

HP-41C

Clinical Lab and Nuclear Medicine

Quick Reference Card

Beer's Law

(Minimum Size 015)

Begin program: **[XEQ]** **BEERS**.

Input patient number (optional) **[R/S]**, and see prompt **A STD=?**

Input absorbance (A), of standard solution, **[R/S]** or, press **[R/S]** *without prior data entry*, and input % transmittance (%T) of the standard, followed by **[R/S]**.

Likewise, input A or %T for the unknown and press **[R/S]**.

See **C STD=?**, input concentration of standard solution **[R/S]** and obtain concentration of the unknown.

For a new calculation press **[C]**.

To Convert A to %T:

Press **[A]**, see **A=?**. Input A **[R/S]**, obtain %T.

To Convert %T to A:

Press **[B]**, see **%T=?**. Input %T **[R/S]**, obtain A.

For a reprint press **[E]**. Press **[R/S]** for results.

For a new case press **[E]**.

Body Surface Area

(Minimum Size 014)

Begin program: **[XEQ] BSA**.

Input patient number (optional) **[R/S]**.

See **HT=?** Input height in centimeters (or inches **[CHS]**) **[R/S]**.

See **WT=?** Input weight in kilograms (or pounds **[CHS]**) **[R/S]**.

See **DUBOIS/BOYD?**

Press **D [R/S]** for BSA by Du Bois method, *or*, press **B [R/S]** for BSA by Boyd method.

For alternative calculation:

Press **[D]** for Du Bois.

Press **[B]** for Boyd.

For reprint, press **[E]**. Press **[R/S]** for results.

For new inputs, press **[A]**.

For a new patient, press **[E]**.

Creatinine Clearance

(Minimum Size 015)

Begin program: **XEQ** **CREAT**.

Input patient number (optional) **R/S**.

See prompt: **BSA CALC?**

If Correction for BSA is not Required:

Press **R/S** without prior data entry, and go to Data Input section.

or, if Correction for BSA is Required:

and BSA is known, press **N** **R/S** and see **BSA?**
Input known value of BSA **R/S** and go to Data Inputs section.

If BSA must be calculated answer **Y** **R/S** and follow instructions under Body Surface Area program. Then go to Data Inputs (below).

Data Inputs:

See prompt **FLOW=?**. Input urine flow rate (ml/min) **R/S**, or if unknown, press **R/S** *without prior data entry* and see prompt **VOL=?**. Input urine volume **R/S** and time (min) **R/S**.

If flow is corrected for BSA, see **FLOW CORR=** (ml/min). Press **R/S**.

See prompt **U CREAT=?**. Input conc. of creatinine in the urine **R/S** and conc. of creatinine in the plasma **R/S** and obtain **CREAT CLEAR=** (ml/min).

For reprint press **■** **E**. Press **R/S** for results.

For a new clearance, press **A**.

For a new case, press **E**.

Blood Acid-Base Status

(Minimum Size 016)

Begin program: **XEQ** **BLOOD**.

Input patient number (optional) **R/S**.

Input body temp BT **R/S**. See **BT CORR?**

If calculations are to be corrected for body temp.
answer: **Y** **R/S**.

If no correction: **N** **R/S**.

See **PCO2=?** Input partial pressure of CO₂ (mm Hg) **R/S** (corrected value, if calculated, will be displayed; press **R/S**).

See **PH=?** Input pH **R/S** (corrected value, if calculated, will be displayed; press **R/S**). Total plasma CO₂ (TCO₂) (mmol/l) is calculated and displayed.

Press **R/S**, see **HGB=?** Input hemoglobin conc. (g/100ml) **R/S** and see base excess (BE).

Press **R/S** for plasma bicarbonate conc. (HCO₃- in mmol/l).

For reprint press **■** **E**. Press **R/S** for results.

For new data, press **A**.

For new case, press **E**.

Oxygen Saturation and Content

(Minimum Size 016)

Begin program: **XEQ** **O2SAT**.

Follow instructions for Blood Acid-Base Status program until prompt **PO2=?** is displayed. Input PO₂ **R/S** and obtain % saturation (%SAT).

Press **[R/S]**, input hemoglobin concentration (g/100ml) **[R/S]** and obtain O₂ content as volume %.

Optional: VPO₂ or P_AO₂ may be input in place of PO₂. Press **[B]**, input VPO₂, or P_AO₂, **[CHS]** **[R/S]**.

For a reprint, press **[E]**. Press **[R/S]** for results.

Optional: For known % O₂ saturation, press **[C]**, input % O₂ saturation **[R/S]**, input hemoglobin conc. **[R/S]** and calculate O₂ content.

For new data, press **[A]**.

For a new case, press **[E]**.

Red Cell Indices

(Minimum Size 014)

Begin program: **[XEQ]** **RCI**.

Input patient number (optional) **[R/S]**.

See prompts and input:

- red cell count, (10⁶/mm³) **[R/S]**
- hematocrit, (%) **[R/S]**
- hemoglobin, (g/dl)

Press **[R/S]** to calculate:

- mean corpuscular volume (MCV), **[R/S]**
- mean corpuscular hemoglobin (MCH), **[R/S]**
- mean corpuscular hemoglobin concentration (MCHC)

For reprint, press **[E]**. Press **[R/S]** for results.

For new data, press **[A]**.

For a new case, press **[E]**.

Total Blood Volume

(Minimum Size 014)

Begin program: **XEQ** **TBV**.

Input patient number (optional) **R/S**.

See prompts and input:

- background counts **R/S**
- volume of fluid injected **R/S**
- dilution of standard **R/S**
- standard counts/min **R/S**
- whole blood counts/min **R/S**

Total blood volume is calculated.

For reprint, press **■** **E**. Press **R/S** for results.

For new data, press **A**.

For new case, press **E**.

Thyroid Uptake

(Minimum Size 015)

Begin program: **XEQ** **THY**.

Input patient number (optional) **R/S**.

See **PTNT PRERAD?**

To correct for prior patient radioactivity:

input **Y** **R/S**, see **ISOTOPE?**

Follow isotope entry instructions for Radioactive Decay Corrections program until **A0=?** is displayed, input **1** **R/S**, then input time elapsed (dd.hh) **R/S** and see decay factor, press **R/S**.

No correction for prior patient radioactivity:

Input **N** **R/S**

For either case:

See prompts and input:

- counts/min for the standard **[R/S]**
- background counts/min for standard **[R/S]**

See net standard counts displayed.

Press **[R/S]**, see prompt and input:

- counts/min for the patient **[R/S]**
- background counts/min for patient **[R/S]**.

See net patient counts displayed.

Press **[R/S]** to calculate % thyroid uptake.

Corrections:

To correct for prior radioactivity:

Press **[R/S]**, input:

- predose counts **[R/S]**
- predose background **[R/S]**.

See % uptake corrected for prior radiation.

To correct for differences in dose and standard:

Press **[C]**, input:

- standard precounts **[R/S]**
- dose precounts **[R/S]**.

See % uptake corrected for activity difference.

For reprint, press  **[E]**. Press **[R/S]** for results.

For new data, press **[A]**.

For a new case, press **[E]**.

Radioactive Decay Corrections

(Minimum Size 007)

Begin program: **[XEQ] RADCORR.**

See **ISOTOPE?**, key in chemical symbol for isotope, press **[R/S]** and see half-life in hours.

Press **[R/S]**, see **A0=?**

Input 2 of the three variables:

- activity at time zero (A_0), **[R/S]**
- time elapsed (dd.hh format) **[R/S]**
- present activity (A) **[R/S]**.

(For the unknown, *do not* input data, simply press **[R/S]** *without data entry*.)

Unknown is calculated and displayed.

For new data, press **[A]**.

Radioimmunoassay

(Minimum Size 016)

Begin program: **[XEQ] RIA**.

(optional: if printer is used and inputs are to be printed answer the following prompt; **PRINT INPUT?; Y** **[R/S]**. Otherwise **N** **[R/S]**.)

See **DATA FOR PLOT?** Answer **Y** or **N** **[R/S]**.

See **NSB=?** Input non-specific binding counts, **[R/S]**. Repeat for all NSB, then press **[R/S]** *without prior data entry* and see **AVE NSB=**.

Press **[R/S]** and see **B0=?** Input zero dose counts **[R/S]**. Repeat for all B_0 then press **[R/S]** *without prior data entry*, to see **AVE B0=**.

Press **[R/S]** and see **STD B=?** Input counts for the first standard, **[R/S]**.

Repeat for all replicates.

After all replicates are entered press **[R/S]** *without prior data entry*, and input concentration of the standard. Press **[R/S]** for outputs.

Repeat above for all standards.

Press **[C]** to calculate correlation coefficient (R),
press **[R/S]** for slope and intercept.

Press **[R/S]**, see **UNKN B=?** and input counts for
an unknown, **[R/S]**. Repeat for all replicates.

Press **[R/S]** *without prior data entry* to calculate
concentration of unknown.

Press **[R/S]** for other results.

Repeat above for all unknowns.

Basic Statistics

(Minimum Size 010)

Place overlay on keyboard.

Begin program: **[XEQ]** **BSTAT**.

Ungrouped data: (type A)

Input data point, press **[A]**.

Repeat for all data points.

Grouped data: (type B)

Input frequency **[ENTER↑]**, input data points **[B]**.

Repeat for all data points.

Corrections:

Reinput incorrect data as above, press **[C]**.

Then input correct data point and continue.

Results:

Press **[D]** for mean.

Press **[R/S]** successively for std dev., std error
and coeff. of variation.

For a new case, press **[E]**.

Chi-Square Evaluation and Distribution

(Minimum Size 007)

Place overlay on keyboard.

Begin program: **XEQ** **CHI**.

Expected frequencies equal: (type A)

Input observed value, press **A**.

Repeat for all values, then press **D** for χ^2 Statistic, **R/S** for ave. expected frequency (E).

Expected frequencies unequal: (type B)

Input observed value **ENTER**, expected frequency **B**. Repeat for all values.

Press **D** to calculate χ^2 Statistic.

Corrections:

Reinput incorrect data as above, press **C**.

Then input correct data point and continue.

χ^2 distribution:

Input deg. of freedom **■** **A** to calculate $\Gamma(\nu/2)$.

Input x, **■** **B** for χ^2 density, or

Input x, **■** **C** for cumulative distribution.

For a new case, press **E**.

t Statistics

(Minimum Size 012)

Place overlay on keyboard.

Begin program: **XEQ** **TSTAT**.

Paired t statistic: (type A)

Input x **ENTER** , y **A** . Repeat for all data pairs.

Press **D** for paired t statistic.


Press **R/S** for other outputs.

t statistic for two means: (type B)

Input the x-value **B** . Repeat for all x.

Press **R/S** and input the difference to be tested **R/S** . Input the y-value **B** . Repeat for all y.

Press **D** for t Statistic. Press **R/S** for other outputs.

For different value of d, input and press  **D** .

For corrections to inputs:

Reinput incorrect data, press **C** .

Then input correct value and continue.

For a new case, press **E** .

t Distribution

(Minimum Size 015)

Begin program: **XEQ** **TDIST**.

Input deg. of freedom **R/S** and x **R/S**.

See prompt: **I F P**.

Press **■** **A** to calculate integral, $I(x)$.

Press **■** **B** to calculate density function, $F(x)$.

Press **■** **C** to calculate cumulative distribution $P(x)$.

For other calculations:

Input x and press **R/S**.

See **I F P**.

Press **■** **A**, **■** **B** or **■** **C** as desired.

For a new case, press **E**.



November 1979

00041-90148