

Patient Name : Demo Patient Name
Age / Sex : 52 Y / F
Referred By : DEMO HOSPITAL
Centre : HOD Head Office

Lab No : Demo Visit No
Registration On : 20-Jan-25 09:40
Patient ID : UHID.DEMO.001

CBC			EDTA Whole Blood Sample	
Accession No: DEMO_BARCODE		Collected On: 20-Jan-25 09:40	Received On: 20-Jan-25 10:54	Approved On: 20-Jan-25 13:01
Observation	Result	Unit	Biological Ref. Interval	Method
Hemoglobin	11.7	gm/dL	12.0 - 15.0	Photometric Measurement
Total RBC	3.98	million/ μ L	3.8 - 4.8	Coulter Principle
Platelet Count	150	X 10^3 / μ L	150 - 410 x 10^3 / μ L	Impedance
Total Leucocyte Count (WBC)	5.74	X 10^3 / μ L	4.0 - 10.0	Flow Cytometry
Differential Leucocyte Count (DLC)				
Neutrophils	49.9	%	40 - 80	Flow Cytometry
Lymphocytes	40.0	%	20 - 40	Flow Cytometry
Monocytes	6.3	%	2 - 10	Flow Cytometry
Eosinophils	3.4	%	1 - 6	Flow Cytometry
Basophils	0.4	%	0 - 1	Flow Cytometry
Absolute Neutrophil Count	2.86	X 10^3 / μ L	2.0 - 7.5	Flow Cytometry
Absolute Lymphocyte Count	2.3	X 10^3 / μ L	1.0 - 4.0	Flow Cytometry
Absolute Monocyte Count	0.36	X 10^3 / μ L	0.2 - 1.0	Flow Cytometry
Absolute Eosinophil Count	0.2	X 10^3 / μ L	0.04 - 0.44	Flow Cytometry
Absolute Basophil Count	0.03	X 10^3 / μ L	0.00 - 0.30	Flow Cytometry
Indices				
Hematocrit (PCV)	36.1	%	36 - 46	Calculated
Mean Corpuscular Volume (MCV)	90.8	fL	83 - 101	Calculated
Mean Corp. Hemoglobin (MCH)	29.3	pg	27 - 32	Calculated
MCH Concentration (MCHC)	32.4	g/dl	31.5 - 34.5	Calculated
Red Cell Dist. Width (RDW-CV)	14.1	%	11.5 - 14.5	Calculated
Red Cell Dist. Width (RDW-SD)	48.9	fL	39 - 46	Calculated
Mean Platelet Volume (MPV)	14.2	fL	7.5 - 12.0	Calculated
P-LCC	77	10^9 /L	30-90	SF Cube
P-LCR	51.33	%	11-45	Calculated
Neutrophil-Lymphocyte Ratio (NLR)	1.25	Ratio		Calculated
Mentzer Index	22.81	Index		Calculated

Remarks: Please correlate with clinical conditions

Glucose Fasting			Sodium Fluoride Sample	
Accession No: DEMO_BARCODE		Collected On: 20-Jan-25 09:40	Received On: 20-Jan-25 10:52	Approved On: 20-Jan-25 11:25
Observation	Result	Unit	Biological Ref. Interval	Method
Blood Sugar Fasting	103	mg/dL	70 - 100	GOD/POD, colorimetric



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Sample Type: Sodium Fluoride; A blood sample will be taken after 8 - 12 hours of fasting.

Method: Glucose oxidase hydrogen peroxidase

Technology: Dry Chemistry (VITROS MicroSlide, MicroSensor & Intellichex Technology)

Analyzer: Fully Automated Integrated Biochemistry & ImmunoAssay Analyzer: VITROS 5600

Remarks: Please correlate clinically

Note: Blood glucose level is maintained by a very complex integrated mechanism involving a critical interplay of the release of hormones and action of enzymes on key metabolic pathways. If postprandial glucose is lower than fasting glucose, it is termed as postprandial reactive hypoglycemia (PRH). The possible cause of PRH are high insulin sensitivity, exaggerated response of insulin and glucagon-like peptide 1, defects in counter-regulation, very lean individuals, anxious individuals, after massive weight reduction, women with lower body overweight physical activity prior test, hypoglycemic medication, deliberately eating less or eat a non-carbohydrate meal before testing.



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Sample Report



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Lipid Profile Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 20-Jan-25 09:40 **Received On:** 20-Jan-25 10:52 **Approved On:** 20-Jan-25 14:18

Observation	Result	Unit	Biological Ref. Interval	Method
Total Cholesterol	186	mg/dL	<200	Enzymatic (CHE/CHO/POD)
Triglyceride	93	mg/dL	<150	Enzymatic, Endpoint
HDL Cholesterol	65	mg/dL	>45	Direct Measure, PTA / MgCl ₂
VLDL Cholesterol	19	mg/dL	5-40	Calculated
LDL Cholesterol	102	mg/dL	<100	Friedewald Formula (Calculated)
Non-HDL Cholesterol	121	mg/dL	<130	Calculated
LDL / HDL Ratio	1.57	Ratio	1.5-3.5	Calculated
TC / HDL Ratio	2.86	Ratio	3-5	Calculated

Clinical Decision Limits*	Optimal	Above Optimal	Borderline High	High	Very High
Triglycerides	<150	-	150-199	200-499	>=500
Total Cholesterol	<200	200-239	-	>=239	-
LDL Cholesterol	<100	100-129	130-159	160-189	>=189
HDL Cholesterol	>45	-	40-45	<40	-
Non HDL Cholesterol**	<130	130 - 159	160 - 189	190 - 219	>=220

* Clinical Decision Limits are suggested from Tietz Fundamentals Of Clinical Chemistry And Molecular Diagnostics 8th Edition

** Suggested from National Lipid Association Recommendations for Patient Centered Management of Dyslipidemia: Part 1—Full Report (Volume 9, Issue 2, P129-169, March 01,2015, Terry A. Jacobson, MD et al.

Analyzer: Fully Automated Integrated Biochemistry and ImmunoAssay Analyzer: VITROS 5600
Technology: Dry Chemistry (VITROS MicroSlide, MicroSensor & Intellicheck Technology)

Reports of Lipid Profile are best obtained with 10 hours fasting.

Clinical Significance:

- Triglyceride: Very high levels of Triglyceride can be indicative of a significantly higher risk of coronary vascular disease. Elevation of triglyceride can be seen with fasting less than 12 hours, obesity medication, alcohol intake, diabetes mellitus or pancreatitis.
- Total Cholesterol: its fractions and triglycerides are the important plasma lipids identifying cardiovascular risk factor and in the management of cardiovascular disease. Values above 220 mg/dl are associated with increased risk of CHD regardless of HDL & LDL value.
- HDL - Cholesterol: Low levels of HDL are associated with an increased risk of coronary vascular disease even in the face of desirable levels of Cholesterol and LDL-Cholesterol
- LDL - Cholesterol: levels can be strikingly altered by thyroid, renal and liver disease as well as hereditary factors. In case Triglyceride levels are more than 400 mg/dl, the patient is advised for a direct-LDL Cholesterol test.

Remarks: Please correlate results clinically.



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Liver Function Test				Serum Sample
Accession No: DEMO_BARCODE		Collected On: 20-Jan-25 09:40	Received On: 20-Jan-25 10:52	Approved On: 20-Jan-25 14:23
Observation	Result	Unit	Biological Ref. Interval	Method
Total Protein	7.2	g/dL	6.5-7.8	Biuret, No Serum Blank
Albumin	3.9	g/dL	3.9 - 5.0	Bromocresol Green
Globulin	3.3	gm/dL	2.0-3.5	Calculated
A/G Ratio	1.18	Ratio	1.5-2.5	Calculated
Total Bilirubin	0.73	mg/dL	0.2-1.3	Azobilirubin/dyphylline
Conjugated Bilirubin	0.35	mg/dL	<0.3	Calculated
Unconjugated Bilirubin	0.38	mg/dL	<1.1	Spectrophotometry
SGOT (AST)	37	U/L	18-34	Enzymatic Colorimetric
SGPT (ALT)	25	U/L	4-35	UV with P5P
SGOT/SGPT Ratio	1.48	Ratio		Calculated
Alkaline Phosphatase	154	U/L	46 - 122	PNPP, AMP buffer
Gamma Glutamyl Transferase	153	U/L	10 - 54	G-glutamyl-p-nitroanilide

Clinical Significance of LFT: The clinical suspicion of liver disease usually leads to the measurement of the liver function tests (LFT) which include measurement of several enzymes, serum bilirubin and albumin. These parameters may point to an underlying pathological process and direct further investigation. The aim of investigation in patients with suspected liver disease are: ·To detect hepatic abnormality · Measurement of severity of liver damage · Identify the specific cause · Investigate possible complications

Technology: Dry Chemistry (VITROS MicroSlide, MicroSensor and Intellicheck Technology)

Analyzer: Fully Automated Biochemistry and ImmunoAssay Analyzer: VITROS 5600

Advise: Please correlate results clinically.

Kidney Function Test				Serum Sample
Accession No: DEMO_BARCODE		Collected On: 20-Jan-25 09:40	Received On: 20-Jan-25 10:52	Approved On: 20-Jan-25 14:23
Observation	Result	Unit	Biological Ref. Interval	Method
Blood Urea	12	mg/dL	15-36	Urease, Colorimetric
Blood Urea Nitrogen	5.61	mg/dL	7 - 17	Calculated
Creatinine	0.61	mg/dL	0.5-1.04	Enzymatic
Estimated GFR	107.50	mL/min/1.73m2		Calculated By CKD-EPI(2021)
Uric Acid	5.6	mg/dL	2.5 - 6.2	Uricase , Colorimetric
Calcium	9.3	mg/dL	8.4 - 10.2	Arsenazo III
Phosphorus	4.3	mg/dL	2.5 - 4.5	Phosphomolybdate reduction
BUN/Creatinine Ratio	9.2	Ratio		Calculated
Urea/Creatinine Ratio	19.67	Ratio		Calculated
Electrolytes				
Sodium	139	mmol/L	137-145	ISE Direct
Potassium	4.1	mmol/L	3.5 - 5.1	ISE Direct
Chloride	104	mmol/L	98 - 107	ISE Direct



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Classification of eGFR by UK Kidney Association (2017):		
eGFR (ml/min/1.73 m2)	GFR Category	Significance
>90	G1	Normal Renal Function
60-90	G2	Mild Impairment of Renal Function
45-59	G3a	Impaired Kidney Function
30-44	G3b	Impaired Kidney Function
15-29	G4	Significant Impairment of Renal Function
<15	G5	End-Stage Renal Failure (ESRF)

Technology: Dry Chemistry (VITROS MicroSlide, MicroSensor and Intellichcek Technology)
Remarks: Please correlate results clinically.

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Vitamin B12 Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 20-Jan-25 09:40 **Received On:** 20-Jan-25 10:52 **Approved On:** 20-Jan-25 16:02

Observation	Result	Unit	Biological Ref. Interval	Method
Vitamin B-12	853	pg/mL	239-931	CLIA

Technology: VITROS Microwell, Microsensor and Intellicheck Technology
Analyzer: Fully Automated Integrated Biochemistry and ImmunoAssay Analyzer: VITROS 5600
Remarks: Please correlate results clinically.

Vitamin D, 25 - Hydroxy Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 20-Jan-25 09:40 **Received On:** 20-Jan-25 10:52 **Approved On:** 20-Jan-25 14:33

Observation	Result	Unit	Biological Ref. Interval	Method
25-OH Vitamin D (Total)	87.6	ng/mL	20 - 100	CLIA

Technology: VITROS Microwell, Microsensor, and Intellicheck Technology
Analyzer: Fully Automated Integrated Biochemistry and ImmunoAssay: VITROS 5600

Clinical Significance: The major circulating form of vitamin D is 25-hydroxyvitamin D (25(OH)D); thus, the total serum 25(OH)D level is currently considered the best indicator of vitamin D supply to the body from cutaneous synthesis and nutritional intake. The reference range of the total 25(OH)D level is 20-100 ng/mL. There are two principal forms of vitamin D: D2 and D3. Many of the currently available assays measure and report on both vitamin D2 and D3 metabolites. This can be useful in studies evaluating the contribution of vitamin D2 and D3 to overall vitamin D status. 25-hydroxyvitamin D (25(OH)D) is the major circulating form of vitamin D; thus, the total serum 25(OH)D level is currently considered the best indicator of vitamin D supply to the body from cutaneous synthesis and nutritional intake. One exception is that 25(OH)D levels do not indicate clinical vitamin D status in patients with chronic renal failure or type 1 vitamin D-dependent rickets or when calcitriol (1,25-dihydroxy vitamin D) is used as a supplement. Interpretation of 25(OH)D can be challenging owing to wide variability in patient's weight, ethnicity, assays, laboratory procedures and validation of reference ranges. Vitamin D deficiency is defined by most experts as a serum 25(OH)D level of less than 20 ng/mL. Vitamin D insufficiency has been defined as a serum 25(OH)D level of 20-29 ng/mL. Vitamin D sufficiency has been defined as serum 25(OH)D levels of 30-100 ng/mL. Vitamin D toxicity is observed when serum 25(OH)D levels are greater than 100 ng/mL.

Remarks: Please correlate results clinically.

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Iron Profile Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 20-Jan-25 09:40 **Received On:** 20-Jan-25 10:52 **Approved On:** 20-Jan-25 15:13

Observation	Result	Unit	Biological Ref. Interval	Method
Iron	115	µg/dL	37-170	Pyridylazo Dye
Total Iron Binding Capacity	349	µg/dL	265 - 497	Chromazurol B
Transferrin Saturation	32.95	%	14 - 34	Calculated

Analyzer: Fully Automated Biochemistry and Immunology VITROS 5600
Technology:
 - Iron: Dry Chemistry (VITROS MicroSlide, MicroSensor & Intellicheck Technology)
 - TIBC: VITROS MicroTip, MicroSensor & Intellicheck Technology
Remarks: Please correlate with clinical conditions.



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Hb A1c

EDTA Whole Blood Sample

Accession No: DEMO_BARCODE **Collected On:** 20-Jan-25 09:40 **Received On:** 20-Jan-25 10:54 **Approved On:** 20-Jan-25 15:13

Observation	Result	Unit	Biological Ref. Interval	Method
HbA1C	6.4	%	4.8-5.7	HPLC
90 Day Average Blood Glucose	136.98	mg/dl	90 - 120	Calculated

Interpretation as per American Diabetes Association (ADA) Guidelines

Reference Group	Non diabetic adults >=18 years	At risk (Prediabetes)	Diagnosing Diabetes	Therapeutic goals or glycemic control
HbA1c in %	4.0-5.6	5.7-6.4	>= 6.5	<7.0

Note:

- Presence of Hemoglobin variant and /or conditions that affect red cell turnover must be considered particularly when the HbA1c result does not correlate with the patient's blood glucose levels.
- Factors That Interfere With Hba1c Measurement:** Hemoglobin variants, elevated fetal hemoglobin (HbF) and chemically modified derivatives of hemoglobin (e.g. carbamylated Hb in patients with renal failure) can affect the accuracy of Hba1c measurements
- Factors That Affect Interpretation Of Hba1c Results:** Any condition that shortens erythrocyte survival or decreases mean erythrocyte age (e.g., recovery from acute blood loss, hemolytic anemia, Hbss, HbCC, and HbSC) will falsely lower Hba1c test results regardless of the assay method used. Iron deficiency anemia is associated with higher Hba1c
- Since Hba1c Reflects long term Fluctuations in the blood glucose concentration, a diabetic patient who is recently under good control may still have a high concentration of Hba1c. Converse is true for a diabetic previously under good control but now poorly controlled.
- Target goals of < 7.0% may be beneficial in patients with short duration of diabetes, long life expectancy and no significant cardiovascular co-morbid conditions, targeting a goal of >7.0 % may not be appropriate.
- Any condition that shortens erythrocyte survival such as sickle cell disease, pregnancy (second and third trimesters), hemodialysis, recent blood loss of transfusion , or erythropoietin will falsely lower Hba1c results regardless of the assay method
- In patients with Hba1c level between 7-8%, Glycemark (1,5 Anhydro-glucitol) test may be done to identify those with more frequent and extreme hyperglycemic excursions.

Remarks: Please correlate results with clinical conditions.



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Free Thyroid Test [FT3,FT4,TSH]

Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 20-Jan-25 09:40 **Received On:** 20-Jan-25 10:52 **Approved On:** 20-Jan-25 14:33

Observation	Result	Unit	Biological Ref. Interval	Method
Free Triiodothyronine [FT3]	3.88	pg/mL	2.77 - 5.27	CLIA
Free Thyroxine [FT4]	1.32	ng/dL	0.78 - 2.19	CLIA
Thyroid Stimulating Hormone (TSH)	3.67	mIU/L	0.46-4.68	CLIA



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Note:

1. **TSH Levels are subject to circadian variation**, reaching peak levels between 2-4 AM & the minimum between 6-10 PM. The variation is of the order of 50-206% Hence time of the day has influence on the measured serum TSH concentrations (Reference:Tietz Textbook of Clinical Chemistry & Molecular Diagnostics - 5th Edition Page 123). Fluctuating TSH value must be Clinically correlated.
2. Circulating TSH levels are known to show a circadian rhythm & diurnal variation. The diagnosis based on one TSH value which fluctuates is not reliable. Clinical correlation is mandatory.
3. Values <0.03 uIU/mL need to be clinically correlated due to presence of a rare TSH variant in some individuals.

Remarks:Please correlate results clinically.



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ESR				EDTA Whole Blood Sample
Accession No: DEMO_BARCODE		Collected On: 20-Jan-25 09:40	Received On: 20-Jan-25 10:54	Approved On: 20-Jan-25 12:44
Observation	Result	Unit	Biological Ref. Interval	Method
ESR	52	mm/hr	<20	Modified Westergren

Clinical Notes for ESR:

Increased ESR is seen in:

- In any chronic infection
- Active rheumatic fever
- Acute myocardial infection
- Nephrosis
- All type of shocks

Decreased ESR is seen in:

- Newborn infants
- Polycythemia
- Congestive heart failure
- Sickel cell anaemia

Remarks: Please correlate results with clinical conditions.



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Urine R/M				Urine Sample
Accession No: DEMO_BARCODE		Collected On: 20-Jan-25 09:40	Received On: 20-Jan-25 10:52	Approved On: 20-Jan-25 14:18
Observation	Result	Unit	Biological Ref. Interval	Method
<u>Physical Examination</u>				
Urine Quantity	7.5	mL	7 - 8	Physical Examination
Urine Colour	Pale Yellow		Pale Yellow	Physical Examination
Urinary Transparency	Slightly Turbid		Clear	Physical Examination
<u>Biochemical Examination</u>				
Urinary pH	5.5	pH	6.0 - 8.0 pH	bromothymol blue
Urinary Specific Gravity	1.010		1.005 - 1.030	Ethylenglycol-bis t.a.a.
Urinary Protein	Negative		Negative	Tetrachlorophenol
Urinary Glucose	Negative		Negative	glucose-oxidase-peroxidase
Urinary Ketones	Negative		Negative	Sodium Nitroprusside
Urobilinogen	Negative		Negative	Methoxybenzene Diazonium
Urine Bilirubin	Negative		Negative	Dichlorobenzene-diazonium
Urinary Nitrites	Negative		Negative	hydroxy
Blood [In Urine]	Negative		Negative	Tetramethylbenzidine
Leukocyte esterase	1+		Negative	indoxyl-ester-diazonium
<u>Microscopic Examination</u>				
Pus Cells [In Urine]	5-10	/HPF	1 - 2 /HPF	Flow Micro Imaging
Epithelial Cells (Squamous)	10-15	/HPF	0-2/HPF	Flow Micro Imaging
Epithelial Cells (Non-Squamous)	NIL	/HPF	0-2/HPF	Flow Micro Imaging
Urinary RBC	NIL	/HPF	NIL /HPF	Flow Micro Imaging
Hyaline Casts	NIL	/LPF	0-2/LPF	Flow Micro Imaging
Pathological Casts	NIL	/LPF	0-1/LPF	Flow Micro Imaging
Yeast Cells	NIL	/HPF	0-1/HPF	Flow Micro Imaging
Crystals	NIL	/HPF	NIL/HPF	Flow Micro Imaging
Other Morphology	NIL		NIL	Microscopy

Remarks:

- Sample Quantity is observed after transfer to a Urinalysis Vacutainer Tube for preservation of sample.
- **Note for Female Patients:** If the urine is collected during menstruation, red cells may be present in the urine.
- **Microscopy:** Microscopy may have supplemented automated measurements, wherever necessary.

Advise: Please correlate results clinically.



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