

A SURVEY OF
MEDICAL DIAGNOSTIC SOFTWARE

BY

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THESIS

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A SURVEY ON MEDICAL DIAGNOSTIC SOFTWARE

Mr. Steven Stein

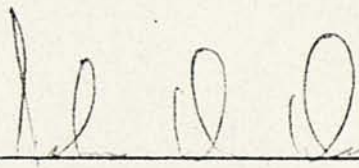
ABSTRACT

The field of medical diagnostic software is reviewed to define its status in the medical profession. This is accomplished in a two-step procedure. The first step is a cross-section of literature on the topic, and the second step is a survey of physicians in a sample area.

The cross-section of literature presents some of the more advanced studies which have been conducted on medical diagnostic software. Also presented is an explanation of the logic used in diagnostic software and the results of several test cases.

The survey was of physicians in the Orlando, Florida area to define the actual application of medical diagnostic software. It presented a sample of physicians' feeling concerning the present use of medical diagnostic software. From these steps, the present status of medical diagnostic software is defined and projections concerning its future made.

Approved by



Director of Thesis

ACID-BASE EVALUATION MAY 15, 1969 5:46 PM

SERUM ELECTROLYTES (MEQ/L): —

NA	=	142
K	=	4.0
Ca	=	9.8
CL	=	115
CO2T	=	23

BLOOD PH = 7.19

BLOOD PCO2 = 47.9 (CALCULATED FROM CO2T AND PH)

PATIENT'S WEIGHT (IN POUNDS) = 150

IS THERE EVIDENCE OF PULMONARY CONGESTION OR CONGESTIVE HEART FAILURE?
NO

EVALUATION NOTE

THE PH OF 7.19 UNITS IS LOWER THAN CAN BE ACCOUNTED FOR BY THIS DEGREE OF HYPERCAPNIA, AND INDICATES THAT A METABOLIC ACIDOSIS IS SUPERIMPOSED ON THE RESPIRATORY ACIDOSIS.

FURTHERMORE, THE FINDING OF A NORMAL PLASMA CONCENTRATION OF UNMEASURED ANIONS (14.0 MEQ/L) INDICATES THAT THE MOST LIKELY CAUSES OF THE METABOLIC ACIDOSIS ARE:

- 1) PYELONEPHRITIS WITHOUT GLOMERULAR FAILURE
- 2) RENAL TUBULAR ACIDOSIS
- 3) CARBONIC ANHYDRASE INHIBITION (DIAMOX)
- 4) AMMONIUM CHLORIDE INGESTION
- 5) URETERO-SILOMIOSTOMY
- 6) MASSIVE DIARRHEA, PANCREATIC DRAINAGE, OR FISTULAE OF THE SMALL INTESTINE.

IN AN EFFORT TO CORRECT THE METABOLIC COMPONENT OF THE ACIDOSIS IT IS SUGGESTED THAT SUFFICIENT ALKALI BE GIVEN TO RAISE PLASMA BICARBONATE CONCENTRATION TO A VALUE THAT WOULD BE MORE IN KEEPING WITH UNCOMPLICATED HYPERCAPNIA.

THE CALCULATED QUANTITY OF BICARBONATE REQUIRED TO ACHIEVE THIS GOAL IS APPROXIMATELY 250 MEQ. IT IS SUGGESTED, HOWEVER, THAT 132 MEQ OF SODIUM BICARBONATE BE GIVEN DURING THE NEXT FEW HOURS, AND THAT SERUM ELECTROLYTES AND BLOOD PH BE MEASURED AGAIN AT THAT TIME.

FINALLY, EVERY EFFORT SHOULD BE MADE TO IMPROVE PULMONARY VENTILATION AND TO MAINTAIN BLOOD PCO2 AT A VALUE OF NO GREATER THAN 45 MM HG.

THANK YOU FOR REFERRING THIS INTERESTING PATIENT TO US.

REFERENCES:

- 1) BRACKETT, N. C., JR., COHEN, J. J., AND SCHWARTZ, W. B. CARBON DIOXIDE TITRATION CURVE OF NORMAL MAN. NEW ENG. J. MED., 272, 6, 1965.
- 2) BESSON, P. B. AND MODERMOTT, W. CECIL-LOEB TEXTBOOK OF MEDICINE 10TH EDITION (1967), P. 762.

Figure 8. A sample acid-base time-sharing program output.

