Measured Creatinine Clearance (MCC)

Background

Renal creatinine clearance is a frequently used measure of renal function. The creatinine clearance is the rate at which creatinine-containing serum is cleared of creatinine; a low creatinine clearance corresponds to diminished renal function. To measure renal creatinine clearance, a 24-hour urine collection is generally taken and the serum creatinine concentration is determined from a blood sample taken halfway through the collection.

Method

Let \( U \) (mg/dl) be the urinary concentration of creatinine in a urine collection of volume \( V \) (ml) taken over \( H \) hours. Let \( S \) (mg/dl) be the serum creatinine

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**MEASURED CREATININE CLEARANCE**

(C) D. John Doyle MD PhD

**INPUT DATA**

- Urinary Creatinine (mg/dl) = 43
- Serum Creatinine (mg/dl) = 1.5
- Urine Volume (ml) = 2500
- Collection Time (hr) = 24
- Body Surface Area (sqm) = 2

**DERIVED DATA**

- Creatinine Clearance (ml/min) = 50
- Standardized Clearance = 43

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D. J. Doyle, *Computer Programs in Clinical and Laboratory Medicine*
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1000 REM ********************************
1010 REM * NAME: MCC *
1020 REM * *
1030 REM * MEASURED *
1040 REM * CREATININE CLEARANCE *
1050 REM * *
1060 REM * D. JOHN DOYLE MD PhD *
1070 REM * OCT 6, 1988 REV 6.0 *
1080 REM ********************************
1090 KEY OFF
1100 WIDTH 40
1110 SP$=SPACE$(40)
1120 REM********************************
1130 REM DISPLAY TITLE *
1140 REM********************************
1150 GOSUB 1540
1160 REM********************************
1170 REM INPUT DATA *
1180 REM********************************
1190 INPUT "URINARY CREATININE (MG/DL)?", U
1200 IF U<=0 THEN BEEP: GOTO 1190
1210 INPUT "SERUM CREATININE (MG/DL)?", S
1220 IF S<=0 OR S>20 THEN BEEP: GOTO 1210
1230 INPUT "URINE VOLUME COLLECTED (ML)?", V
1240 IF V<=0 OR V>20000 THEN BEEP: GOTO 1230
1250 INPUT "DURATION OF URINE COLLECTION (HR)?", H
1260 IF H<=0 OR H>48 THEN BEEP: GOTO 1250
1270 B=0: INPUT "BODY SURFACE AREA (SQM)?", B
1280 REM ********************************
1290 REM * CARRY OUT CALCULATIONS *
1300 REM ********************************
1310 C=(U*V)/(S*(60*H))
1320 IF B<>0 THEN LET L=1.73/B: Z=INT(C*L+.5)
1330 C=INT(C+.5)
1340 REM ********************************
1350 REM DISPLAY TITLE AND DATA *
1360 REM ********************************
1370 GOSUB 1540
1380 PRINT "INPUT DATA"
1390 PRINT
1400 PRINT " URINARY CREATININE (MG/DL)="; U
1410 PRINT " SERUM CREATININE (MG/DL)="; S
1420 PRINT " URINE VOLUME (ML)="; V
1430 PRINT " COLLECTION TIME (HR)="; H
1440 IF B<>0 THEN PRINT " BODY SURFACE AREA (SQM)="; B
1450 PRINT
1460 PRINT "DERIVED DATA"
1470 PRINT
1480 PRINT " CREATININE CLEARANCE (ML/MIN)="; C
1490 IF B<>0 THEN PRINT " STANDARDIZED CLEARANCE="; Z
1500 END
1510 REM ********************************
1520 REM TITLE DISPLAY SUBROUTINE *
1530 REM ********************************
1540 CLS

Figure 16.2.