Introduction

Clinical calculators and laboratory (lab) value converters are software tools used in clinical research to standardize and transform lab measurements across different units and measurement systems. Appropriately configured and validated clinical calculators and converters automate these processes, which can save Cancer Prevention Clinical Trials Network (CP-CTNet) accruing Lead Academic Organizations (LAOs) and Affiliated Organizations (AOs) valuable time and reduce the risk of errors. The Data Management, Auditing, and Coordinating Center (DMACC) hosts internal and external clinical calculators and converters on the CP-CTNet DMACC Portal Gateway at the request of LAOs and AOs. This quick reference guide covers how to access the clinical calculators and converters on the CP-CTNet DMACC Portal Gateway, highlights the utilities included in the *Calculator Utilities* program, and provides links to two external utilities that are available on the CP-CTNet DMACC Portal Gateway.

Note: Although the conversion factors and/or formulas used within the available clinical calculators and converters are derived from medical research and literature, some clinical calculators and converters may not be adequately validated for specific laboratory tests. This could lead to inaccurate calculations and conversions that may impact research outcomes. It is important to consider the pros and cons of using software versus manual methods to calculate and convert clinical values for CP-CTNet studies. Accruing LAOs and AOs are responsible for ensuring the accuracy of the values entered into the Stars registration/randomization system checklists and Medidata Rave electronic case report forms (eCRFs) according to specific requirements outlined in each protocol.

Accessing Clinical Calculators and Converters

To access the posted clinical calculators and converters:

1. Go to the CP-CTNet DMACC Portal Gateway.
2. Sign in with a CP-CTNet DMACC Portal Gateway username and password.

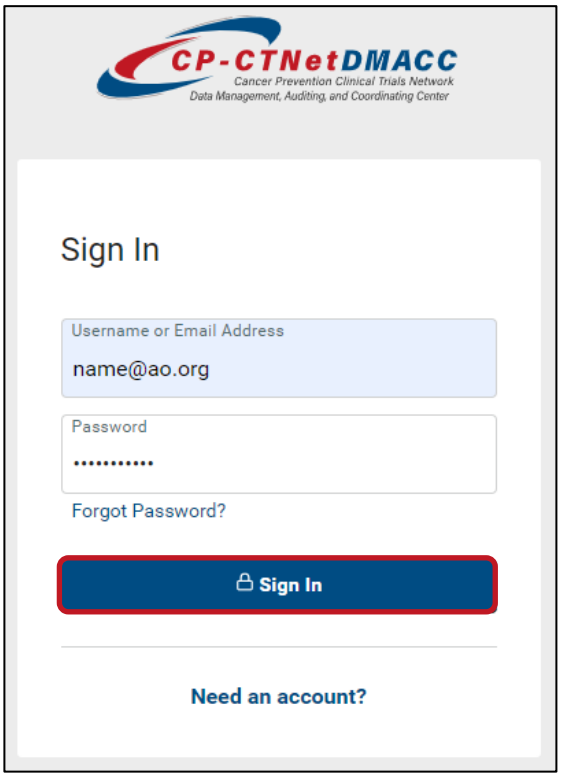

Figure 1: CP-CTNet DMACC Portal Gateway Sign In page.

3. Click the *More Details* button beneath the *Medidata Rave* tile on the dashboard.

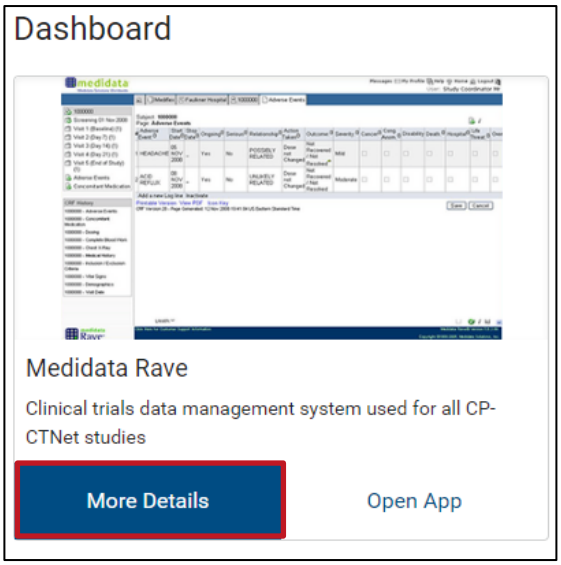

Figure 2: CP-CTNet DMACC Portal Gateway dashboard tile.

4. Scroll down to the *Utilities* category-specific container on the *Medidata Rave* dashboard item page.
5. Links to the available clinical calculators and converters are displayed in the *Utilities* category-specific container.

Figure 3: Utilities category-specific container on the Medidata Rave dashboard item page.

To view the *Calculator Utilities* program on the Frontier Science Portal:

1. Click the *Calculator Utilities* link in the *Utilities* category-specific container.
2. Log in to the Frontier Science Portal with a CP-CTNet DMACC Portal Gateway username and password.

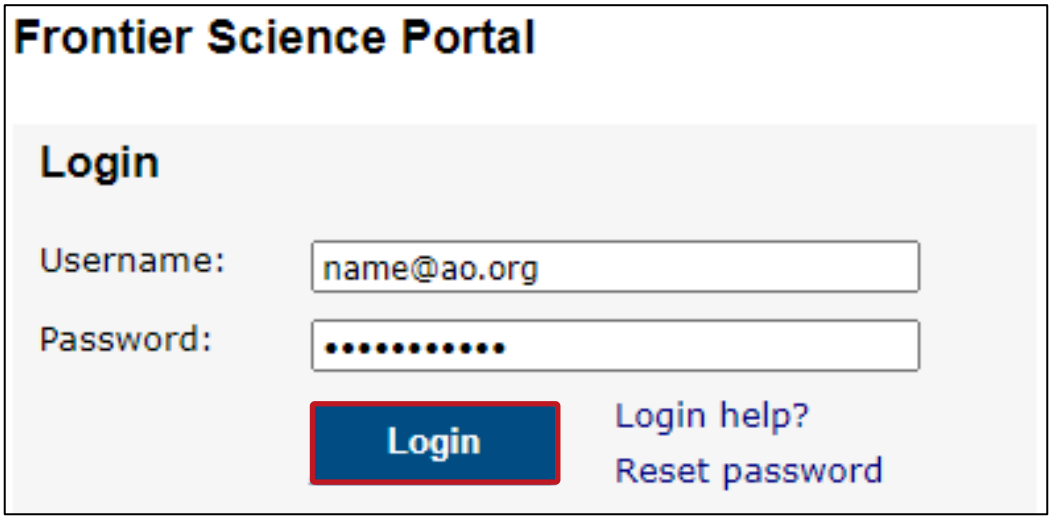

Figure 4: Frontier Science Portal Login page.

3. The *Calculator Utilities* program is displayed.

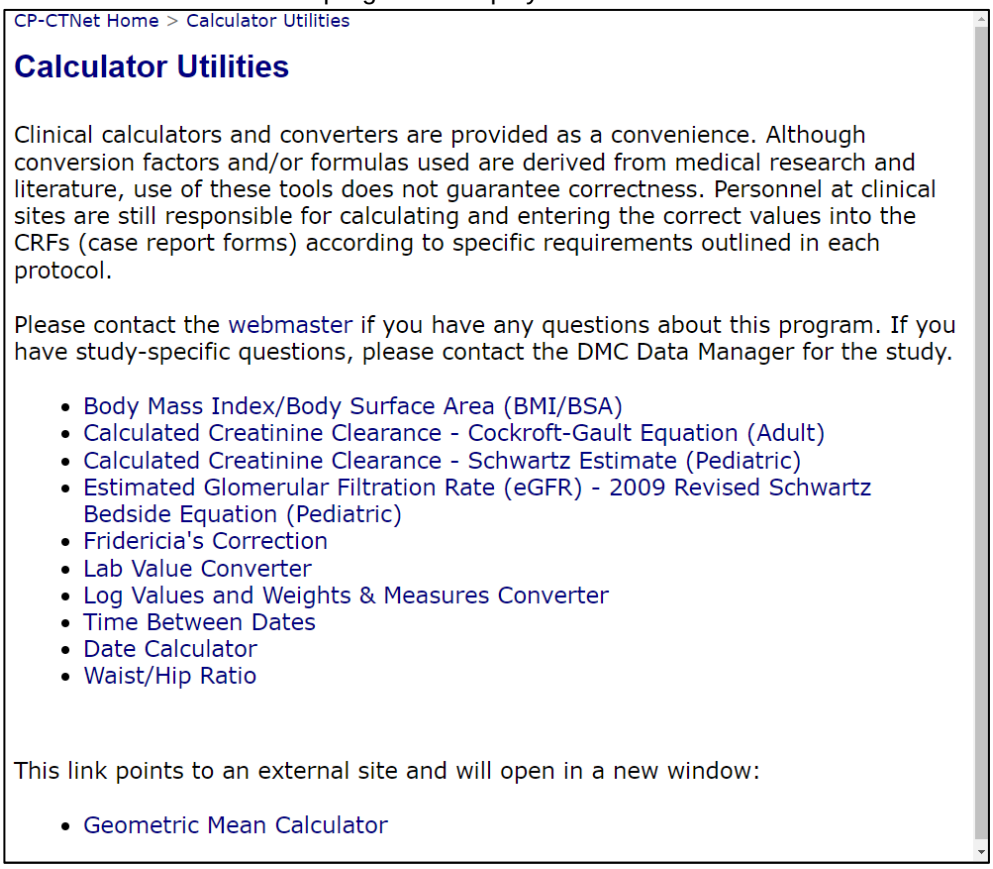

Figure 5: Calculator Utilities program on the Frontier Science Portal.

Calculator Utilities Overview

The *Calculator Utilities* program includes several different types of clinical calculators and converters. The table below includes the name and additional information for each included clinical calculator and converter.

Clinical Calculator/Converter Name	Additional Information

Body Mass Index/Body Surface Area (BMI/BSA)	• Body mass index (BMI) is a mathematical formula to assess relative body weight.
	  ○ BMI is calculated as weight in kilograms divided by the square of the height in meters.
	• Body surface area (BSA) is a measure of the overall size of a person calculated from height and weight.
	  ○ BSA is calculated by multiplying height (in centimeters) by weight (in kilograms), dividing the total by 3600, and taking the square root of the result.

Calculated Creatinine Clearance - Cockcroft-Gault Equation (Adult)	• Calculated creatinine clearance is used to evaluate kidney function. This program focuses on adult populations. For more information, refer to: ○ Cockcroft, D. W., & Gault, H. (1976). Prediction of creatinine clearance from serum creatinine. *Nephron*, *16*(1), 31-41.
Calculated Creatinine Clearance - Schwartz Estimate (Pediatric)	• Calculated creatinine clearance is used to evaluate kidney function. This program focuses on pediatric populations. For more information, refer to:

	○ Schwartz, G. J., & Gauthier, B. (1985). A simple estimate of glomerular filtration rate in adolescent boys. *The Journal of Pediatrics*, 106(3), 522-526. ○ Schwartz, G. J., Feld, L. G., & Langford, D. J. (1984). A simple estimate of glomerular filtration rate in full-term infants during the first year of life. *The Journal of Pediatrics*, 104(6), 849-854.
Estimated Glomerular Filtration Rate (eGFR) - 2009 Revised Schwartz Bedside Equation (Pediatric)	• Glomerular filtration rate (GFR) is used to evaluate kidney function. This program focuses on pediatric populations. For more information, refer to: ○ Schwartz, G. J., Munoz, A., Schneider, M. F., Mak, R. H., Kaskel, F., Warady, B. A., & Furth, S. L. (2009). New equations to estimate GFR in children with CKD. *Journal of the American Society of Nephrology: JASN*, 20(3), 629. ○ Schwartz, G. J., & Work, D. F. (2009). Measurement and estimation of GFR in children and adolescents. *Clinical Journal of the American Society of Nephrology*, *4*(11), 1832-1843. ○ Staples, A., LeBlond, R., Watkins, S., Wong, C., & Brandt, J. (2010). Validation of the revised Schwartz estimating equation in a predominantly non-CKD population. *Pediatric Nephrology*, 25, 2321-2326.
Fridericia's Correction	• The QT interval is the section on an electrocardiogram (ECG) report that represents the time it takes the heart muscle to contract and then recover. The corrected QT interval is calculated to two decimal places using Fridericia's correction.
Lab Value Converter	• This program is used to convert International System of Units/Standard International (SI) units to conventional units and vice versa. ○ The algorithms for the Lab Value Converter originated from the Medical Algorithms Project, located at http://www.medicalalgorithms.com/.
Log Values and Weights & Measures Converter	• To use this program, enter a value in any field; the conversion will appear in the adjacent field. ○ Do not enter commas. Decimal points can be included. Negative numbers can only be entered for temperature conversions. • About ribonucleic acid (RNA) to logarithm (log) base 10 conversions: ○ Do not enter commas in numbers when entering RNA copies/mL results. This program will convert an RNA copies/mL value to log base 10 and will round to two decimal places. • About temperature conversions: ○ This program will accept values from -460 to 999999 degrees Fahrenheit and from -273 to 999999 degrees Celsius.
Time Between Dates	• This program calculates the duration between two dates.
Date Calculator	• To use this program, enter a start date. Next, choose the *Add* radio button to calculate a later date or the *Subtract* radio button to calculate an earlier date. Then, enter the time that you wish to add or subtract in years, months, weeks, or days.
Waist/Hip Ratio	• Waist/hip ratio is the ratio of the circumference of the waist to that of the hips.
Geometric Mean Calculator	• The geometric mean is the average of a set of numbers that have been multiplied together. The link opens to an external website.

External Clinical Calculators and Converters

DMACC hosts two external clinical calculators and converters in the *Utilities* category-specific container on the *Medidata Rave* dashboard item page on the CP-CTNet DMACC Portal Gateway. These external utilities include the *Merck Manual Unit of Measure Conversions* and *Oxford Academic Units of Measure Converter*. The provided links open to external websites. More information about each utility is available on its respective external website.

Contact the DMACC Documentation team at Documentation_CP-CTNet@frontierscience.org with questions about this quick reference guide.

References

Resource	ID	Location
A Simple Estimate of Glomerular Filtration Rate in Adolescent Boys (Journal Article)	10.1016/S0022-3476(85)80697-1	academia.edu
A Simple Estimate of Glomerular Filtration Rate in Full-Term Infants During the First Year of Life (Journal Article)	10.1016/S0022-3476(84)80479-5	sciencedirect.com
Measurement and Estimation of GFR in Children and Adolescents (Journal Article)	10.2215/CJN.01640309	researchgate.net
Medical Algorithms Project	Website	medicalalgorithms.com
Merck Manual Unit of Measure Conversions	Website	merckmanuals.com
New Equations to Estimate GFR in Children with CKD (Journal Article)	10.1681/ASN.2008030287	ncbi.nlm.nih.gov
Oxford Academic Units of Measure Converter	Website	academic.oup.com
Prediction of Creatinine Clearance from Serum Creatinine (Journal Article)	10.1159/000180580	researchgate.net
Validation of the Revised Schwartz Estimating Equation in a Predominantly Non-CKD Population (Journal Article)	10.1007/s00467-010-1598-7	researchgate.net