

The service directory supplied by the laboratory has tests listed in serial order with specific test methodology, specimen type and storage and transport conditions required for each test.This service directory has to be referred by the phlebotomist to obtain specific test related information before proceeding to test ordering and specimen collection. The specimen types are Whole blood, Serum or plasma (EDTA, Fluoridated, Citrated, Heparinized, etc.), Urine, Body fluids, sputum, stool.

ORDER OF DRAW, SAMPLE VOLUMES FOR BLOOD SAMPLES:

The order of draw is important to minimize carry-over of anticoagulant.

Note: Blood cultures must be drawn first to avoid contamination.

Please note, it is preferable that blood tubes, especially those containing preservatives, are filled to their stated capacity. This avoids the risk of insufficiency or interferences from excess concentrations of preservative. This is mandatory for some tests (e.g. coagulation), where an imbalance of preservative due to under-filling or over-filling would invalidate the test.

Order of draw	Cap colour		Specimen volume	se	Additive	Mixing instructions (after blood collection)	Additional directions
First	Blue & Purple 	Special	10 ml	Blood culture	Culture media	Rotate gently to mix	Must collect first. Use sterile technique
		Light blue	2.7 ml	Coagulation study, PT, INR, APTT D-Dimers	Trisodium citrate	Invert tube 3-4 times	**FILL TO LINE ON BOTTLE.** Under or overfilled tubes cannot be used
		Red	4 ml	General Biochemistry, Endocrinology	No anticoagulant (glass), silicon coating(plastic)	Do not invert (glass) Invert 5 times (plastic)	
		Gold (SST)	3.5 ml	General Biochemistry, Endocrinology	Clot activator Gel separator	Invert tube 5 times	
		Green	4 ml	General Biochemistry, Endocrinology	Lithium Heparin	Invert tube 8-10 times	
		Lavender	3.0 ml	Haematology HbA1c, ACTH, Ammonia	EDTA	Invert tube 8-10 times	
Last		Grey	4ml	Glucose	Potassium oxalate, Sodium fluoride	Invert tube 8-10 times	

For whole blood

Blood must be collected in a specific anticoagulant containing vacutainer (i.e. containing specific anticoagulant as per test specifications e.g. lavender top EDTA for CBC), to a full draw.
This specimen containing vacutainer must be gently inverted seven – eight times, to ensure proper mixing of blood and the anticoagulant. The specimen quality must be checked, and should be free from hemolysis, clots and must be in recommended quantity.

The vacutainer system color codes are explained to the phlebotomist, which are as follows

Color of the cap	Additive	Used for
Gold	Clot activator and gel for serum separation	Serum determination in chemistry
Light green	Lithium heparin and gel for plasma separation	Plasma determination in chemistry.
Red	Clot activator	Serum determination in chemistry.
Royal blue	• Clot activator • K2 EDTA	Trace element, toxicology and nutritional chemistry determinations.
Green	• Sodium heparin • Lithium heparin	Plasma determinations in chemistry.
Grey	Sodium fluoride / Na2 EDTA	Glucose determinations.
Yellow	Acid citrate dextrose (ACD)	Blood bank studies, HLA phenotyping, DNA and paternity testing.
Lavender	Spray coated K2EDTA	Whole blood hematology and blood donor screening.
White	K2EDTA with gel	Molecular diagnostic tests.
Light blue	• Buffered sodium citrate • Citrate,theophylline,adenosine, dipyridamole (CTAD)	Coagulation determinations, CTAD for selected platelet function assays and routine coagulation determination.

The vacutainer tube must be suitably labeled indicating Patient's name and identity number.
The vacutainer cap must be checked to ensure it is firmly in place.

For Serum

i. Blood must be collected in a labeled (Patient's name, identity no.) red top plain or gel tube vacutainer.

ii. Allow the blood to clot.

iii. Centrifuge the specimen at 1200 g (3000 – 3500 rpm) for 10 minutes.

iv. Ensure that the quantity of Serum specimen is sufficient for all the tests requested.

For Plasma

i. Blood must be collected in specific anticoagulant containing vacutainer as per test Specifications, to a full draw (until blood flow stops on its own or volume of blood collected is as stated on the vacutainer).

ii. Blood containing vacutainer must be gently inverted seven-times to ensure proper Mixing of specimen and the anticoagulant.

iii. The vacutainer tube must be suitably labeled indicating Patient's name and identity no. and thereafter centrifuged at 1200 g (3500 rpm) for 10-15 mins.

iv. The obtained plasma must be free from hemolysis and turbidity.

v. Ensure that the quantity of plasma specimen being sent suffices specimen requirement of all the specific plasma requiring tests.

For Coagulation (Or Haemostasis) Assays TYPE OF SPECIMENS:

For all haemostasis laboratory tests blood is collected into sodium citrate anticoagulant tubes. All plasma based coagulation tests, including diagnostic haemostasis laboratory assays ("special coagulation tests"), can be performed using sodium citrate plasma(including D – Dimer test).

COLLECTION OF SPECIMENS:

Proper identification of the patients.
The most accessible site for venipuncture in an adult is the antecubital fossa of the arm.
Sample must be collected within 1 minute of application of tourniquet to avoid venous stasis. Tourniquet must be released before sample is collected.
Proper needle must be used 19 to 21 G for adults, 22 to 23 G for children.
Sample must be drawn in a plastic syringe
The Coagulation tube should be filled without formation of foam. Prompt and adequate mixing with citrate solutions should be done by 5 to 6 gentle inversions.
Correct labeling of the tube with hospital number.
Transport whole blood to laboratory ***as quickly as possible***, as some coagulation factors are labile, and undue delay will affect coagulation testing. For
practical purposes, blood should be tested ***within four hours*** of collection. In general, samples should be transported at room temperature (~22^{o}C). Transport of whole blood at extreme temperatures (eg 4^{o}C or >30^{o}C) should be avoided as this may have an effect on test results.

Add 9 parts of blood to 1 part of buffered 3.2% trisodium citrate and mix well. A suitable commercially supplied citrate anticoagulant tube will suffice (eg Becton Dickinson VACUTAINER systems [these are also often referred to as "blue top" tube], Greiner Vacuette, etc). Typically, 2.7ml of blood is added to 0.3ml-buffered trisodium citrate for normal coagulation studies. For paediatric patients 1ml mini collect is used. Note that underfilled tubes may not be acceptable for testing.

Effect of Hematocrit

In Polycythemia, the relative proportion of plasma is very low and therefore the amount of calcium available for chelation by citrate is low.
Hence excess citrate is left over in the plasma.
These citrate complexes with the calcium added during PT / APTT measurements, artificially elevating the results.
For PCV values of more than 60%, the citrate volume must be adjusted to maintain optimal anticoagulant to blood ratio by using the following formula;

$$\frac{60 \times 2.7}{100} - \text{Pt PCV} = \text{amount of blood collected for 0.3 ml citrate solution}$$

Preparation of Samples for Testing

Most routine coagulation investigations are performed on platelet poor plasma (PPP).
Sample must be processed within 2 hours.
Platelet count is checked for PPP.
Do not test plasma from badly haemolysed blood**.** Badly haemolysed blood may give an artifactual coagulation results that do not accurately represent the coagulation status of the patient under investigation. Haemolysed blood may suggest a traumatic blood collection and you may need to request a repeat collection. Samples which need further workup are prepared by double centrifuging and should be aliquoted and stored at -20 degree C. It is important that all samples be frozen preferable within 2 hour of collection.

For body fluids for Cytopathology

i. Body fluid (Pleural fluid, Ascitic fluid , Synovial fluid, Peritoneal fluid , cerebrospinal fluid & BAL) is to collected with an Hypodermic syringe and needle as per the normal procedure (Collection to be done by doctor).
ii. The fluid obtained is to sent in a sterile wide mouth plastic container to the department with appropriate requisition form duly filled.
iii. This fluid is transferred to the Histopathology / Cytopathology immediately.
iv. If not possible the fluid can be stored at 2 – 8 ^{0}C until the time of transfer to the department.
v. EBB smears, cervical smear, Buccal smears should be made prepared and transfer to the department after fixing in absolute alcohol. The slides should be appropriately labeled and duly filled form with patient information should follow.
vi. Tzank smears when submitted should be air dried, appropriate patient details should follow.

For collection of tissue biopsy for Histopathology / IHC

i. Tissue biopsy must be of size so as to be accommodated plain container.
ii. The tissue should be submerged in 10 % formalin as preservative. The preservative should be 10 times the quantity of the size of the specimen and sent in plastic containers only. A form containing appropriate details of the patient should follow.
iii. The container for IHC should contain the slide and blocks as per the instructions of the laboratory under taking procedure. Patient detail should accompany the slide and blocks the container then must be placed in the small Styrofoam box.
iv. The Styrofoam box must be then packed in the small corrugated box and place in the plastic bag the requisition form must be put in the outer slot of the plastic bag.

Preparing Platelet Poor Plasma for Coagulation Tests

i. Blood must be collected in a Blue top Sodium Citrate (3.2%) vacutainer to full draw (till blood flow stops on its own or volume stated on the vacutainer).
ii. Blood containing vacutainer must be gently inverted seven-eight times to ensure proper mixing of specimen with the anticoagulant.
iii. The vacutainer tube must be suitably labeled indicating Patient's name and identity number.
iv. Centrifuge at 2000 g (3500 rpm) for 10-15 minutes.
v. Label the plastic transfer vial specifying anticoagulant used to obtain plasma and time of collection. Ensure that the above details match with the details given on the label of the specimen containing vacutainer.
vi. Transfer separated plasma to this vial with the help of a plastic transfer pipette after ensuring that the plasma is free form haemolysis and turbidity.

Note: Clinical History and or provisional diagnosis along with a list of medication taken must be specified, especially if it is an anticoagulant like warfarin or intravenous anticoagulant i.e. Heparin. Coagulation tests are very sensitive specialized tests, proper specimen collection, processing and transport under specified conditions is mandatory to obtain accurate reports.

TRANSPORTATION OF LABORATORY SPECIMENS:

Purpose:

All laboratory specimens are to be transported in a closed container with biohazard label which serves as the secondary container. This is to reduce associate and patient exposure to potentially infectious blood and body fluids and to ensure hospital compliance with local guidelines for specimen transportation.

Materials Equipment & Transport Mechanisms:

1. Biohazard bags with outside pocket
2. Bucket or container with lid
3. Pneumatic tube system
4. Hand delivered/Manual
5. Plastic carrier
6. Ice
7. Dry ice

Procedure:

A. **Hand Delivered Specimens**

1. Prepare the specimen appropriately.
2. Insert the properly labeled specimen into the container and seal closed.
3. If a requisition is accompanying the specimen, insert the laboratory requisition
4. When computerized labels are used to label specimens, insert properly labeled specimen into biohazard bag and seal it closed. Extra labels can be placed into the outside pocket.
5. Odd sized or large specimens should be placed in a jumbo zip lock bag or into a non-leaking container with a lid. To prevent contamination of the test requisition, attach it to the outside of the secondary container.
6. A large batch of specimens may be transported in a sealed cooler, container or rack labeled "biohazard bloods & body fluids." This may occur with surgical specimens, or courier drop-offs.
7. Certain specimens that are contraindicated for transport via the pneumatic tubesystem must be manually transported to the laboratory and are defined later in the policy.
8. Specimens are placed into the appropriate temperature holding receptacles e.g.freezer,refrigerator, ambient, awaiting courier pick-up for delivery to its destination lab.

B. Pneumatic Tube System Delivered Specimens

1. Laboratory specimens **NOT** approved for transport

- 24 hour urine jugs
- Formalin and /or alcohol preserved specimens
- Empty blood bags
- Blood bags with IV sets and IV solutions that have been implicated in a possible transfusion reaction
- Syringe aliquots for infant transfusions
- Body fluids in large containers (i.e. paracentesis, peritoneal,pleural, thoracentesis)
- Platelet Function study specimens
- Dry Ice packaged specimens

2. Items to be sent through the system must be inserted into a system carrier.
-To prevent spillage or breakage
-Package the product adequately and immobilize content
-Use leak tight container and tighten securely.
-Do not keep excess carriers at tube stations as this prevents other users from having access to carriers when needed.
-Return empty carriers to the system

C. Blocked Tubes.

Blocked tubes can only be cleared from the laboratory tube station

E. Leakage & Cleanup Procedures

1. Use leak proof containers. Ensure caps are tightly secured.
2. Place all specimens in a plastic bag to contain any spillage that may occur to avoid leakage of the specimen into the carrier and the pipe.
3. Ensure there are padded inserts (foam liners) in the carriers to minimize breakage.
As per Infection Prevention and Control, the carrier foam liners are to be discarded when contaminated with body fluids.
4. If the carrier is contaminated with body fluids, wear appropriate gloves and other personal protective equipment as necessary.
5. Open the carrier in an area where equipment on Unit is cleaned and disinfected. Cover and contain the spill with paper towels.
6. Wipe up spill and discard spill material and the soiled paper towels into appropriate waste container.
7. Use hospital approved disinfectant to clean up spill and let it dry.
8. The carrier can now be placed into service.

INSTRUCTIONS FOR SPECIAL HANDLING NEEDS

A. GENERAL

Instructions for collecting blood specimens from known HIV/HbsAg/HCV positive patients, sending for routine tests and to safely discard them.

- Wear double disposable gloves when collecting the blood sample from the patient
- Know the examination procedures to be performed on the patient and collect only the required blood sample
- If blood sample is also collected for referral labs, collect the sera in a micro centrifuge tube and inform to the personnel of the referral laboratory.
- The peripheral smear if requested should be made.
- The gloves, needle and the barrels should be immediately discarded after the blood sample collection into a 2% sodium hypo chlorite solution in a plastic container for 24 hours and then placed in a polythene bag and sent for incineration.
- The HIV/HbsAg/HCV positive samples are placed in a separate rack so that it could be differentiated from the other samples.
- Use automated pipette for the required tests.
- After the tests are done the blood samples and the glass wares used for the tests are to be immersed in 2% sodium hypo hypochlorite solution for 24 hours.
- The blood sample after completion of the procedures should be discarded in 2% sodium hypochlorite solution, kept for 24 hours.
- The discarding of the samples and glassware's are the responsibility of the technicians.

B. NEEDLE PRICK INJURIES: IMMEDIATE MEASURES TO BE TAKEN AFTER AN OCCUPATIONAL EXPOSURE:

Use soap and water to wash any wound or skin site that came into contact with infected blood or fluid.
Flush exposed mucous membranes with water.
Irrigate an open wound with sterile saline or disinfectant.
Report to the laboratory in charge

C. INSTRUCTIONS FOR RECORDING THE IDENTITY OF THE PERSON COLLECTING THE PRIMARY SAMPLE

The technician in the phlebotomy maintains all data related to the collection in the collection register with the following details:

1. ID of the patient:
2. Time of collection:

Avoid labeling errors. There should be no mismatch between the name and patient ID mentioned on the bill and on the specimen tube or any other container.

SPECIMEN PROCESSING

Serum separation at the laboratory (Biochemistry and Microbiology)

Serum separation from Tube:

Place the collection tube in the upright position in the rack, and allow the blood to clot at room temperature for no longer than 30minutes. If clotting fails to occur within 60 minutes, notify the laboratory in charge. Do not remove the tube stopper.

After allowing clot to form, insert the tube in the centrifuge, stopper end up. Operate the centrifuge for no more than 10 minutes at a speed of 3000 rpm. Employ a balance tube of the same type containing an equivalent volume of water in the centrifuge.

Turn the centrifuge off, and allow it to come to a complete stop. Do not attempt to open the lid and stop by hand or brake. Remove the tube carefully without disturbing the contents. Do not spin more than 10 minutes unless otherwise specified.

Remove the stopper and carefully aspirate the serum from cells, using a separate disposable pipette for each tube avoiding contamination with cells.

1. Place the tip of the pipette against the side of the tube, approximately ¼ inch above the cell layer. Do not disturb the cell layer or carry any cells over into the pipette. If cells do enter the pipette, recentrifuge the entire specimen.
2. Transfer the serum from the pipette into micro centrifuge tubes – if the sample is being sent to referral laboratories

Label the tube carefully and clearly with all Patient information (name and ID).

INSTRUCTIONS FOR STORAGE OF EXAMINED SAMPLES

Post analysis the sample are stored as per below table for any additional testing or confirmations.

	Duration	**Temperature**
Clinical Biochemistry	1 day	2-8^{O}C
Hematology		
a. Complete blood counts	1 Day	2-8^{O}C
b. Coagulation	6 – 8 hrs >8hrs	2-8^{O}C -20 ^{O}C
Histopathology		
a. Specimens	4 weeks	
b. Specimens with confirmed malignancy	1 year	
c. Slides (Representative)	5 years	
d .Bone Marrow slides	5 years	
Cytopathology		
a. Fluids	1 day	2-8^{O}C
b. Slides (Representative)	5 years	
Microbiology	3 days	2-8^{0}C
Serology *	3 days	2-8^{0}C
Molecular Testing	<5 days	2-8^{0}C
	>5 days	-70^{0}C

*In Serology HIV reactive samples are stored for 7 days after report authorization.

The samples are stored in designated slots in racks and the record of the same is maintained for easy traceability and retrieval.

It is the policy of the Department of Histo/ Cyto pathology that the blocks and slides are given to the patients along with the report. However, the department retains a representative slide used for diagnosis for the stipulated period. The detailed procedure is given the 'Department procedures manual' of Department of Histo/ Cytopathology.

INSTRUCTIONS FOR TIME LIMITS FOR REQUESTING ADDITIONAL EXAMINATIONS

SL NO	ADDITIONAL EXAMINATION	REQUEST ACCEPTED WITHIN HRS OF PRIMARY SAMPLE COLLECTION
1.	Glucose. Insulin	8 hrs
2.	Bilirubin	3 hrs
3.	Other Liver Function tests	8 hrs
4.	Lipid profile	8 hrs
5.	Urea, Creatinine	10 hrs
6.	Thyroid hormones,	24 hrs
7.	CBC	6 hrs
8.	Coagulation	4 hrs

The Laboratory will request that a new laboratory requisition be submitted whenever asked to perform additional tests upon a specimen already in the laboratory.

In case of verbal orders, the patients are instructed to get the billing for additional examinations. Where it is not expedient to wait for the receipt of the written confirmation, the additional tests will be processed in a timely manner to ensure that specimen integrity and quality of patient care are not jeopardized; note that the written request must match the verbal orders.

Tests that depend upon intact cellular function or morphology like semen, urine are not saved. Many hematologic parameters (e.g., coagulation tests and sedimentation rate) are unstable after a few hours. Many chemical assays also are not performed on residual specimens because of instability of the analyte(s) (acid phosphatase, ionized calcium, and many enzymes). If the volume of the leftover specimen is less than 0.2 ml, the specimen is unsuitable for quantitative assay because of evaporation.

INSTRUCTIONS FOR REPEAT EXAMINATIONS DUE TO ANALYTICAL FAILURE OR FURTHER EXAMINATIONS OF SAME PRIMARY SAMPLE

- In case of a delay beyond 2 hours where the equipment related /test related trouble shooting is not rectified, all serum samples should be separated.
- In case of a delay beyond 2 hours where the equipment related /test related trouble shooting is not rectified, all serum samples for hormone testing should be separated and refrigerated (2 - 8^{o} C) AFTER 24 hours in case of inability to carry out the hormonal tests, in house, samples shall be sent out to the referral laboratory if requested by patient or clinician.

INSTRUCTIONS FOR SAFE DISPOSAL OF MATERIALS USED IN THE COLLECTION

The material used for the collection should be disposed off as per the guidelines given in the State Pollution Control Board.

1. Purpose: The purpose of this standard operating procedure (SOP) is to ensure that all potentially infectious waste materials, and waste that must be made biologically inactive before disposal, are adequately sterilized when subjected to autoclaving. This SOP will outline procedures for waste collection, treatment by autoclaving, validating autoclave performance.

2. Scope: This SOP applies to all autoclaves that are used to decontaminate infectious waste materials and that must be made biologically inactive prior to disposal into the normal solid waste stream.

3. Responsibilities:

Users: All users are responsible for operating the autoclave in accordance with the parameters outlined in this SOP when the autoclave is being used to decontaminate or inactivate materials. Users are also strongly encouraged to run monthly tests to ensure proper performance of the autoclave.

4. Definitions:

Potentially infectious waste, which requires autoclaving, includes the following:

Biological waste: includes blood and blood products, excretions, exudates, secretions, and other body fluids that cannot be directly discarded into the municipal sewer system,and waste materials saturated with blood or body fluids.

Culture and stocks: includes etiologic agents of disease and associated biologicals, including specimen cultures and dishes and devices used to transfer, inoculate and mix cultures, wastes from production of biologicals, and serums

Gloves and other disposable personal protective equipment used as barriers when handling biological wastes, cultures, or stocks.

5. Required materials:

1. Autoclavable bags
2. Solid walled holder for autoclave bag during waste collection
3. Black plastic bags to dispose of autoclave bags in once they are decontaminated to send to the landfill (red or orange biohazard bags cannot go to the landfill)
4. Shallow tub or tray to autoclave bags in (metal preferred, but can be autoclavable plastic
5. Autoclave indicator (heat-sensitive, lead free autoclave indicator tape)
6. Biological indicator (commercially available; contains *Geobacillus Stearothermophilus* spores)

6. Procedures:

Waste Collection:

- All potentially infectious waste must be collected into a solid walled container marked with the universal biohazard symbol. Do not mix potentially infectious waste with non-infectious waste at any time.
- Do not overfill your waste container. Prepare the autoclavable bag by cinching, twisting, and securing the bag closed when it is no more than ¾ full.

Autoclaving:

- Place bag to be autoclaved into a shallow pan or tub.
- Affix a small piece of autoclave indicator tape or test strip to the outside of the bag.
- Place the pan and bag inside the autoclave. Do not overload the autoclave. There should be at least 2 inches of space around each waste bag on all sides to allow access to surfaces by steam. No other materials should be autoclaved together with waste in the same load.
- Run the autoclave at a chamber temperature of 121°C for 60 minutes*, using a dry cycle run. 121°C is a standard temperature for autoclave operation, and generally achieved when chamber pressure is 15-16 psi. However, this pressure is dependent upon altitude. At higher altitudes, the pressure must be increased to achieve 121°C.
- When the cycle has been completed, verify that the autoclave chamber and ambient pressure are the same. The chamber may now be opened and the waste bag removed. **Wear autoclave gloves when handling hot items.** Also use caution when opening the autoclave door, as a small amount of hot steam may be released when opening the chamber.
- Verify that the cycle ran appropriately by visualizing the heat indicator tape or strip.
- Once the bag has cooled, place the treated waste bag inside a black plastic bag and close the bag either by knotting or with a twist tie. The treated waste may now be discarded as normal solid waste.
- Please be sure and select the most appropriate cycle for rendering biohazardous materials non-viable for disposal. The above instructions are for solid waste, however if the materials you need to autoclave are liquid cultures, be sure to use the liquid autoclave cycle to avoid creating a mess within the autoclave due to overflow of liquid from the container(s). Always use secondary containment for liquids when autoclaving such as a shallow pan or tub.

Validating Autoclave Performance:

- Each autoclave must have a functional monitoring or measuring device (electronic or dial) to ensure that the recommended temperature is achieved for the proper length of time on each load.
- Each waste bag or container decontaminated by autoclaving should have a heat sensitive indicator such as autoclave tape or strip attached to the outside of the bag. These should be visualized before disposal of each bag and should remain with the bag.
- A biological indicator, *Geobacillus stearothermophilus* is used daily with each run

Testing procedure:

1. Secure a biological indicator test containing endospores
2. Tie a piece of string to the testing vial containing spores to facilitate retrieval of the vial after the autoclave run. Add vial containing spores to the bag of waste, burying it within the waste. Leave the other end of the string attached to the vial trailing out of the opening of the waste bag.
3. Secure the waste bag and start the autoclave run.
4. Post autoclaving and once the bag has cooled, retrieve the vial.
5. For Biological indicators: To activate the media, with gloves on hold the indicator in an upright position, gently squeeze to break the glass ampoule.
6. Incubation is done at 55-60° for up to 48 hours.
7. Read the results of the indicator according to manufacturer instructions.
8. If after 24 hours the media is yellow this = a failed test (the endospores grew, they were not killed).

9. If after 24 hours the media is still purple = presumptive pass, but continue toincubate until 48 hours.
10. If after 48 hours the media is still purple = passed test (all endospores were killed).
11. If spores survived the autoclave process, growth will lead to fermentation andthe production of acid turning the media yellow.

Record date, run parameters, autoclave tested, and test results

Understand the limits of testing:

1. Testing with a temperature indicator (tape or strip) only lets you know if the autoclave reached the approximate desired/operating temperature, but will not tell you how longthat temperature was maintained.
2. Using a recording device or computer to track time and temperature will not ensurethat the materials inside the center of your waste bag have been sterilized.
3. Validating performance using a biological indicator is the only way to ensure complete inactivation/sterilization.

Precautions when working with autoclaves:

1. Always wear thermal protective gloves when handling items that have been recentlyautoclaved.
2. Use caution when opening an autoclave door. Always verify that the chamber pressure has come down to 0 psi before trying to open the door. Still, a little bit of steam may bereleased when you open the autoclave door.
3. Be cautious about minimizing exposure during placement and retrieval of the testing vial. At a minimum use personal protection equipment (PPE) such as gloves, safety glasses, and a lab coat and mechanical methods such as forceps to avoid exposures. Ifyou are generating high risk waste that presents a risk for potential exposure, the vial may be run inside a bag of waste that has previously been autoclaved.

The following items should not be autoclaved:

1. Polyethylene plastics (LDPE and HDPE)
2. Solutions or waste products that contain chemicals characterized as corrosives(this includes bleach), solvents, flammables, volatiles, or radioactive materials
3. Anything in a sealed container

Autoclave Testing Record:

Test Vial Information
Test Vial #:
Test Vial Type:
Test Vial lot #:
Expiration Date:
Each Vial contains: $2x10^5$ *Geobacillus stearothermophilus* endospores
Incubation conditions: 55°C for 48 hours Autoclave
Test Conditions
Time:
Chamber Pressure:
Type of Waste: Date:
Results:
Name of Tester
Contact Person
Comments

CRITERIA FOR REJECTION / ACCEPTANCE OF SAMPLES GENERAL POLICY

Specimen/Sample Acceptance Criteria Policy

1. Purpose

The laboratory must monitor and evaluate the overall quality of the pre- analytic systems and correct identified problems for each specialty and sub-specialty of testing performed. This Policy provides guidance for specimen/sample assessment activities that must be in place to ensure positive specimen/sample identification and optimum integrity.

2. Scope

All Laboratories employees shall adhere to this Policy, which applies to all specimens/samples.

3. Definitions/ Key Terms

Requisition – A document, paper or electronic, that contains information that accurately identifies the patient and the tests that the physician has requested. May also be called a physician's order.

Sample – a representative part taken to typify the whole. Sample is taken to show or to determine the character of the whole. Examples of samples that are received in the Laboratory for analysis are blood, urine, feces and body fluids.

4. Responsibilities All staff – Collecting, receiving and reviewing samples and requisitions for acceptability criteria.

5. Acceptable Criteria for Requisitions

The requisition shall contain sufficient information to uniquely identify the patient, the ordering physician and the requested test analysis. The following elements shall be included:

a. Patient's last and first name
b. The patient's name or unique patient/sample identifier matching what is labeled on the specimen/sample,
c. Patient sex & age.
d. Patient location, if an inpatient
e. Tests requested
f. Priority of collection or time for collection if it is a timed order
g. Chief Symptom or Complaint /drug history.
h. If a sample is submitted with the requisition the information on both must be Identical.
i. If a sample is submitted with the requisition time and date of specimen collection shall be on the request
j. If a sample is submitted with the requisition the name or initials of the sampler collector shall be on the request.
k. Source of specimen, when appropriate

6. Acceptable Labeling Criteria for Samples

Each sample container shall identify the patient uniquely and the information is legible. All primary collection containers and their aliquots shall have a unique label which one can audit back to full particulars of patient identification, collection date, specimen type, etc. The following elements shall be included on the primary container:

a. Patient's last and first name
b. Patient ID
c. Date and time of collection
d. Source and site, when applicable

7. Additional Acceptable Criteria for Samples

a. Samples shall be contained in an appropriate container, tube, for the test requested.
b. The volume must be sufficient for the test requested.
c. Sample shall be transported and/or handled correctly for the test requested.
d. Samples should not be leaking, spilled onto the outside of the container.
e. Other conditions, such as clotting, hemolysis, contamination may render the sample unacceptable.
f. Received within acceptable time limitation;
g. Samples shall be accompanied by a requisition with identical patient information.

8. Sample not meeting the above criteria shall be rejected.
Rejection of Requisitions Course of Action

A new requisition will be submitted if the acceptance criteria are not met. For inpatients notify the nursing unit to resubmit the requisition. For outpatients the following will be performed.

Step	Action
1	The staff member who rejects the requisition will request a re-submission from the physician's
2	If a sample was submitted with the requisition the sample will be handled in such a manner as to preserve the sample for the testing requested.
3.	Once the new requisition is received it will be evaluated to determine if it meets acceptable criteria.

Laboratory personnel can handle minor corrections such as, date and time of collection, and the source and site, if applicable.

- Samples that are not unique or difficult to obtain will be recollected when the acceptance criteria is not met.
- Samples that are unique or difficult to obtain that do not meet the acceptance criteria will require that the physician, to be notified.

1. A Clinical Laboratory staff will contact the Physician or designee and inform them of the reason for the unacceptability of the sample.
2. The Physician, or designee, may request test analysis and can approve re-labeling of the sample by the person who collected it if the sample was mislabeled or unlabeled.

NOTE: If there is a time delay in contacting the physician, or designee, preserve the sample integrity for the tests ordered including if necessary performing the analysis. If analysis is performed the results cannot be released until the physician, or designee, has approved the sample.

Samples that are unique or difficult to obtain that do not meet the acceptance criteria,

IF	THEN
the physician, or designee requests test analysis or re- labeling of the sample	document on the report the reason the results are questionable and the name of the physician, or designee, who authorized testing or re-labeling

Note: Document the physician's name, or designee, and the person who re-labeled the sample, if applicable, on the

Recollection of Samples

Samples that are not unique or difficult to obtain will be recollected when the acceptance criteria is not met. Samples that are unique or difficult to obtain that do not meet the acceptance criteria and the physician, or designee, has not approved for analysis will be recollected.

A. INPATIENT SAMPLES THAT THE LABORATORY DID COLLECT

Step	Action	
1	Notify the nursing unit the reason the test will not be performed and inquire if they want it re-drawn.	
2	Credit the test(s) that cannot be performed entering the comment as to why the sample was unacceptable, name of the person notified and if the sample will be redrawn or not.	
3	IF	THEN
	it is to be recollected	reorder the test(s), and, if requested, at the specified time. For the emergency department they will re-order the test. Notify the appropriate laboratory personnel of the collection
	In cases of precious sample i.e. C.S.F fluid and blood /serum of infants , where recollection may be difficult.	The test is carried out and the report released with the note or comment on the quality of sample

B. INPATIENT SAMPLES THAT THE LABORATORY DID NOT COLLECT

STEP	ACTION
1	Notify the nursing unit the reason the test will not be performed and inform them if they want the sample recollected to reorder and send a new sample.
2	Credit the test(s) that cannot be performed entering the comment as to why the sample was unacceptable, name of the person notified and if the sample will be recollected or not.
3.	In cases of precious sample i.e. C.S.F fluid and blood /serum of infants , where recollection may be difficult, the test is carried out and the report released with the note or comment on the quality of sample

PROCEDURE FOR RECEIPT, LABELLING, PROCESSING AND REPORTING OF PRIMARY SAMPLES REQUESTED AS 'URGENT'

1. Scope

This procedure is applicable for primary samples collected for examinations in clinical biochemistry, hematology, clinical pathology and small biopsies for histopathology requested as urgent by patients and / or referring hospitals, laboratories and clinicians.

2. Responsibility

The phlebotomist and carrier is responsible for transporting the sample immediately to the department.
The authorized signatory is authorized not to accept such requests, without giving reasons.
The technicians are responsible for rapid processing of such samples without compromising the quality of the result.

3. Policy

It is the policy of the laboratory to accept primary samples requested as 'urgent', whenever possible.
The request can be made only by the patient and the referring doctor. The processing and Reporting of such samples does not compromise the turnaround times of other samples, procedures of the laboratory and the quality of the results.

4. Procedure

Receipt and labeling of samples

The request is made either by the patients during primary sample collection or verbally by the referring hospital, laboratory, clinician to the laboratory staff. The information is then given to the phlebotomist.
The phlebotomist marks the requisition form 'URGENT' and the relevant entry in the phlebotomy register.
The primary sample containers are also marked 'urgent' with red ink or red sticker.

5. Transport to the department

The sample is immediately transported to the department and the in charge technician is informed on the need for rapid processing.

6. Processing

Clinical Biochemistry – Examinations using auto analyzers are processed using 'STAT' mode as detailed in the equipment procedures and reported within 45 minutes.
Hematology - The urgent samples to be examined are given preference over routine samples and are analyzed immediately and reported within 45 minutes.
Histopathology – small biopsy samples are processed rapidly and are reported in 2 days against 3 days for routine samples.

Annexure I Biochemistry requisition form Routine

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE BELAGAVI

KLES DR. PRABHAKAR KORE HOSPITAL & M.R.C., BELAGAVI.

DEPARTMENT OF CLINICAL BIOCHEMISTRY

REQUISITION FORM (ROUTINE)

PRE ACCREDITED PEH-2018-0667

PATIENT'S NAME _____ AGE/SEX _____ LAB I.D. No. _____

NAME OF OPD/IPD _____ OPD/IPD No. _____ BILL No. _____

NATURE OF SPECIMEN _____

CLINICAL DETAILS _____

PROVISIONAL DIAGNOSIS _____

	DIABETES PANEL
	GLUCOSE FASTING
	GLUCOSE PP
	GLUCOSE RANDOM
	GLUCOSE TOLERANCE TEST
	GLYCOSYLATED Hb (HbAlc)
	MICROALBUMINURIA
	RENAL PANAL
	GLUCOSE
	UREA/BUN
	CREATININE
	SODIUM
	POTASSIUM
	CHLORIDE
	BICARBONATE
	URIC ACID
	METABOLIC
	LIPASE
	AMYLASE
	LACTATE
	COPPER
	ARTERIAL BLOOD GAS (ABG)

	LIPID PANEL
	TOTAL CHOLESTEROL
	HDL CHOLESTEROL
	LDL CHOLESTEROL
	TRIGLYCERIDES
	VLDL
	LDL CHOLESTEROL (Direct)
	LDL/HDL RATIO
	MINERALS
	FREE CALCIUM
	TOTAL CALCIUM
	PHOSPHATE
	MAGNESIUM.
	SR/URINE COPPER
	IRON STUDIES
	SR. IRON
	SR. TIBC
	FERRITIN
	TRANSFFERINE
	OTHERS
	CHOLINESTERASE
	ACID PHOSPHATASE
	ELECTROPHORESIS SERUM/Hb
	URINE AMINOACIDOGRAM

	LIVER FUNCTION PANEL
	TOTAL BILIRUBIN
	DIRECT BILIRUBIN
	TOTAL PROTEINS
	ALBUMIN
	A.G.RATIO
	AST (SGOT)
	ALT (SGPT)
	ALKALINE PHOSPHATASE
	Y - GLUTAMYL TRANSFERASE
	AMMONIA
	CARDIC PROFILE
	AST (SGOT)
	LDH
	CPK
	CK MB
	OTHER MARKERS
	TROPONIN - I
	HOMOCYSTEINE
	APOLIPOPROTEIN - AI
	APOLIPOPROTEIN - B
	LIPOPROTEIN - A
	MYOGLOBIN
	STONE ANALYSIS

NAME OF DOCTOR _____ SIGNATURE OF DOCTOR _____

SAMPLE COLLECTED ON DATE _____ Time _____

RECEIVED ON DATE _____ Time _____

NOTE: INCOMPLETE FORMS WILL NOT BE ACCEPTED

(PTO)

Annexure II Biochemistry requisition form Special

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE NEHRUNAGAR, BELAGAVI-590010 KARNATAKA-INDIA

KLES DR. PRABHAKAR KORE HOSPITAL & M.R.C.BELAGAVI.
DEPARTMENT OF CLINICAL BIOCHEMISTRY
REQUISITION FORM (SPECIAL)

PEH-2018-0667

PATIENT'S NAME_____ AGE/SEX_____ LAB I.D. No._____

NAME OF OPD/IPD_____ OPD/IPD No._____ BILL No._____

NATURE OF SPECIMEN_____

CLINICAL DETAILS_____

PROVISIONAL DIAGNOSIS_____

	THYROID PANEL
	SERUM T3
	SERUM T4
	SERUM TSH
	FREE T3
	FREE T4
	THYROGLOBULIN
	ANTITYROGLOBULIN
	ANTI TPO
	DIABETIC PANEL
	INSULIN
	C-PEPTIDE
	ANTI GAD
	INBORN ERRORS
	URINARY V.M.A.
	URINARY 17 KETO STEROIDS
	URINARY 5 - HIAA
	G6PD
	FETAL Hb

	FERTILITY PANEL
	SERUM LH
	SERUM FSH
	SERUM PROLACTIN
	SERUM PROGESTERONE
	SR TESTOSTERONE
	FREE TESTOSTERONE
	ESTRADIOL (E2)
	D.H.E.A.-S
	PAPP - A
	ADRENAL/PITUITARY
	SERUM CORTISOL
	URINE CORTISOL
	H. GROWTH HORMONE
	INTACT PTH
	ACTH
	ADRENAL INE/NOR -ADRENALINE
	THERAPEUTIC DRUG M
	DIGOXIN
	THEOPHYLINE
	LITHIUM
	V ALPROIC ACID
	PHENYTOIN
	CARBAMEZAPINE
	ZINC

	TUMOR MARKERS
	BETA HCG
	ALPHA FETO PROTEIN
	C.E.A.
	CA - 125
	CA - 15-3
	CA - 19-9
	P.S.A.
	BETA 2 MICROGLOBULIN
	SR. CALCITONIN
	PLASMA PROTEINS
	PLASMA FIBRINOGEN
	CERULOPLASMIN
	COMPLEMENT C3
	COMPLEMENT C4
	C-REACTIVE PROTEIN (hs CRP)
	α 1 ANTITRYPSIN
	α 2 MACROGLOBULIN
	α 1 GLYCOPROTEIN ACID
	ANTITHROMBIN III
	CI ESTERASE
	HAPTOGLOBIN
	PRE-ALBUMIN
	URINE/CSF/OTHER.....
	GLUCOSE
	PROTEIN
	CREATININE
	ADA

NAME OF DOCTOR_____ SIGNATURE OF DOCTOR_____

SAMPLE COLLECTED ON DATE_____ Time_____

RECEIVED ON DATE_____ Time_____

NOTE : INCOMPLETE FORMS WILL NOT BE ACCEPTED (PTO)

Annexure III Hematology and Clinical Pathology requisition form

Phone : 0831-2473777 (16 Lines)

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE,BELAGAVI

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE NEHRU NAGAR, BELAGAVI-590010 KARNATAKA-INDIA

HI - TECH LABORATORY

Test Requisition Form

HEMATOLOGY / CLINICAL PATHOLOGY

PEH-2018-0667

NAME OF THE PATIENT'S _____ AGE/SEX_____ LAB I.D. No._____

Ref. by Dr. _____ OPD/Ward _____ IP/OP No._____

CLINICAL DETAILS /DIAGNOSIS_____

DOSAGE OF ANTI-COAGULANT/BLOOD TRANSFUSION HISTORY : _____

Spacemen Type: ☐ Whole Blood EDTA ☐ Citrate Plasma ☐ Urine ☐ Fluid: _____Others :_____

Test Code	HEMATOLOGY
1	Haemogram
2	Complete Blood Counts (CBC)
12	Red Blood cell Counts
8	Haemoglobin
16	Hemtocrit (PCV)
13	MCV
14	MCH
15	MCHC
293	Red cell Distribution with (RDW)
9	WBC Total count
10	WBC Diffrential count
69	Toxic granules / Band forms
18	Absolute Eosinophil count (AEC)
34	Absolute Neutrophil count (ANC)
292	Absolute Lymphocyte count
19	Reticulocyte count
11	ESR
21	Peripheral smear
25	Malaria Parasites in smear
26	Microfilaria in smear
29	Dsmotic Fregility
24	Slckling pheonomenon
30/11	Coomb's Test (Direct/Indirect)
9	Blood Group

Test Code	COAGULATION
17	Platelet count
91	Mean Platelet Volume (MPV)
22	Clot Retraction time
298	Ivy's Bleeding time
27	Prothrombin time (PT)/ INP
28	Activated Partial Thromboplastim (APTT)
33	D-dimer
104	Plasma Fibrinogen
295	Factor VIII assay
296	Factor IX assay
297	Factor VIII and IX assay
320	Factor XIII Screen
	PROFILES
3	Anaemia Profile
66	Thalassemia Profile
4	Hemolytic Profile
7	Coagulation Profile
6	DIC Profile
	MARROW
31	Bone marrow Trephine Biopsy (Procedure)
294	Bone marrow aspiration (Procedure/Reporting)
83	Bone marrow slides for second opinion
318	Bone marrow slides for Special Stain

Test Code	CLINICAL PATHOLOGY
250	CSF (Cell count/type)
79	Fluid Pleural (Cell count/type)
80	Fluid Pericardial (Cell count/type)
81	Fluid Synovial (Cell count/type)
54	Fluid Ascitic (Cell count/type)
37	Urine Examination
39	Urine Sugar
40	Urine Albumin
41	Urine Microscopy
42	Urine Ketone Bodies
43	Urine Bile Salt and Bile Pigment
44	Urine Bence jones protein
45	Urine Urobilinogen
46	Urine Prophoblilinogen
47	Urine Specific Gravity
48	Urine pH
49	Urine Total Protein (24Hrs)
50	Urine Pregnancy test
51	Urine Haemoglobin
52	Urine Myoglobin
53	Urine Eosinophils
319	Urine Nitrite

Other Tests :_____

SAMPLE Collected by : DATE: Time:

SAMPLE Received by : DATE: Time: SIGNATURE OF DOCTOR

NOTE : INCOMPLETE FORMS WILL NOT BE ACCEPTED

Annexure IV Bone marrow consent form

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE,
NEHRUNAGAR, BELAGAVI-10.
Phone : 0831-2473777 (16 Lines) / Fax : 0831-2470732
PEH-2018-0667

HEMATOLOGY / CLINICAL PATHOLOGY

Brief explanation of the procedure :

Bone Marrow : Bone Marrow aspiration is performed by introducting a needle into the hip/bone after giving local anesthesia to the bone. The procedure is performed by experienced doctors. Slight pain is felt during the procedure when blood is sucked out from the bone. Bone marrow biospy involves cutting out a core of bone with marrow using specially designed needled.

There may be slight but bearable pain while the bone core is dislodged. Local bleeding and clot may from but this complication is rare and minimized by proper bandaging. The bandage should not be soaked or removed for 48 hours. This precaution is to avoid any bleeding from the local site. You can perform your routine work soon after the procedure. In case you feel pain later, you may take a mild pain killer such as paracetamol.

CONSENT FORM

I Mr./Ms _____ aged _____ Years, have read through the procedure, have been expalined about, and have understood the same I understand that the procedure of Bone marrow aspiration / Trephine Biopsy that I am undergoing is performed by persons who are experienced in the same.

I hereby voluntarily give my consent to undergo the procedure.

Signed :

Name :

Name of attendant : (in case of minor / when patient cannot sign) :

Lab No. : BM / / 20

Person performing the procedure :

Date : / / 20

Annexure V Microbiology requisition form I

✆ : 2473777 (16 lines)

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE NEHRUNAGAR, BELAGAVI-590010 KARNATAKA-INDIA

ಕೆ.ಎಲ್.ಇ. ಸಂಸ್ಥೆಯ ಡಾ. ಪ್ರಭಾಕರ ಕೋರೆ ಆಸ್ಪತ್ರೆ ಮತ್ತು ವೈದ್ಯಕೀಯ ಸಂಶೋಧನಾ ಕೇಂದ್ರ, ನೆಹರುನಗರ, ಬೆಳಗಾವಿ-10.

KLES Dr. Prabhakar Kore Hospital & M.R. C., Nehrunagar, Belagavi-10.

NABH PATIENT SAFETY & QUALITY OF CARE PRE ACCREDITED PEH-2018-0667

MICROBIOLOGY REQUISITION FORM

LABORATORY EXAMINATION REQUESTED :

☐ Culture ☐ Serology(specify test)_____

☐ Antibiotic Sensitivity ☐ Others (specify)_____

CATEGORY OF AGENT SUSPECTED :

☐ Bacteria ☐ Fungus ☐ Parasite ☐ Others (specify)_____

SPECIFIC AGENT SUSPECTED :_____

Date specimen taken	Time	Submitted on	Refrigerated ? ☐ Yes ☐ No Stored at room temperature ☐ Yes ☐ No

SOURCE OF SPECIMEN :

☐ Blood ☐ Serum ☐ Sputum ☐ Urine ☐ CSF ☐ Stool

☐ Throat ☐ Ear ☐ Eye

☐ Wound (site) _____ ☐ Tissue (specify)_____

☐ Exudate (site)_____ ☐ Other (specify) _____

ISOLATION ATTEMPTED :

☐ Yes ☐ No

No. times isolated

Previous Laboratory Results (if any)

SERUM INFORMATION : **TREATMENT :** Drugs used ☐ None Dt. begun Dt. completed

☐ Acute _____ _____ _____

☐ Convalescent _____ _____ _____

☐ Screening _____ _____ _____

Name and address of Doctor / Hospital

PATIENT IDENTIFICATION Hospital No._____

Name : Age Sex

Clinical Diagnosis :

Associated illness :

OP/IP. No. Ward/Unit/Bed

Completed by (Doctor's Name)

Date : Signature

OTHER CLINICAL INFORMATION :

☐ Fever ☐ Rash ☐ Jundice ☐ Myalgia

☐ Pharyngitis ☐ Cough ☐ Hachmoptysis

☐ Anaemia ☐ Splenomegally ☐ Hepatomegally

☐ Lymphodenopathy ☐ Conjuctivities

☐ Headache ☐ Hydrocephalus

☐ Microcephalus ☐ Paralysis

☐ Renal Colic Dysuria ☐

☐ Frequency of Micturition (Diurnal Nocturnal)

☐ Vaginitis Abdominal Pain ☐

☐ Vomitting ☐ Other

THIS FORM MUST BE COMPLETED

Annexure VI Microbiology requisition form II

K.L.E.S. DR. PRABHAKAR KORE HOSPITAL & M.R.C., BELGAUM.
DEPARTMENT OF CLINICAL MICROBIOLOGY
REQUISITION

Patient's Name :_____ Age / Sex :_____ Lab No. :_____

Name of OPD/ IPD :_____ OPD/ IPD No. :_____ Bill No. :_____

Referred By : _____ Ward :_____

Clinical Details & Diagnosis :_____

NATURE OF SPECIMEN :

	Blood		Sputum		Eye/Ear		Throat Swab		Others
	Urine		CSF		Fluids		PUS		

TESTS

ROUTINE		SEROLOGY			
Grams Stain	WIDAL	TORCH	Measles IgG		
Albert stain	RA	TOX IgG	Measles IgM		
ZN stain	CRP	TOX LgM	Cysticercosis IgG		
Simple stain	ASLO	HSV Igm	Leptospirosis IgM		
P. Carinii stain	Brucella	Rubella IgM	Cardiolipin		
KOH prepn	VDRL	CMV IgM	Dengue		
India ink prepn	TPHA	ANA	TB IgG		
Hanging drop	HCV	Ds DNA	TB IgA		
Stool Ova/Cyst	Serum electrophoresis	HBsAg	TB IgM		
Stool occult blood	Other Tests :				

Name of Doctor :_____

Sample Collected on : Date :_____ Time :_____

Received on : Date :_____ Time :_____

Note : Incomplete forms will not be accepted.

Annexure VII Cytopathology requisition form

KLES
DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE
NEHRUNAGAR, BELAGAVI-590010
KARNATAKA-INDIA

KLES Dr. Prabhakar Kore Hospital & Medical Research Centre

Nehru Nagar, Belagavi

CYTOPATHOLOGY REQUEST FORM

PATIENT SAFETY & QUALITY OF CARE
NABH ENTRY LEVEL
PRE ACCREDITED
PEH-2018-0667

Cytology No. :

Date :

Name of the patient : Age :

(Block Letters) Sex :

Ref. by Doctor / Hospital :

Contact Number :

Nature of the specimen :

Anatomical site of collection :

Date and time of collection :

BRIEF CLINICAL HISTORY :

PROVISIONAL CLINICAL DIAGNOSIS :

Site of FNAC REQUIRED :

In case of submission of fluid, name of the Doctor performed the FNA

Previous reports (in case of second opinion) with details of slides / blocks

X-ray findings if any :

CT/MRI/Ultrasound imaging FINDINGS, IF any :

For Gynocological cytology :

- Details of hormone therapy :
- Details of contraception :
- Details of previous surgery :

Format No. : QRF/KLELAB/SAM/07

Annexure VIII Histopathology requisition form

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE, NEHRUNAGAR, BELAGAVI-590010 KARNATAKA-INDIA

Phone : 0831-2473777 (16 Lines)

KLES DR. PRABHAKAR KORE HOSPITAL & MEDICAL RESEARCH CENTRE,
NEHRU NAGAR, BELAGAVI-590010.

HISTOPATHOLOGY REQUEST FORM

Biopsy No. :

Date :

IP / OP No. :

Name of the patient :
(Block Letters)

Age :

Sex :

Ref. by Doctor / Hospital :

Contact Number :

Nature of the specimen :

Anatomical site of collection :

BRIEF CLINICAL HISTORY :

PROVISIONAL CLINICAL DIAGNOSIS :

SURGERY DONE :

Previous reports (in case of second opinion) with details of slides / blocks.

X-ray findings if any :

CT / MRI / Ultrasound imaging FINDINGS, IF any :

Format No. QRF / KLELAB / SAM / 07

Annexure IX FNAC Consent form

CONSENT FORM FOR FNA (Fine Needle Aspiration)

I Shri./Smt./Ku. _____ aged _____ years

here by authorise Dr. _____ to perform the procedure

of fine needle asipiration on the required site / region.
I have been explained the procedure of fine needle aspiration.
I have been explained that the following side effects may occur as a result of the procedure, e.g. :
a) Swelling at the site b) Minor bleeding c) Pain d) Fainting
I am not suffering from any bleeding disorder to the best of my knowledge.
I understand that results of the procedure may not be conclusive and a subsequent biopsy may be necessary.
I have been explained the excision biopsy is the alternative for the needle aspiration.
I here by give my consent to perform the procedure.

Patient / attendant : _____

Witness (Name) : _____

Date : _____

ಎಫ್.ಎನ್.ಎ. ತಪಾಸಣೆಗಾಗಿ ಸಮ್ಮತಿ (ಒಪ್ಪಿಗೆ) ಪತ್ರ

ಕೆಳಗೆ ಸಹಿ ಮಾಡಿದ ನಾನು, ಶ್ರೀ/ಶ್ರೀಮತಿ/ಕುಮಾರ/ರಿ _____

ವಯಸ್ಸು _____ ವರ್ಷಗಳು, ಡಾ॥ _____ ಇವರ

ಅಭಿಪ್ರಾಯದಂತೆ, ತಾವು ಕೈಗೊಳ್ಳುವ ವೈದ್ಯಕೀಯ ವಿಧಾನಕ್ಕೆ ಒಪ್ಪಿರುತ್ತೇನೆ / ಸಮ್ಮತಿಸುತ್ತೇನೆ.

ನನಗೆ ಕೈಗೊಳ್ಳುವ ವೈದ್ಯಕೀಯ ವಿಧಾನದ ಪದ್ಧತಿ ಮತ್ತು ಅದರಿಂದ ಆಗಬಹುದಾದ ಸಾಮಾನ್ಯ ತೊಂದರೆಗಳ ಬಗ್ಗೆ , ನನಗೆ ತಿಳಿಯುವ ಭಾಷೆಯಲ್ಲಿ ವಿವರವಾಗಿ ಹೇಳಿ ಕೊಟ್ಟಿದ್ದಾರೆ. ಅವುಗಳ ಬಗ್ಗೆ ನಾನು ಪೂರ್ತಿಯಾಗಿ ತಿಳಿದುಕೊಂಡಿದ್ದೇನೆ.

ಆದರಂತೆ ಈ ವೈದ್ಯಕೀಯ ವಿಧಾನವನ್ನು ಮಾಡಿಸಿಕೊಳ್ಳಲು ನನ್ನ ಸಂಪೂರ್ಣ ಒಪ್ಪಿಗೆ / ಸಮ್ಮತಿ ಇರುತ್ತದೆ.

ಈ ಒಪ್ಪಿಗೆ/ಸಮ್ಮತಿ ಪತ್ರ ಕಾನೂನುಬದ್ಧ ದಾಖಲೆಯಾಗಿದೆ ಎಂದು ನನಗೆ ತಿಳಿದಿರುತ್ತದೆ.

ರೋಗಿ / ಸಹಾಯಕರ ಹೆಸರು : _____

ಸಾಕ್ಷಿದಾರರು (ಹೆಸರು) : _____

ದಿನಾಂಕ : _____

एफ्.एन्.ए. तपासणीसाठी संमती पत्र

खाली सही केलेला मी श्री/श्रीमती/कुमार/री _____

वय _____ वर्षे, डॉ. _____ यांनी

माझ्या संबंधीत ह्या अधिकृत वैद्याकडून सूक्ष्म सुई घालून शरीरावरील गाठीची तपासणी करायल सांगितली आहे. तरी या तपासणी विषयी सर्व माहिती संबंधित वैद्यानी मला/माझ्या संबंधीताला आमच्या भाषेत व आम्हाला समजेल अशा प्रकारे सांगितले आहे व ते आम्हाला व्यवस्थित समजले आहे. तरी त्या तपासणी संबंधीचे सर्व परिणाम आम्हाला समजावून सांगितले आहे. तरी आम्ही एफ्.एन्.ए.सी.ची तपासणी करण्यासाठी स्वखुषीने तयार आहोत.

मला/माझ्या सबंधीतला आमच्या माहितीप्रमाणे कुठलाही रक्तस्राव होण्याचा विकार नाही.

रुग्णाचे/साहाय्यकांचे नाव : _____

साक्षीदार (नाव) : _____

दिनांक : _____