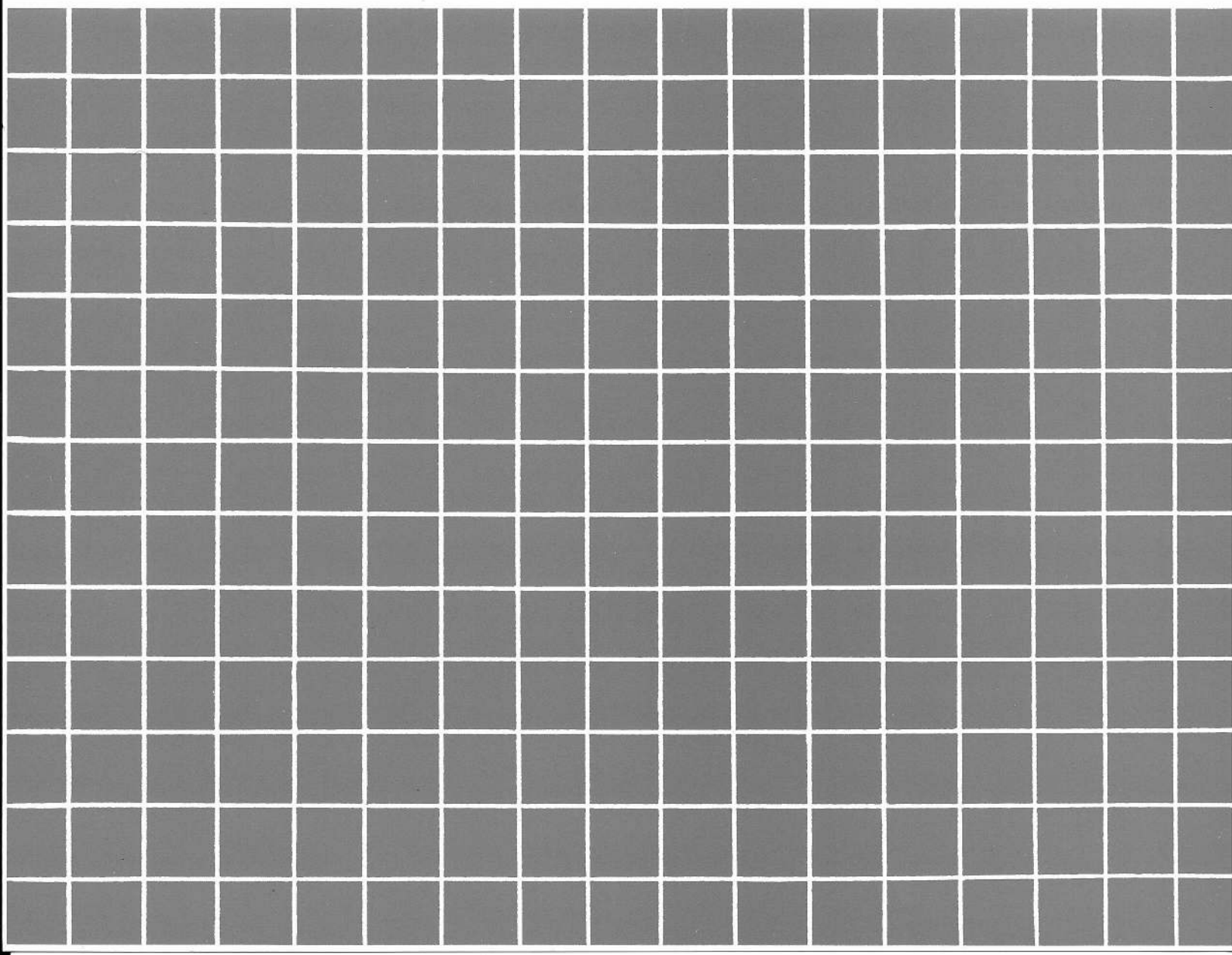
Healthlab®

Uniquely Personal Health Through Preventive Care



THIS HEALTH AND NUTRITION ASSESSMENT SURVEY HAS BEEN SUPPORTED IN PART BY A GRANT FROM

BIOTECH LABORATORY, INC.
ST. LOUIS, MISSOURI

"SERVING FOR OVER TWENTY-FIVE YEARS"

Health Laboratory Research Institute
1064 Humber Circle • St. Louis, MO 63129-1904 • 314-894-9922

PATIENT DEMOGRAPHICS

NAME:	TINSLEY, DR. CURTIS J.
ADDRESS:	1064 HUMBER CIRCLE
CITY-STATE:	ST. LOUIS, MO 63129
PHONE NUMBER:	314.894.2511
PATIENT NUMBER:	88.503180
SEX:	MALE
DATE OF BIRTH:	07.12.50
AGE:	46 YRS
HEIGHT:	69 INCHES
WEIGHT:	225 LBS
FASTING STATUS:	1900 - 0835 HRS

CUMULATIVE ANALYSIS:
06 FEB 96
12 JAN 95
28 JAN 94

13 HR 35 MIN

REFERENCE PHYSICIAN

DR. RICHARD P. MURRAY

In Memory of His Infinite Nutritional Wisdom

R. Murray & Associates, Inc. - Midwest Division
Ste. Genevieve, MO 63670

314-883-9088

Healthsystems Analysis

ABOUT THE...
CONVENTIONAL UNIT REPORT

Congratulations on selecting the most modern and comprehensive analytic assessment of the **Health & Nutrition Assessment Survey (HANAS)**:

BIOCHEMICAL ANALYSIS
URINE BIOCHEMICAL ANALYSIS
URINE MICROSCOPY
HEMATOLOGY ANALYSIS
CELLULAR MORPHOLOGY

A unique approach is used for the reporting format to arrange the bioanalytes into physiological domains or organ systems. The numerical findings can be reviewed as an array of data, rather than traditional single discrete analysis. Healthsystems Analysis has grouped twenty-three (23) bioanalytes from a SMAC report to survey several organ systems encountered in the scope of modern health care. The same has been accomplished for the Hematalogy and Urine Analysis.

Currently all of today's analytic concentrations are measured in conventional units based on weight per volume of solvent. The units reported by clinical laboratories in this country use the conventional unit of measurement. Below is a table of abbreviations adopted for this report:

DL	=	Deciliter
GM	=	Gram
I.U.	=	International Unit
KG	=	Kilogram
MG	=	Milligram
ML	=	Milliliter
MIU	=	Milli International Unit
NG	=	Nanogram
PG	=	Picogram
MCG	=	Microgram
MCIU	=	Micro International Unit
MCL	=	Microliter
MCU	=	Micro Unit

THE PURPOSE OF THIS SYSTEM FORMAT IS TO PRESENT THE BIOCHEMICAL AND HEMATOLOGICAL DATA IN A MORE INFORMATIVE MANNER. IT IS NOT THE INTENT, IMPLIED OR OTHERWISE, TO DIAGNOSE OR PRESCRIBE TREATMENT BASED SOLELY ON THE LABORATORY FINDINGS. THE RESPONSIBILITY OF Healthsystems Analysis IS TO PUT FORTH ACCURATE AND PRECISE DATA WHILE EXERCISING GOOD LABORATORY PRACTICE.

Healthsystems Analysis

Patient: 87-506222

Reference Physician:

TINSLEY, DR. CURTIS J.
M 46Y 69HT 225WT

MURRAY, D.C., RICHARD
02.06.96 0835 CJT

CONVENTIONAL UNIT SYSTEM REPORT

ANALYTE	PATIENT CONCENTRATION	UNITS	HEALTH-ASSOCIATED REFERENCE MEAN	HEALTH-ASSOCIATED REFERENCEINTERVAL
ORGAN SYSTEMS ANALYSIS				
MYOCARDIUM SYSTEM:				
Creatine Kinase	**106**	U/L	115	5 - 225
Aspartate Aminotransferase	**16**	U/L	20	0 - 40
Lactate Dehydrogenase	**127**	U/L	160	90 - 230
KIDNEY SYSTEM:				
Urea Nitrogen	**15**	MG/DL	16	6 - 26
Creatinine	**1.0**	MG/DL	1.0	0.6 - 1.4
Urea / Creatinine Ratio	**15.0**	FRACTION	18	8 - 28
LIVER-BILIARY SYSTEM:				
Gamma Glutamyl Transpeptidase	**15**	U/L	31.5	3 - 60
Aspartate Aminotransferase	**16**	U/L	20	0 - 40
Alanine Aminotransferase	**8**	U/L	22	0 - 44
Alkaline Phosphatase	**71**	U/L	75	35 - 115
Total Bilirubin	**0.5**	MG/DL	0.7	0.1 - 1.3
Total Protein	**7.3**	G/DL	7.2	6.0 - 8.4
Albumin	**5.2**	G/DL	4.4	3.4 - 5.4
Globulin	**2.1**	G/DL	2.4	1.6 - 3.2
SKELETAL SYSTEM:				
Alkaline Phosphatase	**71**	U/L	75	35 - 115
Calcium	**9.5**	MG/DL	9.5	8.5 - 10.5
Phosphate	**3.5**	MG/DL	3.5	2.5 - 4.5
Uric Acid	**6.0**	MG/DL	6.0 M	3.6 - 8.4
THYROID SYSTEM:				
Thyroxine	**7.6**	MCG/DL	8.5	4.5 - 12.5
IRON METABOLISM:				
Iron	**125**	MCG/DL	100	50 - 150
CARBOHYDRATE METABOLISM:				
Glucose	**96**	MG/DL	90	70 - 110

Healthsystems Analysis

Patient: 87-506222

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CONVENTIONAL UNIT SYSTEM REPORT

ANALYTE	PATIENT CONCENTRATION	UNITS	HEALTH-ASSOCIATED REFERENCE MEAN	HEALTH-ASSOCIATED REFERENCEINTERVAL
MINERAL ELECTROLYTE SYSTEM:				
Sodium	**141**	MEQ/L	140	136 - 148
Potassium	**4.7**	MEQ/L	4.3	3.5 - 5.3
Chloride	**103**	MEQ/L	100	96 - 110
Calcium	**9.5**	MG/DL	9.5	8.5 - 10.5
Phosphorus	**3.5**	MG/DL	3.5	2.5 - 4.5
LIPID METABOLISM:				
Triglycerides	**190**	MG/DL	90	30 - 150
Cholesterol - Total	**215**	MG/DL	200	140 - 260
High Density Lipoprotein	**48**	MG/DL	45 M	38 - 78
Low Density Lipoprotein	**129**	MG/DL	122 M	65 - 185
Very Low Density Lipoprotein	**38**	MG/DL	20	0 - 40
Cholesterol / HDL Ratio	**4.47**	FRACTION	5.0 M	AVERAGE CHD RISK
LDL / HDL Ratio	**2.68**	FRACTION	3.5 M	AVERAGE CHD RISK
Coronary Heart Disease Risk	**1.00**	CALCULATION	1.0 M	AVERAGE CHD RISK

URINE BIOCHEMICAL ANALYSIS

Color	**YELLOW**	QUALITATIVE	-	YELLOW
Appearance	**CLEAR**	QUALITATIVE	-	CLEAR
Specific Gravity	**1.025**	REFRACTIVE INDEX	1.019	1.016 - 1.022
pH	**6.0**	puissance Hydrogen	6	5 - 7
Protein	**NEGATIVE**	QUALITATIVE	-	NEGATIVE
Glucose	**NEGATIVE**	QUALITATIVE	-	NEGATIVE
Ketones	**NEGATIVE**	QUALITATIVE	-	NEGATIVE
Bilirubin	**NEGATIVE**	QUALITATIVE	-	NEGATIVE
Blood	**NEGATIVE**	QUALITATIVE	-	NEGATIVE
Urobilinogen	**0.2**	MG/DL	-	0.2 - 1

URINE MICROSCOPY

White Blood Cells	**1 - 2**	PER HPF	-	0 - 5
Red Blood Cells	**0**	PER HPF		0 - 2
Epithilial Cells	**1 - 2**	PER HPF	-	VARIABLE
Bacteria	**0**	PER HPF	-	0
Yeast	**0**	PER HPF	-	0
Crystals	**0**	PER HPF	-	VARIABLE
Casts	**0**	PER HPF	-	0
Other	**0**			

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CONVENTIONAL UNIT SYSTEM REPORT

ANALYTE	PATIENT CONCENTRATION	UNITS	HEALTH-ASSOCIATED REFERENCE MEAN	HEALTH-ASSOCIATED REFERENCEINTERVAL
HEMATOLOGY SYSTEMS ANALYSIS				
ERYTHROCYTE SYSTEM:				
Red Blood Cells	**5.68**	10^6/CU.MM	5.40 M	4.2 - 5.4
Hemoglobin	**15.6**	G/DL	16.0 M	12 - 16
Hematocrit	**46.8**	%	47.0 M	38 - 47
Mean Corpuscular Volume	**90**	FL	87 M	82 - 100
Mean Corpuscular Hemoglobin	**29.9**	PG	30.0	27.0 - 33.0
M.C. Hemoglobin Concentration	**33.3**	%	34.0	32.0 - 36.0
LEUKOCYTE SYSTEM:				
White Blood Cells	**4.4**	10^3/CU.MM	7.6	4.2 - 11.0
Segmented Neutrophils	**53**	%	60	50 - 70
Band Neutrophils	**0**	%	3	0 - 6
Lymphocytes	**42**	%	30	20 - 40
Monocytes	**4**	%	3	1 - 6
Eosinophils	**1**	%	2	0 - 4
Basophils	**0**	%	0.5	0 - 1
Precursors	**0**	%	0	0
THROMBOCYTE SYSTEM:				
Platelets	**231**	10^3/CU.MM	270	150 - 390
CELLULAR MORPHOLOGY *				
Normochromic	**4+**	%/hpf	4+	3+ - 4+
Normocytic	**4+**	%/hpf	4+	3+ - 4+
Hypochromatic	**0**	%/hpf	0	0 - 1+
Polychromatic	**0**	%/hpf	0	0 - 1+
Anisocytic	**0**	%/hpf	0	0 - 1+
Poikilocytic	**0**	%/hpf	0	0 - 1+
Macrocytes	**0**	%/hpf	0	0 - 1+
Microcytes	**0**	%/hpf	0	0 - 1+
Acanthocytes	**0**	%/hpf	0	0 - 1+
Spherocytes	**0**	%/hpf	0	0
Codocytes	**0**	%/hpf	0	0
Basophilic Stippling	**0**	%/hpf	0	0
Toxic Granulation	**0**	%/hpf	0	0
Other	**0**	%/hpf	0	0

* Morphology Legend: **1+** = 5-25% /hpf **2+** = 25-50% /hpf **3+** = 50-90% /hpf **4+** = 90-100% /hpf

Healthsystems Analysis

CUMULATIVE TREND ANALYSIS

HEALTH & NUTRITION ASSESSMENT SURVEY (HANAS):

BIOCHEMICAL ANALYSIS
URINE BIOCHEMICAL ANALYSIS
URINE MICROSCOPY
HEMATOLOGY ANALYSIS
CELLULAR MORPHOLOGY

IMPORTANT NOTATION: ON JANUARY 20, 1992 THE HEALTH & NUTRITION ASSESSMENT SURVEY HAS BEEN ANALYZED ON DIFFERENT INSTRUMENTATION. NOTE THAT PATIENT INTRA-VARIATION MAY BE EFFECTED BECAUSE OF A CHANGE IN REAGENTRY, INSTRUMENTATION OR METHODOLOGY.

THEREFORE PLEASE REFER TO PAST CUMULATIVE ANALYSES PRIOR TO JANUARY 1992 WITH CAUTION SINCE THEY WILL BE REPORTED IN THIS NEW CUMULATIVE PERIOD.

A NEW PERIOD OF CUMULATIVE REPORTING BEGAN ON JANUARY 20, 1992. ALL CUMULATIVE REPORTS SHALL PROCEED FROM THIS DATE.

THE PURPOSE OF THIS SYSTEM FORMAT IS TO PRESENT THE BIOCHEMICAL AND HEMATOLOGICAL DATA IN A CUMULATIVE MANNER, THEREBY DISPLAYING INTRA-VARIATION THRU AN INTERVAL OF THREE SEPARATE ANALYSES. IT IS NOT THE INTENT, IMPLIED OR OTHERWISE, TO DIAGNOSE OR PRESCRIBE TREATMENT MODALITIES BASED SOLELY ON THE LABORATORY VARIATIONS. THE RESPONSIBILITY OF Healthsystems Analysis IS TO PUT FORTH ACCURATE AND PRECISE DATA WHILE EXERCISING GOOD LABORATORY PRACTICE.

Healthsystems Analysis

Patient: 87-506222

Reference Physician:

TINSLEY, DR. CURTIS J.
M 46Y 69HT 225WT

MURRAY, D.C., RICHARD
02.06.96 0835 CJT

CUMULATIVE TREND ANALYSIS

ANALYTE	CONCENTRATION(S) 02.06.96	01.12.95	01.28.94	HEALTH-ASSOCIATED REFERENCE INTERVAL
ORGAN SYSTEMS ANALYSIS				
MYOCARDIUM SYSTEM:				
Creatine Kinase	106	89	92	5 - 225
Aspartate Aminotransferase	16	17	16	0 - 40
Lactate Dehydrogenase	127	115	121	90 - 230
KIDNEY SYSTEM:				
Urea Nitrogen	15	16	14	6 - 26
Creatinine	1.0	1.0	1.1	0.6 - 1.4
Urea / Creatinine Ratio	15	16	13	8 - 28
LIVER-BILIARY SYSTEM:				
Gamma Glutamyl Transpeptidase	15	18	17	3 - 60
Aspartate Aminotransferase	16	21	23	0 - 40
Alanine Aminotransferase	8	15	17	0 - 44
Alkaline Phosphatase	71	89	78	35 - 115
Total Bilirubin	0.5	0.4	0.5	0.1 - 1.3
Total Protein	7.3	7.4	7.5	6.0 - 8.4
Albumin	5.2	5.1	5.3	3.4 - 5.4
Globulin	2.1	2.3	2.2	1.6 - 3.2
SKELETAL SYSTEM:				
Alkaline Phosphatase	71	89	78	35 - 115
Calcium	9.5	8.9	9.2	8.5 - 10.5
Phosphate	3.5	3.6	3.5	2.5 - 4.5
Uric Acid	6.0	6.2	5.8	3.6 - 8.4
THYROID SYSTEM:				
Thyroxine	7.6	8.2	8.5	4.5 - 12.5
IRON METABOLISM:				
Iron	125	96	89	50 - 150
CARBOHYDRATE METABOLISM:				
Glucose	96	89	84	70 - 110

Healthsystems Analysis

Patient: 87-506222

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CUMULATIVE TREND ANALYSIS

ANALYTE	CONCENTRATION(S) 02.06.96	01.12.95	01.28.94	HEALTH-ASSOCIATED REFERENCE INTERVAL
MINERAL ELECTROLYTE SYSTEM:				
Sodium	141	140	141	136 - 148
Potassium	4.7	4.5	4.5	3.5 - 5.3
Chloride	103	102	103	96 - 110
Calcium	9.5	8.9	9.2	8.5 - 10.5
Phosphorus	3.5	3.6	3.5	2.5 - 4.5
LIPID METABOLISM:				
Triglycerides	190	254	210	30 - 150
Cholesterol	215	208	206	140 - 260
High Density Lipoprotein	48	46	39	29 - 61
Low Density Lipoprotein	129	111	125	66 - 178
Very Low Density Lipoprotein	38	51	42	0 - 40
Cholesterol / HDL Ratio	4.47	4.52	5.28	< 5.0
LDL / HDL Ratio	2.68	2.41	3.20	< 3.5
Coronary Heart Disease Risk	1.00	1.00	1.49	< 1.0
URINE BIOCHEMICAL ANALYSIS				
Color	YELLOW	YELLOW	YELLOW	YELLOW
Appearance	CLEAR	CLEAR	CLEAR	CLEAR
Specific Gravity	1.025	1.020	1.025	1.016 - 1.022
pH	6.0	5.5	6.0	5 - 7
Protein	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
Glucose	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
Ketones	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
Bilirubin	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
Blood	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
Urobilinogen	0.2	0.2	0.2	0.1 - 1.0
URINE MICROSCOPY				
White Blood Cells	1 - 2	0 - 2	0 - 2	0 - 5
Red Blood Cells	0	0	0 - 1	0 - 2
Epithelial Cells	1 - 2	2 - 4	1 -3	VARIABLE
Bacteria	0	0	0	0
Yeast	0	0	0	0
Crystals	0	0	0	VARIABLE
Casts	0	0	0	0
Other				

Healthsystems Analysis

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CUMULATIVE TREND ANALYSIS

ANALYTE	CONCENTRATION(S) 02.06.96	01.12.95	01.28.94	HEALTH-ASSOCIATED REFERENCE INTERVAL
HEMATOLOGY SYSTEMS ANALYSIS				
ERYTHROCYTE SYSTEM:				
Red Blood Cells	**5.68**	**5.61**	**5.59**	4.60 - 6.20
Hemoglobin	**15.6**	**15.5**	**15.3**	14.0 - 18.0
Hematocrit	**46.8**	**46.2**	**45.9**	40.0 - 54.0
Mean Corpuscular Volume	**90**	**89**	**89**	80 - 94
Mean Corpuscular Hemoglobin	**29.9**	**30.1**	**30.0**	27.0 - 33.0
M. C. Hemoglobin Concentration	**33.3**	**33.4**	**33.2**	32.0 - 36.0
LEUKOCYTE SYSTEM:				
White Blood Cells	**9.6**	**9.2**	**10.2**	4.2 - 11.0
Segmented Neutrophils	**65**	**63**	**62**	50 - 70
Band Neutrophils	**0**	**0**	**0**	0 - 6
Lymphocytes	**32**	**29**	**34**	20 - 40
Monocytes	**3**	**8**	**4**	1 - 6
Eosinophils	**0**	**0**	**0**	0 - 4
Basophils	**0**	**0**	**0**	0 - 1
Precursors	**0**	**0**	**0**	0
THROMBOCYTE SYSTEM:				
Platelets	**231**	**205**	**226**	150 - 390
CELLULAR MORPHOLOGY *				
Normochromic	**4+**	**4+**	**4+**	3+ - 4+
Normocytic	**4+**	**4+**	**4+**	3+ - 4+
Hypochromatic	**0**	**0**	**4+**	0 - 1+
Polychromatic	**0**	**0**	**0**	0 - 1+
Anisocytic	**0**	**0**	**0**	0 - 1+
Poikilocytic	**0**	**0**	**0**	0 - 1+
Macrocytes	**0**	**0**	**0**	0 - 1+
Microcytes	**0**	**0**	**0**	0 - 1+
Acanthocytes	**0**	**0**	**0**	0 - 1+
Spherocytes	**0**	**0**	**0**	0
Codocytes	**0**	**0**	**0**	0
Basophilic Stippling	**0**	**0**	**0**	0
Toxic Granulation	**0**	**0**	**0**	0
Other	**0**	**0**	**0**	0

* Morphology Legend: **1+** = 5-25% /hpf **2+** = 25-50% /hpf **3+** = 50-90% /hpf **4+** = 90-100% /hpf

INDIVIDUAL ANALYTE PATHOPHYSIOLOGY

Twenty-seven (27) analytes of **BIOCHEMICAL ANALYSIS** are listed on the following pages in alphabetic order. The statements made concerning the bioanalytes have been orientated with nutritional assessment as the premise. General descriptions of the analytes have been compiled from the public domain of medical information and applied to the unique requirements of Healthsystems Analysis. The conditions for decreased and increased concentrations are general in nature, but orientated around a nutritional health premise. The conditions listed are not conclusive, but do reflect as accurately as possible the scope of Preventive Care. Since this type and caliber of routine report is unprecedented, your professional input is strongly recommended for this report is not intended as a practice of clinical pathology.

NONDISEASE SOURCES OF CONCENTRATION VARIATION

FASTING: Fasting is the standard condition for the Healthsystems Analysis Survey. **A fast of twelve (12) hours, but no more than sixteen (16) hours** is recommended for patient standardization.

EATING: Ingestion of food up to 4 - 6 hours will compromise the standardization for the analysis. **Water is encouraged.**

EXERCISE: Vigorous to strenuous physical exercise can greatly effect homeostasis of glucose, lactate, glycerol, hormones, and muscle enzymes. A general physiologic rule follows: the degree to which an individual is out-of-shape, the greater the elevation in muscle enzymes.

ALCOHOL: Long and short term effects are demonstrated; such as hypoglycemia, elevated uric acid and triglycerides.

COFFEE: Coffee stimulates increases of cortisol, cathecholamines and non-esterified fatty acids.

TOBACCO: Smoking compromises homeostatic cathecholamines and cortisol. Most individuals find this restriction untolerable for this survey. Notation of smoker or non-smoker is made.

POSTURE: Usually variation occurs between sitting briefly for venipuncture and prolonged lying in bed. Most individuals for this survey are healthy ambulatory.

DRUGS: There are well over 30,000 drugs that can effect some metabolic parameters. Medication history is important.

HEALTH: The Health-Associated Reference Interval is statistically applied when there may exist a pathophysiologic overlap between HAD 2 - 3. This effects approximately 4.5% of a referenced population and care must be exercised to include individual intra-variation in this interval.

Healthsystems Analysis

ABOUT THE... HEALTH ASSESSMENT DEVIATION

The Health Assessment Deviation (HAD) is a fresh and innovative method of understanding the intricate relationship between "health" and "pathology". As it is with any miraculous creation, human physiology is an exquisite interdependent system functioning according to a designed harmony. Health almost becomes an esoteric or ontological concept when one looks deep into the mechanism that operates the human body.

The HAD is an attempt to classify the analyte concentrations into mutually exclusive "domains" that do not conclusively define health or pathology, but establishes some reference point in order to deduce the physiologic status of the individual during nutritional processes. Simply stated, HAD values originate at "zero" and extend in a positive and negative direction until a cut-off value of 1.99, designated as CLASS I concentration. CLASS I analyte concentrations include 95% of the reference population concentrations for a particular analyte. Let us consider a simple physical analogy. Because of the metabolic processes of human physiology, heat is transferred from the internal organs to the peripheral skin, where the temperature is measured. Assume then, **a priori**, that 98.6 degrees (37 degrees Centigrade) is the "health standard" and any deviation upward, say to 100.5 degrees constitues a positive direction of body temperature. Employing the HAD and classification, 98.6 is the "health standard" designated at HAD = 0 and the measurement 100.5 degrees falls within 95% of 100 persons measured for body temperature. Therefore, it follows that a measurement of 100.5 degrees is a CLASS I measurement with a HAD = 1.96, assuming a standard deviation for 100 measurements is 1.0 degrees. Hence, statistically 1.96 = 95% of the population measured for body temperature. The following diagram demonstrates statistical relationships between measurements, HAD and statistical inference.

```
[  95.6------96.6----97.6-----98.6----99.6----100.6------101.6  ]
   -3.0     -2.0     -1.0          0      1.0      2.0      3.0
                              [50%]
                          [---------68%----------]
                     [------------------95%----------------------]
               [-----------------------------99.7%-----------------------------------]
```

Taking advantage of the open number deviation, an individual analyte concentration can be located from a "health standard" helping the physician to determine his patient's "base-line" parameters [**homeostasis**] and to audit any proceeding variations in a concentration as a follow-up test.

THE SOLE PUPOSE FOR PROVIDING THE HEALTH ASSESSMENT DEVIATION IS TO AUGMENT THE VISUALIZATION OF THE NUMERICAL FINDINGS REPORTED BY THE LABORATORY. THE HAD CLASSIFICATION IS NOT A DIAGNOSIS, BUT A TOOL TO BE USED BY THE PRACTICING PHYSICIAN. NUTRITIONAL CONSULTATION IS AVAILABLE.

Healthsystems Analysis

ABOUT THE...

ANALYTE CONCENTRATION CLASSIFICATION SYSTEM

The Analyte Concentration Classification System (ACCS) is a concept that effectively and efficiently assimilates the empirical data produced by the clinical laboratory. The classification system can be further expanded to reflect a symptom category. Since the activity of the clinical laboratory is to measure the subclinical findings via bioanalysis, the numeric data (analyte concentration) can be translated to a symptom category as follows:

CLASS I CLASS I analytes may reflect **FUNCTIONAL** physiologic symptomotology. These are the usual indicants observed in "stable-state physiology" or **homeostasis**. Functional symptoms may also be expressed in the presence of a known disease entitiy. These measurements are the **anticipated** concentrations in nondiseased subjects and includes 95% of a sampling or diagnostic paradigm that usually reflects a zone of positive health. HAD = 0 - 1.99

CLASS II CLASS II analytes may reflect **EQUIVOCAL** physiologic symptomotology. These indicants may not point to any special disease entity, being associated with any one of a number of morbid states. This class of measurements may also indicate a health/disease overlap referred to as **PHYSIOLOGIC OVERLAP** or may be due to individual variation or indicative of a prodromal effect and includes 99.7% of a sampling or diagnostic paradigm that usually reflects a zone of cautious health. HAD = 2.0 - 2.99

CLASS III CLASS III analytes may reflect **PATHOGNOMONIC** symptomotology. These indicants usually points unmistakably to certain disease entities. If there are no medical operatives such as drugs, exercise, or genetics, then these measurements indicate decreased health unless a desirably elevated concentration is beneficial to physiologic function. HAD = > 3.0

THE PURPOSE OF THE ANALYTE CONCENTRATION CLASSIFICATION SYSTEM IS TO PRESENT THE BIOCHEMICAL AND HEMATOLOGICAL DATA IN A MORE CONCEPTUAL MANNER BASED ON THE STATISTICAL DISTRIBUTION OF A DIAGNOSTIC PARADIGM. IT IS NOT THE INTENT, IMPLIED OR OTHERWISE, TO DIAGNOSE OR PRESCRIBE TREATMENT MODALITIES BASED SOLELY ON THE LABORATORY FINDINGS. THE RESPONSIBILITY OF Healthsystems Analysis IS TO PUT FORTH ACCURATE AND PRECISE DATA WHILE EXERCISING GOOD LABORATORY PRACTICE.

Healthsystems Analysis

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Reference Physician:

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HEALTH ASSESSMENT DEVIATION REPORT

ORGAN SYSTEMS ANALYSIS

ANALYTE	PATIENT CONCENTRATION	ANALYTE CONCENTRATION CLASS I	CLASS II	CLASS III
MYOCARDIUM SYSTEM:				
Creatine Kinase	106	-0.16	.	.
Aspartate Aminotransferase	16	-0.4	.	.
Lactate Dehydrogenase	127	-0.94	.	.
KIDNEY SYSTEM:				
Urea Nitrogen	15	-0.2	.	.
Creatinine	1.0	0	.	.
Urea / Creatinine Ratio	15.0	-0.6	.	.
LIVER-BILIARY SYSTEM:				
Gamma Glutamyl Transpeptidase	15	-1.15	.	.
Aspartate Aminotransferase	16	-0.4	.	.
Alanine Aminotransferase	8	-1.27	.	.
Alkaline Phosphatase	71	-0.2	.	.
Total Bilirubin	0.5	-0.66	.	.
Total Protein	7.3	0.16	.	.
Albumin	5.2	1.6	.	.
Globulin	2.1	-0.74	.	.
SKELETAL SYSTEM:				
Alkaline Phosphatase	71	-0.2	.	.
Calcium	9.5	0	.	.
Phosphate	3.5	0	.	.
Uric Acid	6.0	0	.	.
THYROID SYSTEM:				
Thyroxine	7.6	-0.45	.	.
IRON METABOLISM:				
Iron	125	1.0	.	.
CARBOHYDRATE METABOLISM:				
Glucose	96	0.6	.	.

Healthsystems Analysis

Patient: 87-506222

Reference Physician:

TINSLEY, DR. CURTIS J.
M 46Y 69HT 225WT

MURRAY, D.C., RICHARD
02.06.96 0835 CJT

HEALTH ASSESSMENT DEVIATION REPORT

ANALYTE	PATIENT CONCENTRATION	ANALYTE CONCENTRATION CLASS I	CLASSIFICATION CLASS II	CLASSIFICATION CLASS III
MINERAL ELECTROLYTE SYSTEM:				
Sodium	141	-0.33	.	.
Potassium	4.7	0.66	.	.
Chloride	103	0	.	.
Calcium	9.5	0	.	.
Phosphorus	3.5	0	.	.
LIPID METABOLISM:				
Triglycerides	190	.	.	3.33
Cholesterol	215	0.5	.	.
High Density Lipoprotein	48	0.37	.	.
Low Density Lipoprotein	141	0.67	.	.
Very Low Density Lipoprotein	26	0.6	.	.
Cholesterol / HDL Ratio	---			
LDL / HDL Ratio	---			
Coronary Heart Disease Risk	---			

URINE BIOCHEMICAL ANALYSIS

Color	---
Appearance	---
Specific Gravity	---
pH	---
Protein	---
Glucose	---
Ketones	---
Bilirubin	---
Blood	---
Urobilinogen	---

URINE MICROSCOPY

White Blood Cells	---
Red Blood Cells	---
Epithilial Cells	---
Bacteria	---
Yeast	---
Crystals	---
Casts	---
Other	

Healthsystems Analysis

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HEALTH ASSESSMENT DEVIATION REPORT

ANALYTE	PATIENT CONCENTRATION	ANALYTE CONCENTRATION CLASS I	CLASS II	CLASS III
HEMATOLOGY SYSTEMS ANALYSIS				
ERYTHROCYTE SYSTEM:				
Red Blood Cells	5.68	0.7	.	.
Hemoglobin	15.6	-0.4	.	.
Hematocrit	46.8	-0.05	.	.
Mean Corpuscular Volume	90	0.85	.	.
Mean Corpuscular Hemoglobin	29.9	-0.06	.	.
M.C. Hemoglobin Concentration	33.3	-0.7	.	.
LEUKOCYTE SYSTEM:				
White Blood Cells	4.4	-1.88	.	.
Segmented Neutrophils	53	-1.64	.	.
Band Neutrophils	0	.	.	.
Lymphocytes	42	-1.1	.	.
Monocytes	4	-1.12	.	.
Eosinophils	1	-1.6	.	.
Basophils	0	.	.	.
Precursors	0			
THROMBOCYTE SYSTEM:				
Platelets	231	-0.65	.	.
CELLULAR MORPHOLOGY *				
Normochromic	---			
Normocytic	---			
Hypochromatic	---			
Polychromatic	---			
Anisocytic	---			
Poikilocytic	---			
Macrocytes	---			
Microcytes	---			
Acanthocytes	---			
Spherocytes	---			
Codocytes	---			
Basophilic Stippling	---			
Toxic Granulation	---			
Other	---			

* Morphology Legend: 1 + = 5-25% /hpf 2 + = 25-50% /hpf 3 + = 50-90% /hpf 4 + = 90-100% /hpf

INDIVIDUAL ANALYTE PATHOPHYSIOLOGY

Twenty-seven (27) analytes of **BIOCHEMICAL ANALYSIS** are listed on the following pages in alphabetic order. The statements made concerning the bioanalytes have been orientated with nutritional assessment as the premise. General descriptions of the analytes have been compiled from the public domain of medical information and applied to the unique requirements of Healthsystems Analysis. The conditions for decreased and increased concentrations are general in nature, but orientated around a nutritional health premise. The conditions listed are not conclusive, but do reflect as accurately as possible the scope of Preventive Care. Since this type and caliber of routine report is unprecedented, your professional input is strongly recommended for this report is not intended as a practice of clinical pathology.

NONDISEASE SOURCES OF CONCENTRATION VARIATION

FASTING: Fasting is the standard condition for the Healthsystems Analysis Survey. **A fast of twelve (12) hours, but no more than sixteen (16) hours** is recommended for patient standardization.

EATING: Ingestion of food up to 4 - 6 hours will compromise the standardization for the analysis. **Water is encouraged.**

EXERCISE: Vigorous to strenuous physical exercise can greatly effect homeostasis of glucose, lactate, glycerol, hormones, and muscle enzymes. A general physiologic rule follows: the degree to which an individual is out-of-shape, the greater the elevation in muscle enzymes.

ALCOHOL: Long and short term effects are demonstrated; such as hypoglycemia, elevated uric acid and triglycerides.

COFFEE: Coffee stimulates increases of cortisol, cathecholamines and non-esterified fatty acids.

TOBACCO: Smoking compromises homeostatic cathecholamines and cortisol. Most individuals find this restriction untolerable for this survey. Notation of smoker or non-smoker is made.

POSTURE: Usually variation occurs between sitting briefly for venipuncture and prolonged lying in bed. Most individuals for this survey are healthy ambulatory.

DRUGS: There are well over 30,000 drugs that can effect some metabolic parameters. Medication history is important.

HEALTH: The Health-Associated Reference Interval is statistically applied when there may exist a pathophysiologic overlap between HAD 2 - 3. This effects approximately 4.5% of a referenced population and care must be exercised to include individual intra-variation in this interval.

Healthsystems Analysis

Patient: 87-506222

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ALANINE AMINOTRANSFERASE

Your patient's Alanine Aminotransferase concentration has been measured in conventional units:

8 U/L

Health-Associated Reference Interval

0 - 44 U/L

Alanine Aminotransferase (ALT) was formerly called Serum Glutamic Pyruvic Transaminase (SGPT). ALT is an enzyme produced primarily in the liver, and secondarily in skeletal muscle and the myocardium. Therefore, ALT is a more liver-specific enzyme rarely observed in high concentrations other than parenchymal liver disease.
ALT serum levels can be increased as much as 100 fold in hepatocellular destruction, although 20 - 50 fold elevations are most encountered in viral hepatitis before the clinical signs and symptoms of jaundice manifest.

DECREASED CONCENTRATIONS LESS THAN 4 U/L:

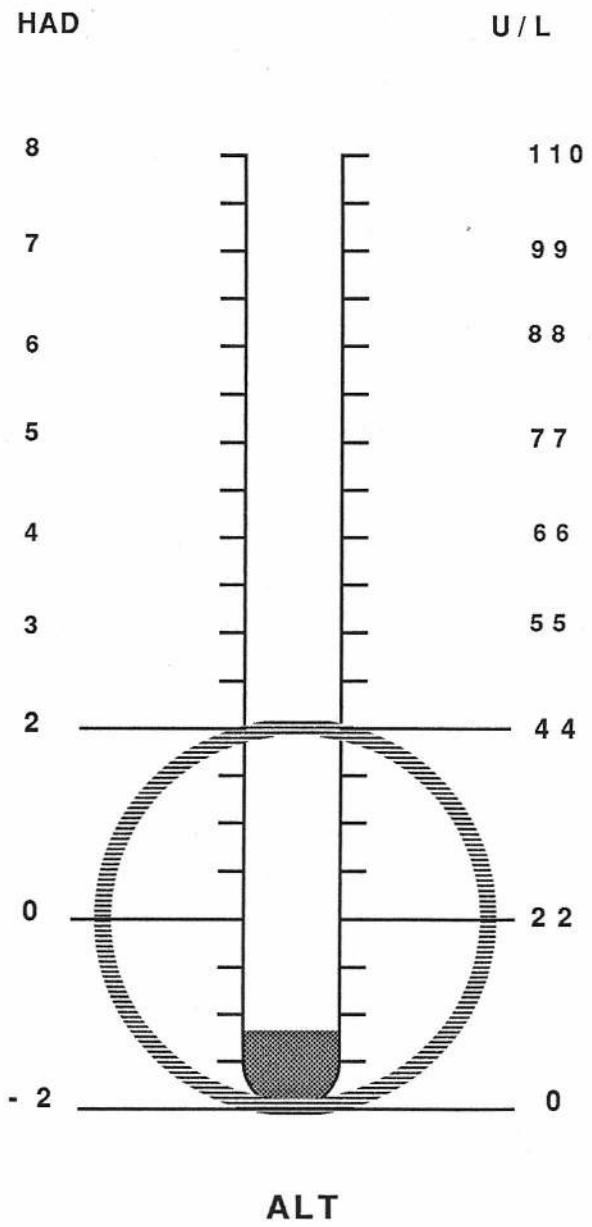
* Usually influenced by salicylate ingestion
* Physical exercise - strenuous

INCREASED CONCENTRATIONS GREATER THAN 44 U/L:

* 20 - 50 fold during acute viral hepatitis
* Liver necrosis from toxic agents
* Acute alcohol intoxication
* Infectious mononucleosis

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

Patient: 87-506222

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ALBUMIN

Your patient's Albumin concentration has been measured in conventional units:

5.2 G/DL

Health-Associated Reference Interval

3.4 - 5.4 G/DL

Albumin is a globular protein, free of any carbohydrate constituents and contributes approximately 60% of the total plasma proteins. Albumin facilitates maintenance of the colloid osmotic pressure of the blood in circulation; hence, it prevents and controls peripheral edema. This protein is synthesized in the liver at a rate that is dependent on dietary intake of amino acids. Therefore, serum albumin concentrations can be considered a reliable indicator of visceral or nonmuscle protein status.
One of the most important biological functions is to transport and store metabolic constituents such as thyroxine, bilirubin, cortisol, calcium, magnesium, small molecules necessary for oncotic pressure and as a reserve source of endogeneous amino acids.

DECREASED CONCENTRATIONS LESS THAN 3.4 G/DL:

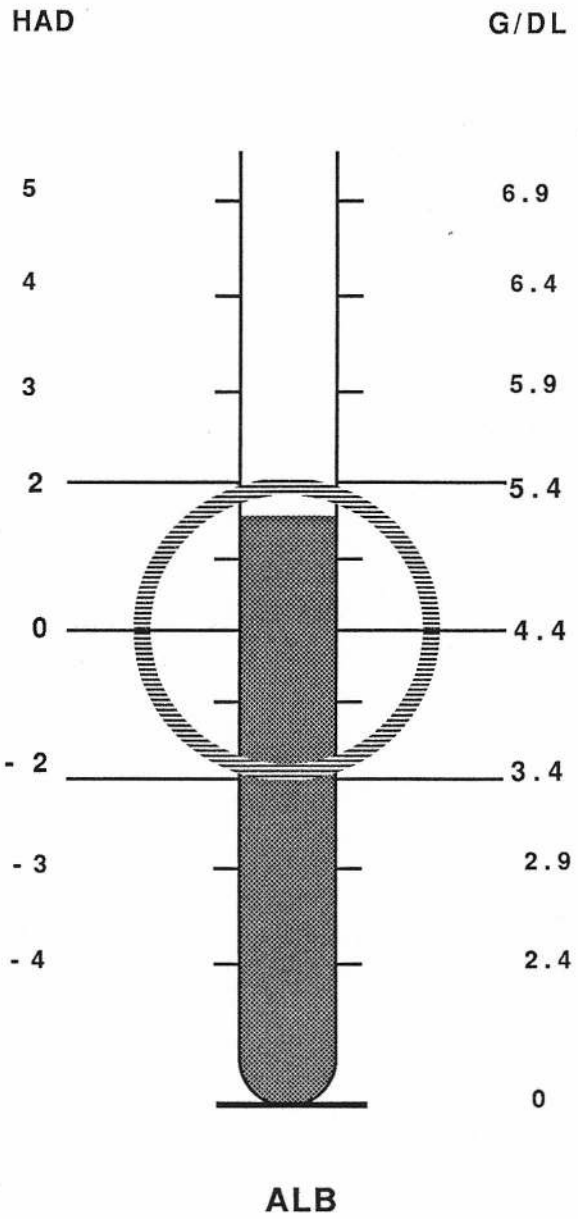
* Edema in the extremities
* Protein-calorie malnutrition
* Cirrohsis
* Severe acute liver disease
* Extravascular protein loss due to nephrotic syndrome
* Rare genetic familial idiopathic dysproteinemia

INCREASED CONCENTRATIONS GREATER THAN 5.4 G/DL:

* Dehydration

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

Patient: 87-506222

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02.06.96 0835 CJT

==========

ALKALINE PHOSPHATASE

Your patient's Alkaline Phosphatase concentration has been measured in conventional units:

71 U/L

Health-Associated Reference Interval

35 - 115 U/L

Alkaline Phosphatase (ALP) is actually the total enzyme activity of at least three different isoenzymes derived from differential tissues analyzed in the serum; ALP-1 is an isoenzyme formed by liver and biliary tract mucosal cells, ALP-2 is derived from osteoblastic activity in the bone that produces elevated concentrations of this isomer, and ALP-3 is produced by the intestinal mucosa - this isomer is absent in persons with blood group O and B.

DECREASED CONCENTRATIONS LESS THAN 35 U/L:

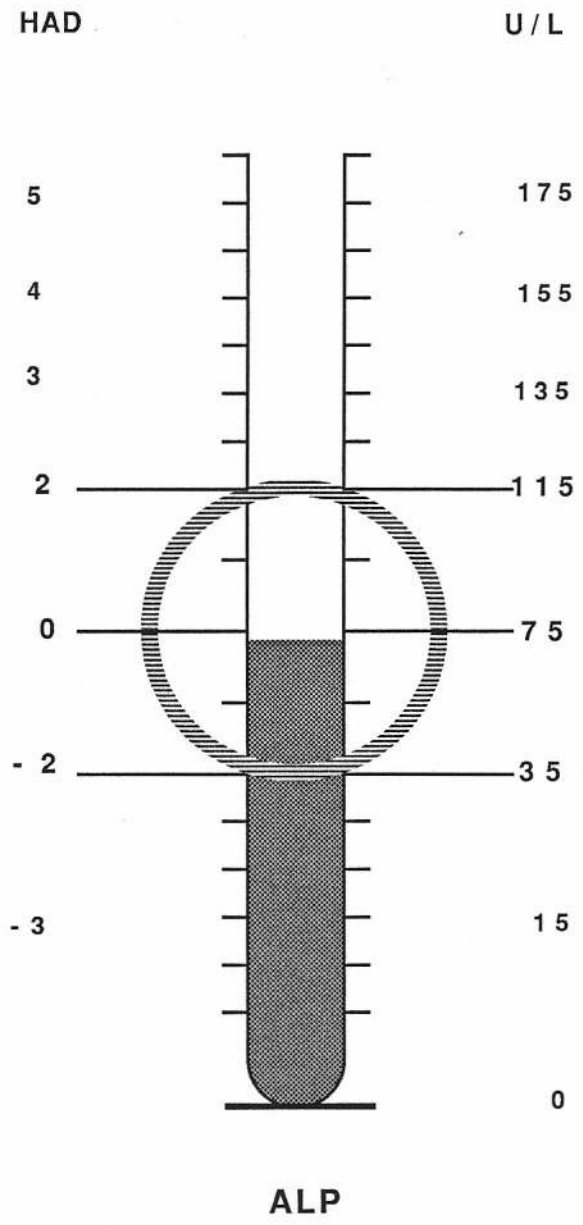
* Malnutrition
* Hypophosphatasia
* Hypervitaminosis D
* Scurvy

INCREASED CONCENTRATIONS GREATER THAN 115 U/L:

* Common bile duct obstruction with jaundice
* Primary biliary cirrhosis
* Hepatitis viruses
* 3 - 5 fold elevation in metastatic carcinoma of liver
* 10 fold elevation or greater in Paget's disease
* Rickets
* Osteoblastic metastatic carcinoma of the bone
* Gastrointestinal ulcerative diseases

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

Patient: 87-506222

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02.06.96 0835 CJT

ASPARTATE AMINOTRANSFERASE

Your patient's Aspartate Aminotransferase concentration has been measured in conventional units:

16 U/L

Health-Associated Reference Interval

0 - 40 U/L

Aspartate Aminotransferase (AST) was formerly called Serum Glutamic Oxaloacetic Transaminase (SGOT). AST is an enzyme of the aminotransferase class found in tissues of the heart, liver, skeletal muscle and erythrocytes. Following injury to hepatocellular and myocardial tissue, elevated concentrations are usually referenced in acute liver damage and frequently in acute myocardial infarction and some skeletal muscle diseases.

DECREASED CONCENTRATIONS LESS THAN 5 U/L:

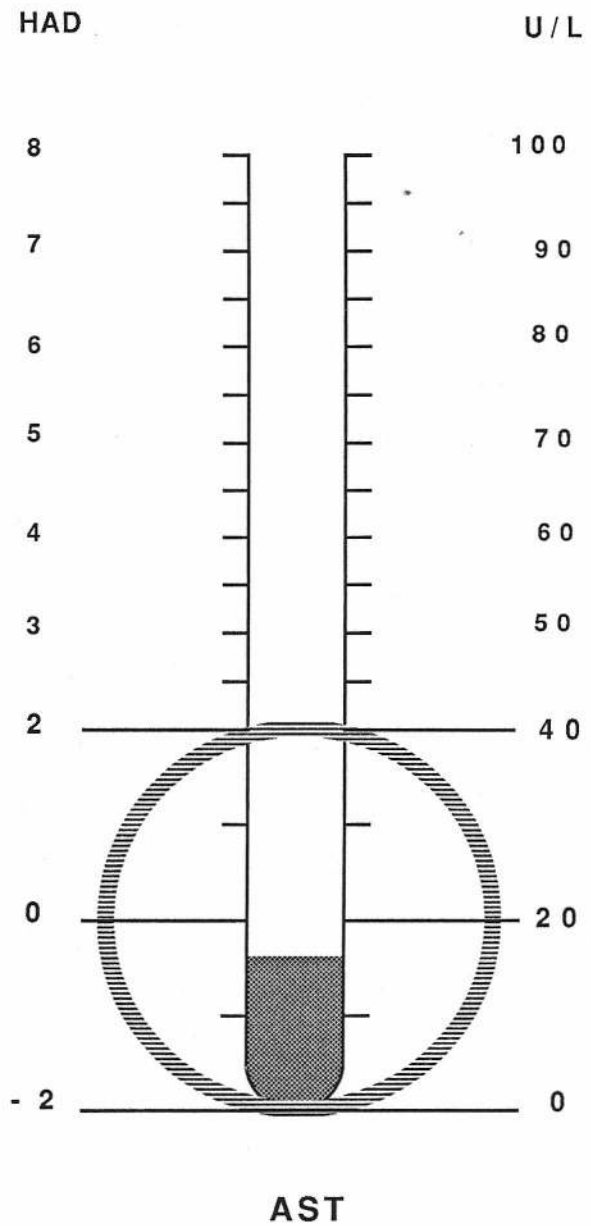
* Artifactual hemodilution

INCREASED CONCENTRATIONS GREATER THAN 40 U/L:

* 2 - 4 fold elevation in crushed muscle injury
* 2 - 4 fold elevation in acute pancreatitis
* 2 fold increase in pulmonary infarction
* 10 fold increase in acute hepatitis A , B & Non-A,B
* 10 fold increase in liver necrosis with ALT
* Acute myocardial infarction - damage dependent

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

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BILIRUBIN - TOTAL

Your patient's Total Bilirubin concentration has been measured in conventional units:

0.5 MG/DL

Health-Associated Reference Interval

0.1 - 1.3 MG/DL

Bilirubin is a yellow pigment by-product of hemoglobin degradation of aging erythrocytes formed in the cell of the reticuloendothelial system. Newly formed bilirubin bound to albumin (indirect or unconjugated) passes through the parenchymal cells of the liver where it forms bilirubin diglucuronide (direct or conjugated). Therefore, total bilirubin measured in the serum is the sum of the indirect + direct forms of bilirubin.

When total bilirubin concentrations exceed 2.5 MG/DL, jaundice may manifest. In all cases, total bilirubin is elevated: severe hemolysis releases more unconjugated (indirect) bilirubin into the plasma than cleared by the liver; hepatic jaundice produces elevations in conjugated (direct) and unconjugated (indirect) bilirubin; obstructive jaundice elevates the conjugated (direct) bilirubin since the obstructed flow of bile may be extrahepatic or intrahepatic.

DECREASED CONCENTRATIONS LESS THAN 0.1 MG/DL:

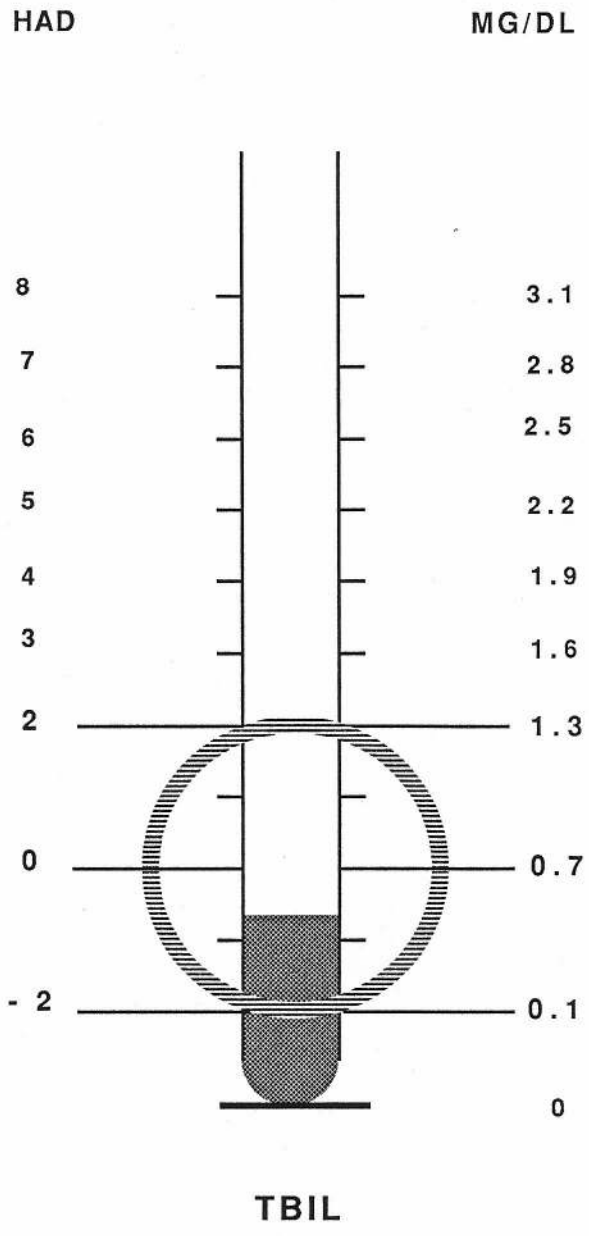
* ron deficiency anemia
* Influenced by ingestion of barbituates and salicylates

INCREASED CONCENTRATIONS GREATER THAN 1.3 MG/DL:

* Viral hepatitis with elevated AST
* Infectious mononucleosis with elevated AST
* Drug-induced acute liver cell injury with AST
* Active cirrhosis
* Metastatic tumor of the liver

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

Patient: 87-506222

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02.06.96 0835 CJT

CALCIUM

Your patient's Calcium concentration has been measured in conventional units:

9.5 MG/DL

Health-Associated Reference Interval

8.5 - 10.5 MG/DL

Calcium is a major inorganic mineral that occurs in the body in concentrations greater than 10 grams. The circulating level of calcium is regulated strictly through the interaction of parathyroid hormone, calcitonin and vitamin D. The total plasma calcium level consist of approximately 50% ionized which is physiologically active and the remainder is either nondiffusible albumin-bound or diffusable complexed calcium. Since the routine analysis of serum calcium measures only the albumin-bound form, an important relationship exists between the absorption of calcium and the level of plasma albumin. **For every increase or decrease of 1.0 G/DL of albumin, the homeostatic level of calcium increases or decreases about 1.2 MG/DL.**

DECREASED CONCENTRATIONS LESS THAN 8.5 MG/DL:

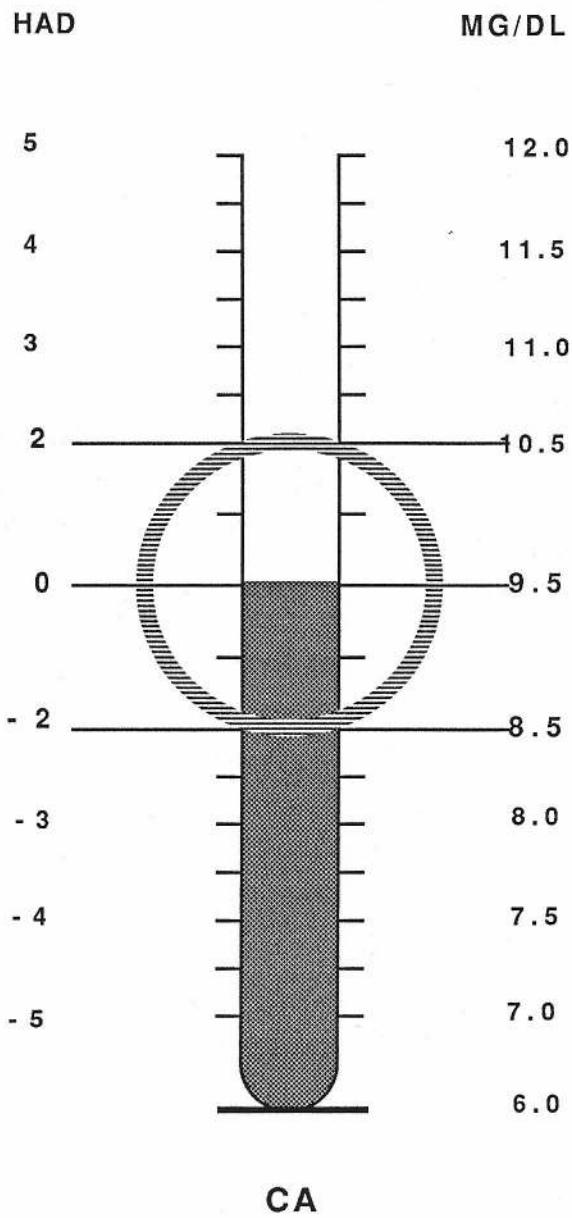
* Primary hypothyroidism with low PTH concentrations
* Malabsorption
* Renal failure due to phosphorus retention
* Vitamin D deficiency
* Hypoalbuminemia artifact

INCREASED CONCENTRATIONS GREATER THAN 10.5 MG/DL:

* Bone neoplasia - myeloma and acute leukemia
* Neoplasm secretion of PTH
* Primary hyperparathyroidism
* Artifactual - dehydration and elevated serum albumin

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

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02.06.96 0835 CJT

CHLORIDE

Your patient's Chloride concentration has been measured in conventional units:

103 MEQ/L

Health-Associated Reference Interval

96 - 110 MEQ/L

The element of chlorine forms a compound with another mineral element of sodium to provide the most abundant biological fluid of the body - saline. Chlorides can be readily absorbed in the gastrointestinal tract through dietary intake and easily excreted in the urine. Therefore, chloride plays an essential role in maintaining body water balance, osmolality of body fluids as sodium chloride and maintains a critical balance of acid-base physiology.

DECREASED CONCENTRATIONS LESS THAN 96 MEQ/L:

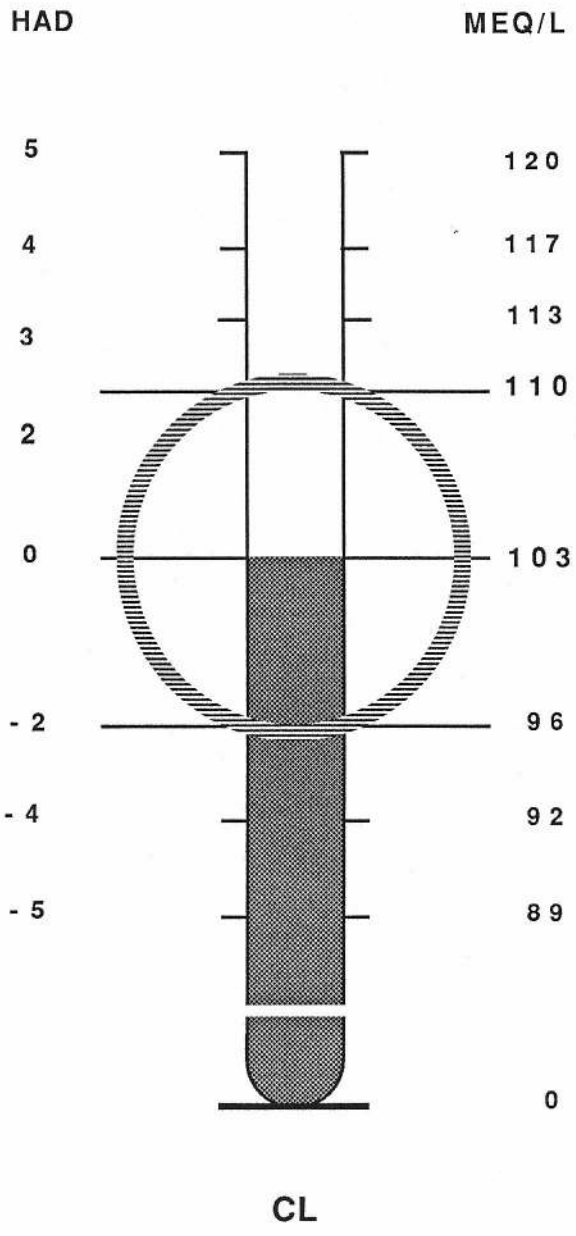
* Vomiting
* Diarrhea
* Uncompensated diuretic use
* Low plasma potassium levels
* Low plasma sodium levels
* Excessive diaphoresis

INCREASED CONCENTRATION GREATER THAN 104 MEQ/DL:

* Dehydration
* High plasma sodium levels
* Hyperparathyroidism
* Cancer of the stomach
* Adrenal gland hyperactivity
* Acute renal failure

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



Healthsystems Analysis

Patient: 87-506222

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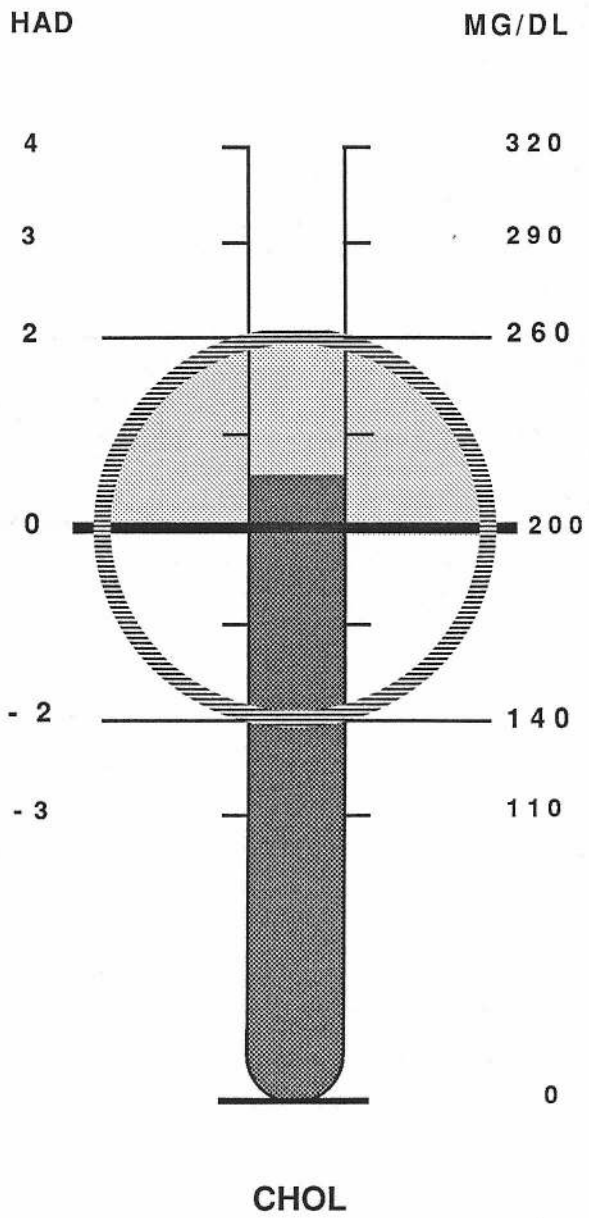
CHOLESTEROL - TOTAL

Your patient's Total Cholesterol concentration has been measured in conventional units:

215 MG/DL

Health-Associated Reference Interval

140 - 260 MG/DL



Cholesterol is an unsaturated steroid alcohol widely distributed in all animal tissue. The liver is primarily responsible for the daily metabolism of about 1 gram of esterified cholesterol where it is tranported by low density lipoprotein particles to membrane receptor cells. Cholesterol is also transported by high density lipoprotein particles back to the liver where it is excreted as conjugated bile salt. Elevated total cholesterol levels have demonstrated through long-term epidemiologic studies to contribute the greatest risk factor for developing coronary heart disease (CHD). Decreasing LDL cholesterol can significantly reduce the risk of progressive coronary, cerebral and peripheral vascular diseases.

The National Institute of Health has adopted the European Concensus Panel of Cholesterol Lowering target concentration greater than 200 MG/DL as being associated with unacceptable risk for CHD for adult Americans.

DECREASED CONCENTRATIONS LESS THAN 140 MG/DL:

* Diet
* Malnutrition
* Hyperthyroidism

INCREASED CONCENTRATIONS GREATER THAN 260 MG/DL:

* Atherosclerosis
* Familial hypercholesterolemia
* Uncontrolled diabetes mellitus
* Type II hyperlipoproteinemia
* High dietary intake of animal fat

PATHOPHYSIOLOGICAL IMPLICATIONS:

NIH RECOMMENDED TARGET LEVEL OF 200 MG/DL OR LESS MAY BE APPROPRIATE. YOUR PHYSICIAN SHOULD MAKE THIS DETERMINATION.

Healthsystems Analysis

Patient: 87-506222

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CORONARY HEART DISEASE RISK FACTOR

Your patient's Coronary Heart Disease (CHD) risk factor has been calculated with conventional units:

1.00 RISK FACTOR

Health-Associated Reference Interval

AVERAGE RISK = 1.0

The Coronary Heart Disease (CHD) risk factor is based predominantly on the Framingham Coronary Disease study employed by the Lipid Research Clinics Program of the NIH. The factor is based on the concentration of the serum HDL cholesterol. Pursuant to these studies, **HDL is considered a protective agent or anti-atherogenic constituent of the total cholesterol.** It is ascertained that HDL lipoprotein may act solely as a cholesterol clearing agent. Framingham demonstrated that the beneficial effects of HDL increases milligram for milligram above the concentration of 45 MG/DL for males. Therefore, it is assumed that as the HDL increases, the risk for Coronary Heart Disease decreases as a single variable. **NOTE: As the CHD risk factor increases over 1.0, the risk of CHD <u>increases</u> as HDL <u>decreases</u> as a single variable.**

DECREASED CONCENTRATIONS LESS THAN 1.0:

* If CHD = 1.00, then HDL = 45 MG/DL
* If CHD = 0.55, then HDL = 60 MG/DL
* If CHD = 0.45, then HDL = 65 MG/DL

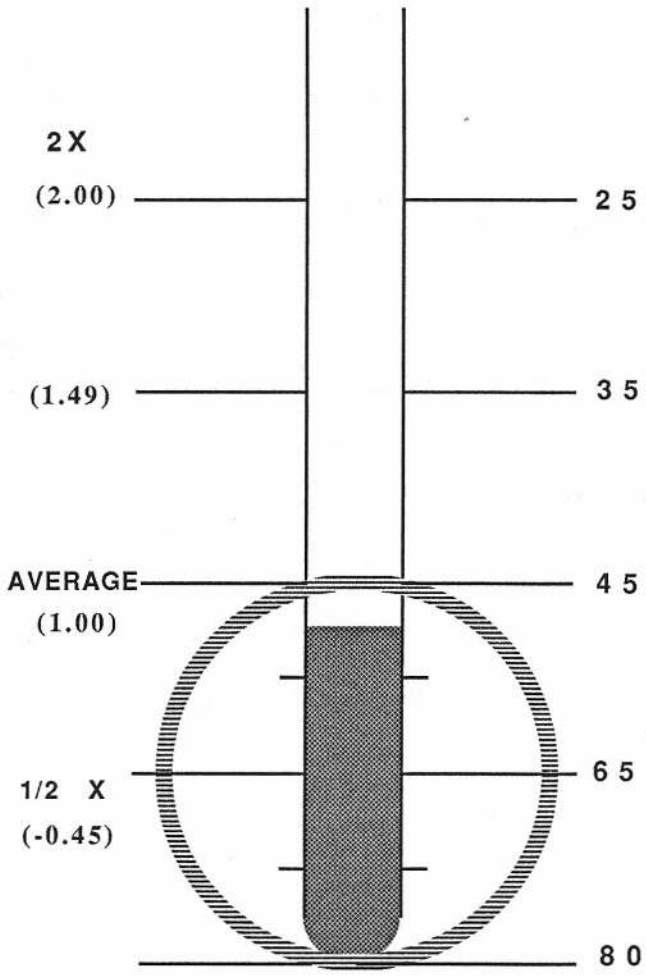
INCREASED CONCENTRATIONS GREATER THAN 1.0:

* If CHD = 1.22, then HDL = 40 MG/DL
* If CHD = 1.49, then HDL = 35 MG/DL
* If CHD = 2.00, then HDL = 25 MG/DL

PATHOPHYSIOLOGICAL IMPLICATIONS:

CHD RISK FACTOR MAY BE REDUCED BY INCREASING THE HDL-CHOLESTEROL AS A SINGLE VARIABLE.

CHD RISK FACTOR **HDL MG/DL**



CHD

Healthsystems Analysis

Patient: 87-506222

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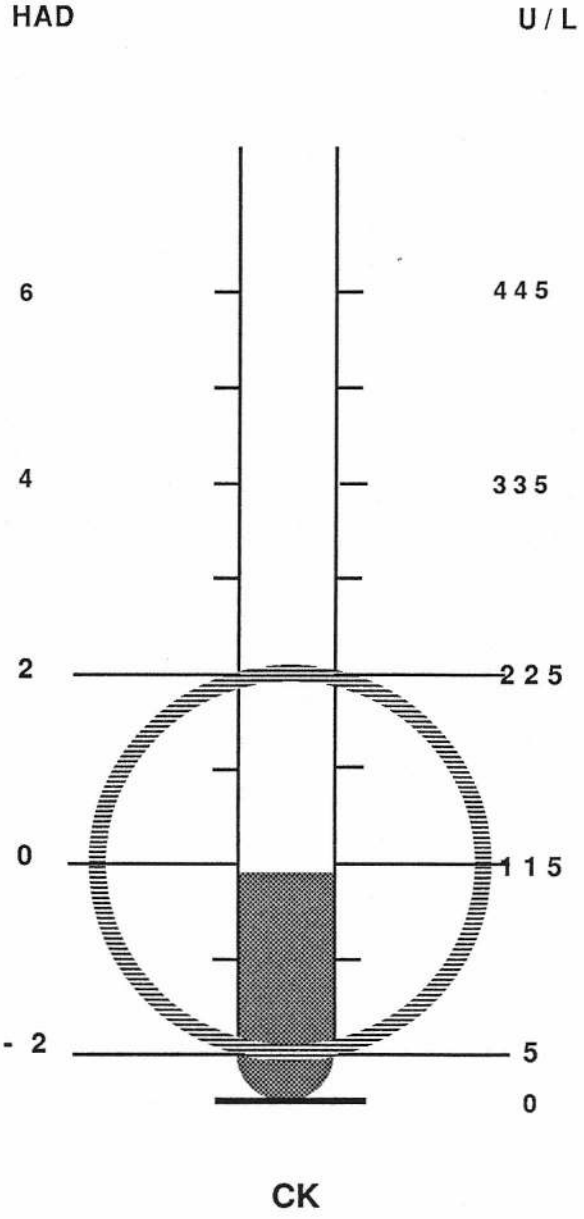
CREATINE KINASE

Your patient's total Creatine Kinase activity has been measured in conventional units:

106 U/L

Health-Associated Reference Interval

5 - 225 U/L



Creatine Kinase (CK) is a cytoplasmic and mitochondrial enzyme-protein formerly called creatine phosphokinase (CPK). Creatine kinase functions as a pivotal catalyst (enzyme) in the cellular formation of Adenosine Triphosphate (ATP), an obligatory substance for contractile muscle functions.

Creatine kinase displays two distinct isoenzyme species: M, isolated from muscle and B, isolated from brain to form three electrophoretic subdivisions: CK-MM, CK-MB AND CK-BB. The CK-MB is a hybrid isomer that displays increased activity from myocardium damage responsive to infarction or ischemia and Duchenne's muscular dystrophy. However, there is no increased CK-MB activity due to neutogenic muscle diseases, myasthenia gravis or multiple sclerosis. CK-MM isoenzyme activity represents approximately 99% of all creatine kinase responsive to skeletal muscle trauma. CK-BB activity can be 100% in many cases of cerebral vascular accidents (CVA), cerebral thrombosis and metastatic cancer of the brain.

DECREASED CONCENTRATIONS LESS THAN 5 U/L:

* Heredity
* Second trimester of pregnancy

INCREASED CONCENTRATIONS GREATER THAN 225 U/L:

* 10 fold elevation - transient from strenuous exercise
* Crushed skeletal muscle injury - usually all CK-MM
* All types of muscular dystrophy-Duchenne, progressive
* Deep muscle massage or intramuscular injection
* Myocardial infarction - CK-MB peak at 24 hours

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

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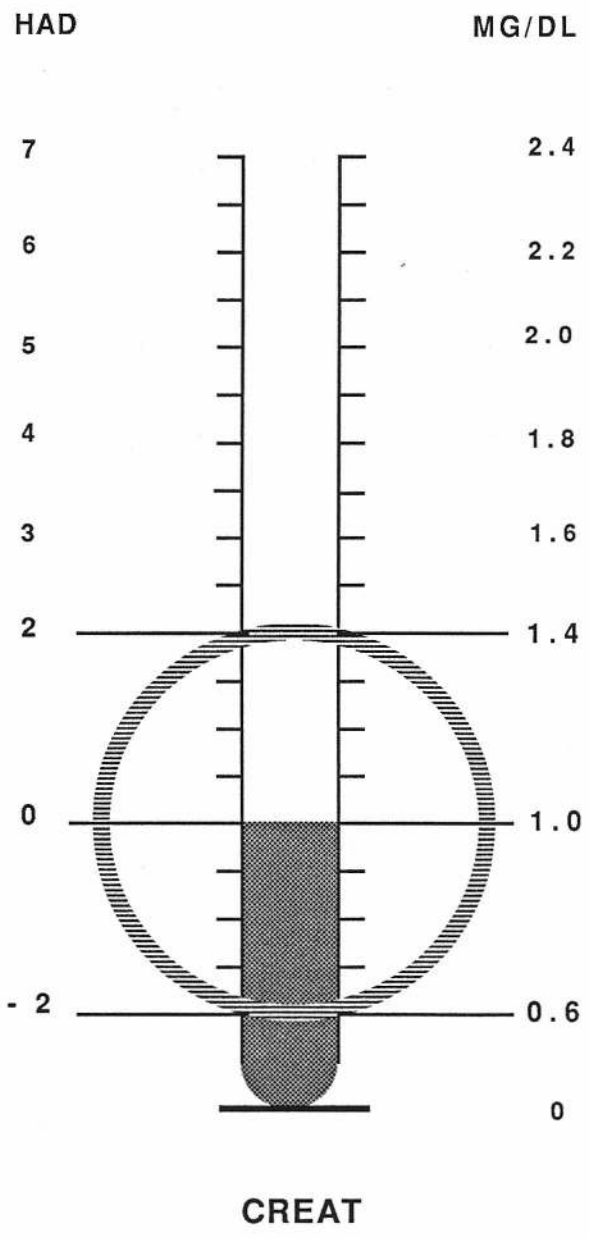
CREATININE

Your patient's Creatinine concentration has been measured in conventional units:

1.0 MG/DL

Health-Associated Reference Interval

0.6 - 1.4 MG/DL



Creatinine is the nonprotein nitrogenous waste product of creatine and phosphocreatine metabolism in muscle cells. Therefore, creatinine levels are dependent of the body muscle mass and are excreted in the urine at a relatively stable rate by the kidneys during normal physiologic conditions.
Serum creatinine may be a more sensitive and specific indicator of kidney disease because it is not influenced by diet or fluid intake. The determination of creatinine concentration in serum reflects the balance between the production from muscle metabolism and the rate of filtration by the renal glomerulus.

DECREASED CONCENTRATIONS LESS THAN 0.6 MG/DL:

* Pregnancy
* Eclampsia
* Influenced by ascorbic acid

INCREASED CONCENTRATION GREATER THAN 1.4 MG/DL:

* All diseases of the kidneys
* Diabetic nephropathy
* Systemic lupus erythematosus
* Artifactual in diets rich in creatinine - beef
* Artifactual in persons with large muscle mass

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

Patient: 87-506222

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GLOBULIN - TOTAL

Your patient's Total Globulin concentration has been measured in conventional units:

2.1 G/DL

Health-Associated Reference Interval

1.6 - 3.2 G/DL

Total Globulins consist of several different proteins that contribute about one third to the total serum protein level. Five groups of nonalbumin protein are: **Alpha-1 globulin** such as alpha-1 antitrypsin, glycoprotein, lipoprotein, and thyroxine-binding globulin; **Alpha-2 globulins** such as haptoglobin, ceruloplasmin, and alpha-2 macroglobulin; **Beta globulins** such as transferrin, plasminogen and beta-lipoprotein particles; **Fibrinogen** is found only in plasma before clotting has occured; **Gamma globulins** such as antibody immunoglobulin type IgG, IgM, IgA, IgD and IgE. Any deviation in any one fraction can alter the total globulin measurement.

DECREASED CONCENTRATIONS LESS THAN 1.6 MG/DL:

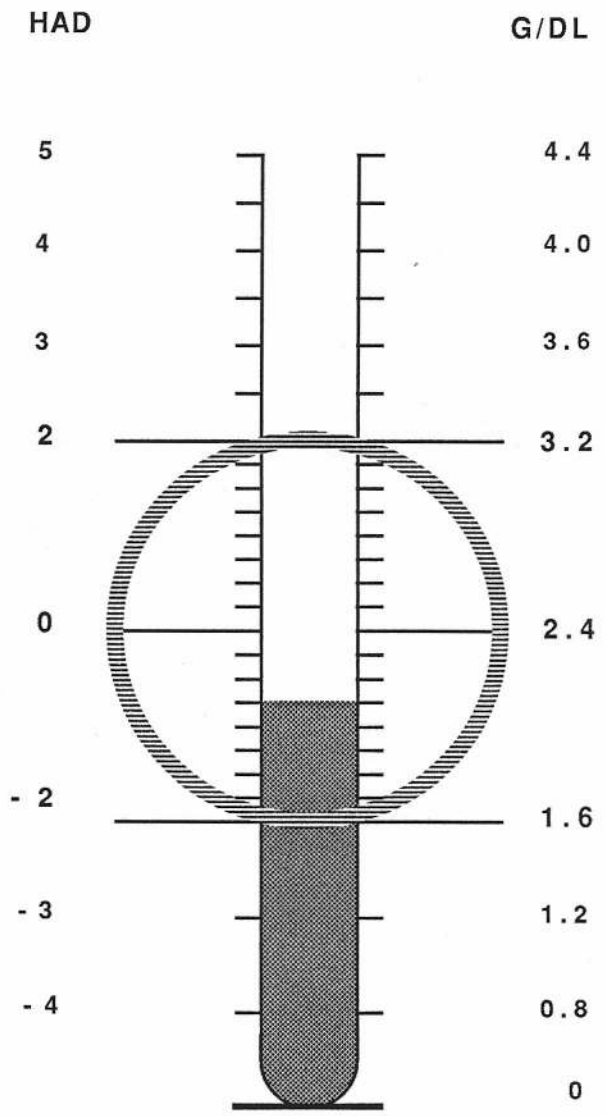
* Alpha-1 globulin suggests alpha-1 antitrypsin deficiency
* Haptoglobin in severe liver disease-megaloblastic anemia
* Transferrin in protein malnutrition
* Gamma globulins in long-term steroid treatment

INCREASED CONCENTRATIONS GREATER THAN 3.2 MG/DL:

* Alpha-1 antitrypsin in acute inflamation-infection
* Alpha-2 globulins in nephrotic syndrome
* Beta globulins in elevated beta-lipoprotein
* Gamma globulins in 90% of advanced cirrhosis

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



GLOB

Healthsystems Analysis

Patient: 87-506222

TINSLEY, DR. CURTIS J.
M 46Y 69HT 225WT

Reference Physician:

MURRAY, D.C., RICHARD
02.06.96 0835 CJT

GLUCOSE

Your patient's Glucose concentration has been measured in conventional units:

96 MG/DL

Health-Associated Reference Interval

70 - 110 MG/DL

Glucose is a monosaccharide derived from dietary complex carbohydrates and is stored in the liver and skeletal muscles as glycogen. A complex homeostatic system involving the liver, muscle, and small intestine coordinated with several hormone levels such as insulin necessary for cellular membrane permeability to glucose, and glucagon responsible for the conversion of glycogen to glucose in the liver. High concentrations of plasma glucose are excreted in the urine by the kidneys.

DECREASED CONCENTRATIONS LESS THAN 70 MG/DL:

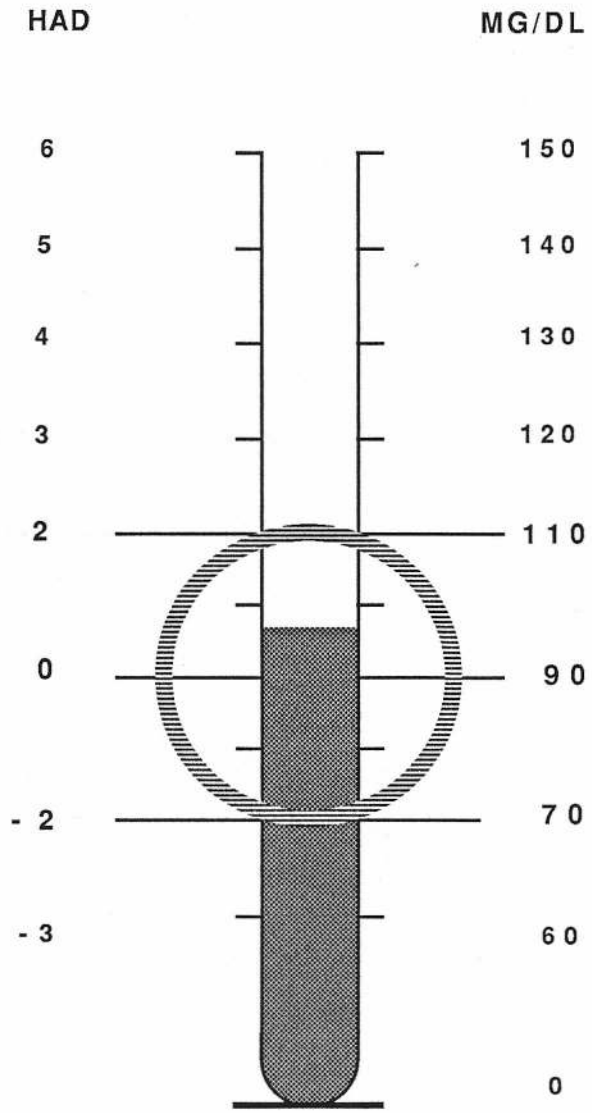
* Malnutrition
* Alcoholism
* Strenuous exercise
* Pancreatic islet cell tumor

INCREASED CONCENTRATION GREATER THAN 110 MG/DL:

* Diabetes mellitus
* Crushed injury
* Infections
* Acute pancreatitis
* Cancer of the pancreas
* Adrenal gland hyperfunction (Cushing's syndrome)

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



GLUC

Healthsystems Analysis

Patient: 87-506222

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M 46Y 69HT 225WT

MURRAY, D.C., RICHARD
02.06.96 0835 CJT

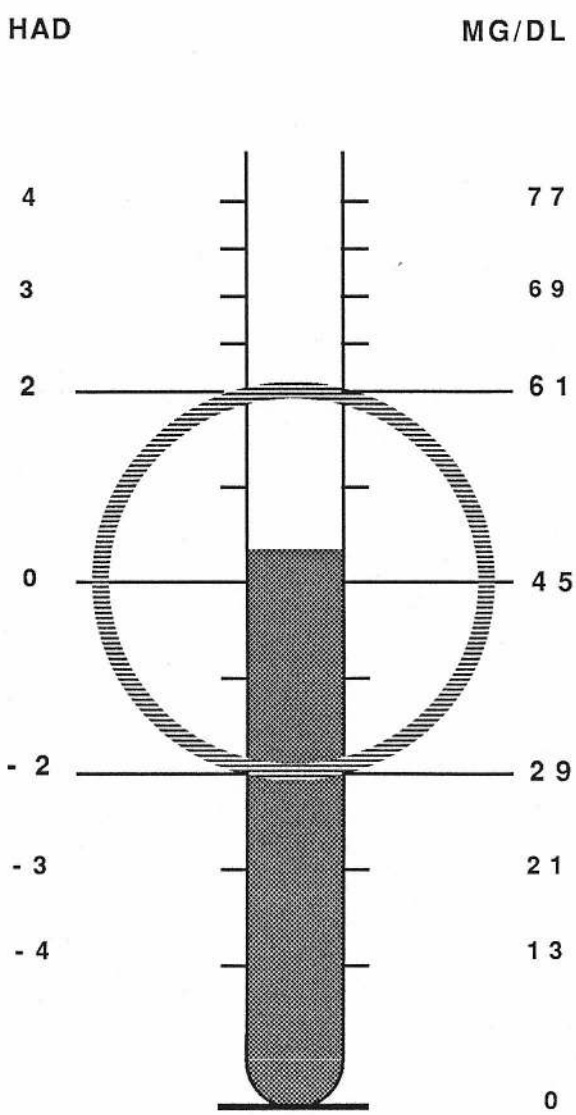
HIGH DENSITY LIPOPROTEIN

Your patient's High Density Lipoprotein concentration has been measured in conventional units:

48 MG/DL

Health-Associated Reference Interval

29 - 61 MG/DL



High Density Lipoprotein (HDL) is the smallest of the lipoprotein particles containing an outer surface of free cholesterol, phospholipid, apoprotein and an inner core of cholesteryl ester, triglyceride in the following approximate composition:

50% Protein
25% Phospholipid
20% Cholesterol
5% Triglyceride

HDL is measured in the serum by the indirect measurement of cholesterol content in the lipid particle since its concentration contributes to the total serum cholesterol. The function of HDL is to transport cholesterol from the cell to the liver where cholesterol is excreted as bile salt. Studies have demonstrated that **HDL** has a **protective** effect about 3.7 times over the promoting effect of LDL cholesterol for coronary heart disease (CHD). Framingham studies indicate that serum concentrations **greater than 45 MG/DL** for males provides increased protection against developing CHD.

DECREASED CONCENTRATIONS LESS THAN 29 MG/DL:

* Obesity with increased triglycerides
* Chronic physical inactivity
* Hyperthyroidism
* Tangier's disease - low cholesterol, LDL
* Obstructive liver disease with increased cholesterol

INCREASED CONCENTRATIONS GREATER THAN 61 MG/DL:

* Chronic physical activity
* Above 100 - chronic liver disease

PATHOPHYSIOLOGICAL IMPLICATIONS:

NIH TARGET LEVEL OF 45 MG/DL OR GREATER REFLECTS A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

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06-FEB-900835-01

IRON

Your patient's Iron concentration has been measured in conventional units:

125 MCG/DL

Health-Associated Reference Interval

50 - 150 MCG/DL

Iron is an essential trace element measured in the serum as trivalent ferric ions combined with beta-1 globulin transferrin for circulation to the bone marrow, liver and spleen where iron is stored as ferritin and hemosiderin. Daily dietary iron is absorbed in the duodenum where only 10% is assimulated into circulation. Since there is only a small excretion of iron daily, average losses for men about 1 MG/DAY and for women about 2 MG/DAY, **iron is held in a stable homeostasis.**

Iron as a trace nutrient functions as an oxygen electron tranporter and also as a critical component for a healthy immune response. Lymphocyte proliferation to mitogens and antigens with neutrophilic phagocytic activity depend on adequate stores of iron.

DECREASED CONCENTRATIONS LESS THAN 50 MCG/DL:

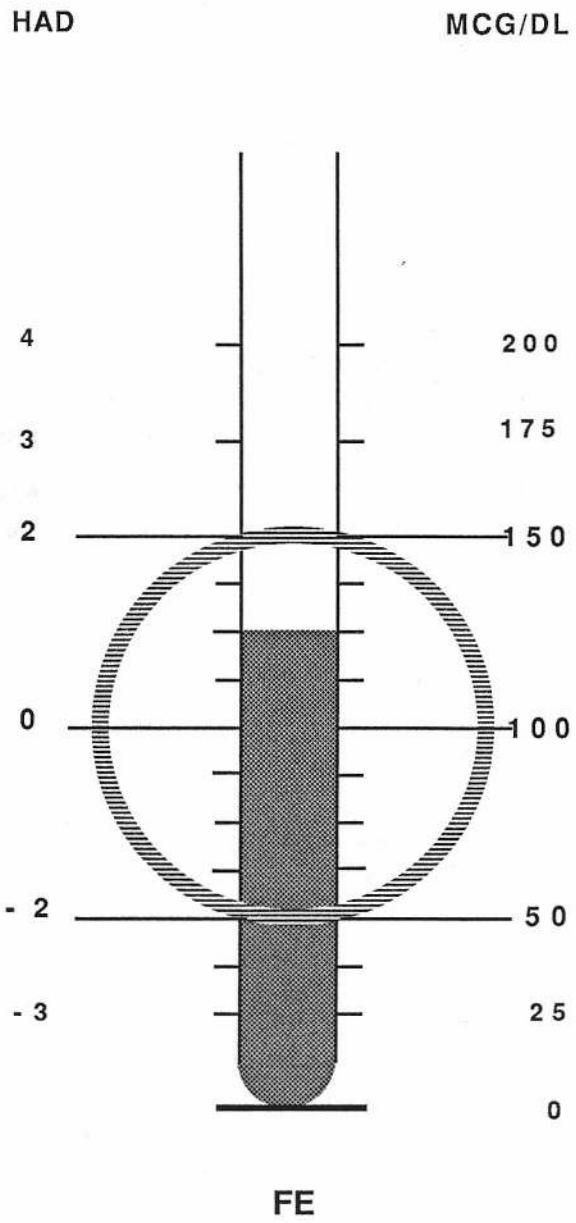
* Iron deficiency anemia - microcytic
* Protein malnutrition
* Malabsorption
* Rheumatoid arthritis
* Chronic peptic ulcer bleeding
* Menorrhagia - abnormally profuse menstrual flow

INCREASED CONCENTRATION GREATER THAN 150 MCG/DL:

* Hemochromatosis - excessive iron deposits
* Appearance of hemosiderin crystals in urine
* Toxic effects of lead
* Vitamin B6 - pyridoxine deficiency inhibits heme
* Liver necrosis

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



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LACTATE DEHYDROGENASE

Your patient's Lactate Dehydrogenase concentration has been measured in conventional units:

127 U/L

Health-Associated Reference Interval

90 - 230 U/L

Lactate Dehydrogenase (LD) is a glycolytic intracellular enzyme found in nearly every metabolically active tissue with the highest concentrations derived in the serum from heart, skeletal muscle, liver, kidneys, brain and erythrocytes. Total LD activity is a composite of five different isoenzyme activities with production of increased LD-1 over LD-2 in the myocardium after infarction damage.
Since total LD is the enzyme responsible for the reversible oxidation of lactic to pyruvic acid in the glycolytic pathway of carbohydrate metabolism, LD serves as a more appropriate screening indicant for megaloblastic and metastatic carcinoma of the liver.

DECREASED CONCENTRATIONS LESS THAN 90 U/L:

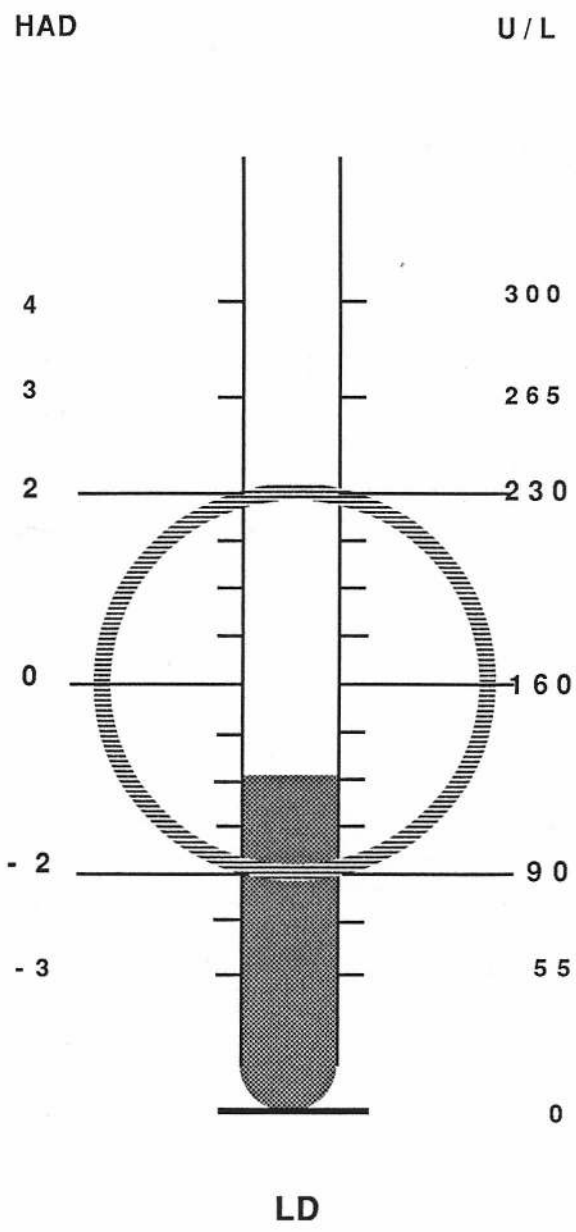
* Severe iron deficiency

INCREASED CONCENTRATIONS GREATER THAN 230 U/L:

* 2 - 40 fold in megaloblastic anemia
* 2 - 40 fold in extensive carcinomatosis
* 2 - 4 fold in myocardial infarction with CK, ALT
* 2 - 4 fold in hemolytic anemia
* 2 - 4 fold in infectious mononucleosis
* Carcinoma without hepatic involment

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



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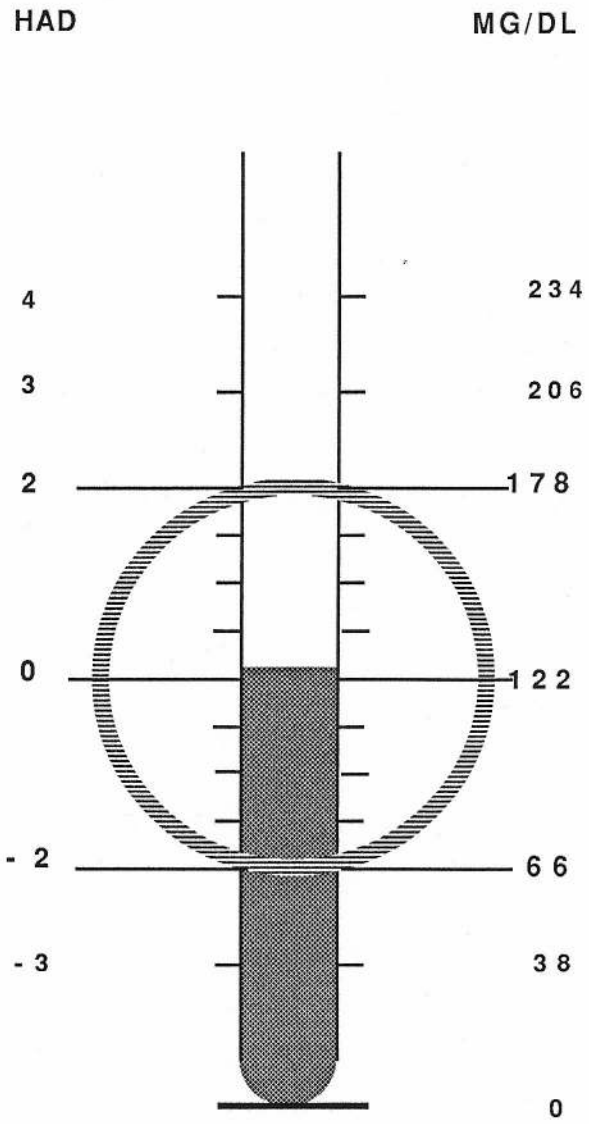
LOW DENSITY LIPOPROTEIN

Your patient's Low Density Lipoprotein concentration has been measured in conventional units:

129 MG/DL

Health-Associated Reference Interval

66 - 178 MG/DL



Low Density Liporpotein (LDL) is twice the size of the HDL particle containing an outer surface of free cholesterol, phospholipid, one large molecule of apoprotein B-100 and an inner core of cholesteryl ester in the following approximate composition:

55% Cholesterol
20% Protein
20% Phospholipid
5% Triglycerides

LDL cholesterol is not measured in the serum but is obtained from the calculation derived from the HDL and triglyceride measurements in the following relationship:
LDL Cholesterol = Total Cholesterol - [VLDL-C + HDL-C]
Studies have indicated that LDL cholesterol is the most prevalent and contributes the most atherogenic class of cholesterol-transporting lipoproteins found in serum. In compliance with the National Institute of Health Consensus Panel on Cholesterol Lowering, LDL target concentration of less than **110 MG/DL** would contribute less cholesterol to the total cholesterol level of 200 MG/DL.

DECREASED CONCENTRATIONS LESS THAN 66 MG/DL:

* Starvation
* Tangier's disease - low HDL, total cholesterol

INCREASED CONCENTRATION GREATER THAN 178 MG/DL:

* Hypercholesterolemia - diet high in animal fat
* Familial hypercholesterolemia

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

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LOW DENSITY-TO-HIGH DENSITY LIPOPROTEIN RATIO

Your patient's LDL / HDL ratio has been calculated with conventional units:

2.93 RATIO

Health-Associated Reference Interval

AVERAGE RISK = 3.5

The Total Cholesterol measurement in serum is the collective concentrations of three major lipoproteins:
TOTAL CHOLESTEROL = HDL-C + LDL-C + VLDL-C
Since VLDL cholesterol contributes the lowest concentration of cholesterols, the percentage of LDL and HDL represents a risk factor for coronary heart disease (CHD). The LDL cholesterol has been implicated as the greatest atherogenic constituent because this lipoprotein particle carries about 45% cholesterol to LDL receptors that are present on the surface of all mammalian cells, where they facilitate the uptake of plasma LDL cholesterol, whereby it is needed for membrane synthesis in growing cells.
HDL is credited with the transportation of cholesterol from the cells back to the liver for conjugation into bile salts.
As the LDL / HDL ratio <u>increases</u> over 3.5 for males, the risk of progressive coronary heart disease <u>increases</u>.

DECREASED RATIO LESS THAN 3.5

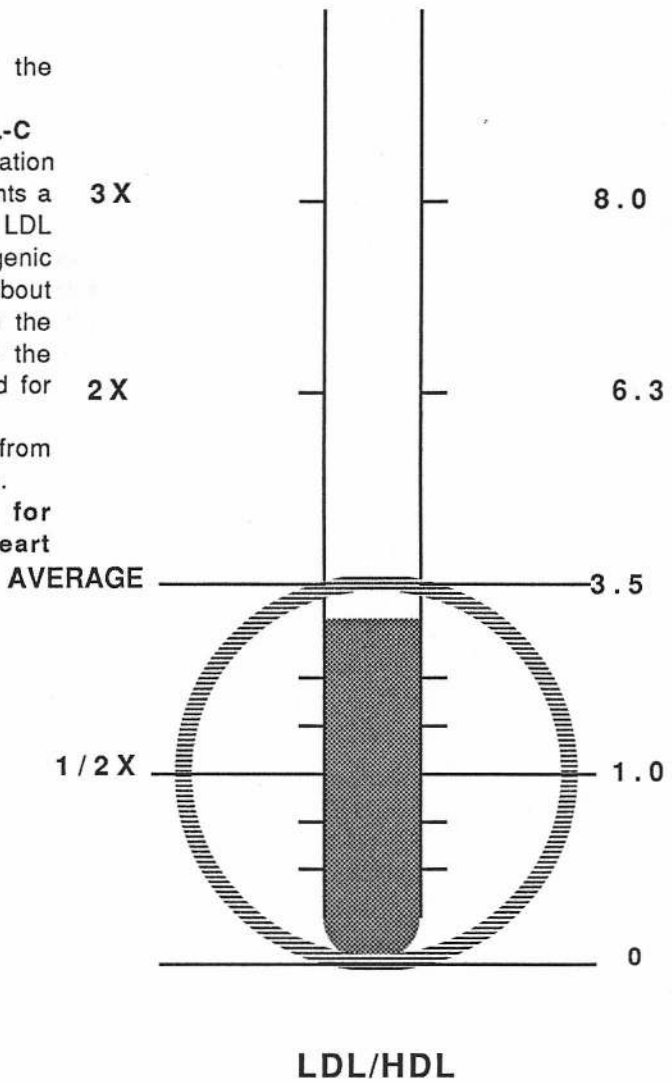
* If LDL = 150, then HDL = 43 or more
* If LDL = 100, then HDL = 29 or more
* If LDL = 75, then HDL = 22 or more

INCREASED RATIO GREATER THAN 3.5

* If LDL = 150, then HDL = 42 or more
* If LDL = 100, then HDL = 28 or more
* If LDL = 75, then HDL = 21 or more

PATHOPHYSIOLOGICAL IMPLICATIONS:

THE RATIO OF LDL-CHOLESTEROL TO HDL-CHOLESTEROL MAY BE ALTERED BY EITHER <u>INCREASING HDL-CHOLESTEROL</u> OR BY <u>DECREASING LDL-CHOLESTEROL</u>. YOUR PHYSICIAN WILL ADVISE YOU.



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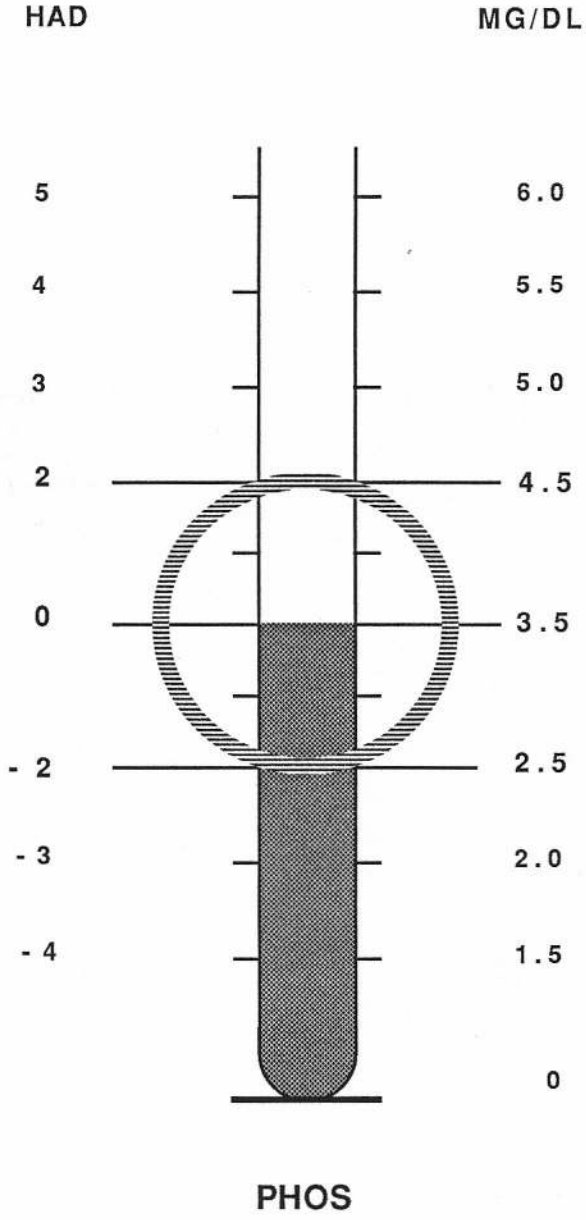
PHOSPHORUS

Your patient's Phosphorus concentration has been measured in conventional units:

3.5 MG/DL

Health-Associated Reference Interval

2.5 - 4.5 MG/DL



Phosphorus is one of the major minerals found in the cells of bone and soft tissue as phosphorus ions and phosphate complexes. About 80% of body phosphorus is in the bone combined with calcium to form a crystalline structure. **There is an important metabolic relationship between calcium and phosphorus levels of a 2:1 ratio repsectively.** Therefore, calcium and phosphorus homeostatsis is maintained together by regulation of dietary absorption, bone formation or destruction and urinary excretion. Serum phosphorus levels can deviate almost 100% within a day but still regulated in a narrow homeostatic range.
Phosphorus nutritive is an important intracellular regulator of protein, carbohydrate and lipid metabolism, regulates acid-base equilibrium by plasma and urine levels, utilization of B vitamins and promotion of nerve and muscle acitivity.

DECREASED CONCENTRATIONS LESS THAN 2.5 MG/DL:

* Increased serum calcium concentrations
* Decreased serum magnesium concentrations
* Malabsorption syndrome
* Vitamin D deficiency
* Hyperparathyroidism with increased calcium

INCREASED CONCENTRATION GREATER THAN 4.5 MG/DL:

* Chronic glomerular disease
* Hypoparathyroidism with decreased calcium
* Increased growth hormone secretion in children
* Healing fractures

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

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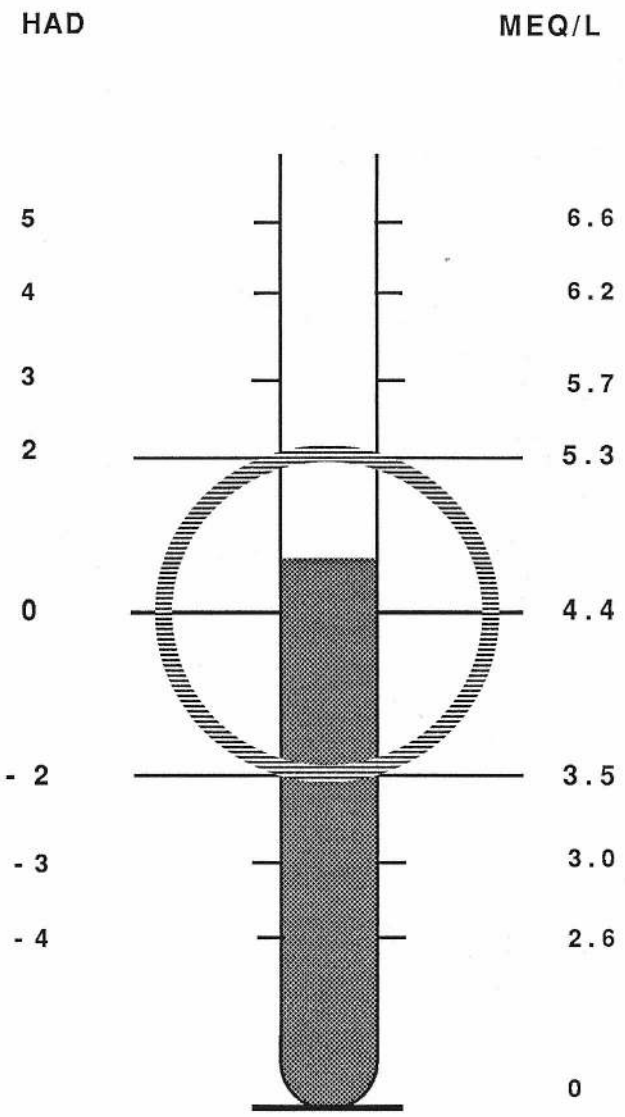
POTASSIUM

Your patient's Potassium concentration has been measured in conventional units:

4.7 MEQ/L

Health-Associated Reference Interval

3.5 - 5.3 MEQ/L



Potassium is a major mineral electrolyte found in the highest concentrations in cellular fluids at levels of 150 MEQ/L. The measurement of serum potassium is the best indicator of body potassium held in a narrow homeostatic range. Potassium moves intracellularly with glucose and amino acids and is retained in a ratio of 3 MEQ/potassium for each gram of nitrogen synthesized by protein so that dietary deficiency is unusual physiology.
During tissue breakdown, potassium enters the extracellular fluids from the cell and is excreted by the kidneys. Since the body does not conserve potassium, the kidneys eliminate from 25 - 120 MEQ/L daily, even during restrictive dietary intake of potassium.

DECREASED CONCENTRATIONS LESS THAN 3.5 MEQ/L:

* Diarrhea
* Dehydration
* Malnutrition - starvation
* Excessive ingestion of licorice
* Metabolic alkalosis
* Influenced by potassium-wasting diuretics

INCREASED CONCENTRATION GREATER THAN 5.1 MEQ/L:

* Renal failure
* Addison's disease with hypovolemia-increased urea
* Massive destruction of muscle tissue
* Metabolic acidosis

PATHOPHYSIOLOGIC IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

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PROTEIN - TOTAL

Your patient's Total Protein concentration has been measured in conventional units:

7.3 G/DL

Health-Associated Reference Interval

6.0 - 8.4 G/DL

Total serum Protein is the collective biochemical measurement of albumin, alpha-1 globulins, alpha-2 globulins, beta globulins and gamma globulins. As a screening procedure, deviations in serum levels of any one or all components can result in alteration in total serum proteins. Proteins are high molecular weight organic compounds composed of amino acids that are combined to form polypeptide chains of 40 or more amino acids that impart the physical property of a protein. Protein nutrition is fundamentally based on providing an adequate intake and balance of essential amino acids and a sufficient source of nitrogen to form nonessential amino acids.

DECREASED CONCENTRATIONS LESS THAN 6.0 MG/DL:

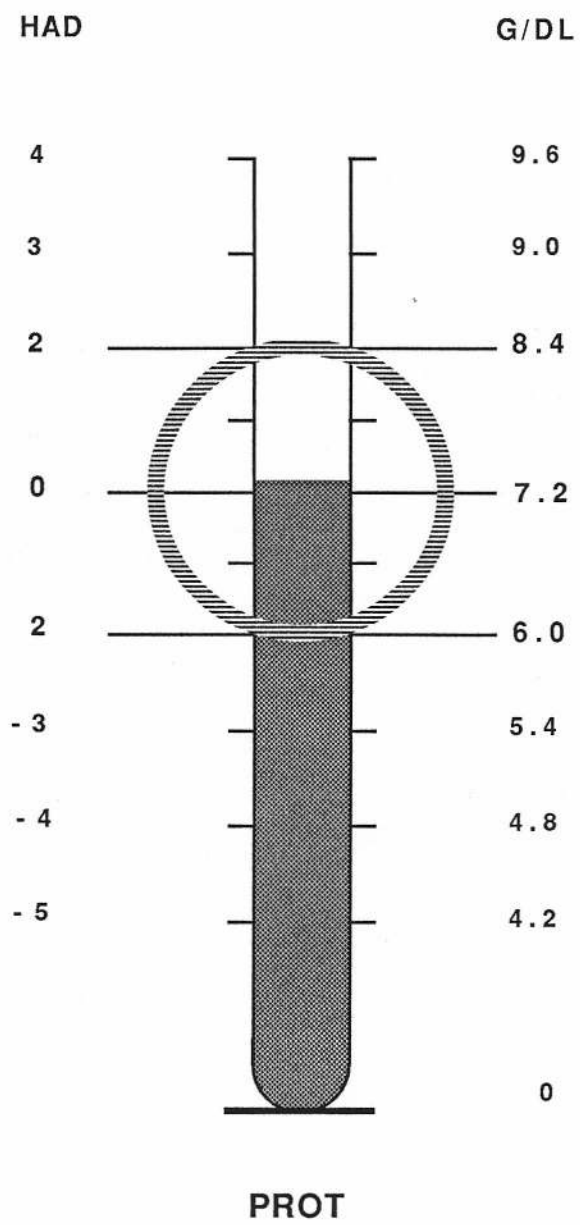
* Malnutrition
* Low protein diet
* Malabsorption syndrome
* Advanced cirrhosis
* Chronic inflamation or infection
* Cancer of gastrointestinal tract

INCREASED CONCENTRATION GREATER THAN 8.4 MG/DL:

* Dehydration
* Diarrhea
* Multiple myeloma
* Respiratory distress sydrome

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



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SODIUM

Your patient's Sodium concentration has been measured in conventional units:

141 MEQ/L

Health-Associated Reference Interval

136 - 148 MEQ/L

Sodium is the major mineral found in the extracellular fluids of the body with an obligatory demand of 2 - 4 grams daily - a teaspoon of table salt contains about 2.3 grams of sodium. The average man contains about 65 grams of sodium; about 38 grams are extracellular in the plasma, about 21 grams are stored temporarily in the bones and about 6 grams are located within the cells. Energy-producing reactions in metabolism are necessary for the transport of sodium ions across the cell membrane with intracellular sodium providing additional buffer to the pH of the extracellular fluid. Sodium functions as a conductor of neuromuscular impulse, metalloenzyme activity, osmolality of intravascular fluids and regulation of acid-base equilibrium by combining with chloride and bicarbonate ions.

DECREASED CONCENTRATIONS LESS THAN 136 MEQ/L:

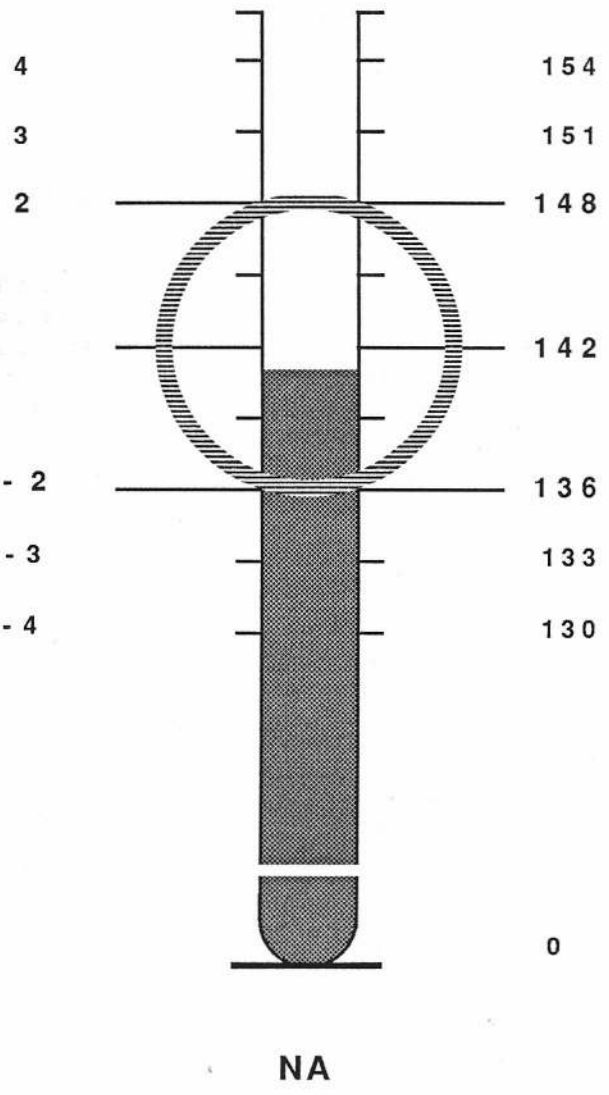
* Loss of sodium from kidneys by diuretic use
* Glomerulonephritis or pyelonephritis
* Metabolic loss of sodium through starvation
* Secondary hyperaldosteronemia
* Excess water intake
* Intracellular potassium depletion
* Fluid replacement without adequate sodium

INCREASED CONCENTRATION GREATER THAN 144 MEQ/L:

* Very uncommon in healthy physiology
* Primary dehydration
* Mineralocorticoid steriod excessive use

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



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THYROXINE

Your patient's Thyroxine concentration has been measured in conventional units:

7.6 MCG/DL

Health-Associated Reference Interval

4.5 - 12.5 MCG/DL

Thyroxine (T4) is an endocrine hormone secreted by the thyroid gland and bound to three serum proteins: Thyroxine-binding globulin (TBG), thyroxine-binding prealbumin (TBPA) and albumin. The thyroid feedback loop, consisting of the hypothalmus that secretes thyrotropin releasing factor (TRF), the anterior pituitary that secretes thyroid stimulating hormone (TSH) and the thyroid gland that secretes triiodothyronine (T3) and thyroxine (T4), is maintained in an equilibrium that T4 can serve as a dependable screening procedure to evaluate dietary intake of iodine and for general thyroid function.

DECREASED CONCENTRATIONS LESS THAN 4.5 MCG/DL:

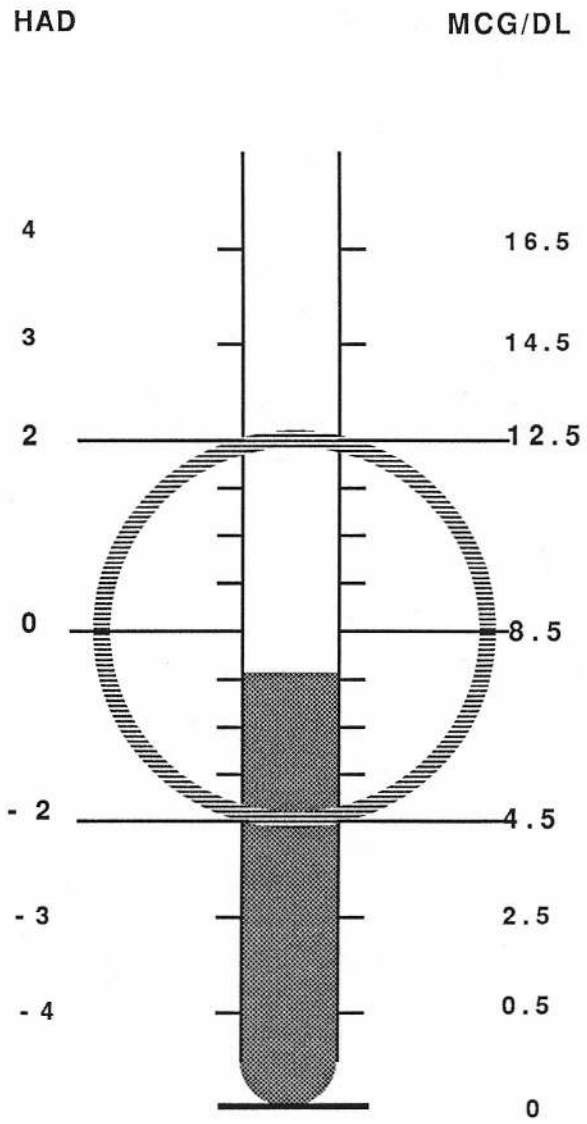
* Dietary iodine deficiency
* Prolong ingestion of iodine
* Dietary goitrogens - cabbage, turnips, cauliflower
* Goiter syndrome
* Protein malnutrition
* Strenuous exercise
* Decreased TBG due to anabolic steroid use
* Chronic liver disease
* Myxedema

INCREASED CONCENTRATION GREATER THAN 12.5 MCG/DL:

* Estrogen therapy
* Increased TBG in pregnancy
* Hyperthyroid syndrome

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



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02.06.96 0835 CJT

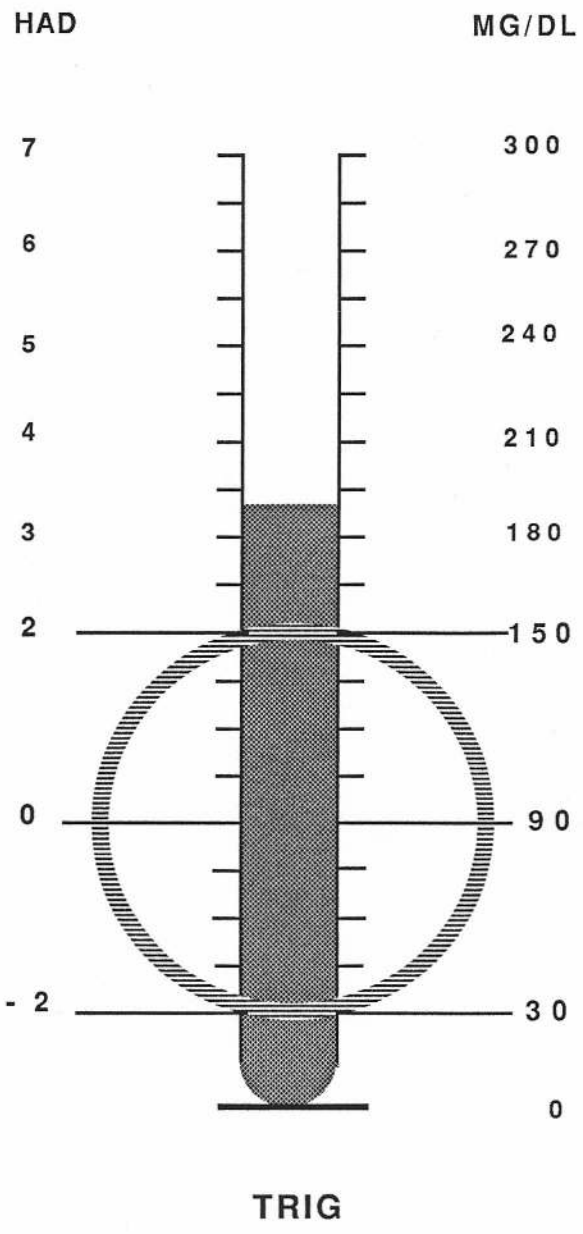
TRIGLYCERIDES

Your patient's Triglycerides concentration has been measured in conventional units:

190 MG/DL

Health-Associated Reference Interval

30 - 150 MG/DL



Triglycerides are esters of glycerol, a sweet syrupy hygroscopic alcohol, with three fatty acids. The intestine processes triglycerides from dietary fatty acids as an exogenous source soluble in plasma and transported by chylomicron lipoprotein particles. The liver also produces triglycerides as the endogenous source and stores as lipids in the adipose tissues. The primary metabolic function of triglycerides is to provide energy to heart and skeletal muscle tissue.
In fasting conditions of 12 hours, very low density lipoprotein is the primary vehicle for triglycerides. Therefore, the three lipoprotein particles expected in fasting serum are VLDL, LDL and HDL. **As the concentration of triglycerides increase, the LDL level increases as a result of the availablity of more LDL receptors.**

DECREASED CONCENTRATIONS LESS THAN 30 MG/DL:

* Congenital Beta-lipoproteinemia
* Hyperthyroidism
* Protein malnutrition
* Chronic exercise

INCREASED CONCENTRATION GREATER THAN 150 MG/DL:

* Hyperlipoproteinemia types I, IIB, III, IV, V
* Acute myocardial infarction
* Hypothyroidism
* Alcohol cirrhosis
* High carbohydrate diet

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS III ANALYTE, AND FALLS OUTSIDE A 99.7% CONFIDENCE INTERVAL - A ZONE OF NEGATIVE HEALTH.

Healthsystems Analysis

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UREA NITROGEN

Your patient's Urea Nitrogen concentration has been measured in conventional units:

15 MG/DL

Health-Associated Reference Interval

6 - 26 MG/DL

Urea nitrogen formerly called Blood Urea Nitrogen (BUN) is the major nonprotein nitrogenous waste product derived primarily from the amino groups of amino acids metabolized in the liver. The concentration of urea as intra and extracellular fluids is expressed as urea nitrogen by this measurement. After urea is produced in the liver, it passes into the plasma and is excreted in the urine. The relatively wide homeostatic range of urea nitrogen is due to the relationship between the formation of urea through protein ingestion and catabolism, and urea excretion. **Thus, urea nitrogen levels are increased by dietary protein intake and dependent on the fluid intake of the individual.** Therefore, urea nitrogen measurement is an accurate indicator for renal function and tubular absorption of the kidneys.

DECREASED CONCENTRATIONS LESS THAN 6 MG/DL:

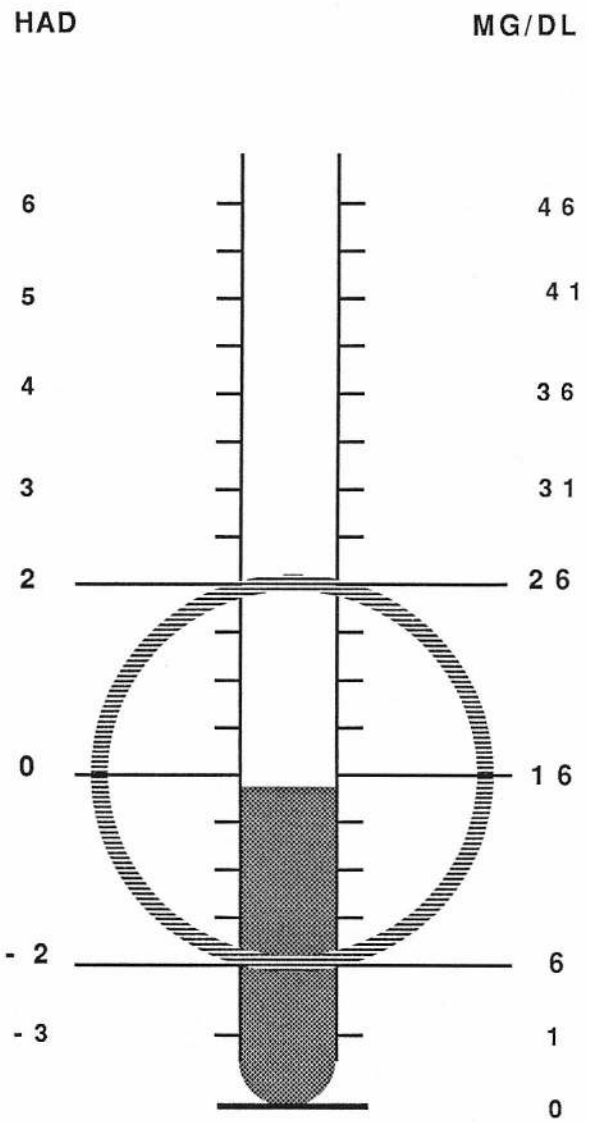
* Low-protein diet
* Overhydration
* Negative nitrogen balanced malnutrition

INCREASED CONCENTRATION GREATER THAN 26 MG/DL:

* Azotemia - prerenal, renal and postrenal etiologies
* Dehydration
* High protein intake
* Excessive licorice ingestion
* Glomerular nephritis, pyelonephritis

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.



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02.06.96 0835 CJT

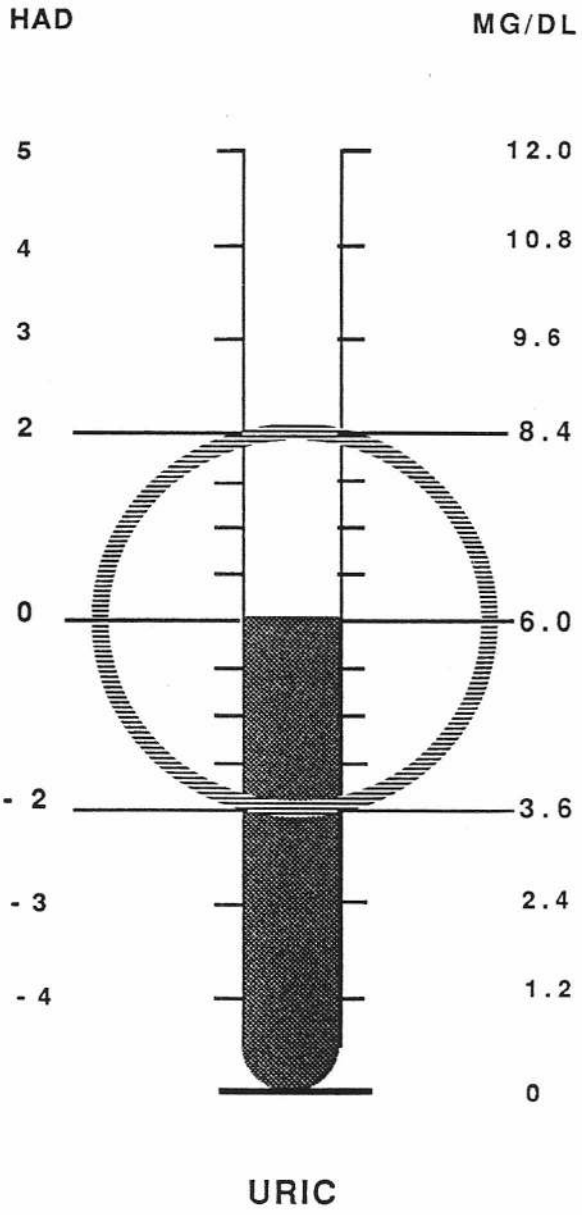
URIC ACID

Your patient's Uric Acid concentration has been measured in conventional units:

6.0 MG/DL

Health-Associated Reference Interval

3.6 - 8.4 [MALES] MG/DL



Uric Acid is the major end product of nucleic acid and purine nucleoside breakdown, notably guanine metabolism in man. Uric acid levels reflect the amount of dietary purine rich food such as liver, sweetbreads, scallops, anchovies, mushrooms, and spinach as the exogenous source and nucleic acid catabolism in lukemias and polycythemia.

Increased levels of uric acid in the urine usually accompany elevated plasma urate concentrations when there is decreased excretion by the kidneys. Since uric acid is relatively insoluble, increased production or decreased excretion can lead to deposits of urate crystals in tissue with increased excretion leading to stone formation in the urinary tract.

DECREASED CONCENTRATIONS LESS THAN 3.6 MG/DL:

* Proximal renal tubular acidosis
* Anemia due to folic acid deficiency
* Pregnancy

INCREASED CONCENTRATION GREATER THAN 8.4 MG/DL:

* Gout
* Alcoholism
* Glumerulonephritis
* Stress
* Lead poisoning
* Excessive X-ray exposure
* High protein weight reduction diet

PATHOPHYSIOLOGICAL IMPLICATIONS:

CONCENTRATION IS A CLASS I ANALYTE, AND FALLS WITHIN A 95% CONFIDENCE INTERVAL - A ZONE OF POSITIVE HEALTH.

Healthsystems Analysis

Patient: 87-506222

Reference Physician:

TINSLEY, DR. CURTIS J.
M 46Y 69HT 225WT

MURRAY, D.C., RICHARD
02.06.96 0835 CJT

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VERY LOW DENSITY LIPOPROTEIN

Your patient's Very Low Density Lipoprotein concentration has been measured in conventional units:

38 MG/DL

Health-Associated Reference Interval

0 - 40 MG/DL

Very Low Density Lipoprotein (VLDL) is twice the size of the LDL particle containing predominantly triglycerides, synthesized in the liver in the approximate composition:

60% Triglycerides
15% Cholesterol
15% Phospholipid

VLDL contributes the lowest concentration of cholesterol but reflects the dietary intake of saturated and unsaturated fats which raise the plasma level of triglycerides. Subsequently, dietary intake is associated with an increase production of VLDL-triglycerides. Although a debate concerning the atherogenicity of VLDL exists, increased VLDL can effectively lower the HDL by providing remanant lipoprotein used in LDL formation.
In compliance with the National Institute of Health Concensus Panel on Cholesterol lowering, VLDL target concentration of less than **40 MG/DL** would contibute less cholesterol to the total cholesterol level of **200 MG/DL.**

DECREASED CONCENTRATIONS LESS THAN 5 MG/DL:

* Starvation

INCREASED CONCENTRATIONS GREATER THAN 40 MG/DL:

* Hypertriglyceridemia - triglycerides greater than 400
* Tangier's disease
* Obesity

PATHOPHYSIOLOGICAL IMPLICATIONS:

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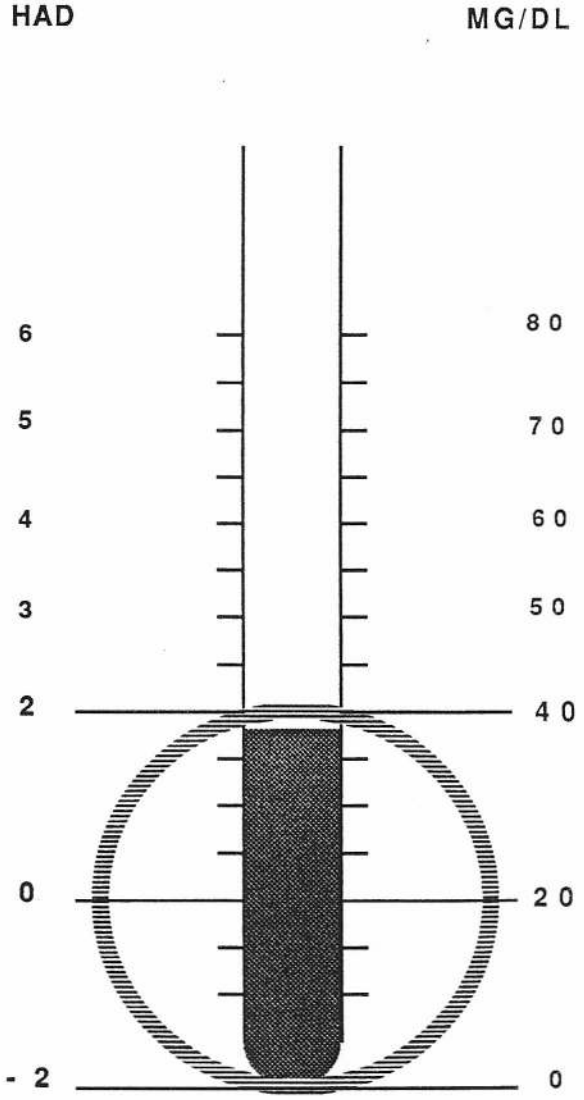

VLDL

October 1, 1987

Service Provided By

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