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NAME	**: Mr. JAGIR SINGH**		
AGE/ GENDER	: 67 YRS/MALE	**PATIENT ID**	: 1722743
COLLECTED BY	:	**REG. NO./LAB NO.**	**: 042501130006**
REFERRED BY	:	**REGISTRATION DATE**	: 13/Jan/2025 02:46 PM
BARCODE NO.	: A1260300	**COLLECTION DATE**	: 13/Jan/2025 03:35PM
CLIENT CODE.	: KOS DIAGNOSTIC SHAHBAD	**REPORTING DATE**	: 13/Jan/2025 04:49PM
CLIENT ADDRESS	: 6349/1, NICHOLSON ROAD, AMBALA CANTT		

Test Name	Value	Unit	Biological Reference interval
CLINICAL CHEMISTRY/BIOCHEMISTRY			
KIDNEY FUNCTION TEST (BASIC)			
UREA: SERUM *by UREASE - GLUTAMATE DEHYDROGENASE (GLDH)*	27.44	mg/dL	10.00 - 50.00
CREATININE: SERUM *by ENZYMATIC, SPECTROPHOTOMETERY*	1.05	mg/dL	0.40 - 1.40
BLOOD UREA NITROGEN (BUN): SERUM *by CALCULATED, SPECTROPHOTOMETERY*	12.82	mg/dL	7.0 - 25.0
BLOOD UREA NITROGEN (BUN)/CREATININE RATIO: SERUM *by CALCULATED, SPECTROPHOTOMETERY*	12.21	RATIO	10.0 - 20.0
UREA/CREATININE RATIO: SERUM *by CALCULATED, SPECTROPHOTOMETERY*	26.13	RATIO	
URIC ACID: SERUM *by URICASE - OXIDASE PEROXIDASE*	6.47	mg/dL	3.60 - 7.70

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Test Name	Value	Unit	Biological Reference interval

INTERPRETATION:

Normal range for a healthy person on normal diet: 12 - 20
To Differentiate between pre- and postrenal 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.
2.Catabolic states with increased tissue breakdown.
3.GI hemorrhage.
4.High protein intake.
5.Impaired renal function plus .
6.Excess protein intake or production or tissue breakdown (e.g. infection, GI bleeding, thyrotoxicosis, Cushings syndrome, high protein diet, burns,surgery, cachexia, high fever).
7.Urine reabsorption (e.g. ureterocolostomy)
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).

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OSMOLALITY: SERUM

Test Name	Value	Unit	Biological Reference interval
SODIUM: SERUM	143.4	mmol/L	135.0 - 150.0
GLUCOSE RANDOM (R): PLASMA	109.2	mg/dL	NORMAL: < 140.00 PREDIABETIC: 140.0 - 200.0 DIABETIC: > 0R = 200.0
UREA: SERUM	27.44	mg/dL	10.00 - 50.00
BLOOD UREA NITROGEN (BUN): SERUM	12.82	mg/dL	7.0 - 25.0
OSMOLALITY - SERUM *by FREEZING POINT DEPRESSION*	297.45	mOSM/kg	275.0 - 300.0

INTERPRETATION:

SERUM OSMOLALITY	URINE OSMOLALITY	CLINICAL SIGNIFICANCE
Normal or Increased	Increased	Fluid Volume Deficit
Decreased	Decreased	Fluid Volume Excess
Normal	Decreased	Increased Fluid intake or diuretics
Increased or Normal	Decreased (with no increase in fluid intake)	Kidneys unable to concentrate urine or lack of ADH (diabetes insipidus)
Decreased	Increased	SIADH

COMMENTS:

1.Osmolality refers to the osmotic concentration of a fluid. It depends on the number of active ions or molecules in a solution
2.It yields important information about a patient`s ability to maintain a normal fluid balance status.
3.Increased urine o smolality (hyperosmolality) levels are seen in Addison`s disease, Dehydration, Diabetes mellitus/hyperglycemia, hypernatremia, SIADH
4.Decreased urine osmolality (hypoosmolality) levels are seen in Sodium loss due to diuretic use and a low salt diet , Diabetes insipidus, Excessive water replacement/overhydration/water intoxication.

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Test Name	Value	Unit	Biological Reference interval

ENDOCRINOLOGY

THYROID FUNCTION TEST: TOTAL

TRIIODOTHYRONINE (T3): SERUM *by CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)*	0.822	ng/mL	0.35 - 1.93
THYROXINE (T4): SERUM *by CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)*	**4.73**^{L}	µgm/dL	4.87 - 12.60
THYROID STIMULATING HORMONE (TSH): SERUM *by CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)*	3.243	µIU/mL	0.35 - 5.50

3rd GENERATION, ULTRASENSITIVE

INTERPRETATION:

TSH levels are subject to circadian 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 concentrations. TSH stimulates the production and secretion of the metabolically active hormones, thyroxine (T4)and triiodothyronine (T3).Failure at any level of regulation of the hypothalamic-pituitary-thyroid axis will result in either underproduction (hypothyroidism) or overproduction(hyperthyroidism) of T4 and/or T3.

CLINICAL CONDITION	T3	T4	TSH
Primary Hypothyroidism:	Reduced	Reduced	Increased (Significantly)
Subclinical Hypothyroidism:	Normal or Low Normal	Normal or Low Normal	High
Primary Hyperthyroidism:	Increased	Increased	Reduced (at times undetectable)
Subclinical Hyperthyroidism:	Normal or High Normal	Normal or High Normal	Reduced

LIMITATIONS:-

1. T3 and T4 circulates in reversibly bound form with Thyroid binding globulins (TBG),and to a lesser extent albumin and Thyroid binding Pre Albumin so conditions in which TBG and protein levels alter such as pregnancy, excess estrogens, androgens, anabolic steroids and glucocorticoids may falsely affect the T3 and T4 levels and may cause false thyroid values for thyroid function tests.
2. Normal levels of T4 can also be seen in Hyperthyroid patients with :T3 Thyrotoxicosis, Decreased binding capacity due to hypoproteinemia or ingestion of certain drugs (e.g.: phenytoin , salicylates).
3. Serum T4 levels in neonates and infants are higher than values in the normal adult , due to the increased concentration of TBG in neonate serum.
4. TSH may be normal in central hypothyroidism , recent rapid correction of hyperthyroidism or hypothyroidism , pregnancy , phenytoin therapy.

TRIIODOTHYRONINE (T3)		THYROXINE (T4)		THYROID STIMULATING HORMONE (TSH)	
Age	Refferance Range (ng/mL)	Age	Refferance Range (µg/dL)	Age	Reference Range (µIU/mL)
0 - 7 Days	0.20 - 2.65	0 - 7 Days	5.90 – 18.58	0 - 7 Days	2.43 - 24.3
7 Days - 3 Months	0.36 - 2.59	7 Days - 3 Months	6.39 - 17.66	7 Days - 3 Months	0.58 - 11.00
3 - 6 Months	0.51 - 2.52	3 - 6 Months	6.75 – 17.04	3 Days – 6 Months	0.70 - 8.40
6 - 12 Months	0.74 - 2.40	6 - 12 Months	7.10 – 16.16	6 – 12 Months	0.70 - 7.00

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Test Name			Value	Unit	Biological Reference interval
1 - 10 Years	0.92 - 2.28	1 - 10 Years	6.00 - 13.80	1 – 10 Years	0.60 - 5.50
11- 19 Years	0.35 - 1.93	11 - 19 Years	4.87- 13.20	11 – 19 Years	0.50 – 5.50
> 20 years (Adults)	0.35 - 1.93	> 20 Years (Adults)	4.87 - 12.60	> 20 Years (Adults)	0.35– 5.50
RECOMMENDATIONS OF TSH LEVELS DURING PREGNANCY (µIU/mL)					
1st Trimester			0.10 – 2.50		
2nd Trimester			0.20 – 3.00		
3rd Trimester			0.30 – 4.10		

INCREASED TSH LEVELS:

1.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, iodine containing agents & dopamine antagonist.
5.Neonatal period, increase in 1st 2-3 days of life due to post-natal surge

DECREASED TSH LEVELS:

1.Toxic multi-nodular goiter & Thyroiditis.
2.Over replacement of thyroid hormone in treatment of hypothyroidism.
3.Autonomously functioning Thyroid adenoma
4.Secondary pituitary or hypothalamic hypothyroidism
5.Acute psychiatric illness
6.Severe dehydration.
7.DRUGS: Glucocorticoids, Dopamine, Levodopa, T4 replacement therapy, Anti-thyroid drugs for thyrotoxicosis.
8.Pregnancy: 1st and 2nd Trimester

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BARCODE NO.	: A1260302	**COLLECTION DATE**	: 15/Jan/2025 03:51PM
CLIENT CODE.	: KOS DIAGNOSTIC SHAHBAD	**REPORTING DATE**	: 16/Jan/2025 09:51AM
CLIENT ADDRESS	: 6349/1, NICHOLSON ROAD, AMBALA CANTT		

Test Name	Value	Unit	Biological Reference interval

CLINICAL PATHOLOGY

PROTEIN/CREATININE RATIO: 24 HOURS URINE

URINE VOLUME: 24 HOUR *by SPECTROPHOTOMETRY*	1200	mL	
PROTEINS: 24 HOURS URINE *by SPECTROPHOTOMETRY*	78.24	mg/ 24 HOURS	25 -160
CREATININE: 24 HOUR URINE *by SPECTROPHOTOMETRY*	1091.64	mg/24 Hours	1070 - 2150
PROTEIN/CREATININE RATIO: 24 HOURS URINE *by SPECTROPHOTOMETRY*	0.07		< 0.20

INTERPRETATION:

PROTEIN/CREATININE RATIO	REMARKS
< 0.20	NORMAL
0.20 – 1.00	LOW GRADE PROTEINURIA
1.00 – 5.00	MODERATE PROTEINURIA
>5.00	NEPHROSIS

NOTE:
Urinary total proteins are nearly negligible in healthy adults. The Protein Creatinine ratio is a simple and convenient method to quantitate and monitor proteinuria in adults with chronic kidney disease. Patients with 2 or more positive results within a period of 1-2 weeks should be labeled as having persistent proteinuria and investigated further

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BARCODE NO.	: A1260301	**COLLECTION DATE**	: 15/Jan/2025 03:51PM
CLIENT CODE.	: KOS DIAGNOSTIC SHAHBAD	**REPORTING DATE**	: 16/Jan/2025 10:17AM
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Test Name	Value	Unit	Biological Reference interval

OSMOLALITY - RANDOM URINE

OSMOLALITY: RANDOM URINE *by FREEZING POINT DEPRESSION*	581.74	mOSM/kg	300 - 900

INTERPRETATION:

SERUM OSMOLALITY	URINE OSMOLALITY	CLINICAL SIGNIFICANCE
Normal or Increased	Increased	Fluid Volume Deficit
Decreased	Decreased	Fluid Volume Excess
Normal	Decreased	Increased Fluid intake or diuretics
Increased or Normal	Decreased (with no increase in fluid intake)	Kidneys unable to concentrate urine or lack of ADH (diabetes insipidus)
Decreased	Increased	SIADH

COMMENTS:

1.Osmolality refers to the osmotic concentration of a fluid. It depends on the number of active ions or molecules in a solution
2.It yields important information about a patient`s ability to maintain a normal fluid balance status.
3.A urine osmolality test may be done on an early morning urine sample as water depletion during the night should concentrate the urine. The test may also be done using multiple timed samples or on a cumulative sample collected over a 24 hour period
4.Urine osmolality is a more accurate measurement of urine concentration than specific gravity, and urine osmolality can be compared with the serum osmolality to obtain an accurate picture of a patient`s fluid balance.
5.With restricted fluid intake, urine osmolality should be greater than 800 mOsm/Kg. A 24 hour urine osmolality should average between 500 and 800 mOsm/Kg. A random urine osmolality should average 300 and 900 mOsm/Kg
6.Increased urine o smolality (hyperosmolality) levels are seen in Addison`s disease, Dehydration, Diabetes mellitus/hyperglycemia, hypernatremia, SIADH
7.Decreased urine osmolality (hypoosmolality) levels are seen in Sodium loss due to diuretic use and a low salt diet , Diabetes insipidus, Excessive water replacement/overhydration/water intoxication.

*** End Of Report ***

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