



دائرة المختبرات الطبية و علم الأمراض
Department of Laboratory Medicine and Pathology

Lab Guide - 2019

Endocrine Section Lab Guide

Estradiol

ITEM	Estradiol, Cerner Name: Estradiol								
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature 								
Transport Temperature	Ambient								
Days test is performed	Sunday to Thursday (Except Holidays)								
Turnaround time	Routine: 1 day								
Method	Competitive test principle using a polyclonal antibody specifically directed against 17 β -estradiol in Roche Cobas 6000 e module analyzer								
Reference Value	<p>MALE: 41.4 To 159 pmol/L</p> <p>FEMALE:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">Follicular Phase</td> <td style="text-align: right;">45.4-854 pmol/L</td> </tr> <tr> <td style="padding-left: 20px;">Midcycle Phase</td> <td style="text-align: right;">151-1461 pmol/L</td> </tr> <tr> <td style="padding-left: 20px;">Luteal Phase</td> <td style="text-align: right;">81.9-1251 pmol/L</td> </tr> <tr> <td style="padding-left: 20px;">PMP Phase</td> <td style="text-align: right;"><18.4-505 pmol/L</td> </tr> </table>	Follicular Phase	45.4-854 pmol/L	Midcycle Phase	151-1461 pmol/L	Luteal Phase	81.9-1251 pmol/L	PMP Phase	<18.4-505 pmol/L
Follicular Phase	45.4-854 pmol/L								
Midcycle Phase	151-1461 pmol/L								
Luteal Phase	81.9-1251 pmol/L								
PMP Phase	<18.4-505 pmol/L								
Interpretation	Determination of Estradiol is utilized in the elucidation of fertility disorder, Estrogen producing tumors and in hyperplasia of the adrenal cortex. Further indication includes monitoring of fertility therapy and determining the time of ovulation within the framework of in-vitro fertilization.								
Rejection Criteria	<p>-Grossly hemolyzed</p> <p>-See Management of Laboratory Specimen (CL7067)</p>								
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)								

Ferritin

ITEM	Ferritin Cerner Name: Ferritin
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Specimen	Minimum of 3ml blood in Red/Yellow top or Li Heparin tube																																																						
Transport Temperature	Ambient																																																						
Days test is performed	Sunday to Thursday (Except Holidays)																																																						
Turnaround time	Routine: 1 day																																																						
Method	Particle enhanced Immunoturbidimetric assay in Roche Cobas 6000 c module analyzer																																																						
Reference Value	<table border="1"> <thead> <tr> <th colspan="2">AGE</th> <th>GENDER</th> <th>REFERENCE RANGE</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1 Year</td> <td>Male</td> <td>12 – 327 mcg/L</td> </tr> <tr> <td>1 Years</td> <td>3 Years</td> <td>Male</td> <td>6 - 67mcg/L</td> </tr> <tr> <td>4 Years</td> <td>6 Years</td> <td>Male</td> <td>4 - 67mcg/L</td> </tr> <tr> <td>7 Years</td> <td>12 Years</td> <td>Male</td> <td>14 – 124 mcg/L</td> </tr> <tr> <td>13 Years</td> <td>17 Years</td> <td>Male</td> <td>14 – 152 mcg/L</td> </tr> <tr> <td>17 years</td> <td>150 Years</td> <td>Male</td> <td>30 – 400 mcg/L</td> </tr> <tr> <td>0</td> <td>1 Year</td> <td>Female</td> <td>12 – 327 mcg/L</td> </tr> <tr> <td>1 Years</td> <td>3 Years</td> <td>Female</td> <td>6 – 67 mcg/L</td> </tr> <tr> <td>4 Years</td> <td>6 Years</td> <td>Female</td> <td>4 – 67 mcg/L</td> </tr> <tr> <td>7 Years</td> <td>12 Years</td> <td>Female</td> <td>7 – 84 mcg/L</td> </tr> <tr> <td>13 Years</td> <td>17 Years</td> <td>Female</td> <td>13 – 68 mcg/L</td> </tr> <tr> <td>17 years</td> <td>150 Years</td> <td>Female</td> <td>15 – 150 mcg/L</td> </tr> </tbody> </table>			AGE		GENDER	REFERENCE RANGE	0	1 Year	Male	12 – 327 mcg/L	1 Years	3 Years	Male	6 - 67mcg/L	4 Years	6 Years	Male	4 - 67mcg/L	7 Years	12 Years	Male	14 – 124 mcg/L	13 Years	17 Years	Male	14 – 152 mcg/L	17 years	150 Years	Male	30 – 400 mcg/L	0	1 Year	Female	12 – 327 mcg/L	1 Years	3 Years	Female	6 – 67 mcg/L	4 Years	6 Years	Female	4 – 67 mcg/L	7 Years	12 Years	Female	7 – 84 mcg/L	13 Years	17 Years	Female	13 – 68 mcg/L	17 years	150 Years	Female	15 – 150 mcg/L
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Interpretation	Determination of ferritin is used in iron metabolism disorders, monitoring iron therapy, ascertaining iron reserves and in the differential diagnosis of anemias.																																																						
Rejection Criteria	-Grossly hemolyzed -See Management of Laboratory Specimen (CL7067)																																																						
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)																																																						

Folate

ITEM	Folate Cerner Name: Folate
Specimen	-Minimum of 3ml blood in Red/Yellow top or Li Heparin tube

	-Protect from light and send to the laboratory as soon possible -Sample Stability: 2 hours in ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Competitive test principle using natural folate binding protein (FBP) specific for folate assay in Roche Cobas 6000 e module analyzer
Reference Value	10.4 to 42.4 nmol/L
Interpretation	Deficiency can be result to neural tube defects in the fetus, and megaloblastic anemia
Rejection Criteria	-Slight to Grossly hemolyzed samples -See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Follicle Stimulating Hormone

ITEM	Follicle Stimulating Hormone Cerner Name: FSH
Specimen	- Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Sandwich principle in Roche Cobas 6000 e module analyzer
Reference Value	MALE: 1.5 TO 12.4 IU/L FEMALE:

	Follicular Phase 3.5-12.5 IU/L Midcycle Phase 4.7-21.5 IU/L Luteal Phase 1.7-7.7 IU/L PMP Phase 25.8-134.8 IU/L
Interpretation	The determination of FSH in conjunction with LH is utilized for the following indications: congenital diseases with chromosome aberrations, polycystic ovaries (PCO), amenorrhea (causes), and menopausal syndrome. Depressed gonadotropin levels in men occur in azoospermia
Rejection Criteria	<ul style="list-style-type: none"> - Grossly hemolyzed sample - See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Free Thyroxine

ITEM	Free Thyroxine Cerner Name: FT4				
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature 				
Transport Temperature	Ambient				
Days test is performed	Sunday to Thursday (Except Holidays)				
Turnaround time	Routine: 1 day				
Method	Competition principle in Roche Cobas 6000 e module analyzer				
Reference Value	AGE		LOW LIMIT	UPPER LIMIT	UNIT
	1 Years	6 Years	12.3	22.8	pmol/L
	7 Years	11 Years	12.5	21.5	pmol/L

	12 Years	20 Years	12.6	21	pmol/L
	20 Years	150 Years	12	22	pmol/L
	Reference Range for Pregnancy: 1ST TRIMESTER 12.1-19.6 pmol/L 2ND TRIMESTER 9.6-17.0 pmol/L 3rd TRIMESTER 8.4-15.6 pmol/L				
Interpretation	Free T4 is a useful tool in clinical routine diagnostics for the assessment of the thyroid status. It should be measured together with TSH if thyroid disorders are suspected and is also suitable for monitoring thyrosuppressive therapy				
Rejection Criteria	<ul style="list-style-type: none"> - Grossly hemolyzed sample - See Management of Laboratory Specimen (CL7067) 				
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)				

Luteinizing Hormone

ITEM	Luteinizing Hormone Cerner Name: LH
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Sandwich principle in Roche Cobas 6000 e module analyzer

Reference Value	<p>MALE: 1.7 to 8.6 IU/L</p> <p>FEMALE:</p> <p>Follicular Phase 2.4-12.6 IU/L</p> <p>Midcycle Phase 14-95.6 IU/L</p> <p>Luteal Phase 1 - 11.4 IU/L</p> <p>PMP Phase 7.7-58.5 IU/L</p>
Interpretation	Determination of the LH concentration is used in the elucidation of dysfunctions within the hypothalamus-pituitary-gonads system
Rejection Criteria	<ul style="list-style-type: none"> - Grossly hemolyzed sample - See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Progesterone

ITEM	Progesterone Cerner Name: Progesterone
Specimen	Minimum of 3ml blood in Red/Yellow top or Li Heparin tube
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Competition principle in Roche Cobas 6000 e module analyzer
Reference Value	<p>MALE: 0.7 to 4.3 nmol/L</p> <p>FEMALE:</p> <p>Follicular Phase: 0.6-4.7 nmol/L</p> <p>Luteal Phase: 5.3-86 nmol/L</p>

	PMP Phase: 0.3-2.5 nmol/L
Interpretation	Utilized in fertility diagnosis for the detection of ovulation and assessment of the luteal phase
Rejection Criteria	<ul style="list-style-type: none"> - Grossly hemolyzed sample - See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Prolactin

ITEM	Prolactin Cerner Name: Prolactin								
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature 								
Transport Temperature	Ambient								
Days test is performed	Sunday to Thursday (Except Holidays)								
Turnaround time	Routine: 1 day								
Method	Sandwich principle in Roche Cobas 6000 e module analyzer								
Reference Value	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Male</td> <td style="text-align: center;">86</td> <td style="text-align: center;">to</td> <td style="text-align: center;">324 mIU/L</td> </tr> <tr> <td style="text-align: center;">Female</td> <td style="text-align: center;">102</td> <td style="text-align: center;">to</td> <td style="text-align: center;">496 mIU/L</td> </tr> </table>	Male	86	to	324 mIU/L	Female	102	to	496 mIU/L
Male	86	to	324 mIU/L						
Female	102	to	496 mIU/L						
Interpretation	The determination of prolactin is utilized in the diagnosis of anovular cycles, hyperprolactinemic amenorrhea and galactorrhea, gynecomastia and azoo-spermia. Prolactin is also determined when breast cancer and pituitary tumors are suspected								
Rejection Criteria	<ul style="list-style-type: none"> - Grossly hemolyzed sample - See Management of Laboratory Specimen (CL7067) 								
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)								

Parathyroid Hormone

ITEM	Parathyroid Hormone Cerner Name: PTH, intact
Specimen	-Minimum of 3ml blood in Red/Yellow top tube. -Send to the laboratory as soon possible. -Serum must be separated immediately and freeze if cannot processed immediately -Sample stability: 8 hours at ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Sandwich principle in Roche Cobas 6000 e module analyzer
Reference Value	15 – 65 pg/mL
Interpretation	Hyperfunctioning of the parathyroid glands results in an increased secretion of PTH (hyperparathyroidism). Primary causes are adenomas of the parathyroid glands. In secondary hyperparathyroidism the blood calcium level is low as a result of other pathological states
Rejection Criteria	<ul style="list-style-type: none"> - Slight to Grossly Hemolyzed samples - See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Testosterone

ITEM	Testosterone Cerner Name: Testost
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible

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Interpretation	<p>The determination of testosterone in women is helpful in the diagnosis of androgenic syndrome (AGS), polycystic ovaries (Stein - Leventhal syndrome) and when an ovarian tumor, adrenal tumor, adrenal hyperplasia or ovarian insufficiency is suspected.</p> <p>Testosterone is determined in men when reduced testosterone production is suspected, e.g. in hypogonadism, estrogen therapy, chromosome aberrations (as in the Klinefelter's syndrome) and liver cirrhosis.</p>																																																																								
Rejection Criteria	<ul style="list-style-type: none"> - Slight to Grossly Hemolyzed samples - See Management of Laboratory Specimen (CL7067) 																																																																								
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)																																																																								

Total PSA

ITEM	Prostate Specific Antigen (Total), tPSA
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	Cerner Name: TPSA
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Sandwich principle in Roche Cobas 6000 e module analyzer
Reference Value	<p>The testing method is an electrochemiluminescence immunoassay manufactured by Roche COBAS, and performed on cobas e immunoassay analyzers.</p> <p>The results cannot be interpreted as absolute evidence for the presence or absence of malignant disease.</p> <p>Normal Range: 0 to 4 ng/mL</p>
Interpretation	Elevated concentrations of PSA in serum are generally indicative of a pathologic condition of the prostate (prostatitis, benign hyperplasia or carcinoma)
Rejection Criteria	<ul style="list-style-type: none"> - Grossly hemolyzed samples - See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Thyroid Stimulating Hormone

ITEM	Thyroid Stimulating Hormone Cerner Name: TSH
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)

Turnaround time	Routine: 1 day				
Method	Sandwich principle in Roche Cobas 6000 e module analyzer				
Reference Value	Age		Low Limit	High Limit	UNIT
	0 Minutes	5 Days	0.7	15.2	mIU/L
	6 Days	3 Months	0.72	11	mIU/L
	4 Months	12 Months	0.73	8.35	mIU/L
	1 Years	6 Years	0.7	5.97	mIU/L
	7 Years	11 Years	0.6	4.84	mIU/L
	12 Years	20 Years	0.51	4.3	mIU/L
	20 Years	150 Years	0.27	4.2	mIU/L
	Interpretation	A very sensitive and specific parameter for assessing thyroid function and is particularly suitable for early detection or exclusion of disorders in the central regulating circuit between the hypothalamus, pituitary and thyroid			
Rejection Criteria	<ul style="list-style-type: none"> - Grossly Hemolyzed samples - See Management of Laboratory Specimen (CL7067) 				
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)				

Vitamin B12

ITEM	Vitamin B12/Cobalamin Cerner Name: Vit B12
Specimen	<ul style="list-style-type: none"> - Preferably fasting (minimum of 6 hours) - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 2 hours at ambient temperature
Transport Temperature	Ambient
Days test is	Sunday to Thursday (Except Holidays)

performed	
Turnaround time	Routine: 1 day
Method	Competition principle using intrinsic factor specific for vitamin B12 in Roche Cobas 6000 e module analyzer
Reference Value	141 to 489 pmol/L
Interpretation	Vitamin B 12 deficiency leads to megaloblastic anemia, peripheral neuropathy, dementia, poor cognitive performance, and depression.
Rejection Criteria	<ul style="list-style-type: none"> - Hemolyzed samples - See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)

Vitamin D Total

ITEM	Vitamin D Total, 25-Hydroxyvitamin D, 25-OH Cerner Name: Dihydroxyvitamin D Total (Vit D Total)
Specimen	<ul style="list-style-type: none"> - Minimum of 3ml blood in Red/Yellow top or Li Heparin tube - Send to the laboratory as soon possible - Sample stability: 8 hours at ambient temperature
Transport Temperature	Ambient
Days test is performed	Sunday to Thursday (Except Holidays)
Turnaround time	Routine: 1 day
Method	Competition principle in Roche Cobas 6000 e module analyzer
Reference Value	<p>Please note the change from population based reference range to clinical decision values. Clinical decision values correlate better with clinical status of Vitamin D.</p> <p>< 10 ng/mL - Severe deficiency.</p> <p>10 - 30 ng/mL - Mild to moderate deficiency.</p> <p>30-80 ng/ml - Optimum Values.</p> <p>(Greater Than) 80 ng/ml - Possible Toxicity</p>
Interpretation	Vitamin D is essential for bone health. In children, severe deficiency leads to bone-malformation, known as rickets. Milder degrees of insufficiency are believed to cause

	reduced efficiency in the utilization of dietary calcium. Vitamin D deficiency causes muscle weakness and is a common cause of secondary hyperparathyroidism which in turn results in osteomalacia, increased bone turnover, reduced bone mass and risk of bone fractures.
Rejection Criteria	<ul style="list-style-type: none">- Slight to grossly hemolyzed samples- See Management of Laboratory Specimen (CL7067)
Performing Lab Location	AL KHOR HOSPITAL, DLMP – CHEMISTRY/ENDOCRINE SECTION (44745190)