Aster LABS
We'll Treat You Well

TEST REPORT

Lab. Id	: **P2590774**	**Hosp. UHID** :		**Reg. Date**	: 26-Sep-2024 / 10:50 AM
Name	: MR. NOORUDHEEN N			**Collection**	: 26-Sep-2024 / 10:54 AM
Age/Gender	: 33Y / Male			**Received**	: 26-Sep-2024 / 12:11 PM
Collected At	: FPEC TANALUR			**Report**	: 26-Sep-2024 / 12:40 PM
Referral Dr	: -	**Report Status :** Preliminary		**Print**	: 26-Sep-2024 / 14:17 PM
Bed	:				

Biochemistry

Tests	Result	Units	Biological Reference Range	Specimen
KIDNEY FUNCTION TEST				
UREA Method:Endpoint/Colorimetric - Urease	22	mg/dl	19-43	Serum
CREATININE Method:Twopoint Rate - Creatinine Aminohydrolase	1.2	mg/dl	0.66-1.25	Serum
URIC ACID Method:Colorimetric - Uricase, Peroxidase	**8.6**	mg/dl	3.5-8.5	Serum
CALCIUM Method:Colorimetric - Arsenazo Method	9.4	mg/dl	8.4-10.2	Serum
PHOSPHORUS Method:Colorimetric - Phosphomolybdate Formation	3.3	mg/dl	2.5-4.5	Serum
SODIUM Method:Direct ISE - Potentiometric	**135**	mmol/l	137-145	Serum
POTASSIUM Method:Direct ISE - Potentiometric	3.9	mmol/l	3.5-5.1	Serum
CHLORIDE Method:Direct ISE - Potentiometric	100	mmol/l	98-107	Serum

Verified By: 165821

Dr. DEEPAK GOPINATH
MBBS,MD
Senior Specialist - Pathology

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Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
IRON STUDIES				
IRON Method:Twopoint Rate	109	µg/dL	49-181	Serum
TIBC Method:Immunoturbidmetry	312	mcg/dl	261-462 µg/dL	Serum
TRANSFERRIN SATURATION Method:Calculated	34.9	%		Serum

COMMENTS:
Serum Iron test is a measurement of the circulating iron that is bound to **Transferrin**. Transferrin is generally 25-30% saturated with iron. The additional amount of iron that can be bound is the unsaturated iron-binding capacity (UIBC). The **Total iron-binding capacity (TIBC)** can be indirectly determined using the sum of the serum iron and UIBC.
Approximately 65% of the iron in the body is bound up in hemoglobin molecules in red blood cells. About 4% is bound up in myoglobin molecules. Around 30% of the iron in the body is stored as ferritin or hemosiderin in the spleen, the bone marrow and the liver. Small amounts of iron can be found in other molecules in cells throughout the body. This iron cannot be measured.
Serum iron, total iron-binding capacity, and percent saturation are widely used for the diagnosis of iron deficiency. However, **serum Ferritin** is a much more sensitive and reliable test for demonstration of iron deficiency. Ferritin also acts as an acute phase reactant in inflammatory conditions wherein iron deficiency anemia may coexist with a normal serum ferritin concentration.

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Haematology

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
COMPLETE BLOOD COUNT				
RBC Parameters				
Haemoglobin Method:Colorimetric	15.4	g/dL	13-17 gm/dl	K2EDTA WB
RBC Count Method:Elect. Impedance	5.24	mil/cmm	4.5-5.5	K2EDTA WB
PCV Method:Calculated	47.3	%	40-50	K2EDTA WB
MCV Method:Derived from RBC Histogram	90.2	fl	83-101	K2EDTA WB
MCH Method:Calculated	29.4	pg	27-32	K2EDTA WB
MCHC Method:Calculated	32.6	g/dL	31.5-34.5	K2EDTA WB
RDW - CV Method:Derived from RBC Histogram	13.6	%	11.6-14.0	K2EDTA WB
RDW-SD Method:Derived from RBC Histogram	**47.7**	fl	39.0-46.0	K2EDTA WB
WBC Parameters				
Total WBC Count Method:Fluorescent Flow Cytometry	9.00	K/uL	4.0-10.0	K2EDTA WB
WBC Differential				
Neutrophils Method:Fluorescent Flow Cytometry	51.0	%	30-75	K2EDTA WB
Lymphocytes Method:Fluorescent Flow Cytometry	44.0	%	20-55	K2EDTA WB
Monocytes Method:Fluorescent Flow Cytometry	4.0	%	1.0-12.0	K2EDTA WB
Eosinophils Method:Fluorescent Flow Cytometry	1.0	%	0.0-6.0	K2EDTA WB
Absolute Counts				
Absolute Neutrophils Method:Fluorescent flow cytometry (FFC)	4.59			K2EDTA WB
Absolute Lymphocytes Method:Fluorescent flow cytometry (FFC)	**3.96**	Ku/L	1.0-3.0	K2EDTA WB
Absolute Monocytes Method:Fluorescent flow cytometry (FFC)	0.36	Ku/L	0.1-1.0	K2EDTA WB

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Absolute Eosinophils Method:Fluorescent flow cytometry (FFC)	0.09	Ku/L	0.05-0.50	K2EDTA WB
Absolute Basophils Method:Fluorescent flow cytometry (FFC)	0.0	Ku/L		K2EDTA WB

Platelet Parameters

Platelet Count Method:Electrical Impedance method	229	K/uL	150-410	K2EDTA WB
MPV Method:Derived from Platelet Histogram	11.2	fl	8.6-15.5	K2EDTA WB
PDW Method:Derived from Platelet Histogram	16.2	%	10.0-17.9	K2EDTA WB
PCT Method:Calculated	**0.257**	%	0.22-0.24	K2EDTA WB
P-LCR Method:Derived from Platelet Histogram	33.9	%	12-67	K2EDTA WB

Comments:

- A complete blood count (CBC) is a blood test which measures several cellular components of blood and is used to evaluate overall health and detect a wide range of disorders.
- It is used to determine one's general health status; to screen for, diagnose, or monitor a variety of diseases and conditions that affect blood cells, such as anemia, infection, inflammation, bleeding disorder or cancer.
- A decrease in hemoglobin levels/ RBC count lower than the normal reference range for the given age can signify anemia. Further investigation with iron studies, vitamin B12 and folic acid levels will help in determining the cause and assist in further treatment. Red cell indices help in classification of anaemia and give a clue to their etiology. An increase in haemoglobin level may signify polycythemia, dehydration and is often seen in smokers.
- White blood cell (WBC) counts and their differential counts (DC) are used to diagnose infections(bacterial/viral), allergies, inflammatory conditions and leukemias.
- Platelets help in clotting of blood, any substantial decrease may increase the risk of bleeding

Note
The differential leucocyte counts are additionally being reported as absolute numbers of each cell in per unit volume of blood as per the recommendation of International council for Standardization in Hematology.

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Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
GLUCOSE, FASTING (F) Method:Colorimetric - Glucose Oxidase peroxidase	87		Normal - <100 mg/dl Prediabetes - 100- 125 mg/dl Diabetes - >126 mg/dl	Fluoride Plasma (F)

Comments:
Glucose is a simple sugar(monosaccharide) obtained by breakdown of carbohydrates. It is the main source of energy in the body. This test measures glucose levels in the blood after 8-12 hrs of fasting.

Clinical uses:
1. Diagnosis and monitoring of Diabetes(hyperglycemia)
2. Diagnosis and monitoring of Hypoglycemia
3. Diagnosis of some endocrinal disorders

High levels are seen in:
1. Diabetes – Type 1 and 2
2. Gestational Diabetes
3. Stress, surgery
4. Endocrinal disorders – Hyperthyroidism, Hypercortisolism
5. Pancreatic disorders – Pancreatitis, Glucagonoma
6. Drugs such as steroids, Hydrocortisone

Low levels are seen in:
1. Insulinoma
2. Overdose of Anti diabetic drugs & Insulin
3. Starvation
4. Endocrinal disorders – Hypothyroidism, Hypopituitarism, Addison's disease
5. Chronic kidney and liver disorders

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Bed	:				

Haematology

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
ERYTHROCYTE SEDIMENTATION RATE				
ESR Method:Westergren	05	mm/hr	0-25	Whole Blood

Comments:

Erythrocyte sedimentation rate (ESR), is a blood test that detects non-specific inflammatory activity in the body. It is not a stand-alone diagnostic tool but can be used to help diagnose or monitor the progress of an inflammatory disease.

- It helps to detect the presence of inflammation caused by one or more conditions such as infections, tumors or autoimmune diseases.
- It is useful for diagnosing and monitoring of specific conditions such as temporal arteritis, systemic vasculitis, polymyalgia rheumatica, or rheumatoid arthritis where the levels are significantly increased.
- Values are low in polycythaemia, hyperleukocytosis, hypofibrinogenaemia and congestive cardiac failure and when there are abnormalities of the red cells such as poikilocytosis, spherocytosis, or sickle cells is present.
- It is influenced by age, sex, stage of the menstrual cycle, pregnancy and medications taken (corticosteroids, contraceptive pills).

Note- ESR is best interpreted when test is carried out on a fasting blood and needs to be clinically corelated.

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Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
GLYCOSYLATED HEMOGLOBIN (HbA1c)				
HbA1c Method:HPLC	5.1		>/= 6.5 % : Diabetic 5.7–6.4 % : Pre-Diabetic < 5.7 % : Non-Diabetic	K2EDTA WB

Comments:

In persons with diabetes, optimal HbA1c value is as advised by your doctor.

Glucose combines with Hb continuously and nearly irreversibly during the lifespan of RBCs (120 days). Therefore, Glycosylated Haemoglobin will be proportional to mean plasma Glucose during previous 6-12 weeks. Mean blood Glucose in first 30days (day 0-30) before sampling GHb contributes approximately 50% to final GHb value, whereas days 90-120 contribute only approximately 10%. Time to reach a new steady state is approximately 30-35 days.

A long-term diabetic who has recent good control may still show higher HbA1c% and a normal (or diabetic with previous good control) individual with recent poor control can show normal (or lower than expected) HbA1c levels.

HbA1c in pregnancy has limited role in diagnosing gestational diabetes. Physiological changes lower HbA1c levels, and pregnancy-specific reference ranges may need to be recognized. In these cases, a fasting plasma glucose, oral glucose tolerance test or fructosamine test should be used for screening or diagnosing diabetes.

Note : NGSP certified method.

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Bed	:				

Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
VITAMIN D 25 - HYDROXY				
VITAMIN D 25-OH Method:ECLIA	31.9	ng/ml	Deficient: <20 Insufficient: 20-30 Sufficient: 30-100 Potential Toxicity: >100	Serum

Comments:
Vitamin D is a fat soluble secosteroid responsible for absorption and regulation of calcium, magnesium and phosphorus. There are 2 forms vitamin D2(ergocalciferol) and D3(cholecalciferol) which are converted to 25-hydroxyergocalciferol and 25-hydroxycholecalciferol in the liver. These 2 metabolites are usually measured to estimate the vitamin D status of a person. 25-hydroxycholecalciferol is further converted to 1, 25-dihydroxycholecalciferol (calcitriol) in the kidneys, which is the active form of vitamin D.

Vitamin D deficiency: Osteomalacia/ Rickets

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Clinical Pathology

Investigation	Result	Unit	Biological Ref. Interval	Specimen
URINE ROUTINE EXAMINATION				
PHYSICAL EXAMINATION				
Appearance Method:Manual	Clear			Spot urine
Color Method:Manual	Pale yellow		Pale Yellow	Spot urine
CHEMICAL EXAMINATION				
pH-Urine Method:Reflectance Spectrophotometry	6.5		4.5 - 8.0	Spot urine
Proteins Method:Reflectance Spectrophotometry	Negative		Negative	Spot urine
Glucose Method:Reflectance Spectrophotometry	Negative		Negative	Spot urine
Specific Gravity Urine Method:Reflectance Spectrophotometry	1.010		1.005-1.030	Spot urine
Ketones Method:Reflectance Spectrophotometry	Negative		Absent	Spot urine
Urobilinogen Method:Reflectance Spectrophotometry	Negative		Normal	Spot urine
Nitrite Method:Reflectance Spectrophotometry	Negative		Negative	Spot urine
Bile Salts Method:Reflectance Spectrophotometry	Negative		Nil	Spot urine
Bile Pigments Method:Reflectance Spectrophotometry	Negative		Negative	Spot urine
leukocytes Method:Reflectance Spectrophotometry	Negative		Negative	Spot urine
MICROSCOPIC EXAMINATION				
Pus cells Method:Manual	1-2	/HPF	0-5	Spot urine
RBC Method:Manual	Nil	/hpf		Spot urine
Epithelial Cells Method:Manual	0-1	/hpf	0-5	Spot urine

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Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
LIPID PROFILE				
TOTAL CHOLESTEROL Method:Colorimetric - Cholesterol Oxidase	177	mg/dl	**Desirable**:< 200 **Borderline-high**:200 - 239 **High**:>/= 240	Serum
TRIGLYCERIDES Method:Colorimetric - Lip/Glucerol kinase	132	mg/dl	**Normal:** <150 **Borderline-high:** 150 - 199 **High:** 200 - 499 **Very high**:>/=500	Serum
HDL CHOLESTEROL Method:Colorimetric non HDL precipitation method	33	mg/dl	**Desirable**: >60 **Borderline**: 40 - 60 **Low (High risk)**: <40	Serum
LDL CHOLESTEROL Method:Immunoturbidmetry	129.21	mg/dl	**Optimal:** <100 **Near Optimal:** 100 - 129 **Borderline High:** 130 - 159 **High:** 160 - 189 **Very High**: >/= 190	Serum
VLDL Method:Calculated	26.4	mg/dl	5 - 30	Serum
TOTAL CHOLESTEROL/HDLC RATIO Method:Calculated	**5.36**		0 - 4.5	Serum

Comments:
Lipid profile is a panel of blood tests that serves as an initial screening tool for abnormalities in lipids, such as cholesterol and triglycerides. The lipid panel is used as part of a cardiac risk assessment to help determine your risk of heart disease and to help make decisions about what treatment may be best if you have borderline, intermediate or high risk.

The results of the lipid panel are considered along with other known risk factors of heart disease to develop a plan of treatment and follow up. Depending on the results and other risk factors, treatment options may involve lifestyle changes such as diet and exercise or medications that lower lipid levels, typically statins.

Additionally a lipid panel may be used to monitor whether treatment has been effective in lowering cholesterol levels.

NLA 2014-15 guidelines:
1. Non-HDL-C (calculated as total C – HDLC) represents the sum of cholesterol carried by all potentially atherogenic, apo B-containing lipoprotein particles, including LDL, IDL, Lp (a), VLDL (including VLDL remnants), and chylomicron particles and remnants.
2. An elevated level of cholesterol carried by circulating apolipoprotein (apo) B-containing lipoproteins (non- HDL-C and LDL-C, termed atherogenic cholesterol) is a root cause of atherosclerosis/ASCVD. HDL-C is responsible for lowering peripheral tissue cholesterol(reverse transport), inturn reducing risk of ASCVD.
3. Apolipoprotein B, hsCRP, Lp(a) and LP-PLA2 testing should be considered in patients with moderate risk for ASCVD.
4. In all adults (>20 years of age), a fasting or nonfasting lipid profile should be obtained at least every 5 years. At a minimum, this should include total cholesterol and HDL-C, which allows calculation of non-HDL-C (total-C – HDL-C). If fasting (generally 9-12 hours), the LDL-C level may be calculated, provided that the triglyceride concentration is <400 mg/dL.
5. Apo B is considered an optional, secondary target for treatment. Epidemiologic studies have generally shown that both apo B and non-HDL-C are better predictors of ASCVD risk than LDL-C. Apo B and non-HDL-C share the advantage that neither requires fasting sample for accurate

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TEST REPORT

Lab. Id	: **P2590774**	**Hosp. UHID**	:	**Reg. Date**	: 26-Sep-2024 / 10:50 AM
Name	: MR. NOORUDHEEN N			**Collection**	: 26-Sep-2024 / 10:54 AM
Age/Gender	: 33Y / Male			**Received**	: 26-Sep-2024 / 12:11 PM
Collected At	: FPEC TANALUR			**Report**	: 26-Sep-2024 / 12:51 PM
Referral Dr	: -	**Report Status :** Preliminary		**Print**	: 26-Sep-2024 / 14:17 PM
Bed	:				

assessment.
6. Elevated triglyceride level is not a target of therapy per se, except when very high (>500 mg/dL). When triglycerides are between 200 and 499 mg/dL, the targets of therapy are non-HDL-C and LDL-C. When triglycerides are very high (>500 mg/dL, and especially if >1000 mg/dL), reduction to <500 mg/dL to prevent pancreatitis becomes the primary goal of therapy.
7. Lifestyle therapies for ASCVD risk reduction generally include interventions aimed at (1) dietary modifications (2) reducing total energy intake to lower body weight and adiposity for those who are overweight or obese; (3) exercise (4) improving risk factors associated with the metabolic syndrome (adiposity, dyslipidemia, high blood pressure, and elevated plasma glucose); and (5) ceasing tobacco use.

Verified By: 165821

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--- End Of Report ---

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Bed	:				

Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
THYROID PROFILE, TOTAL				
T3, TOTAL Method:ECLIA	2.46	ng/ml	1.49-2.60 nmol/L	Serum
T4, TOTAL Method:ECLIA	9.48	µg/dL	5.53-11.0	Serum
THYROID STIMULATING HORMONE (TSH) Method:ECLIA	0.9564	µlU/mL	0.4001-4.049	Serum

PEDIATRIC REFERENCE INTERVAL

Age group	T3 (ng/ml)	T4 (µg/dl)	TSH (µIU/ml)
Infants (01-23 months)	1.17-2.39	6.0-13.2	0.87-6.15
Children (02-12 years)	1.05-2.07	5.5-12.1	0.67-4.16
Adolescents (13-20 years)	0.86-1.92	5.5-11.1	0.48-4.17

As per American Thyroid Association (ATA), treatment goal of TSH levels in pregnancy

Trimester	TSH
Pregnancy 1st trimester:	0.10-2.50 µIU/ml
Pregnancy 2nd trimester:	0.20-3.00 µIU/ml
Pregnancy 3rd trimester:	0.30-3.00 µIU/ml

Reference Range Pregnant Euthyroid Total T4 ug/dl: 6.4-10.7 µg/dl

Comments:
Thyroid function tests are a series of blood tests used to measure how well your thyroid gland is functioning. The thyroid produces 2 major hormones **Triiodothyronine T3 and Thyroxine T4**.
Thyroid stimulating hormone TSH - is a part of thyroid function test. It is a hormone secreted by pituitary gland in response to thyroid hormone levels. It is secreted in larger amount if thyroid hormone levels are low and vice versa. TSH also exhibits circadian variations. Low levels are found during daytime and peaks are found during just after midnight. The best way to avoid false fluctuations in lab test results is to have your thyroid levels checked under same conditions.
Pregnancy has profound impact on thyroid gland and thyroid function.The gland increases 10-40% in size, along with approximately 50% increase in T3/T4 production and 50% increase in iodine requirements. In most normal Pregnancies,TSH levels are Lower than pre-pregnancy levels.This is more profound in twin pregnancies.**Hypothyroidism** - Thyroid hormone deficiency
Symptoms - weight gain, lack of energy, depression, brittle hair & nails
Causes - Hashimoto's thyroiditis, congenital hypothyroidism, Iodine deficiency etc
Hyperthyroidism - Thyroid hormone excess
Symptoms - weight loss, anxiety, tremors, diarrhoea
Causes - Grave's disease, Toxic adenoma, Toxic Multinodular goitre, Thyroiditis etc
Medications like steroids, aspirin, lithium, amiodarone and radio-iodine dye used in radiological procedures can interfere with Thyroid Function Test results.

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Bed	:				

Biochemistry

Investigation	Observed Value	Unit	Biological Ref. Interval	Specimen
LIVER FUNCTION TEST				
BILIRUBIN TOTAL Method:Diazonium Salt	0.9	mg/dl	0.2-1.3	Serum
BILIRUBIN DIRECT Method:Dual Wavelength - Reflectance Spectrophotometry	**0.3**	mg/dl	0.0-0.3	Serum
BILIRUBIN INDIRECT Method:Dual Wavelength - Reflectance Spectrophotometry	0.6	mg/dl	0.0-1.1	Serum
TOTAL PROTEIN Method:Colorimetric - Biuret Method	7.7	g/dL	6.3-8.2	Serum
ALBUMIN Method:Colorimetric - Bromo-Cresol Green	4.4	g/dL	3.5-5.0	Serum
GLOBULIN Method:Calculated	3.3	g/dL	2.3-3.5	Serum
A/G RATIO Method:Calculated	1.33	%	1 - 2	Serum
SGOT(AST) Method:Multipoint Rate with P-5-P	26	U/L	17-59	Serum
SGPT (ALT) Method:Multipoint-Rate/UV with P-5-P (pyridoxal-5-phosphate)	20	U/L	<50	Serum
ALKALINE PHOSPHATASE Method:Multipoint-Rate - p-nitrophenyl Phosphate, AMP buffer	69	U/L	38-126	Serum

Total Bilirubin in Neonates

Age	Premature (mg/dl)	Mature (mg/dl)
0-1 day	1.0-8.0	2.0-6.0
1-2 days	6.0-12.0	6.0-10.0
3-5 days	10.0-14.0	4.0-8.0

*Teitz 5th ed

ALP in paediatric age group

Reference range	IU/L
0-1 yr	150-350
1-16 yr	30-300

*Wallach 10th ed

Comments:
These are a panel of tests that help determine health of the liver by measuring the levels of proteins, liver enzymes and bilirubin in the blood. It helps the clinician in differentiating between pre-hepatic, hepatic and post -hepatic causes of some conditions exhibiting jaundice as a symptom. It is recommended in the following conditions:
1. To check for damage from liver infections (Hepatitis B, C etc)
2. To monitor the side effects of certain hepatotoxic drugs
3. To monitor effectiveness of treatment for liver diseases
4. If symptoms of liver or gall bladder conditions are seen (like jaundice, itchiness etc)

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5. For certain medical conditions like diabetes, high triglycerides, anaemia etc
6. In liver damage caused by heavy alcohol consumption.

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