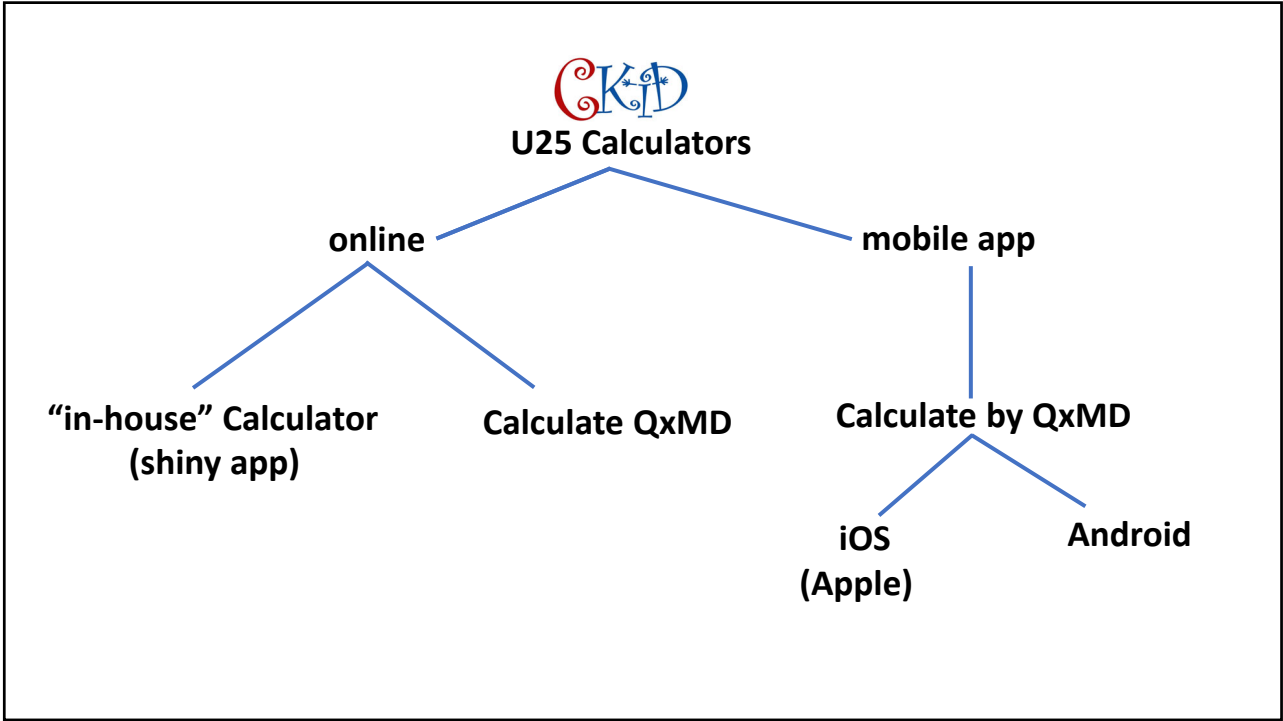



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Chronic Kidney Disease  
in Children

# Online in-house U25 eGFR Calculator

<https://ckid-gfrcalculator.shinyapps.io/eGFR/>

3

<https://ckidstudy.org>

Home

Investigator Resources

Coordinator Resources

Neurocognitive Resources

Publications

Participants and Families

Publication Policies

CKiD Calculators

Data Collection Forms & Codebooks

Discussion Board

by 50%. These estimates are information (age, sex, diagnosis (ACEI/ARB therapy).

This calculator is derived from

Go to Calculator

- Access links to all CKiD U25 eGFR calculators from the CKiD website:  
<https://statepi.jhsph.edu/ckid/investigator-resources/ckid-calculators/>

**CKiD Under 25 (U25) GFR estimating equations**

Two formulas intended for use with children, adolescents and young adults 1-25 years old are provided here: one based on height and creatinine, the other based on cystatin C. Both formulas require age and sex to be specified. If only height and serum creatinine are available, the former calculator will be used; if only cystatin C is available, the later will be used. If height, serum creatinine and cystatin C are provided, estimates using each of the two formulas will be displayed.

This calculator is derived from [Pierce et al. 2021](#).

Go to Online Calculator

The U25 Calculator is also available as an online and mobile app through Calculate by QxMD. To access the U25 calculator in the [Calculate](#) app, you will need to navigate to "Nephrology" then "eGFR" and then click on "CKiD U25 eGFR calculator."

Use Calculate App Online

Download on the App Store

GET IT ON Google Play

4

Basic characteristics (Required)

Age (years old)

11

\* Age must be between 1-25

\*\* Use decimals to capture partial years (e.g., 13.75 for a 13 years 9 months old child)

Sex

Male

Male

Female

• Must enter age and sex

• Can enter decimals for age

Serum Creatinine

Units of Serum Creatinine

mg/dL

mg/dL

μmol/L (SI unit)

Units of Height

cm

cm

inches

Cystatin C (mg/L)

\* Value must be between 0.2-8 and be IFCC-calibrated.

A non-calibrated, Siemens cystatin may be multiplied by 1.17 to approximate its equivalent IFCC-calibrated value.

• Select units of serum creatinine, height and cystatin C

• IFCC-calibrated Cystatin C is expected

5

If all values are entered, calculator will show results for 1) eGFR from sCr level, 2) eGFR from cystatin C level and 3) Average eGFR based on sCr and cystatin C. If some values are unknown, calculator will adjust results based on the values that are entered.

CKiD U25 eGFR

Basic characteristics (Required)

Age (years old)

11

Sex

Male

Serum Creatinine

Units of Height

cm

Height

110

Units of Serum Creatinine

mg/dL

Serum Creatinine

1

Cystatin C

Cystatin C (mg/L)

1.7

CKiD Under 25 (U25) GFR estimating equations

Two formulas intended for use with children, adolescents and young adults 1-25 years old are provided here: one based on height and creatinine, the other based on cystatin C. Both formulas require age and sex to be specified. If only height and serum creatinine are available, the former calculator will be used; if only cystatin C is available, the latter will be used. If height, serum creatinine and cystatin C are provided, estimates using each of the two formulas will be displayed as well as an average of the two single eGFR values. Once you enter the information, please click the SUBMIT button on the left panel.

eGFR from serum creatinine level

For male children 11 years old with height 110 cm and serum creatinine 1 mg/dL, median estimated GFR is 42.6 with interquartile range from 36.9 to 49 mL/min/1.73 m<sup>2</sup>. This means that 50% of children with this profile have GFR greater than 42.6 mL/min/1.73 m<sup>2</sup>, 25% of children with this profile have GFR less than 36.9 mL/min/1.73 m<sup>2</sup> and 25% of children with this profile have GFR greater than 49 mL/min/1.73 m<sup>2</sup>.

42.6

Interquartile Range: [36.9-49] mL/min/1.73m<sup>2</sup>

eGFR from IFCC-calibrated serum cystatin C level

For male children 11 years old with IFCC-calibrated cystatin C 1.7 mg/L, median estimated GFR is 49.1 with interquartile range from 42.6 to 56.6 mL/min/1.73 m<sup>2</sup>. This means that 50% of children with this profile have GFR greater than 49.1 mL/min/1.73 m<sup>2</sup>, 25% of children with this profile have GFR less than 42.6 mL/min/1.73 m<sup>2</sup> and 25% of children with this profile have GFR greater than 56.6 mL/min/1.73 m<sup>2</sup>.

49.1

Interquartile Range: [42.6-56.6] mL/min/1.73m<sup>2</sup>

eGFR as the average (mean) of the eGFR from serum creatinine level and eGFR from serum cystatin C level

As expected, the eGFR derived from the average of the two single-marker eGFR values is less biased, more accurate, and more precise than either of the two single-marker estimates (Ng and Pierce, 2021). The U25 eGFR (average) is unbiased at the population level even among those with discrepant single-marker estimates. If available, it will be displayed below:

Average eGFR: 45.85 mL/min/1.73 m<sup>2</sup>

References:

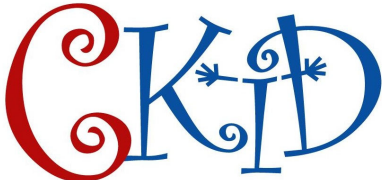
1. Pierce CB, Muñoz A, Ng DK, Warady BA, Furth SL, Schwartz GJ. Age- and sex-dependent clinical equations to estimate glomerular filtration rates in children and young adults with chronic kidney disease. *Kidney Int.* 2021 Apr;99(4):948-956. doi: 10.1016/j.kint.2020.10.047. Epub 2020 Dec 8. [ PMID: 33301749 ]

2. Ng DK, Pierce CB. Kidney disease progression in children and young adults with pediatric CKD: Epidemiologic perspectives and clinical applications. *Seminars in Nephrology*. 2021.

This interactive app was developed by the hCode team: Esther Kim, Perry Kuo, Frances Wang.

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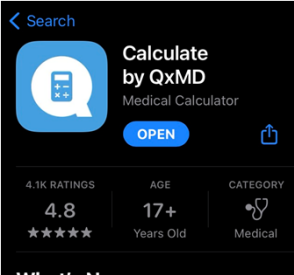



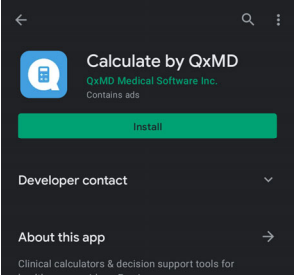

Chronic Kidney Disease  
in Children

**Mobile App**  
**Calculate** by QxMD  
for iOS (Apple) and Android

7

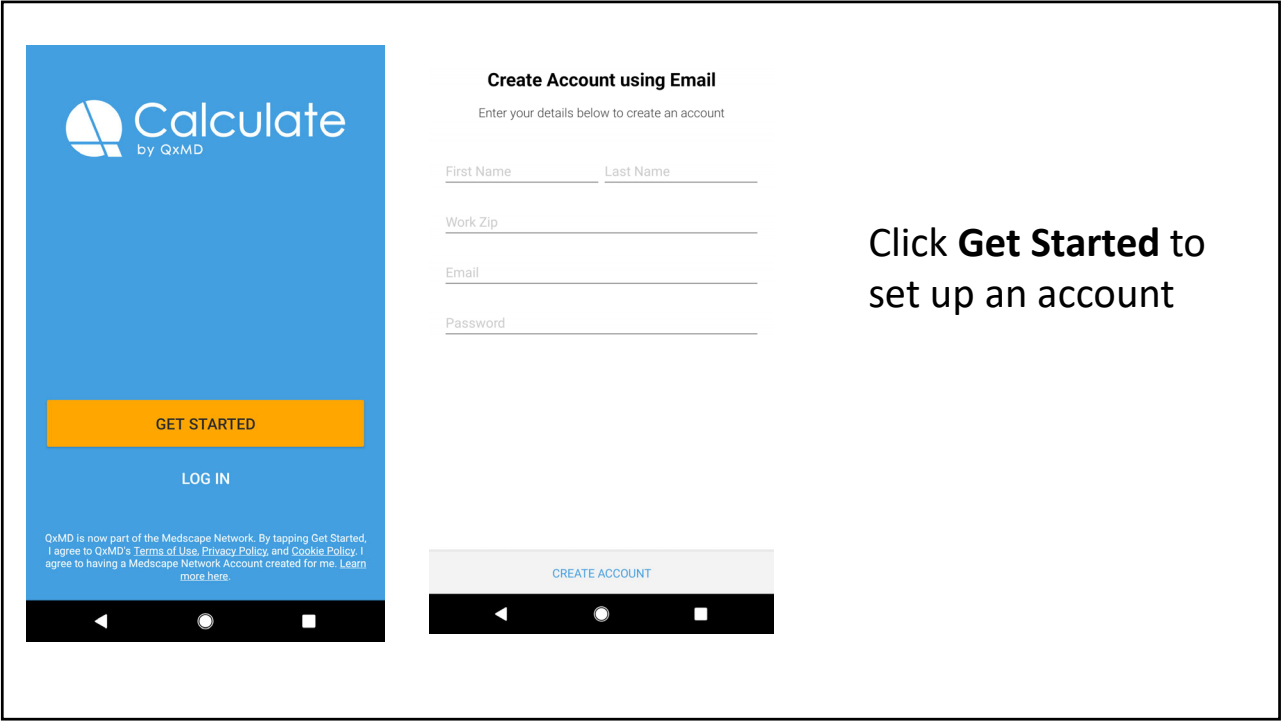
**Download **Calculate**:  
the QxMD U25 eGFR Calculator App**



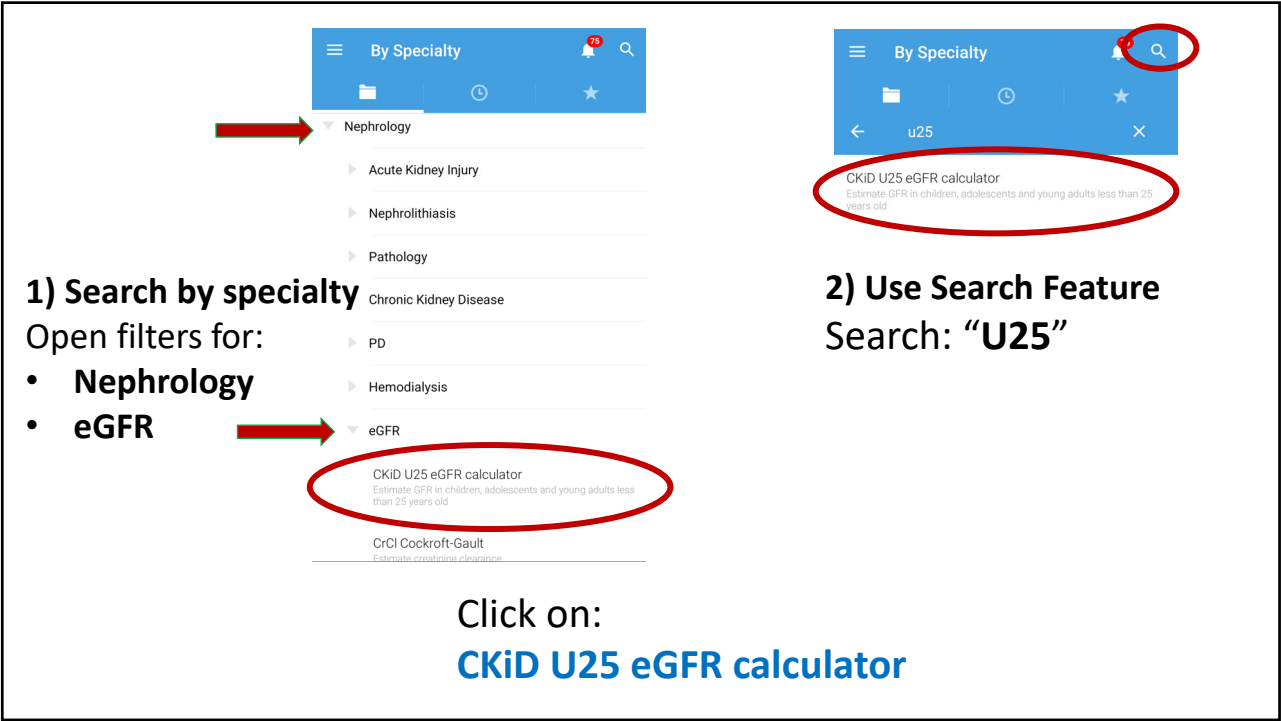


Search **Calculate**  
by QxMD in your  
app store

8



9



10

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CKiD U25 eGFR cal...

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Answer all questions...

Age?

Unanswered

Sex?

Unanswered

Serum Creatinine?

Unanswered

Height?

Unanswered

Cystatin C?

Unanswered

Results

Please answer all questions

• Must enter age and sex

• Default height unit is cm

• If sCr, height or cystatin C are unknown, enter 0

• Calculator will display results based on data entered

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CKiD U25 eGFR cal...

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Questions

Age?

11 Years

Sex?

Male

Serum Creatinine?

1 mg/dL

Height?

110 cm

Cystatin C?

1.7 mg/L

Results

11

1) SCr

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CKiD U25 eGFR cal...

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eGFR from serum creatinine level

42.6

Interquartile Range: [36.9-49] mL/min/1.73m<sup>2</sup>

For patients with a similar profile (age: 11y, sex: male, height: 1.10m, serum creatinine: 1.00mg/dL), median estimated GFR is 42.6 with interquartile range from 36.9 to 49 mL/min/1.73 m<sup>2</sup>. This means that 50% of patients with this profile have GFR greater than 36.9 but less than 49 mL/min/1.73 m<sup>2</sup>, 25% have GFR less than 36.9 mL/min/1.73 m<sup>2</sup> and 25% have GFR greater than 49 mL/min/1.73 m<sup>2</sup>.

2) cysC

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CKiD U25 eGFR cal...

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eGFR from IFCC-calibrated serum cystatin C level

49.1

Interquartile Range: [42.6-56.6] mL/min/1.73m<sup>2</sup>

For patients with a similar profile (age: 11y, sex: male, IFCC-calibrated cys-C: 1.70mg/L), median estimated GFR is 49.1 with interquartile range from 42.6 to 56.6 mL/min/1.73 m<sup>2</sup>. This means that 50% of patients with this profile have GFR greater than 42.6 but less than 56.6 mL/min/1.73 m<sup>2</sup>, 25% have GFR less than 42.6 mL/min/1.73 m<sup>2</sup> and 25% have GFR greater than 56.6 mL/min/1.73 m<sup>2</sup>. Use of a non-IFCC calibrated cystatin C measurement may lead to a biased estimate of GFR. A non-calibrated cystatin C value using Siemens assay may be multiplied by 1.17 to approximate the equivalent IFCC-calibrated value.

3) Average

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CKiD U25 eGFR cal...

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eGFR (mean based on serum creatinine level and serum cystatin C)

Average eGFR: 45.9 mL/min/1.73 m<sup>2</sup>

The average eGFR is less biased, more accurate, and more precise than either of the two single-marker estimates and provides a valid estimate even when the two single-marker estimates are discrepant.

If all values are entered, calculator will show results for 1) eGFR from sCr level, 2) eGFR from cystatin C level and 3) Average eGFR based on sCr and cystatin C. If some values are unknown, calculator will adjust results based on the values that are entered.

12

6

← CKiD U25 eGFR cal... ☆ ⓘ ↻

Questions

Age?11 Years

Sex?Male

Serum Creatinine?1 mg/dL

Height?110 cm

Cystatin C?0 mg/L

← CKiD U25 eGFR cal... ☆ ⓘ ↻

Cystatin C?0 mg/L

Results

eGFR from serum creatinine level

42.6

Interquartile Range: [36.9-49] mL/min/1.73m<sup>2</sup>

For patients with a similar profile (age: 11y, sex: male, height: 1.10m, serum creatinine: 1.00mg/dL), median estimated GFR is 42.6 with interquartile range from 36.9 to 49 mL/min/1.73 m<sup>2</sup>. This means that 50% of patients with this profile have GFR greater than 36.9 but less than 49 mL/min/1.73 m<sup>2</sup>, 25% have GFR less than 36.9 mL/min/1.73 m<sup>2</sup> and 25% have GFR greater than 49 mL/min/1.73 m<sup>2</sup>.

• If cysC is unknown, enter 0

• Calculator will only show eGFR from serum creatinine level

13

← CKiD U25 eGFR cal... ☆ ⓘ ↻

Answer all questions...

Age?Unan

Sex?Unan

Serum Creatinine?Unan

Height?Unan

Cystatin C?Unan

Results

Please answer all questions

Favorites

📁 ⌚ ☆ 🔍

CKiD U25 eGFR calculator

Estimate GFR in children, adolescents and young adults less than 25 years old

Tip: To make it easier to access the calculator, click on the star icon in the calculator to add the calculator to Favorites.

14