



Name:	Nutan Lodha	Age/Gender:	40 Year(s) 0 Month(s) 0 Day(s)/Female
Referred By:	N.A	Client Name:	N.A
Collection Date:	28-02-2021 13:00:07	Report Release Date:	01-03-2021 00:30:19

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Complete Haemogram Test

Erythrocytes

1	Total RBC	4.39	4.1-5.1	10 <sup>6</sup> /μL
2	Hemoglobin	12.9	12.3-15.3	g/dL
3	Hematocrit (PCV)	39.1	33-57	%
4	Mean Corpuscular Volume (MCV)	89.0	80-96	fL
5	Mean Corpuscular Hemoglobin (MCH)	29.3	27.5-33.2	pg
6	Mean Corpuscular Hemoglobin Concentration (MCHC)	32.9	29.4- 34.5	g/dL
7	Red Cell Distribution Width (RDW-CV)	13.6	12-15	%
8	Red Cell Distribution Width-SD(RDW-SD)	42.4	32-60.4	fL
9	Nucleated Red Blood Cells	0.0	0 - 1.36	cells/μL
10	Nucleated Red Blood Cells Percentage	0.0	0-4	%

Platelets

11	Platelet Count	286.0	150-450	10 <sup>3</sup> /μL
12	Mean Platelet Volume (MPV)	7.5	6 - 12	fL
13	Platelet Distribution Width (PDW)	16.4	15.5-18.3	%
14	Plateletcrit (PCT)	0.213	0.12-0.37	%

Leucocytes

15	Total Leucocytes Count	5.9	4.4-11	10 <sup>3</sup> /μL
16	Neutrophils	58.8	40-77	%
17	Lymphocyte Percentage	30.8	16-44	%
18	Monocytes Percentage	7.9	2.0-10.0	%
19	Eosinophils Percentage	1.6	0-7	%
20	Basophils Percentage	0.9	0 - 1	%
21	Neutrophils-Absolute Count	3.47	1.8-7.8	10 <sup>3</sup> /μL
22	Lymphocytes-Absolute Count	1.82	1-4.8	10 <sup>3</sup> /μL
23	Monocytes-Absolute Count	0.47	0.1-1.0	10 <sup>3</sup> /μL
24	Eosinophils-Absolute Count	0.09	0-0.45	10 <sup>3</sup> /μL
25	Basophils-Absolute Count	0.05	0-0.2	10 <sup>3</sup> /μL

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MD (Microbiologist)

Authorized Signatory  
Dr. Mahesh Hampe  
MD (Biochemistry)



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Peripheral Blood Smear

26	RBC Morphology	Normocytic Normochromic		
27	WBC Morphology	Within Normal Range		
28	Platelets	Adequate On Smear		

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Liver Function Test

1	Bilirubin Total Serum, Method: Jendrassik Grof	0.48	0.2-1.2	mg/ dL
2	Bilirubin Direct Serum, Method: Diazotization	0.14	0.01 - 0.4	mg/ dL
3	Bilirubin Indirect Serum, Method: Calculated	0.34	0.01-1.0	mg/dL
4	Aspartate Transaminase (AST/SGOT) Serum, Method: UV Kinetic with P5P	28.3	<35	U/ L
5	Alanine Transaminase (ALT/SGPT) Serum, Method: UV Kinetic with P5P	24.1	<35	U/ L
6	Alkaline Phosphatase Serum, Method: AMP – pNPP Kinetic	56.0	30 - 130	U/L
7	Total Protein Serum, Method: Biuret end point	6.42	6.4 - 8.2	g/dL
8	Albumin Serum, Method: Bromocresol Purple (BCP)	4.22	3.4 - 5	g/dL
9	Globulin Serum, Method: Calculated	2.2	1.9-3.9	g/dL
10	A/G ratio Serum, Method: Calculated	1.92	1.0 - 2.0	
11	Gamma GT Serum, Method: G glutamyl carboxy nitroanilide	20.3	5 - 55	U/L

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Lipid Profile

1	Total Cholesterol Serum, Method: Photometry	203.6	Desirable: <200 Borderline high = 200-239 High: > 240	mg/dl
2	Triglycerides Serum, Method: Enzymatic, end point coupled assay	96.0	Desirable: <150 Borderline High: 150 - 199 High: > 200 - 499	mg/dl
3	<b>HDL-Cholesterol</b> Serum, Method: Photometry	<b>68.6</b>	<b>30 - 60</b>	<b>mg/dL</b>
4	LDL- Cholesterol Serum, Method: Photometry	115.80	Optimal: <100; Near Optimal: 100-129; Borderline High: 130-159; High: 160-189; Very high: >190	mg/dl
5	Cholesterol/HDL ratio Serum, Method: Calculated	2.97	Optimal: <3.5 Near Optimal: 3.5 - 5.0 High >5.0	
6	VLDL Cholesterol Serum, Method: Calculated	19.20	6 - 40	mg/dL
7	Non HDL Cholesterol Serum, Method: Calculated	135.00	Desirable: <130 Borderline high: 130-159 High : 160-189 Very High :>190	mg/dl
8	LDL /HDL ratio Serum, Method: Calculated	1.69	Optimal: <2.5 Near Optimal: 2.5-3.5 High >3.5	

Interpretation

1. Triglycerides: When triglycerides are very high greater than 1000 mg/dL, there is a risk of developing pancreatitis in children and adults. Triglycerides change dramatically in response to meals, increasing as much as 5 to 10 times higher than fasting levels just a few hours after eating. Even fasting levels vary considerably day to day. Therefore, modest changes in fasting triglycerides measured on different days are not considered to be abnormal.

2. HDL-Cholesterol: HDL- C is considered to be beneficial, the so-called "good" cholesterol, because it removes excess cholesterol from tissues and carries it to the liver for disposal. If HDL-C is less than 40 mg/dL for men and less than 50 mg/dL for women, there is an increased risk of heart disease that is independent of other risk factors, including the LDL-C level. The NCEP guidelines suggest that an HDL cholesterol value greater than 60 mg/dL is protective and should be treated as a negative risk factor.

3. LDL-Cholesterol: Desired goals for LDL-C levels change based on individual risk factors. For young adults, less than 120 mg/dL is acceptable. Values between 120-159 mg/dL are considered Borderline high. Values greater than 160 mg/dL are considered high. Low levels of LDL cholesterol may be seen in people with an inherited lipoprotein deficiency and in people with hyperthyroidism, infection, inflammation, or cirrhosis.

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Thyroid Profile - Total T3,Total T4,TSH (TFT)


1	Total T3 Serum, Method: CLIA	102.07	60 - 200	ng/dL
2	Total T4 Serum, Method: CLIA	8.02	4.5 - 14.5	µg/dL
3	TSH (Thyroid Stimulating Hormone) Serum, Method: CLIA	2.812	0.35 - 5.5	µIU/ml

Interpretation

1. Triiodothyronine (T3) is produced by the thyroid gland and along with thyroxine (T4) help control the rate at which the body uses energy. Elevated T3 denote hyperthyroidism while low levels indicate hypothyroidism.
2. The most common causes of thyroid dysfunction are related to autoimmune disorders. Graves disease causes hyperthyroidism, but it can also be caused by thyroiditis, thyroid cancer, and excessive production of TSH. Total T3 is used to assess thyroid function.
3. Elevated T4 levels may indicate hyperthyroidism. They may also indicate other thyroid problems, such as thyroiditis or toxic multinodular goiter. Abnormally low levels of T4 may indicate: dietary issues, such as fasting, malnutrition, or an iodine deficiency, medications that affect protein levels, hypothyroidism, illness.
4. Thyroid-stimulating hormone (TSH) stimulates the production and release of T4 (primarily) and T3. They help control the rate at which the body uses energy and are regulated by a feedback system. Most of the T4 circulates in the blood bound to protein, while a small percentage is free (not bound).
5. Lab has estimated Total T4 reference intervals that are specific for India, using the indirect sampling technique following CLSI EP28-A3c document: Defining Establishing, and Verifying Reference Intervals in the Clinical Laboratory: Approved Guideline-Third Edition.
5. Thyroid hormone status during pregnancy:

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1	<b>Vitamin B12</b> Serum, Method: CLIA	<b>1326.0</b>	<b>75 - 807</b>	<b>pg/ml</b>

Interpretation

Low B12 level in a person with signs and symptoms indicates that the person has a deficiency but does not necessarily reflect the severity of the anemia or associated neuropathy. Vitamin B12 levels are decreased in megaloblastic anaemia, partial/total gastrectomy, pernicious anaemia, peripheral neuropathy, chronic alcoholism, senile dementia, and treated epilepsy. Associated increased in homocysteine levels and Vitamin B12 has better predictivity for cardiovascular disease and deep vein thrombosis. Holo-Transcobalamin II levels and methylmalonic acid levels are more accurate markers of active Vitamin B12 component. Additional tests are usually done to investigate the underlying cause of the deficiency.

In method comparison study done at our centre, we found acceptable correlation and these results showed that there was no statistically significant between our methods and other Lab procedures (like, CLIA, CMIA, ELISA, IFA etc). The harmonization between total vitamin B12 assays is variable and individual results can differ significantly between assays. Though cut-off value of 200 pg/mL was used commonly, however, since there is not a reference method for measuring vitamin B12, this cut-off value may not be suitable to use in the evaluation of cobalamin deficiency diagnosis. Until the harmonization study between measurement methods is concluded, it is always suggested by NABL that laboratories should use their own reference values or reference values for Lab assay methods instead of cut-off value of 200 pg/mL.

GD Wellness Kidney Profile

2	BUN (Blood Urea Nitrogen) Serum, Method: Calculated	11.4	3.3 - 18.7	mg/dL
3	Creatinine Serum, Method: Alkaline picrate kinetic	0.6	0.4 - 1.2	mg/dL
4	BUN/Creatinine ratio Serum, Method: Calculated	19.00	5.0 - 23.5	
5	Uric Acid Serum, Method: Uricase, UV	4.0	2.0 - 6.5	mg/ dL
6	Calcium Serum, Method: O cresolphthalein complexone	9.3	8.5 - 10.5	mg/dL
7	eGFR (estimated Glomerular Filtration Rate) Serum, Method: Calculated	117.47	Normal: > 90 Mild decrease in GFR: 60 -89 Moderate decrease in GFR: 30-59 Severe decrease in GFR: 15-29 Kidney failure: < 15	mL/min/1.73 m²

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Interpretation

A renal function panel could be ordered when a patient has risk factors for kidney dysfunction such as high blood pressure (hypertension), diabetes, cardiovascular disease, obesity, elevated cholesterol, or a family history of kidney disease. A renal function panel may also be ordered when someone has signs and symptoms of kidney disease, though early kidney disease often does not cause any noticeable symptoms. It may be initially detected through routine blood or urine testing. Renal function panel results are not diagnostic but rather indicate that there may be a problem with the kidneys and that further testing is required to make a diagnosis and determine the cause. Results of the panel are usually considered together, rather than separately. Individual test result can be abnormal due to causes other than kidney disease, but taken together with risks and signs and symptoms, they may give an indication of whether kidney disease is present.

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8	Testosterone Serum, Method: CLIA	9.24	5 – 76	ng/dL

Interpretation

Testosterone is the main sex hormone (androgen) in men. It is responsible for male physical characteristics. It is present in large amounts in males during puberty and in adult males to regulate the sex drive and maintain muscle mass. In women, testosterone is converted to estradiol, the main sex hormone in females. Testosterone levels are diurnal, peaking in the early morning hours (about 4:00 to 8:00 am), with the lowest levels in the evening (about 4:00 to 8:00 pm). Levels also increase after exercise and also decrease with age. Testosterone test may be used to help evaluate conditions such as delayed or precocious (early) puberty in boys, decreased sex drive in men and women, erectile dysfunction in men, infertility in men and women, testicular tumors in men, hypothalamus or pituitary disorders, hirsutism and virilization in girls and women.

9	Vitamin D3 Serum, Method: CLIA	49.1	Deficiency: <20 Insufficiency: 20 - 30 Sufficiency: 30 - 100 Toxicity: > 100	ng/mL
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Interpretation

- The 25-hydroxyvitamin D (Vitamin D3) is the major form found in the blood and is the relatively inactive precursor to the active hormone, 1,25-dihydroxyvitamin D. Because of its long half-life and higher concentration, 25-hydroxyvitamin D is commonly measured to assess and monitor vitamin D status in individuals. A low blood level of 25-hydroxyvitamin D may mean that a person is not getting enough exposure to sunlight or enough dietary vitamin D to meet his or her body's demand or that there is a problem with its absorption from the intestines.
- Vitamin D is a fat soluble vitamin and exists in two main forms as cholecalciferol (Vitamin D3) which is synthesized in skin from 7-dehydrocholesterol in response to sunlight exposure & Ergocalciferol (Vitamin D2) present mainly in dietary sources. Both cholecalciferol & Ergocalciferol are converted to 25(OH)vitamin D in liver.
- Testing for 25(OH) vitamin D (Vitamin D3) is recommended as it is the best indicator of vitamin D nutritional status.



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Iron Studies (Iron,TIBC, Transferrin saturation)


1	Iron Serum, Method: Ferene	99.96	50 - 170	µg/dL
2	TIBC Serum, Method: Ferene	382.95	250-450	µg/dL
3	Transferrin saturation Serum, Method: Calculated	26.10	20 - 50	%

Interpretation

1. Serum iron measures the level of iron in the liquid portion of the blood. Low iron levels may seen in anemia (microcytic and hypochromic) . High levels of serum iron in hereditary hemochromatosis, multiple blood transfusions, and a few other conditions.
2. TIBC (Total iron-binding capacity) measures all the proteins in blood available to bind with iron, including transferrin.TIBC test is a good indirect measurement of transferrin. The body produces transferrin in relationship to the need for iron. When iron stores are low, transferrin levels increase and vice versa. Since transferrin is the primary iron-binding protein, the TIBC test is a good indirect measurement of transferrin availability.

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<b>HbA1c (Whole Blood)</b>				
1	HBA1c-Glycated Haemoglobin EDTA Whole Blood, Method: HPLC	5.5	Non-diabetic: 4-6 Excellent Control: 6-7 Fair to good control: 7-8 Unsatisfactory control: 8-10 Poor Control: >10	%
2	Estimated Average Glucose (eAG) EDTA Whole Blood, Method: Calculated	111.15	90-120 mg/dL : Good control 121-150 mg/dL : Fair control 151-180 mg/dL : Unsatisfactory control >180 mg/dL : Poor control	mg/dL


Interpretation

- 1.The term HbA1c refers to Glycated Haemoglobin. Measuring HbA1c gives an overall picture of what the average blood sugar levels have been over a period of weeks/month. Higher the HbA1c, the greater the risk of developing diabetes-related complications.
- 2.HbA1c has been endorsed by clinical groups and ADA (American Diabetes Association) guidelines 2012, for the diagnosis of diabetes using a cut-off point of 6.5%. ADA defined biological reference range for HbA1c is between 4-6%. Patients with HBA1c value between 6.0-6.5% are considered at risk for developing diabetes in the future. Trends in HbA1c area a better indicator of glucose control than standalone test.
- 3.To estimate the eAG from the HbA1c value, the following equation is used:  $eAG(mg/dl) = 28.7 * A1c - 46.7$ .
- 4.Diabetic must aspire to keep values under 7% to avoid the various complications resulting from diabetes.

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