Client Detail :
THE SKY LABS PH. 9465792081
Near Hari Om Mandir, Main Market, Moti Nagar
ludhiana 141009

NAME	: **Mr. HARSIMRAN SINGH**		
AGE/GENDER	: 21 Y/Male	**PATIENT ID**	: 143567
COLLECTED BY	: SANJEEV KUMAR	**REG.NO/LAB NO.**	: **0012404240010**
REFERRED BY	: Dr.SELF	**REGISTRATION DATE**	: 24/Apr/2024 11:32 AM
BARCODE NO.	: Y0237419	**COLLECTION DATE**	: 25/Apr/2024 01:30 AM
CLIENT CODE	: PJ013	**REPORTING DATE**	: 25/Apr/2024 01:52 AM

PATH CHECK 1.3 PRO
COMPLETE BLOOD COUNT (CBC)

Test Name	Value	Unit	Biological Reference interval
RED BLOOD CELLS (RBCS) COUNT AND INDICES			
HAEMOGLOBIN (HB) (CALORIMETRIC)	15.4	gm/dL	12.0 - 17.0
RED BLOOD CELL (RBC) COUNT **(HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)**	**5.74** H	**Millions/cmm**	**3.50 - 5.00**
PACKED CELL VOLUME (PCV) (CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER)	50.4	%	40.0 - 54.0
MEAN CORPUSCULAR VOLUME (MCV) (CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER)	87.7	fL	80.0 - 100.0
MEAN CORPUSCULAR HAEMOGLOBIN (MCH) **(CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER)**	**26.8** L	**pg**	**27.0 - 34.0**
MEAN CORPUSCULAR HEMOGLOBIN CONC. (MCHC) **(CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER)**	**30.5** L	**g/dL**	**32.0 - 36.0**
RED CELL DISTRIBUTION WIDTH (RDW-CV) (CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER)	14.8	%	11.00 - 16.00
RED CELL DISTRIBUTION WIDTH (RDW-SD) (CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER)	48.3	fL	35.0 - 56.0
MENTZERS INDEX (CALCULATED)	15.28	RATIO	BETA THALASSEMIA TRAIT: < 13.0 IRON DEFICIENCY ANEMIA: >13.0
GREEN & KING INDEX (CALCULATED)	22.59	RATIO	BETA THALASSEMIA TRAIT: < = 65.0 IRON DEFICIENCY ANEMIA: > 65.0
WHITE BLOOD CELLS (WBCS)			
TOTAL LEUCOCYTE COUNT (TLC) (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	6360	/cmm	4000 - 11000
NUCLEATED RED BLOOD CELLS (nRBCS) (CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER & MICROSCOPY)	NIL		0.00 - 20.00
NUCLEATED RED BLOOD CELLS (nRBCS) % (CALCULATED BY AUTOMATED HEMATOLOGY ANALYZER & MICROSCOPY)	NIL	%	< 10 %
DIFFERENTIAL LEUCOCYTE COUNT (DLC)			
NEUTROPHILS (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	51	%	50 - 70

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Test Name	Value	Unit	Biological Reference interval
LYMPHOCYTES (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	39	%	20 - 40
EOSINOPHILS (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	3	%	1 - 6
MONOCYTES (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	7	%	2 - 12
BASOPHILS **(FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)**	**0**	**%**	**0 - 1**
ABSOLUTE LEUKOCYTES (WBC) COUNT			
ABSOLUTE NEUTROPHIL COUNT (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	3244	/cmm	2000 - 7500
ABSOLUTE LYMPHOCYTE COUNT (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	2480	/cmm	800 - 4900
ABSOLUTE EOSINOPHIL COUNT (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	191	/cmm	40 - 440
ABSOLUTE MONOCYTE COUNT (FLOW CYTOMETRY BY SF CUBE & MICROSCOPY)	445	/cmm	80 - 880
PLATELETS AND OTHER PLATELET PREDICTIVE MARKERS.			
PLATELET COUNT (PLT) (HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)	163000	/cmm	150000 - 450000
PLATELETCRIT (PCT) (HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)	0.21	%	0.10 - 0.36
MEAN PLATELET VOLUME (MPV) **(HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)**	**13** H	**fL**	**6.50 - 12.0**
PLATELET LARGE CELL COUNT (P-LCC) (HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)	74000	/cmm	30000 - 90000
PLATELET LARGE CELL RATIO (P-LCR) **(HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)**	**45.5** H	**%**	**11.0 - 45.0**
PLATELET DISTRIBUTION WIDTH (PDW) (HYDRO DYNAMIC FOCUSING, ELECTRICAL IMPEDENCE)	16.5	%	15.0 - 17.0

NOTE: TEST CONDUCTED ON EDTA WHOLE BLOOD

*** End Of Report ***

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PATH CHECK 1.3 PRO

GLYCOSYLATED HAEMOGLOBIN (HBA1C)

Test Name	Value	Unit	Biological Reference interval
GLYCOSYLATED HAEMOGLOBIN (HbA1c): WHOLE BLOOD (HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY))	5.7	%	4.0 - 6.4
ESTIMATED AVERAGE PLASMA GLUCOSE (HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY))	116.89	mg/dL	60.00 - 140.00

INTERPRETATION:

AS PER AMERICAN DIABETES ASSOCIATION (ADA):		
REFERENCE GROUP	**GLYCOSYLATED HEMOGLOGIB (HBAIC) in %**	
Non diabetic Adults >= 18 years	<5.7	
At Risk (Prediabetes)	5.7 – 6.4	
Diagnosing Diabetes	>= 6.5	
Therapeutic goals for glycemic control	**Age > 19 Years**	
	Goals of Therapy:	< 7.0
	Actions Suggested:	>8.0
	Age < 19 Years	
	Goal of therapy:	<7.5

COMMENTS:

1.Glycosylated hemoglobin (HbA1c) test is three monthly monitoring done to assess compliace with therapeutic regimen in diabetic patients.
2.Since Hb1c reflects long term fluctuations in blood glucose concentration, a diabetic patient who has recently under good control may still have high concentration of HbAlc. Converse is true for a diabetic previously under good control but now poorly controlled.
3.Target goals of < 7.0 % may be beneficial in patients with short duration of diabetes, long life expectancy and no significant cardiovascular disease. In patients with significant complications of diabetes, limited life expectancy or extensive co-morbid conditions, targetting a goal of < 7.0% may not be appropiate.
4.High HbA1c (>9.0 -9.5 %) is strongly associated with risk of development and rapid progression of microvascular and nerve complications
5.Any condition that shorten RBC life span like acute blood loss, hemolytic anemia falsely lower HbA1c results.
6.HbA1c results from patients with HbSS,HbSC and HbD must be interpreted with caution , given the pathological processes including anemia,increased red cell turnover, and transfusion requirement that adversely impact HbA1c as a marker of long-term gycemic control.
7.Specimens from patients with polycythemia or post-splenctomy may exhibit increse in HbA1c values due to a somewhat longer life span of the red cells.

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Test Name	Value	Unit	Biological Reference interval

PATH CHECK 1.3 PRO

ERYTHROCYTE SEDIMENTATION RATE (ESR)

ERYTHROCYTE SEDIMENTATION RATE (ESR) (MODIFIED WESTERGREN AUTOMATED METHOD)	16	mm/1st hr	0 - 20

INTERPRETATION:

1. ESR is a non-specific test because an elevated result often indicates the presence of inflammation associated with infection, cancer and auto-immune disease, but does not tell the health practitioner exactly where the inflammation is in the body or what is causing it.
2. An ESR can be affected by other conditions besides inflammation. For this reason, the ESR is typically used in conjunction with other test such as C-reactive protein
3. This test may also be used to monitor disease activity and response to therapy in both of the above diseases as well as some others, such as systemic lupus erythematosus

CONDITION WITH LOW ESR

A low ESR can be seen with conditions that inhibit the normal sedimentation of red blood cells, such as a high red blood cell count (polycythaemia), significantly high white blood cell count (leucocytosis) , and some protein abnormalities. Some changes in red cell shape (such as sickle cells in sickle cell anaemia) also lower the ESR.

NOTE:

1. ESR and C - reactive protein (C-RP) are both markers of inflammation.
2. Generally, ESR does not change as rapidly as does CRP, either at the start of inflammation or as it resolves.
3. **CRP is not affected by as many other factors as is ESR, making it a better marker of inflammation.**
4. If the ESR is elevated, it is typically a result of two types of proteins, globulins or fibrinogen.
5. Women tend to have a higher ESR, and menstruation and pregnancy can cause temporary elevations.
6. Drugs such as dextran, methyldopa, oral contraceptives, penicillamine procainamide, theophylline, and vitamin A can increase ESR, while aspirin, cortisone, and quinine may decrease it.

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CLIENT CODE	: PJ013	**REPORTING DATE**	: 24/Apr/2024 03:05 PM

Test Name	Value	Unit	Biological Reference interval

PATH CHECK 1.3 PRO

GLUCOSE FASTING (F)

GLUCOSE FASTING (F): PLASMA (GLUCOSE OXIDASE - PEROXIDASE (GOD-POD))	86	mg/dL	NORMAL: < 100.0 PREDIABETIC: 100.0 - 125.0 DIABETIC: > 0R = 126.0

INTERPRETATION:

IN ACCORDANCE WITH AMERICAN DIABETES ASSOCIATION GUIDELINES:

1. A fasting plasma glucose level below 100 mg/dl is considered normal.
2. A fasting plasma glucose level between 100 - 125 mg/dl is considered as glucose intolerant or prediabetic. A fasting and post-prandial blood test (after consumption of 75 gms of glucose) is recommended for all such patients.
3. A fasting plasma glucose level of above 125 mg/dl is highly suggestive of diabetic state. A repeat post-prandial is strongly recommended for all such patients. A fasting plasma glucose level in excess of 125 mg/dl on both occasions is confirmatory for diabetic state.

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CLIENT CODE	: PJ013	**REPORTING DATE**	: 24/Apr/2024 03:05 PM

PATH CHECK 1.3 PRO

LIPID PROFILE : BASIC

Test Name	Value	Unit	Biological Reference interval
CHOLESTEROL TOTAL: SERUM (CHOLESTEROL OXIDASE PAP)	150.36	mg/dL	OPTIMAL: < 200.0 BORDERLINE HIGH: 200.0 - 239.0 HIGH CHOLESTEROL: > OR = 240.0
TRIGLYCERIDES: SERUM (GLYCEROL PHOSPHATE OXIDASE (ENZYMATIC))	145.9	mg/dL	OPTIMAL: < 150.0 BORDERLINE HIGH: 150.0 - 199.0 HIGH: 200.0 - 499.0 VERY HIGH: > OR = 500.0
HDL CHOLESTEROL (DIRECT): SERUM (SELECTIVE INHIBITION)	50.8	mg/dL	LOW HDL: < 30.0 BORDERLINE HIGH HDL: 30.0 - 60.0 HIGH HDL: > OR = 60.0
LDL CHOLESTEROL: SERUM (CALCULATED, SPECTROPHOTOMETRY)	70.38	mg/dL	OPTIMAL: < 100.0 ABOVE OPTIMAL: 100.0 - 129.0 BORDERLINE HIGH: 130.0 - 159.0 HIGH: 160.0 - 189.0 VERY HIGH: > OR = 190.0
NON HDL CHOLESTEROL: SERUM (CALCULATED, SPECTROPHOTOMETRY)	99.56	mg/dL	OPTIMAL: < 130.0 ABOVE OPTIMAL: 130.0 - 159.0 BORDERLINE HIGH: 160.0 - 189.0 HIGH: 190.0 - 219.0 VERY HIGH: > OR = 220.0
VLDL CHOLESTEROL: SERUM (CALCULATED, SPECTROPHOTOMETRY)	29.18	mg/dL	0.00 - 45.00
TOTAL LIPIDS: SERUM (CALCULATED, SPECTROPHOTOMETRY)	446.62	mg/dL	350.00 - 700.00
CHOLESTEROL/HDL RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	2.96	RATIO	LOW RISK: 3.30 - 4.40 AVERAGE RISK: 4.50 - 7.0 MODERATE RISK: 7.10 - 11.0 HIGH RISK: > 11.0
LDL/HDL RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	1.39	RATIO	LOW RISK: 0.50 - 3.0 MODERATE RISK: 3.10 - 6.0 HIGH RISK: > 6.0

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Test Name	Value	Unit	Biological Reference interval
TRIGLYCERIDES/HDL RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	**2.87**	**RATIO**	**3.00 - 5.00**

INTERPRETATION:

1. Measurements in the same patient can show physiological& analytical variations. Three serial samples 1 week apart are recommended for Total Cholesterol, Triglycerides, HDL & LDL Cholesterol.
2. As per NLA-2014 guidelines, all adults above the age of 20 years should be screened for lipid status. Selective screening of children above the age of 2 years with a family history of premature cardiovascular disease or those with at least one parent with high total cholesterol is recommended.
3. Low HDL levels are associated with increased risk for Atherosclerotic Cardiovascular disease (ASCVD) due to insufficient HDL being available to participate in reverse cholesterol transport, the process by which cholesterol is eliminated from peripheral tissues.
4. NLA-2014 identifies Non HDL Cholesterol (an indicator of all atherogeniclipoproteins such as LDL , VLDL, IDL, Lpa, Chylomicron remnants) along with LDL-cholesterol as co- primary target for cholesterol lowering therapy. Note that major risk factors can modify treatment goals for LDL & Non HDL.
5. Additional testing for Apolipoprotein B, hsCRP,Lp(a) & LP-PLA2 should be considered among patients with moderate risk for ASCVD for risk refinement.

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PATH CHECK 1.3 PRO

LIVER FUNCTION TEST (COMPLETE)

Test Name	Value	Unit	Biological Reference interval
BILIRUBIN TOTAL: SERUM (DIAZOTIZATION, SPECTROPHOTOMETRY)	0.65	mg/dL	INFANT: 0.20 - 8.00 ADULT: 0.00 - 1.20
BILIRUBIN DIRECT (CONJUGATED): SERUM (DIAZO MODIFIED, SPECTROPHOTOMETRY)	0.15	mg/dL	0.00 - 0.40
BILIRUBIN INDIRECT (UNCONJUGATED): SERUM (CALCULATED, SPECTROPHOTOMETRY)	0.5	mg/dL	0.10 - 1.00
SGOT/AST: SERUM (IFCC, WITHOUT PYRIDOXAL PHOSPHATE)	28.8	U/L	7.00 - 45.00
SGPT/ALT: SERUM (IFCC, WITHOUT PYRIDOXAL PHOSPHATE)	**62.6 H**	**U/L**	**0.00 - 49.00**
AST/ALT RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	0.46	RATIO	0.00 - 46.00
ALKALINE PHOSPHATASE: SERUM (PARA NITROPHENYL PHOSPHATASE BY AMINO METHYL PROPANOL)	113.2	U/L	40.0 - 130.0
GAMMA GLUTAMYL TRANSFERASE (GGT): SERUM (SZASZ, SPECTROPHTOMETRY)	**68.9 H**	**U/L**	**0.00 - 55.0**
TOTAL PROTEINS: SERUM (BIURET, SPECTROPHOTOMETRY)	6.37	gm/dL	6.20 - 8.00
ALBUMIN: SERUM (BROMOCRESOL GREEN)	4.32	gm/dL	3.50 - 5.50
GLOBULIN: SERUM (CALCULATED, SPECTROPHOTOMETRY)	**2.05**	**gm/dL**	**2.30 - 3.50**
A : G RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	**2.11**	**RATIO**	**1.00 - 2.00**

INTERPRETATION:
NOTE:- **To be correlated in individuals having SGOT and SGPT values higher than Normal Referance Range.**
USE:- Differential diagnosis of diseases of hepatobiliary system and pancreas.

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PATH CHECK 1.3 PRO

KIDNEY FUNCTION TEST (COMPLETE)

Test Name	Value	Unit	Biological Reference interval
UREA: SERUM (UREASE - GLUTAMATE DEHYDROGENASE (GLDH))	21.09	mg/dL	10.00 - 50.00
CREATININE: SERUM (ENZYMATIC, SPECTROPHOTOMETERY)	0.91	mg/dL	0.40 - 1.40
BLOOD UREA NITROGEN (BUN): SERUM (CALCULATED, SPECTROPHOTOMETRY)	9.86	mg/dL	7.0 - 25.0
BLOOD UREA NITROGEN (BUN)/CREATININE RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	10.84	RATIO	10.0 - 20.0
UREA/CREATININE RATIO: SERUM (CALCULATED, SPECTROPHOTOMETRY)	23.18	RATIO	
URIC ACID: SERUM (URICASE - OXIDASE PEROXIDASE)	7.03	mg/dL	3.60 - 7.70
CALCIUM: SERUM (ARSENAZO III, SPECTROPHOTOMETRY)	10.21	mg/dL	8.50 - 10.60
PHOSPHOROUS: SERUM (PHOSPHOMOLYBDATE, SPECTROPHOTOMETRY)	3.28	mg/dL	2.30 - 4.70
ELECTROLYTES			
SODIUM: SERUM (ISE (ION SELECTIVE ELECTRODE))	138.9	mmol/L	135.0 - 150.0
POTASSIUM: SERUM (ISE (ION SELECTIVE ELECTRODE))	4.15	mmol/L	3.50 - 5.00
CHLORIDE: SERUM (ISE (ION SELECTIVE ELECTRODE))	104.18	mmol/L	90.0 - 110.0
ESTIMATED GLOMERULAR FILTERATION RATE			
ESTIMATED GLOMERULAR FILTERATION RATE (eGFR): SERUM (CALCULATED)	123		

INTERPRETATION:

To differentiate between pre- and post renal azotemia.

INCREASED RATIO (>20:1) WITH NORMAL CREATININE:

1. Prerenal azotemia (BUN rises without increase in creatinine) e.g. heart failure, salt depletion,dehydration, blood loss) due to decreased glomerular filtration rate.

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Test Name	Value	Unit	Biological Reference interval

2. Catabolic states with increased tissue breakdown.
3. GI haemorrhage.
4. High protein intake.
5. Impaired renal function plus
6. Excess protein intake or production or tissue breakdown (e.g. infection, GI bleeding, thyrotoxicosis, Cushing's syndrome, high protein diet, burns, surgery, cachexia, high fever).
7. Urine reabsorption (e.g. ureter colostomy)
8. Reduced muscle mass (subnormal creatinine production)
9. Certain drugs (e.g. tetracycline, glucocorticoids)

INCREASED RATIO (>20:1) WITH ELEVATED CREATININE LEVELS:

1. Postrenal azotemia (BUN rises disproportionately more than creatinine) (e.g. obstructive uropathy).
2. Prerenal azotemia superimposed on renal disease.

DECREASED RATIO (<10:1) WITH DECREASED BUN:

1. Acute tubular necrosis.
2. Low protein diet and starvation.
3. Severe liver disease.
4. Other causes of decreased urea synthesis.
5. Repeated dialysis (urea rather than creatinine diffuses out of extracellular fluid).
6. Inherited hyperammonemias (urea is virtually absent in blood).
7. SIADH (syndrome of inappropiate antidiuretic harmone) due to tubular secretion of urea.
8. Pregnancy.

DECREASED RATIO (<10:1) WITH INCREASED CREATININE:

1. Phenacimide therapy (accelerates conversion of creatine to creatinine).
2. Rhabdomyolysis (releases muscle creatinine).
3. Muscular patients who develop renal failure.

INAPPROPIATE RATIO:

1. Diabetic ketoacidosis (acetoacetate causes false increase in creatinine with certain methodologies,resulting in normal ratio when dehydration should produce an increased BUN/creatinine ratio).
2. Cephalosporin therapy (interferes with creatinine measurement).

ESTIMATED GLOMERULAR FILTERATION RATE:

CKD STAGE	DESCRIPTION	GFR (mL/min/1.73m2)	ASSOCIATED FINDINGS
G1	Normal kidney function	>90	No proteinuria
G2	Kidney damage with normal or high GFR	>90	Presence of Protein , Albumin or cast in urine
G3a	Mild decrease in GFR	60 -89	
G3b	Moderate decrease in GFR	30-59	
G4	Severe decrease in GFR	15-29	
G5	Kidney failure	<15	

COMMENTS:

1. Estimated Glomerular filtration rate (eGFR) is the sum of filtration rates in all functioning nephrons and so an estimation of the GFR provides a measure of functioning nephrons of the kidney.

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THE SKY LABS PH. 9465792081

Near Hari Om Mandir, Main Market, Moti Nagar ludhiana 141009

NAME	: **Mr. HARSIMRAN SINGH**		
AGE/GENDER	: 21 Y/Male	**PATIENT ID**	: 143567
COLLECTED BY	: SANJEEV KUMAR	**REG.NO/LAB NO.**	: **0012404240010**
REFERRED BY	: Dr.SELF	**REGISTRATION DATE**	: 24/Apr/2024 11:32 AM
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Test Name	Value	Unit	Biological Reference interval

2. eGFR calculated using the 2009 CKD-EPI creatinine equation and GFR category reported as per KDIGO guideline 2012
3. In patients, with eGFR creatinine between 45-59 ml/min/1.73 m2 (G3) and without any marker of Kidney damage, It is recommended to measure eGFR with Cystatin C for confirmation of CKD
4. eGFR category G1 OR G2 does not fullfill the criteria for CKD, in the absence of evidence of Kidney Damage
5. In a suspected case of Acute Kidney Injury (AKI), measurement of eGFR should be done after 48-96 hours of any Intervention or procedure
6. eGFR calculated by Serum Creatinine may be less accurate due to certain factors like Race, Muscle Mass, Diet, Certain Drugs. In such cases, eGFR should be calculated using Serum Cystatin C
7. **A decrease in eGFR implies either progressive renal disease, or a reversible process causing decreased nephron function (eg, severe dehydration).**

ADVICE:

KDIGO guideline, 2012 recommends Chronic Kidney Disease (CKD) should be classified based on cause, eGFR category and Albuminuria (ACR) category. GFR & ACR category combined together reflect risk of progression and helps Clinician to identify the individual who are progressing at more rapid rate than anticipated

*** End Of Report ***

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PATH CHECK 1.3 PRO

IRON PROFILE

Test Name	Value	Unit	Biological Reference interval
IRON: SERUM (FERROZINE, SPECTROPHOTOMETRY)	80.42	µg/dL	59.0 - 158.0
UNSATURATED IRON BINDING CAPACITY (UIBC) :SERUM (FERROZINE, SPECTROPHOTOMETERY)	231.54	µg/dL	150.0 - 336.0
TOTAL IRON BINDING CAPACITY (TIBC) :SERUM (SPECTROPHOTOMETERY)	311.96	µg/dL	230 - 430
%TRANSFERRIN SATURATION: SERUM (CALCULATED, SPECTROPHOTOMETERY (FERENE))	25.78	%	15.0 - 50.0
TRANSFERRIN: SERUM (SPECTROPHOTOMETERY (FERENE))	221.49	mg/dL	200.0 - 350.0

INTERPRETATION:

VARIABLES	*ANEMIA OF CHRONIC DISEASE*	*IRON DEFICIENCY ANEMIA*	*THALASSEMIA α/β TRAIT*
SERUM IRON:	Normal to Reduced	Reduced	Normal
TOTAL IRON BINDING CAPACITY:	Decreased	Increased	Normal
% TRANSFERRIN SATURATION:	Decreased	Decreased < 12-15 %	Normal
SERUM FERRITIN:	Normal to Increased	Decreased	Normal or Increased

IRON:

1. Serum iron studies is recommended for differential diagnosis of microcytic hypochromic anemia.i.e iron deficiency anemia, zinc deficiency anemia,anemia of chronic disease and thalassemia syndromes.

2. It is essential to isolate iron deficiency anemia from Beta thalassemia syndromes because during iron replacement which is therapeutic for iron deficiency anemia, is severely contra-indicated in Thalassemia.

TOTAL IRON BINDING CAPACITY (TIBC) :

It is a direct measure of protein transferrin which transports iron from the gut to storage sites in the bone marrow.

% TRANSFERRIN SATURATION:

Occurs in idiopathic hemochromatosis and transfusional hemosiderosis where no unsaturated iron binding capacity is available for iron mobilization. Similar condition is seen in congenital deficiency of transferrin.

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PATH CHECK 1.3 PRO

THYROID FUNCTION TEST: FREE

Test Name	Value	Unit	Biological Reference interval
FREE TRIIODOTHYRONINE (FT3): SERUM (CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY))	2.966	pg/mL	1.60 - 3.90
FREE THYROXINE (FT4): SERUM (CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY))	1.201	ng/dL	0.70 - 1.50
THYROID STIMULATING HORMONE (TSH): SERUM (CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)) **3rd GENERATION, ULTRASENSITIVE**	1.459	µIU/mL	0.35 - 5.50

INTERPREATION:

1. FT3 & FT4 are metabolic active form of thyroid harmones and correlate much better with clinical condition of the patient as compared to Total T4 levels. High FT3 & FT4 with normal TSH Levels and abnormal thyroid function (Total Thyroid) can occasionally be seen in cases of PERIPHERAL THYROID HARMONE RESISTANCE
2. TSH levels are subjected to circardian variation,reaching peak levels between 2-4 a.m and at a minimum between 6-10 pm. The variation is of the order of 50 %. Hence time of the day has influence on the measured serum TSH concentration.

INCREASED TSH LEVELS:

1. Primary hypothyroidism is accompanied by depressed serum FT3 & FT4 values and elevated serum TSH levels. Primary or untreated hypothyroidism may vary from 3 times to more than 100 times normal depending upon degree of hypofunction.
2. Hypothyroid patients receiving insufficient thyroid replacement therapy.
3. Hashimotos thyroiditis
4. DRUGS: Amphetamines, idonie containing agents & dopamine antagonist.
5. Neonatal period, increase in 1st 2-3 days of life due to post-natal surge

DECREASED TSH LEVELS:

1. Primary hyperthyroidism is accompanied by elevated serum FT3 & FT4 values along with depressed TSH levels.
2. Toxic multi-nodular goitre & Thyroiditis.
3. Over replacement of thyroid hormone in treatment of hypothyroidism.
4. Autonomously functioning Thyroid adenoma
5. Secondary pituatary or hypothalmic hypothyroidism
6. Acute psychiatric illness
7. Severe dehydration.
8. DRUGS: Glucocorticoids, Dopamine, Levodopa, T4 replacement therapy, Anti-thyroid drugs for thyrotoxicosis.
9. Pregnancy: 1st Trimester

NOTE:

1. High FT3 levels accompanied by normal FT4 levels and depressed TSH levels may be seen T3 thyrotoxicosis, central hypothyroidism occurs due to pituitary or thalamic malfunction
2. Secondary & Tertiary hypothyroidism, this relatively rare but important condition is indicated by presence of low serum FT3 and FT4 levels, in conjugation with TSH levels that are paradoxically either low/normal or are not elevated to levels that are expected.

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Test Name	Value	Unit	Biological Reference interval

PATH CHECK 1.3 PRO

C-REACTIVE PROTEIN (CRP)

C-REACTIVE PROTEIN (CRP) QUANTITATIVE: SERUM (NEPHLOMETRY)	0.3	mg/L	0.0 - 6.0

INTERPRETATION:

1. C-reactive protein (CRP) is one of the most sensitive acute-phase reactants for inflammation.
2. CRP levels can increase dramatically (100-fold or more) after severe trauma, bacterial infection, inflammation, surgery, or neoplastic proliferation.
3. CRP levels (Quantitative) has been used to assess activity of inflammatory disease, to detect infections after surgery, to detect transplant rejection, and to monitor these inflammatory processes.
4. As compared to ESR, CRP shows an earlier rise in inflammatory disorders which begins in 4-6 hrs, the intensity of the rise being higher than ESR and the recovery being earlier than ESR. Unlike ESR, CRP levels are not influenced by hematologic conditions like Anemia, Polycythemia etc.,
5. Elevated values are consistent with an acute inflammatory process.

NOTE:

1. Elevated C-reactive protein (CRP) values are nonspecific and should not be interpreted without a complete clinical history.
2. Oral contraceptives may increase CRP levels.

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Test Name	Value	Unit	Biological Reference interval

PATH CHECK 1.3 PRO

RHEUMATOID FACTOR (RA): QUANTITATIVE - SERUM

RHEUMATOID (RA) FACTOR QUANTITATIVE: SERUM (NEPHLOMETRY)	2.98	IU/mL	NEGATIVE: < 18.0 BORDERLINE: 18.0 - 25.0 POSITIVE: > 25.0

INTERPRETATION: -

RHEUMATOID FACTOR (RA):

1. Rheumatoid factors (RF) are antibodies that are directed against the Fc fragment of IgG altered in its tertiary structure.
2. Over 75% of patients with rheumatoid arthritis (RA) have an IgM antibody to IgG immunoglobulin. This autoantibody (RF) is diagnostically useful although it may not be etiologically related to RA.
3. Inflammatory Markers such as ESR & C-Reactive protein (CRP) are normal in about 60 % of patients with positive RA.
4. The titer of RF correlates poorly with disease activity, but those patients with high titers tend to have more severe disease course.
5. The test is useful for diagnosis and prognosis of rheumatoid arthritis.

RHEUMATOID ARTHIRITIS:

1. Rheumatoid Arthiritis is a systemic autoimmune disease that is multi-functional in origin and is characterized by chronic inflammation of the membrane lining (synovium) joints which ledas to progressive joint destruction and in most cases to disability and reduction of quality life.
2. The disease spredas from small to large joints, with greatest damage in early phase.
3. The diagnosis of RA is primarily based on clinical, radiological & immunological features.The most frequent serological test is the measurement of RA factor.

CAUTION (FALSE POSTIVE): -

1. RA factor is not specific for Rheumatoid arthiritis, as it is often present in healthy individuals with other autoimmune diseases and chronic infections.
2. Non rheumatoid and rheumatoid arthritis (RA) populations are not clearly separate with regard to the presence of rheumatoid factor (RF) (15% of RA patients have a nonreactive titer and 8% of nonrheumatoid patients have a positive titer).
3. Patients with various nonrheumatoid diseases,characterized by chronic inflammation may have positive tests for RF. These diseases include systemic lupus erythematosus, polymyositis, tuberculosis, syphilis, viral hepatitis, infectious mononucleosis, and influenza.
4. Anti-CCP have been discovered in joints of patients with RA, but not in other form of joint disease.Anti-CCP2 is HIGHLY SENSITIVE (71%) & more specific (98%) than RA factor.
5. Upto 30 % of patients with Seronegative Rheumatoid arthiritis also show Anti-CCP antibodies.
6. The positive predictive value of Anti-CCP antibodies for Rheumatoid Arthiritis is far greater than Rheumatoid factor.

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Test Name	Value	Unit	Biological Reference interval

PATH CHECK 1.3 PRO

VITAMIN D/25 HYDROXY VITAMIN D3

VITAMIN D (25-HYDROXY VITAMIN D3): SERUM **(CLIA (CHEMILUMINESCENCE IMMUNOASSAY))**	**20** L	**ng/mL**	**DEFICIENCY: < 20.0** **INSUFFICIENCY: 20.0 - 30.0** **SUFFICIENCY: 30.0 - 100.0** **TOXICITY: > 100.0**

INTERPRETATION:

DEFICIENT:	< 20	ng/mL
INSUFFICIENT:	21 - 29	ng/mL
PREFFERED RANGE:	30 - 100	ng/mL
INTOXICATION:	> 100	ng/mL

1. Vitamin D compounds are derived from dietary ergocalciferol (from plants, Vitamin D2), or cholecalciferol (from animals, Vitamin D3), or by conversion of 7-dihydrocholecalciferol to Vitamin D3 in the skin upon Ultraviolet exposure.
2. 25-OH--Vitamin D represents the main body resevoir and transport form of Vitamin D and transport form of Vitamin D, being stored in adipose tissue and tightly bound by a transport protein while in circulation.
3. Vitamin D plays a primary role in the maintenance of calcium homeostatis. It promotes calcium absorption, renal calcium absorption and phosphate reabsorption, skeletal calcium deposition, calcium mobilization, mainly regulated by parathyroid harmone (PTH).
4. Severe deficiency may lead to failure to mineralize newly formed osteoid in bone, resulting in rickets in children and osteomalacia in adults.

DECREASED:

1. Lack of sunshine exposure.
2. Inadequate intake, malabsorption (celiac disease)
3. Depressed Hepatic Vitamin D 25- hydroxylase activity
4. Secondary to advanced Liver disease
5. Osteoporosis and Secondary Hyperparathroidism (Mild to Moderate deficiency)
6. Enzyme Inducing drugs: anti-epileptic drugs like phenytoin, phenobarbital and carbamazepine, that increases Vitamin D metabolism.

INCREASED:

1. Hypervitaminosis D is Rare, and is seen only after prolonged exposure to extremely high doses of Vitamin D. When it occurs, it can result in severe hypercalcemia and hyperphophatemia.

CAUTION: Replacement therapy in deficient individuals must be monitored by periodic assessment of Vitamin D levels in order to prevent hypervitaminosis D

NOTE:-Dark coloured individuals as compare to whites, is at higher risk of developing Vitamin D deficiency due to excess of melanin pigment which interefere with Vitamin D absorption.

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Test Name	Value	Unit	Biological Reference interval

PATH CHECK 1.3 PRO

VITAMIN B12/COBALAMIN

VITAMIN B12/COBALAMIN: SERUM (CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY))	388	pg/mL	200 - 940

INTERPRETATION:

INCREASED VITAMIN B12	DECREASED VITAMIN B12
1.Ingestion of Vitamin C	1.Pregnancy
2.Ingestion of Estrogen	2.DRUGS:Aspirin, Anti-convulsants, Colchicine
3.Ingestion of Vitamin A	3.Ethanol Igestion
4.Hepatocellular injury	4. Contraceptive Harmones
5.Myeloproliferative disorder	5.Haemodialysis
6.Uremia	6. Multiple Myeloma

1. Vitamin B12 (cobalamin) is necessary for hematopoiesis and normal neuronal function.
2. In humans, it is obtained only from animal proteins and requires intrinsic factor (IF) for absorption.
3. The body uses its vitamin B12 stores very economically, reabsorbing vitamin B12 from the ileum and returning it to the liver; very little is excreted.
4. Vitamin B12 deficiency may be due to lack of IF secretion by gastric mucosa (eg, gastrectomy, gastric atrophy) or intestinal malabsorption (eg, ileal resection, small intestinal diseases).
5. Vitamin B12 deficiency frequently causes macrocytic anemia, glossitis, peripheral neuropathy, weakness, hyperreflexia, ataxia, loss of proprioception, poor coordination, and affective behavioral changes. These manifestations may occur in any combination; many patients have the neurologic defects without macrocytic anemia.
6. Serum methylmalonic acid and homocysteine levels are also elevated in vitamin B12 deficiency states.
7. Follow-up testing for antibodies to intrinsic factor (IF) is recommended to identify this potential cause of vitamin B12 malabsorption.

NOTE: A normal serum concentration of vitamin B12 does not rule out tissue deficiency of vitamin B12. The most sensitive test for vitamin B12 deficiency at the cellular level is the assay for MMA. If clinical symptoms suggest deficiency, measurement of MMA and homocysteine should be considered, even if serum vitamin B12 concentrations are normal.

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PATH CHECK 1.3 PRO

URINE ROUTINE & MICROSCOPIC EXAMINATION

Test Name	Value	Unit	Biological Reference interval
PHYSICAL EXAMINATION			
QUANTITY RECIEVED	10	ml	
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
COLOUR	AMBER YELLOW		PALE YELLOW
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
TRANSPARANCY	CLEAR		CLEAR
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
SPECIFIC GRAVITY	1.01		1.002 - 1.030
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
CHEMICAL EXAMINATION			
REACTION	ALKALINE		
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
PROTEIN	Negative		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
SUGAR	Negative		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
pH	7.5		5.0 - 7.5
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
BILIRUBIN	Negative		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
NITRITE	Positive		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY.)			
UROBILINOGEN	Normal	EU/dL	0.2 - 1.0
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
KETONE BODIES	Negative		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
BLOOD	Negative		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
ASCORBIC ACID	NEGATIVE (-ve)		NEGATIVE (-ve)
(DIP STICK/REFLECTANCE SPECTROPHOTOMETRY)			
MICROSCOPIC EXAMINATION			
RED BLOOD CELLS (RBCs)	NEGATIVE (-ve)	/HPF	0 - 3
(MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)			
PUS CELLS	2-4	/HPF	0 - 5
(MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)			

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Test Name	Value	Unit	Biological Reference interval
EPITHELIAL CELLS (MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)	1-3	/HPF	ABSENT
CRYSTALS (MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)	NEGATIVE (-ve)		NEGATIVE (-ve)
CASTS (MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)	NEGATIVE (-ve)		NEGATIVE (-ve)
BACTERIA (MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)	NEGATIVE (-ve)		NEGATIVE (-ve)
OTHERS (MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)	NEGATIVE (-ve)		NEGATIVE (-ve)
TRICHOMONAS VAGINALIS (PROTOZOA) (MICROSCOPY ON CENTRIFUGED URINARY SEDIMENT)	ABSENT		ABSENT

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